WATERING
THE NEIGHBOUR'S
GARDEN

EDITED BY
I. ATTANÉ
AND C. Z. GUILMOTO

# WATERING THE NEIGHBOUR'S GARDEN: THE GROWING DEMOGRAPHIC FEMALE DEFICIT IN ASIA

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Edited by Isabelle ATTANÉ
and Christophe Z. GUILMOTO

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*To the memory of an exceptional demographer, P.N. Mari Bhat*

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## Foreword

The rampant demographic masculinization taking place today in several Asian countries, from the Caucasus to East Asia, has been a relatively neglected field in demographic studies, in spite of the centrality of the "number question" in the understanding of the changing sex discriminatory practices in this part of the world. As we were familiar with two distinct cultural areas in Asia, we had long thought of joining forces to provide the missing comparative perspective called for by the increase in child sex ratios observed across the region. A first trial was the initial meeting organized in India in November 2003 by CEPED (Centre Population et Développement) and INED (Institut national d'études démographiques) and hosted by the French Institute of Pondicherry. The success of this pioneer workshop bringing together demographers working on several Asian countries, and of the subsequently published collection of papers, encouraged us to embark two years later on a larger project aimed at covering more systematically all affected regions and aspects of the growing sex imbalance in Asia.

This book originates in the international conference "Female deficit in Asia" held in Singapore on 5-7 December 2005 during which 29 papers were presented. The event was jointly sponsored by CEPED, CICRED and INED and was organized locally by the Asian MetaCentre for Population and Sustainable Development Analysis. We thank all the involved institutions for their commitment to the project. We also acknowledge further support received from the UNFPA India office and from the Asian MetaCentre, which sponsored several participants. The editors are particularly grateful to Brenda Yeoh (Asia MetaCentre), Annabel Desgrées du Loû, André Quesnel and William Molmy (CEPED), P.N. Mari Bhat (IIPS), Li Shuzhuo (Xi'an University), François Héran and Jacques Véron (INED) and Gavin Jones (CICRED and Asia Research Institute, Singapore) for their enthusiastic support and help to prepare the conference. We also want to thank Hartati Ayral (CICRED) and Verene Koh Hwee Kiang (Asian MetaCentre) for their accomplished organization of this event in Singapore, which attracted more than forty participants from sixteen different countries.

With one exception, the essays in this volume were presented as papers during the conference. We thank the participants of the conference and the discussants for their helpful editorial suggestions. We are also grateful to the authors for bearing with our often baffling combination of recurrent editorial deadlines and delays. Due to space limitations, several papers on various Asian countries had to be omitted.

They remain accessible as draft papers on CICRED's website and some of them have already been published elsewhere.

The final preparation of this volume owes considerably to the professional commitment of Silvia Huix who has supervised the planning of this manuscript by CICRED. Pierre Chapelet and Zoé Headley have also done a splendid job in improving the figures and the revising the written English of the contributions authored by non-native speakers. We also want to thank one another for the pleasure of shared work and friendship.

As the book was going to press, we learned with great sadness that our colleague and friend P.N. Mari Bhat had passed away on 30 July 2007 in Mumbai. Mari had written several seminal analyses of the sex ratio deterioration in India, including the joint paper appearing in this volume. This book is dedicated to his memory.

IA and CZG

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# Introduction

**Isabelle ATTANÉ and Christophe Z. GUILMOTO**

The examination of sex distribution in human society constitutes a rather technical, if not abstruse investigation better left to demographers. A reason for the relative indifference of social scientists for these specific gender issues lies mainly in the biological character of the discussion related to the sex-wise proportion of births and deaths that determine, to a large extent, variations in sex ratio.[1] For instance, disparities observed in sex ratio at birth across ethnic groups or periods described in the literature seem to have only indirect links with actual variations in social arrangements and institutions. As a result, the voluminous research derived on the determinants of human sex ratio–a large body of literature that has remained on the whole rather inconclusive–[2] has only marginally contributed to gender studies. This explains why historical or demographic research on sex ratio trends and differentials is rather limited, including for industrialized countries where availability and quality of the statistics is not a main source of concern.[3]

The situation of several Asian countries is, however, slightly different because of the ancient prevalence of a specific gender pattern of mortality, characterized by excess mortality among women at various age spans and resulting in higher sex ratios. The predominantly masculine character of the Indian population was thus singled out from the very first census held by the British in the early 1870s. Over the scores of pages, colonial statisticians debated in census reports the possible

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[1] Sex ratio in this volume refers to *the number of males per 100 females* for both births and live population. We follow the international usage that tends to stress *male surplus*, although the more intuitive Indian practice to compute sex ratio in an inverse manner (as females per 1000 males) corresponds to the extent of observed *female deficits*.

[2] A telling example of this situation is the literature on the recent decline in sex ratio at birth observed in the USA and other industrialized countries. In spite of long series of robust and often detailed data, available analyses fail to clearly identify the demographic or biological determinants of the observable trends. See Grech (2003), Mathew and Hamilton (2004), Davis *et al.* (in press).

[3] See however the valiant attempt by Brian and Jaisson (forthcoming) to explore trends in sex ratio in an historical perspective.

causes for this obvious demographic anomaly, which many simply saw as the mere consequence of female underenumeration. For lack of alternative sources for comparison, the census figures were subject to a lot of scrutiny and controversy, but in the absence of reliable measurements of sex specific demographic indicators such as birth or death rates, the debate on the causes of these unusually high population sex ratios remained alive for decades. But at the same time, observers couldn't fail to relate the apparent male surplus to local specific customs observed in colonial India such as child marriage, early pregnancy, female infanticide, *sati* (immolation of a widow on her husband's funeral pyre), low status of the widows, and so on. Although adequate statistical data are much more recent for China, a large body of historical evidence confirms the widespread practice of female infanticide and resulting skewed sex ratio in East Asian societies such as Japan during the Tokugawa period (Caldwell and Caldwell, 2005).

The traditional interest for gender imbalances in Asia meant that census reports routinely computed and examined sex ratio distributions. Ever since the emergence of gender issues in the 1970s, a decrease in the overall sex ratio in countries like India in the recent decades has often been interpreted somewhat mechanically as a testimony of improving women's status. But looking back to the 1980s and 1990s, it may seem surprising in retrospect that rising sex ratios observed in Asia had not attracted more attention when they were first detected. Surprisingly, it took an economist to bring to the fore the fact that what appeared to many as a local demographic curiosity was in fact the most blatant symptom of the intensity of gender discrimination observed in Asian countries. When Amartya Sen wrote its initial piece in the *New York Review of Books* (Sen, 1990), rather few social scientists–even among demographers or feminist scholars–had taken notice of the ongoing magnitude of the female deficit in Asia. Sen offered ways to measure the impact of discrimination using widely available data derived from the recently conducted censuses, including the 1982 Chinese census.[4] Interpreting men's demographic preponderance as an offshoot of their higher survival rates, he pointed out that the Asian experience showed that economic development did not invariably reduce women's disadvantages in survival.

Today, the number of "missing women" has definitely not reduced ever since Sen attempted to measure it, and recent estimates still

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[4] The 1982 census came, in China, after a long period of almost complete statistical opacity following the absence of censuses during the first part of the 20th Century and the dissimulation of the results from the previous census taken in the People's Republic in 1964. Sen's paper in 1990 was soon followed by a more detailed paper by Coale and Banister (1994).

point to an unexpected gap of no less than 86 millions between Asian males and females (Klasen and Wink, 2002). This gap is made of female babies that were never born and women who died earlier than they should have. Suffice to compare the well-known number of cumulated aids-related deaths in the world till today–which is estimated at 25 millions people by UNAIDS/WHO–to the number of missing women–estimated to be four times higher, at around 100 millions–to gauge the relative lack of interest that the female deficit has attracted. While there have been individual studies for several countries or regions, attempts to delve into the issues in a comparative approach appear to have been limited. Thereby, this volume happens to be among the first to tackle more systematically the situation in several Asian countries, stretching from the Caucasus to East Asia.

There are many factors that may account for this scholarly neglect. Examining the reasons for this delayed realization of the magnitude and implications of the female deficit in Asia would probably take the reader too far away from our current objectives. One major factor for this late appreciation stems in part from the unexpectedness of the progressive increase in juvenile sex ratio. The nearly complete absence of similar experiences in documented population history had indeed left social scientists without the kind of comparative insights that can be derived for many other facets of demographic change such as fertility decline or migration upsurge observed in various contexts. But it may also be worthwhile to examine at least two additional factors that have also contributed to this relative delay in interest and initiative for the changing gender equation in Asia, factors likely to still afflict demographic research on masculinization in the coming years. One such factor is probably more conceptual while the other is rather technical.

## 1. The abortion-discrimination nexus

One challenge when investigating rising sex ratios in Asia has been the understanding of the role of abortion and of its pernicious consequences when misused as an instrument to eliminate girls to be born– or "gender cleansing" as some have put it. Abortion has indeed become in many cultural settings a terribly efficient tool for an unprecedented sexual engineering of the population. The nexus between abortion and rise in sex ratio at birth was recognized rather late, probably for want of adequate statistics, as will be illustrated further below. But questioning the impact of abortion may also raise concern as no less than a quarter of all women in the world reside today in countries where abortion is mostly prohibited and yet many more live in devel-

oping countries where the safety and accessibility to abortion are lim-
ited.[5] The perverse impact of sex-selective abortions risks underplaying
the magnitude and the urgency of the efforts to be accomplished to
make abortions less dangerous for women.

On a broader plane, we may easily recognize why the abortion-
agency nexus is a source of perplexity to many observers. Till the mid-
1990s, higher sex ratios had been associated not to termination of
pregnancy, but to higher infant and child mortality among girls. Fight-
ing against the underlying social context was then made easier. Female
infanticide can be an illustration and many national laws were already
in place to combat a practice classified as homicide. These legislations
reflected the larger consensus on the value of human life and the
"atrocious" character of deliberate killing of baby girls. Similarly, excess
mortality caused by neglect could also be taken care of by improving
information, health infrastructure and postnatal care. In addition, what
made this battle easier was that the women concerned tend to originate
by and large from the lower classes of society such as the rural desti-
tute or the less educated. That these subaltern groups often constitute
the first target for social or demographic campaigns, which emanate on
the contrary from more urban, privileged classes and family planning is
a prime illustration of this tendency. As a result, fighting against excess
mortality or female infanticide could easily be recast as a mission to
educate "ignorant" masses left out from the benefits of social and
economic modernization. Repressive legislation when feasible (as in
the case of infanticide) could be applied on resisting women with little
political repercussions as they all belong to dominated, underprivileged
sections of society. Irrespective of whether this was the result of cam-
paigning or of broader social change, the incidence of these practices
has reduced over the years and they play today a minor part in sex ratio
discrepancies.

In spite of some initial resistance,[6] it was gradually acknowledged
that the spread of the ultrasound–by allowing parents to learn of the
sex of the foetus–was responsible for the largest share of the rise in
child sex ratio. The recognition of abortion as the chief factor behind
this increase has altered the perspective for numerous, intertwined
reasons that are related in no small measure to women's autonomy and
agency. Abortion is indeed firstly seen as an emergency solution for

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[5] It is estimated that more than three fourths of the abortions in South Asia and
nearly two thirds of the abortions in South-East Asia are illegal. Abortion-related
deaths account in this region for about 15% of all maternal deaths (Ganatra, 2006).
[6] Guillot (2002: 52-54) and Riley (2003: 130-134) describe the relative resistance
offered to the abortion explanation by prominent demographers or government
authorities in China and India in the early 1990s.

women to avoid unwanted births and is, to various extents, part of a larger supply of family planning methods in Asian countries like China or India where laws allowing induced abortions were passed earlier than in industrialized countries. But in many other countries such as Pakistan or the Philippines, rights to abort remain extremely restricted, making abortion an illegal and therefore highly unsafe practice. The truth is that abortion was never thought of initially as a tool to sort out foetuses according to their desirability. It is only when the new technology to detect the sex of the foetus became more popular from the 1970s that abortion could become an instrument to eliminate unwanted female births. But as abortion is a women's right and a crucial ingredient of State-sponsored family planning, its relation to widespread gender discrimination became highly contentious. Some observers, including avowed feminists or prominent demographers, insist that abortion rights should be granted to women irrespective of the intention behind its use and that governments have no business regulating its practice among women except for health reasons.[7] As prenatal sex selection is merely a symptom of pervasive discrimination against women, suppressing the symptom alone may also not be sufficient and a more relevant challenge would be to improve women's status. There is also a growing literature on the ethical aspect of sex selection, be it through in vitro fertilization or abortion (Goodkind, 1999; Dickens *et al.*, 2005). Moreover, it gradually emerged that sex-selective abortion as a discriminatory practice against girls was often more common among urban middle and upper classes that had both better education levels and socioeconomic status. For various reasons such as higher information or access to health infrastructure, the upper layers of society acted as forerunners of this new trend towards sex-selective fertility, which also involves a large nexus of urban professionals such as clinic owners and physicians. Sex selection appears therefore as a reasonable behaviour for couples facing (among other) cultural and economic constraints and it is very different from the "archaic behaviour" exemplified by infanticide or female neglect. It is therefore a much more politically sensitive issue to tackle sex-selective abortion among the middle and upper classes than to combat female infanticide and neglect among the rural poor.

The potential contradiction was undoubtedly a source for some of the initial perplexity when it appeared that abortion had turned also into an instrument to implement rigorous sex discrimination against girls. The issue of women's agency remains at the crux of the debate as

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[7] Witness for instance the debate on "Should couples have the right to choose the sex of their children?" held during the IUSSP international conference held in Tours, France, July 18-23, 2005.

it was in no way foreseen that autonomous, empowered women would deliberately enforce through abortion sex planning against their own gender group. There is no better illustration of this discrepancy than in the writings of Amartya Sen himself, whose advocacy contributed so widely to making female deficit in Asia an international issue since the 1990s. Sen has indeed also contributed a much larger theoretical literature concerning women's agency and capabilities and their contribution to social development. To him, women's agency plays a major role on the well-being and freedom of women, but also of the rest of society through lower infant mortality or fertility. But the misuse of abortion does not square well with such an optimistic theory of women's agency and its benefits. There is an obvious difficulty to interpret within his framework the deliberate attempts by women to eliminate girls. This recently led Sen to try to extend his original concept of agency beyond the "immediate control over decisions" to a "fuller sense of agency [involving] the freedom to question established values and traditional priorities" (Sen, 2005: 240). The contradiction is compounded by the usually positive association observed between on the one hand female empowerment and economic status and on the other the practice of sex selection–i.e. the fact that women opting for sex-selective abortions tend to be better educated or from somewhat privileged groups. This association may also sound like a dangerous harbinger of further potential deterioration in sex ratio figures in rapidly modernizing Asian societies where women's education and economic status is improving.

This situation has generated some confusion on the status of sex-selective abortion and its impact. Some observers were simply loath at pinpointing sex-selective abortions as a cause for growing sex imbalances at young ages for fear of fuelling the anti-abortion discourse and impinging on hard-gained women's reproductive rights. Governments offering abortion as part of their family planning supply felt also uneasy to recognize this specific linkage. Many resisted the hypothesis that termination of pregnancy was behind the surge in sex ratio at birth, even if their arguments stemmed from deficiencies of the available statistical sources. It is also true that Sen's seminal paper did not mention abortion anywhere and put instead the blame on excess mortality among girls.[8] Some analysts had even initially posited, employing a mechanical demand and supply framework, that rarefying women would in the end get a better deal in society as their social value as would ultimately rise in inverse proportion of their numbers. Today, even as analysis has now progressed by using various indirect sources

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[8] Sen made no mention of abortion either in the more scholarly piece published two years later (Sen, 1992). He "revisited" the issue in 2003 in the same journal to identify abortion as the main cause.

to estimate the contribution of induced abortion and other factors in sex ratio disequilibria, the fight against the worsening discrimination towards girls remain fraught with interferences of these questions.

## 2. Data failure

Another set of factors may also be held responsible for the relative slow response to the challenge of changing sex ratios in Asia. Demographers would have no difficulty in confessing that many problems emanate from the available population statistics and the shaky estimates derived thereof. This volume offers a few examples of incomplete sources based on samples or of missing data that have to be indirectly estimated. Several factors behind the rise in sex ratio such as infanticide or sex determination are outlawed and are therefore almost impossible to assess through surveys. The estimated numbers of pregnancy terminations are also as elsewhere missing or seriously deficient, even more so in countries where induced abortion is illegal.[9] But other aspects may in theory be easily measured and monitored: a prime illustration among them is the sex ratio at birth, which provides a theoretically perfect indicator of pre-birth gender manipulations, i.e. when not statistically biased by underregistered female births and deaths such as infanticide cases. In developed countries, available series of live births classified by sex allow a close scrutiny of yearly trends and geographical variations. As long as numbers are big enough, sex ratio at birth provides a reliable measurement of the impact of all biological and social mechanisms accounting for sex ratio variability from conception (primary sex ratio) to birth (secondary sex ratio): age or parity of the mother, spontaneous or induced abortion, still births, etc. But in Asia, civil registration data in many countries from Pakistan to Indonesia are simply not dependable enough as a source to estimate sex ratio at birth. In particular, no one today is in a position to use reliable estimates of annual variations in the sex ratio at birth for either China or India, the two countries that are responsible for the largest bulk of missing women today.

In this connection, it is probably worthwhile to point out that estimates from the United Nations Population Division have long suffered from a relative ignorance of variations in sex ratio at birth across populations. Whereas this source provides the most and probably only reliable dataset of recent demographic trends in the world, published figures did not reflect a very reliable picture of the sex gap in Asia as

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[9] See for example the recent study by Sathar *et al.* (2007) that puts the estimated annual number in Pakistan at 890,000.

late as in 2005, when the Population Division published its 2004 revision. In this series, the sex ratio at birth in China was for instance estimated to be 110 for 2005-2010 while that of the 0-4 population was of 111. The turning point occurred when the latest 2006 revision finally corrected these two figures to respectively 115 and 116, values that are much closer to estimates derived from census and other sources.[10] As a result of these rectifications, the estimated sex ratio at birth for the entire planet for the same period has also recorded a significant increase from 105 to 107 following the 2006 revision.

There are many other measurement issues related to distorted sex ratios observed in Asia. As this volume illustrates, it is often deemed more expedient to use age distribution from national censuses than to rely on specific indicators such as sex ratio at birth or sex differentials in infant and child mortality. This strategy offers indeed many advantages. For one, the samples used derive from the census and are therefore almost exhaustive. They correspond usually to large populations for which random fluctuations are almost insignificant. This is definitely not the case with survey-based estimates such as DHS (demographic and health surveys) figures, which happen to be much more sensitive to sample fluctuations. Census data allow also for lower-level disaggregation to identify variations across smaller administrative units such as regions or cities. As variations in sex ratio values across geographical areas are almost universal in Asia, the census offers an efficient instrument to delineate them. Another valuable point is that this measurement, usually performed on children below 5, combines the impact of all discriminatory practices while being almost unaffected by other factors such as sex differentials in migration. Moreover, census figures tend to follow the same format and are therefore readily comparable across countries.

But the frequent reliance on census sources entails at the same time a large number of drawbacks, of which we can only briefly enumerate here the three major ones. First, censuses are conducted at best every ten years or so and their data do not allow close monitoring of ongoing trends. We will have to wait till 2010 and 2011 to see how regions in China or India have been affected by changes in sex ratio during the present decade. In some countries such as Afghanistan, Burma or Pakistan, recent census data are in fact simply not available. Secondly, census data are susceptible to quality issues such as age misstatement or under-enumeration. For instance, age misstatement is

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[10] Data derived from the *World Population Prospects: The 2004 Revision* and *World Population Prospects: The 2006 Revision* published by the Population Division of the United Nations.

a feature common among populations with low education levels such as in several South Asian countries. As age misstatement and sex are often covariant–age heaping being more frequent for girls than for boys–, age distribution is rarely a perfect reflection of reality. Under-registration in China is also a specific cause for concern when using data from the official census.[11] Thirdly, the age distributions deduced from census statistics combine the effects of various discriminatory practices as mentioned before. This proves in turn to be a serious limitation for the understanding of the respective role of various factors for higher sex ratio such as infanticide, female neglect or sex-selective abortions and has probably contributed to the lingering un-dervaluation of the actual sex ratio of births. Another limitation of census data derives from the fact that they provide only aggregate data according to geographical divisions.[12] As a result, household characteristics (such as standard of living) or individual factors related to parents (such as level of instruction) that may account for discriminatory behaviour have to be indirectly estimated through statistical analysis.

## 3. Counting missing women

An additional illustration of our statistical difficulties pertains to the notion of the "missing women". Ever since Sen wrote about it, estimates of the number of missing females in the world provide the most graphic evidence of the relative shortage of women. These estimates are based on the comparison between the actual number of women observed during a census and that of "expected women".[13] The "expected" number is a figure derived from the age distribution of males and standard mortality patterns by age and sex by assuming that mortality patterns among women can be deduced from those observed among male, a by and large reasonable hypothesis even if slightly sensitive to the mortality patterns chosen. But computations rely on estimated mortality levels for men, which are themselves rather fragile in the absence of a reliable civil registration system providing robust age- and sex-specific death rates. Countries like India where such estimates are based on sample data (such as the Sample Registration System) are especially prone to minor estimate errors or inconsistencies

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[11] See however the recent study by Goodkind (2004) according to which sex differential in child under-reporting during the 2000 census was negligible.
[12] India has however provided in 2001 the 0-6 population details for religious groups as well as scheduled castes and tribes.
[13] Klasen and Wink (2002) provide the best international estimates following this method. Cai and Lavely (2003) provide more refined estimates for girls in China. However, both methods ignore migration and include girls not born as "missing".

that may easily translate into millions of additional missing–or surplus–people. Another source of potential problems is that these computations are often not based on actual age distributions, but on stylized distributions derived from stable populations (Klasen and Wink, 2002). While this choice may be understandable to process a large number of countries, Asian specialists have reason to feel uncomfortable when this method is applied to China and India, which are together supposed to account for about 80% of all missing women in the world. Both countries have specific age distributions that do not follow any longer the pattern of "stable populations" because of fertility decline and they would probably require individual demographic analysis.

There are of course many other hypotheses on which the expected number of women is based. One such hypothesis is the assumed sex ratio at birth, which has been shown to vary across countries around the usual 105-106 range and for which robust estimates in countries like China or India are plainly missing. Local differentials in sex ratio value would again result in significant variations in sex ratio all across the age pyramid. Oster (2005) has even recently claimed that large-scale biological variations related to hepatitis B account for a significant part of missing females in China and other Asian countries. In this view, the number of "missing women" due to discrimination could be largely exaggerated. The ultimate truth is that very few data are available today on sex ratio at birth in Asia to refute such a proposition, which most demographers have otherwise found highly speculative if not somewhat misleading (Das Gupta, 2006).

In addition to such misestimation of sex ratio at birth and death, other estimation issues mar the procedures followed to assess the potential national numbers of missing females in Asia. One additional drawback relates to the effects of international migrations, which are not factored in for want of proper data. But China and India provide today the largest number of international out-migrants in the world. Following recent estimates by the United Nations of international migration in 2006, the two countries taken together are losing 670,000 people a year, totalling 6.7 millions in a decade.[14] We have reasons to believe that omission of this factor is a further source of uncertainty as males may tend to preponderate in most international migration flows such as temporary Indian labour working in Gulf countries. As the number of "expected women" is computed from that of observed men, the absence from census figures of a predominantly male migrant population may mechanically lower down the number of expected

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[14] The actual number of migrants born in China or India but residing abroad is not known, nor is its sex composition.

women and may in turn result in understating the extent of the gender bias by underestimating the number of missing women.

As a conclusion to this section, we may also stress that the very concept of "missing women" may also lose some of its validity over the coming years. As long as excess female mortality was the only instrument of discrimination, high sex ratios did reflect the fact that thousands of women had died too early and were indeed "missing" from demographic accounts. Had mortality rates among women in comparison to that of men been at the level found elsewhere, the censuses should have recorded millions more women. But issues get more complicated when sex-selective abortion interferes on the sex ratio at birth. So-called "missing girls" in Asia are nowadays, to a significant extent, girls that weren't born in the first place or, more precisely, children who weren't born of the expected sex. It is no more appropriate to label all of them as "missing" as we will illustrate with a simple simulation below.

Let's suppose that a census enumerates 104 boys as against 86 girls in a region in Asia. This corresponds to a total child population of 190 with a rather high, albeit not uncommon sex ratio of 121. A more likely juvenile ratio would be around 104 in the absence of gender discrimination. Applying such a sex ratio of 104 to the boy population, we would expect to find 100 girls instead, implying that 14 girls are missing. But this would also result in a child population larger by 14 girls. However this is probably an inappropriate assumption as we should not expect to have *more births* in the absence of pre-birth sex selection: to a large extent, the observed surplus of boys stems from pregnancies that followed an abortion and the overall number of children should actually remain rather similar, whatever the sex composition.[15] In the absence of gender discrimination, some female foetuses would have resulted in more baby girls, but also in fewer boys. Of the 104 boys in our imaginary sample, imagine 7 had been actually born girls yielding now a male child population of 97 (=104-7) and a female population of 93 (=86 +7). The resulting sex ratio is again of 104 and appears perfectly plausible. But the real number of "missing girls" is now only of 7, a value twice smaller than the apparent estimate derived earlier from the sole male population. Compared to estimates of missing women for older age groups, the estimation for the child population requires a different approach as abnormally high sex ratio at young ages implies not only a deficit of girls, but also a surplus of boys (Attané, 2006).

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[15] More frequent abortions may in fact slightly lower down the total number of births as women may become less fertile after abortion for a variety of reasons (sterility, age, widowhood, changing circumstances, etc.). We ignored this factor in our simulation.

In Asian countries, excess mortality among girls does still take a heavy toll on the child population: this results in a large number of missing women that can be estimated from the number of observed males using several hypotheses based on model life tables or on concrete experience. But the impact of recent abnormal sex ratio at birth is of a distinct variety as it results not only in a lower number of female births due to induced abortions, but also in an inverse surplus number of male births resulting from additional pregnancies among women who had just aborted a female foetus. Consequently, the high level of sex ratio at birth is both due to missing girls and surplus boys. Since the higher sex ratio at birth has now been observed for at least twenty years, its impact on the age pyramid has already spread to older age groups and will continue to do so as cohorts grow older. Talking of "missing women" to account for distortions caused by abortions may be in this case slightly misleading as these women were never born in the first place.

We could easily underscore other data problems and measurement issues that plague the study of Asia's demographic masculinization. On the whole, this comes down to the fact that to be properly investigated such a new phenomenon calls for statistics, tools and concepts that are still somewhat inadequate or undeveloped. But after bringing together in Singapore, during our initial Conference in 2005, scholars with various experiences and interests on the current female deficit in Asia, we realized that the field had gradually matured by combining a large gamut of approaches. Although demographers remain to some extent at the forefront of the research being conducted today, the tools to examine the various aspects of masculinization and its impact borrow from methods and concepts from a variety of disciplines. As this book demonstrates, methods proceed from classical demographic analysis to econometric models, spatial analysis and field-based qualitative or quantitative surveys. Several major dimensions do, however, emerge and have been used to structure this book.

## 4. Presentation of the volume

The volume is divided into four parts that bring together essays of various contents and methodologies. Part 1 offers exhaustive descriptions of recent trends in female discriminations in four Asian countries and regions, each of them being at a specific stage in the masculinization process. This preliminary part responds to the need for a comparative analysis exploring both the historical and geographical variations observed in various regional settings from West to East Asia. In fact, several valuable papers originally presented to the conference and

covering other regions such as Indonesia or Vietnam could not be included in this volume for lack of space.

The first two chapters in this part describe trends and differentials in sex imbalance in the two Asian demographic giants, China and India where the masculinization process is already quite advanced. The two following chapters focus on two less typical but interesting cases, i.e. the Caucasus Region and Singapore. In chapter 1.1 entitled "Imbalanced Sex Ratio at Birth and Female Child Survival in China: Issues and Prospects", Li Shuzhuo, Wei Yan, Jiang Quanbao and Marcus W. Feldman analyse levels, trends, and regional variations in the sex ratio at birth and excess girl child mortality in China. They discuss proximate and indirect causes of the deteriorating survival environment for girls as well as some of its demographic and social implications. They also review the policy initiatives by the Chinese authorities to improve the situation of girls. A similar descriptive approach is followed by P. Arokiasamy in chapter 1.2: "Sex ratio at birth and excess female child mortality in India: Trends, Differential and Regional Patterns". The author provides a detailed overview of the current situation in India by combining both Census data and survey estimates from the National Family and Health Survey (NFHS). He investigates some of the causes and consequences of sex imbalance at young ages in India, taking into account in particular the wide regional variations in son preference and the changing patterns of female discrimination.

While discriminatory practices have intensified over the past decades in Asia's two most populous countries, they have also spread at the same time to other areas and social groups previously unaffected. This is the case for the three Caucasian countries–Azerbaijan, Georgia and Armenia–studied by France Meslé, Jacques Vallin and Irina Badurashvili in the chapter 1.3 "A sharp increase in sex ratio at birth in the Caucasus. Why? How?". The authors first document the deteriorating sex imbalance at birth in these countries that became apparent in the mid-1990s in these three countries. While these three countries are rather different in terms of ethnicity and religious traditions, their demographic regime do share many common features, including the high abortion rates characteristic of this region. It is worth stressing that neighbouring nations such as Iran or Russia seem unaffected by rising sex ratios at birth as the authors' detailed geographic analysis demonstrates. They also show that in Armenia and Georgia, most of the overall masculinization effect relates to the third birth, for which sex selection appears to be especially acute. In the following chapter 1.4–"Son Preference, Female Demographic Deficit and Singapore's Fertility Transition"–, Elspeth Graham examines whether the secular fertility decline in Singapore has been accompanied by an intensifica-

tion of active discrimination against daughters. Singapore is a particularly appropriate setting for such a study for two reasons, its statistical apparatus and its ethnic composition. Singapore's data are in fact extremely reliable as the availability of annual series of vital statistics show. While being mostly of Chinese ancestry, its population also includes large Malay and Indian minorities. Her analysis shows however that while Singapore meets two main preconditions for daughter discrimination–rapid fertility decline and strong son-preference–, the sex ratio at birth has varied far less over time than in countries such as China, India or South Korea. The author concludes that even if Singapore has not experienced a rise in sex ratio similar to that observed elsewhere, the question of deliberate daughter discrimination remains partly unresolved.

Sex imbalance varies widely across subpopulations within a country or between provinces and social groups and these differentials often point to the social, economic or cultural factors behind the process of gender discrimination. The fact that some groups–characterized by specific religious, socioeconomic or ethnic features–have clearly been at the forefront of rising sex ratios allows a better understanding of the factors behind the growing discrimination against girls. However, very few comprehensive analyses are available to understand the masculinization process and its determinants. Chapters brought together in part 2 of this book investigate more systematically the social, economic or cultural factors likely to influence female discrimination. They attempt to go beyond available data in their usual format to submit them to more intensive cartographic or statistical analysis.

In the first chapter included in this part–"The geography of deteriorating child sex ratio in China and India"–, Christophe Z Guilmoto and Isabelle Attané provide first a comparative analysis of fertility change and policies in both countries. They then examine the geographies of sex ratio differentials, which happen to be rather dissimilar in China and India, by drawing comparative maps of child sex ratio. The chapter ends with a discussion related to the nature of the mechanisms at work in the masculinization processes observed in both countries and also offers clues on some of the possible factors accounting for the spatial patterning of sex ratio observed in China and India. In the next chapter 2.2–"Factors influencing the use of prenatal diagnosis techniques and sex ratio at birth in India"–, P N Mari Bhat and Francis Zavier have chosen to focus on the use–and misuse–of prenatal diagnostic techniques. As it is well known that sex-selective abortions only follow sex determination through ultrasound or other techniques, their study offers a detailed analysis of a key "intervening variable" of sex

ratio at birth. Thanks to a rich logit analysis of the use of prenatal diagnostic technologies, they are able to identify several cultural, social, societal, economic and health characteristics closely associated with abnormal sex ratios in India.

**Figure 1 Research locations in South Asia studied in this volume**



Chapter 2.3 entitled "Decreases in Male and Female Mortality and Missing Women in Bangladesh. The case of Matlab" by Alam Nurul, Jeroen Van Ginneken and Alinda Bosch examines the recent trends in gender gap in infant and child mortality in the rural Matlab region in Bangladesh. This region enjoys an exceptionally good demographic

surveillance system from where some of the first reliable data on gender discrimination among children emerged in the 1980s. The authors' objective is to examine whether postnatal discrimination against girls has shifted over time and to identify the behavioural mechanisms involved in these changes. Matlab data demonstrate in fact that the female-to-male disadvantages in survival have considerably reduced in Bangladesh over the past twenty-five years while sex ratio at birth does not appear to have increased during the same period. In chapter 2.4– "Does Religion Matter? A Study of Regional Variations in Sex Ratio at Birth in Korea"–, Kim Doo-Sub and Song Yoo-Jean come back to South Korea where vital statistics clearly indicate an important rise in sex ratio at birth starting from the mid 1980s. Using both spatial and statistical techniques, their chapter explores the specific effects of religious composition as well as of residential and socioeconomic factors on the regional level of sex ratio at birth. Beyond demographic and socioeconomic correlates of high sex ratio, the authors are able to demonstrate for South Korea a significant relationship between religious affiliation and discriminatory practices through abortion, which should also probably be worth investigating in other national settings.

Most of the research conducted by demographers tends to approach female discrimination at an aggregate level, using either census or quantitative survey data. While indispensable to establish the statistical basis of rising sex ratio values, these studies tend to miss the contextual details that locally determinate gender arrangements and discriminatory strategies. In part 3 of the book, contributors follow a more anthropological approach to investigate local conditions and determinants of female discrimination, combining at times both quantitative and qualitative data. Studies included in this part are based on original data collected during intensive fieldworks and offer the kind of sociological details that allow a better understanding of the actual processes and issues behind gender discrimination.

The location of the various field sites on which these chapters (as well as other chapters from this volume) are based is shown on two different maps, which also depict the regional boundaries of Chinese Provinces and Indian states. Figure 1 is the map of the South Asian regions and Figure 2, stretching from China and Korea to the North to Singapore to the South, covers East Asia.

**Figure 2 Research locations in East Asia studied in this volume**



In chapter 3.1 entitled "Missing Girls, Land and Population Controls in Rural China", Laurel Bossen investigates changes in family

planning and discriminatory practices toward girls in a rural village in Henan. She analyzes these transformations in relation to property rights and the ways households attempt to manage their land and labour resources. To do that, the author examines in particular the significance of lineage revival and its gender implications. In chapter 3.2–"Social networks and son preference among rural-urban migrants in China: A study in Shenzhen"–, Wu Haixia, Marcus W. Feldman, Jin Xiaoyi and Li Shuzhuo make use of sample data derived from a survey of temporary migrants conducted in 2005 in Shenzhen. Their objective is to study the attitudes and behaviours related to son preference among rural-urban migrants based on social network theory. The authors show that while migrants exhibit strong son preference, social network, migration history and individual factors have a real impact on the attitudes related to son preference.

Chapter 3.3 contributed by Sutapa Agrawal and Sayeed Unisa is entitled "Discrimination from Conception to Childhood: A Study of Girl Child in Rural Haryana, India". Here, the authors combine qualitative and quantitative data colleted in villages located in Jind district in Haryana, an area in India where child sex ratio is at its highest. They attempt to explore both passive (i.e. excess female deaths) and active (i.e. sex-selective abortions) female elimination processes and their correlates. In chapter 3.4–"Traditions in transformation: Gender bias among the Nayars of Kerala, India"–, Sudha S., Khanna S., Rajan Irudaya S. and Srivastava Roma analyse data collected during field surveys conducted in central Kerala, a region that has been so far little affected by the masculinization trends observed elsewhere in India. The authors, however, describe the emergence of gender discrimination at young ages among the formerly matrilineal Nayar caste in an ethnographic perspective. In chapter 3.5 entitled "Vulnerable Daughters in a Modernizing Society: From 'Son Preference' to 'Daughter Discrimination' in Rural South India", Sekher T. V. and Neelambar Hatti provide yet another field-based study of a regional setting in India. Here, the authors confront two study villages located in Karnataka and Tamil Nadu, including one in the Salem area notorious for widespread cases of female infanticide. They relate discriminatory practices to the economic and sociological profile of the two rural settings. They document in particular the role of dowry, which has recently emerged in rural South India as a new burden to parents of girls.

Part 4 covers the policy responses to female deficit and some of its potential demographic consequences. More papers were originally contributed to the conference than could be accommodated in this volume, including two presentations focusing on India's experience.

This is no doubt an emerging subfield as rising sex ratios raise new questions in terms of their potential consequences for society as a whole and the ways governments can intervene to correct these trends. At the same time, this represents mostly uncharted territory for policy makers or social scientists owing to the totally new character of this demographic turn.

In chapter 4.1, "Interventions to Balance Sex Ratio at Birth in Rural China", Zheng Zhenzhen first investigates three key determinants of gender discrimination in China, i.e. social and cultural environment, economic development and family needs and individual opinions. She also enumerates and discusses the interventions implemented in China to balance sex ratio at birth. It is, however, still too early to assess the exact impact of these campaigns on discriminatory practices towards girls. The three following chapters are specifically devoted to an expected demographic and social consequence of the rising female deficit, i.e. the marriage squeeze likely to affect young male adults and its links to marriage migration as a response. In chapter 4.2–entitled "Son Preference and the Marriage Squeeze in China: An Integrated Analysis of the First Marriage and Remarriage Market"–, Jiang Quanbao, Isabelle Attané, Li Shuzhuo and Marcus W. Feldman use population forecasts to estimate the potential excess number of Chinese men compared to that of women until 2050. Their analysis is based on various indicators measuring the extent of the marriage squeeze on males of marriageable age. In chapter 4.3–"Marriage migration between Vietnam and Taiwan: A view from Vietnam"–, Graeme Hugo and Nguyen Thi Hong Xoan use survey data and interviews to analyse various socioeconomic characteristics of Vietnamese women who migrated to Taiwan to marry. The chapter describes in particular their experience in Taiwan and its largely positive impact in terms of economic status. As is well-known, "foreign brides" account now for a sizeable share of marriages registered in Taiwan. The last chapter 4.4 has been written by Le Bach Duong, Danièle Bélanger and Khuat Thu Hong: "Transnational Migration, Marriage and Trafficking at the China-Vietnam border". It examines a specific region along an international boundary that has of late experienced intense female mobility. The study uses field-based data to describe some of the consequences of women shortage in China on cross-border migration and trafficking of Vietnamese women. Data collected in 2005 from Vietnamese women who have migrated or have been trafficked to China provide in-depth information on the circumstances of these migrations. In addition, the study describes the traffickers' strategies to recruit, transport as well as sell Vietnamese women as wives or sex workers in

China and discusses the way migration and trafficking are intertwined and to some extent difficult to disentangle conceptually.

These chapters cover a wide array of territories and issues and should help to map the priority issues for future research on masculinization processes in Asia. Obviously, lack of adequate data hampers any progress in both the understanding and the monitoring of current trends. But chapters included in this volume bring together a large amount of quantitative and qualitative data that should inspire scholars. What is probably still lacking is a unified theory accounting for the almost simultaneous rejection of girls expressed by Asian families in countries that otherwise have experienced rather different political and economic conditions over the last two decades. Without such a conceptual frame, it is difficult to foresee the demographic and sociological ramifications of rising sex ratios on Asian societies. With China and India accounting together for more than a third of the world's population, the consequences of this changing sex composition are likely to be significant and probably felt beyond their own borders.

At the same time, there is a real ignorance about the potential impact of the current demographic trends, leading observers to draw all kinds of conclusions. These range from rather optimistic views of future self-regulatory mechanisms bound to correct this imbalance to the benefit of women to more doomsday scenarios with hordes of unmarried males causing disorder in Asia. The more optimistic hypothesis posits that the rising proportion of boys in the child populations is obviously unsustainable in the long run: changing sex composition should therefore automatically lead parents to reverse their pro-son strategy once the deficit of women hits young male adults. A far less sanguine theory envisions somewhat dramatic consequences of the demographic masculinization on the very fabric of Asian societies torn by potentially rising conflict and violence (Hudson, den Boer, 2004). As the world has apparently never experienced any such type of crisis, there is precious little in terms of social and historical literature or documentation that may help to comprehend the ultimate consequences of this singular demographic development while historical experience is missing. We hope that bringing together these studies will help to put the growing Asian female deficit higher on the international population agenda.

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*Part I*

*RECENT TRENDS IN SEX RATIO IN ASIA*

# Imbalanced Sex Ratio at Birth and Female Child Survival in China: Issues and Prospects[1]

**LI Shuzhuo, WEI Yan, JIANG Quanbao, Marcus W. FELDMAN**

## 1. Research background

With the development of Chinese economy and the implementation of the current birth control policy, China's fertility has declined over the past decades. Intensive son preference and discrimination against girls have always been a part of its culture throughout Chinese history. The decline in fertility is paralleled by a concurrent rise in the sex ratio at birth (abbreviated as SRB) and excess female child mortality (abbreviated as EFCM) (Das Gupta and Li, 1999; Li *et al.*, 2004), which lead to the phenomenon of "missing girls". This not only violates the rights of survival, participation and development for girl children, but also produces a dangerously imbalanced sex ratio and concomitant demographic and social problems that threaten the long-term stability and sustainable development of Chinese society (Guo and Deng, 1995; Das Gupta and Li, 1999; Cai and Lavely, 2003; Banister, 2004; Li *et al.*, 2004).

The issue of girl child survival has aroused broad attention from scholars, the public, Chinese central and provincial governments and the international community. Since the mid-1980s, many scholars have reported on this problem. Most studies to date have concentrated on the reasons for and consequences of high sex ratio at birth (Murphy, 2003, Tian and Gao, 2004), although there are some analyses of the reasons behind Chinese excess female child mortality (Li and Feldman, 1996; Li and Zhu, 2001; Li *et al.*, 2004). Some authors (Attané, 2004; Banister, 2004) have pointed out that the girl child survival problem is a reflection of unequal rights in the first stage of human life, and that Chinese society needs to improve the well-being of females. The Chi-

nese government in recognizing the problem has promulgated laws and regulations to protect rights of girls and to improve women's status. It has also implemented some pilot programs aimed at the improvement of the environment for girl children nationwide (Shi, 2005).

This chapter reviews theoretical and empirical research on China's girl child survival and analyzes the history and present status of the survival environment for female children. By comparison with relevant international experience, it also assesses intervention activities and policies of the Chinese government and examines prospects for girl child survival in China.

The data used come mainly from the following sources: census, official statistics and ad-hoc survey data published by government bureaus, and results of previous surveys and studies.

Despite the abundant information and relatively high reliability, most of the data sources are flawed due in large part to underreporting and misreporting of births and deaths (Banister, 2004). One principal reason for misreporting births has been to escape punishment as Family Planning violators (Banister, 1994), but underreporting for girls is more severe than that for boys (Li *et al.*, 2005). Underreporting, especially serious underreporting for girls may bring the authenticity of the reported sex ratio at birth into question. Furthermore, underreporting of births and deaths of children reduces to some extent the reliability of reported mortality levels (Li *et al.*, 2005). Statistical data released by relevant government departments are also problematic. For example, there are inaccuracies in data issued by the national Family Planning department (Yu and Wang, 2003), and annual birth statistics released by the National Population and Family Planning Commission (NPFPC), the Ministry of Public Security, and the National Statistics Bureau also diverge.

Some literature argues that underreporting for girl infants and children is more severe than for boy infants and children (Li *et al.*, 2005). Other authors claim that there is no sex-selective underreporting even though the overall data quality is flawed to some extent by underreporting and inaccurate statistics (Johansson and Arvidsson, 1994), in which case the abnormally high sex ratio at birth and excess female child mortality are not produced by flawed data, but actually reflect the facts (Banister, 2004). Sex ratio at birth and female child mortality are still remarkably divergent from normal even after adjustment for underreporting and misreporting (Yuan, 2003).

## 2. Historic and current situation of gender discrimination

Discrimination against girls includes both prenatal and postnatal events that lead to the phenomenon of "missing females". Prenatal discrimination refers to the sex-selective abortion that causes high sex ratio at birth, while postnatal discrimination against girls, producing excess female child mortality, occurs in allocation of family resources such as nutrition, food and medical care, as well as female infanticide.

### 2.1. Distorted sex ratio at birth

Figure 1 shows that the sex ratio at birth has increased steadily in the period 1950-2000. It was normal before 1980 but rose markedly from the 1980s, well above the normal value of 106. Trends in sex ratio at birth also exhibit differences by parity as well as between provinces and between rural and urban areas.

**Figure 1 Sex ratio at birth in 1950-2000 in China**
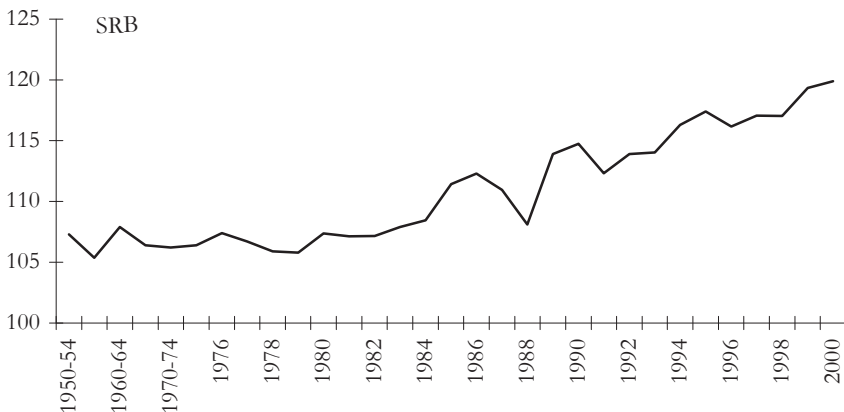


Source: From 1950-1959 and for 1988, NPFPC (1990); from 1960-1979, Gu and Xu (1994); from 1980-1987, China Population Statistics Yearbook 1991; for 1989, Pco, 1993; from 1990-1999, China Population Statistics Yearbook of past years; for 2000, Pco, 2002.

Figure 2 presents parity-specific SRB in census years, from which we can see the tendency to increase with increasing parity. Normally the SRB would decline very slightly from low to high parity (Banister, 2004), but it shows the reverse trend in China. SRB at parity 1 has been normal over all the censuses, but has far exceeded the normal value at parity 2 and above.

Figure 3, which records the sex ratio at birth in 1982-2000 for urban and rural areas, shows it is higher in rural areas than that in urban

areas. SRB was abnormally high in rural areas and relatively low in urban areas before the 1990s. A gradual rise in SRB year by year in urban areas reflects the overall abnormal SRB nationwide.

**Figure 2 Sex ratio at birth by parity in selected census years**
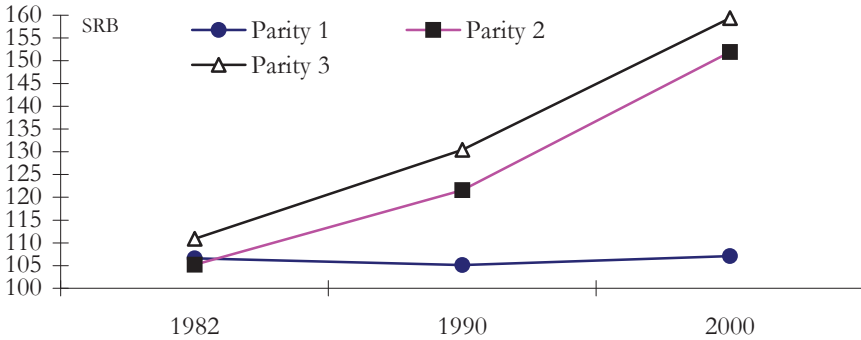


Source: Tabulation from the population census (1982, 1990 and 2000), (PCO, 1985; PCO, 1993; PCO, 2002).

**Figure 3 Sex ratio at birth in 1982-2000, urban and rural areas**
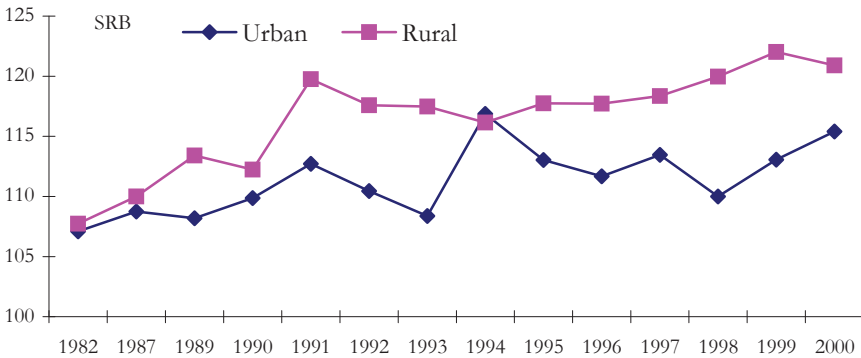


Source: China Population Statistics Yearbooks.

Figure 4 summarizes the sex ratio at birth by province from the last three censuses. It shows that SRB was abnormally high in the provinces with strong traditional culture, such as Shandong, Shaanxi, Shanxi and Henan along the Yellow River Basin, and coastal provinces along the Yangtze River Basin, such as Anhui, Zhejiang, Jiangxi, Fujian and Guangdong. SRB was closer to normal in mega-cities such as Shanghai, provinces with large minority populations such as Tibet, and provinces in North-East China such as Heilongjiang. The regional

pattern of SRB has not changed during the three censuses, but SRB has increased simultaneously in different regions.

**Figure 4 Sex ratio at birth by province in 1982, 1990 and 2000**
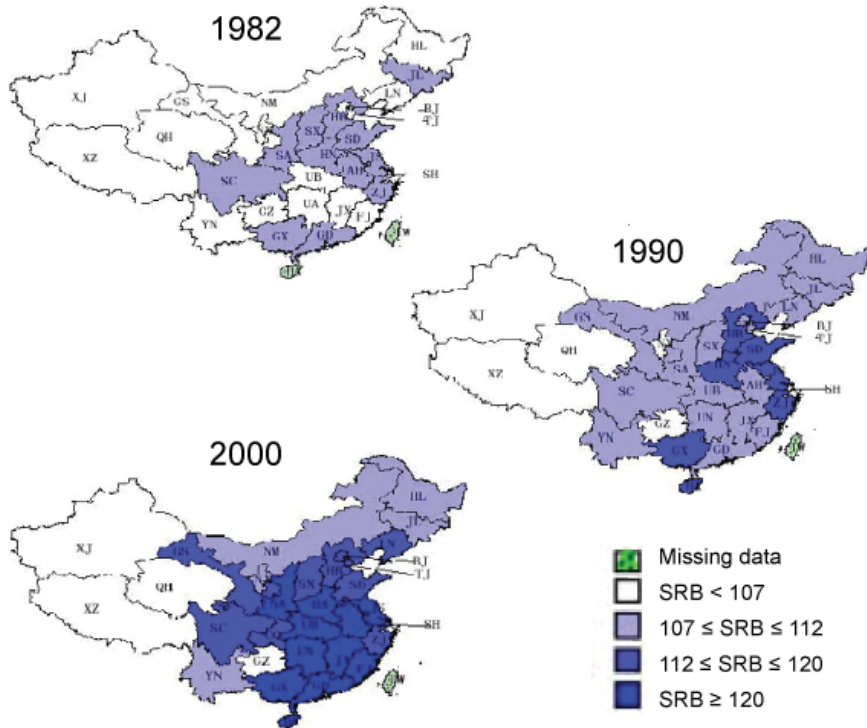


Source: Tabulation from the population census (1982, 1990 and 2000), (PCO, 1985; PCO, 1993; PCO, 2002).

## 2.2. Excess female child mortality

In studying excess female child mortality (EFCM), it is important to determine the normal pattern of infant and child mortality. Excess female child mortality can be measured by comparing the actually observed pattern with the standard one. Similarly to SRB, the sex ratio of child mortality is commonly used to measure excess female child mortality. In this chapter we denote by $SR_0$ the sex ratio of male infant mortality rate to female infant mortality rate; $SR_1$ is the sex ratio of male child mortality rate to female child mortality rate for age group 1-4. Data from many countries indicate that the normal value of $SR_0$ is between 1.2 and 1.3, while $SR_1$ should be between 1.0 and 1.2 (Li *et al.*, 2004). An observed sex ratio of mortality rate is lower than the normal value indicates excess female child mortality.

Sex ratio of mortality rates only roughly reflects whether the pattern of child mortality diverges from normal or not. It underestimates the actual excess female child mortality, and cannot depict the sex difference in standard child mortality corresponding to different mortality levels (Han and Li, 1999). A more accurate index proposed by Hill and Upchurch (1995), is the difference between observed and standard ratio of female child mortality rate to male child mortality rate. However, the standard ratio of female child mortality rate to male child mortality rate varies with the variation in observed boy child mortality level across the age group 0-4. Here we define $I_0$ as the excess female infant mortality index and $I_1$ as the excess female child mortality index (aged 1-4). The closer the index is to 0, the more normal is the female infant or child mortality.

**Figure 5 Sex ratio of child mortality and EFCM indexes in 1950-2000**
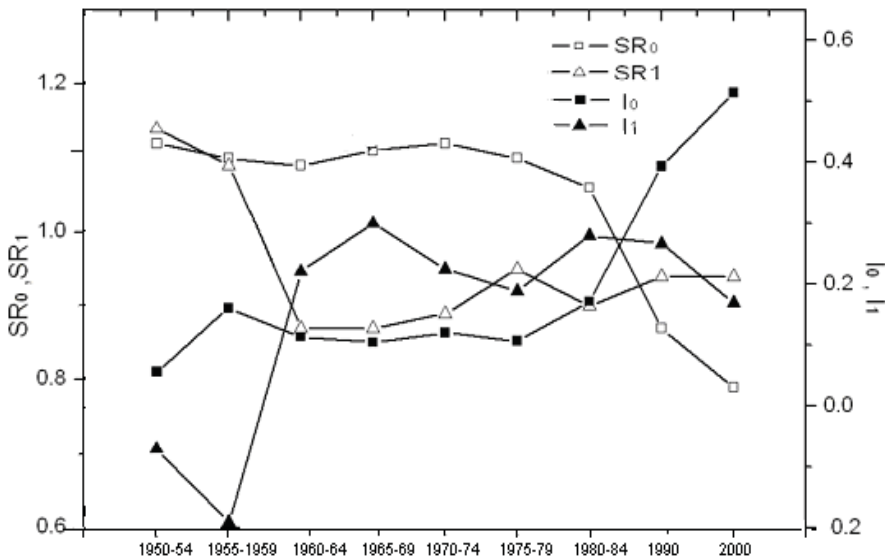


Source: For 2000, calculation based on Li *et al.* (2005); for 1981 and 1990, Li and Zhu (2001).

Figure 5 reports the sex ratio of infant and child mortality and EFCM in China. $SR_0$ and $SR_1$ were lower than the normal values in all periods. $SR_0$ was slightly lower than normal before 1980s, and declined rapidly after the late 1980s, indicating an increase in excess female infant mortality after the 1980s. $SR_1$ was normal before the 1960s, but has been lower than 1 since the beginning of the 1960s, more than twenty years earlier than $SR_0$. Excess female child mortality (aged 1-4) has existed since the 1960s, but has fluctuated at a level slightly lower than normal. $I_0$ and $I_1$ show the same trend, while $I_0$ shows higher

female infant mortality than does $SR_0$. In summary, EFCM has existed since the 1950s. The level of excess female child mortality (aged 1-4) has remained relatively stable, while excess mortality for female infants (aged 0-1) increased rapidly after the 1980s, with a shift from being lower than that for female children to being higher. This indicates that discrimination against girls has shifted from children aged 1-4 to infants in their first year of life.

Table 1 records the sex ratio of infant and child mortality and excess female child mortality by urban-rural areas in census years in China. EFCM has risen steadily in cities, townships, and the countryside since the 1980s, but has been most serious in rural areas.

**Table 1 Sex ratio of child mortality and excess female child mortality indexes, urban and rural areas, selected census years**

| Year | Region | $SR_0$ | $I_0$ | $SR_1$ | $I_1$ |
| --- | --- | --- | --- | --- | --- |
| 1981 | City | 1.11 | 0.130 | 0.93 | 0.250 |
| | Town | 1.07 | 0.161 | 0.96 | 0.221 |
| | County | 1.05 | 0.173 | 0.90 | 0.257 |
| 1990 | City | 0.94 | 0.292 | 0.85 | 0.368 |
| | Town | 0.85 | 0.404 | 0.95 | 0.237 |
| | County | 0.87 | 0.375 | 0.79 | 0.423 |
| 2000 | City | 0.91 | 0.335 | 0.94 | 0.233 |
| | Town | 0.82 | 0.452 | 0.98 | 0.177 |
| | County | 0.79 | 0.482 | 0.90 | 0.255 |

Source: For 2000, calculation based on Li *et al.* (2005); for 1981 and 1990, Li and Zhu (2001).

Figures 6 and 7 illustrate respectively $I_0$ and $I_1$ by province in 1981, 1990, and 2000, and show the regional differences in EFCM, which is consistent with those of SRB in Figure 4. Also, similarly to SRB, excess female infant mortality has increased with time across the country. Excess female child mortality remained essentially stable during 1980-1990 but became worse in 2000.

High sex ratio at birth and excess female child mortality lead to an imbalanced sex ratio among children aged 0-4. Male infants are generally weaker than females due to biological factors, and their mortality is expected to be greater at all ages. Therefore, the sex ratio of children aged 0-4 should be lower than SRB. Banister and Hill (2004) found that the sex ratio was normal for people aged 4-14, while the abnormal sex ratio was manifest at earlier ages after adjusting the data from the last three censuses. In Figure 8, we see that the sex ratios of ages 0-4 are generally normal before 1982, while the sex ratios of the high aged stages were higher in 1953 and 1964; the sex ratio was normal in 1982; afterwards there was a sharp rise in the sex ratio of the age group 0-4,

with the sex ratios of younger age groups becoming higher than the higher age groups, contrasting with the situation before 1982.

**Figure 6 Excess female infant mortality indexes by province in 1981, 1990 and 2000**
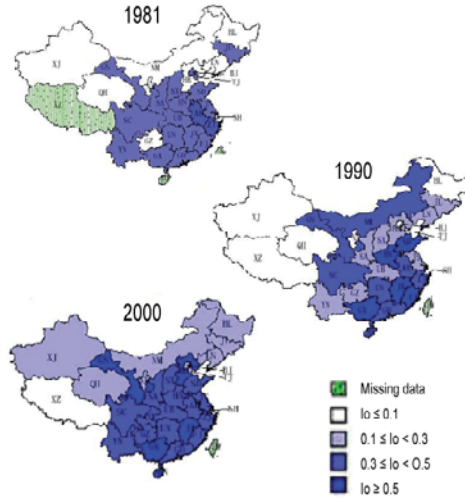


Source: For 2000, calculation based on Li *et al.* (2005); for 1981 and 1990, Li and Zhu (2001).

**Figure 7 Excess female child mortality indexes by province in 1981, 1990 and 2000**
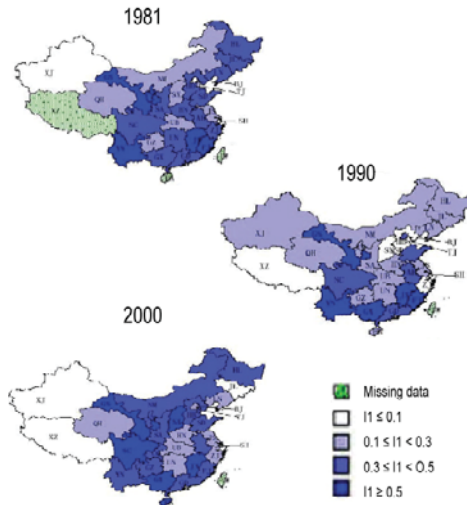


Source: Same as Figure 6.

**Figure 8 Sex ratio of population aged 0-4 in census years**
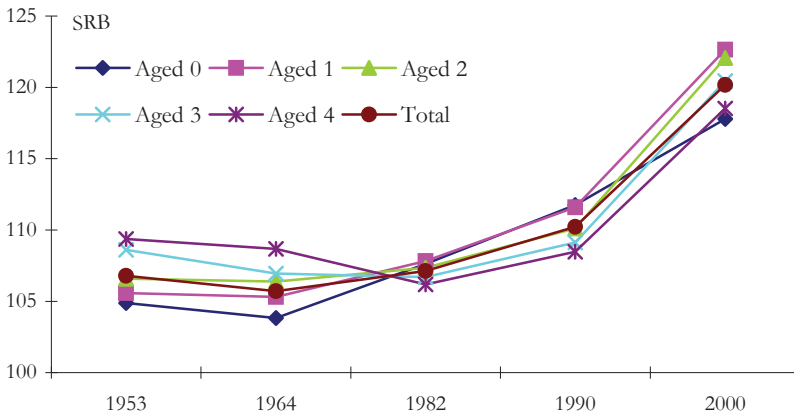


Source: Tabulation from the population census (1953, 1964, 1982, 1990 and 2000).

## 2.3. *Missing females in the 20th century*

In order to measure the deficit of females caused by gender discrimination, Sen (1990) proposed to estimate the number of "missing females" by comparing the sex ratios by age in an actual population with those in a model population with a normal sex ratio at birth and non-gender-biased mortality. If the actual sex ratio exceeds that in the model population, the missing fraction of the female population that would have to be alive to equate the actual with the model sex ratio can be used to estimate the missing females (Klasen and Wink, 2002; Cai and Lavely, 2003).

Many scholars have estimated the number and percentage of missing females in China (Cai and Lavely, 2003; Das Gupta and Li, 1999; Klasen and Wink, 2002). From the 1990 census, Klasen and Wink (2002) estimated the number of missing females to be 34.6 million, the percentage of missing females being 6.3 percent. From the 2000 census, missing females were estimated to be 40.9 million, and the percentage of missing females reached 6.7 percent. Using published statistics from the census in 2000, Cai and Lavely (2003) estimated that there were about 12 million missing females born between 1980 and 2000 at the 2000 census, and the number of truly missing females was 8.5 million. Other scholars have estimated the percentage of missing females in certain years (Das Gupta and Li, 1999). As missing girls account for the great majority of missing females in China, the "miss-

ing females" phenomenon must be considered to be mainly a reflection of reduced female child survival.

Jiang *et al.* (2005) systematically studied the number and percentage of missing females in the 20th century in China, and estimated the total number of missing females in the 20th century from birth cohorts between 1900 and 2000 to be 35.59 million, about 5 percent of the total investigated cohort. Figure 9 graphs the historical variation in the percentage of missing females.

**Figure 9 Percentages of missing females during 1900–2000**
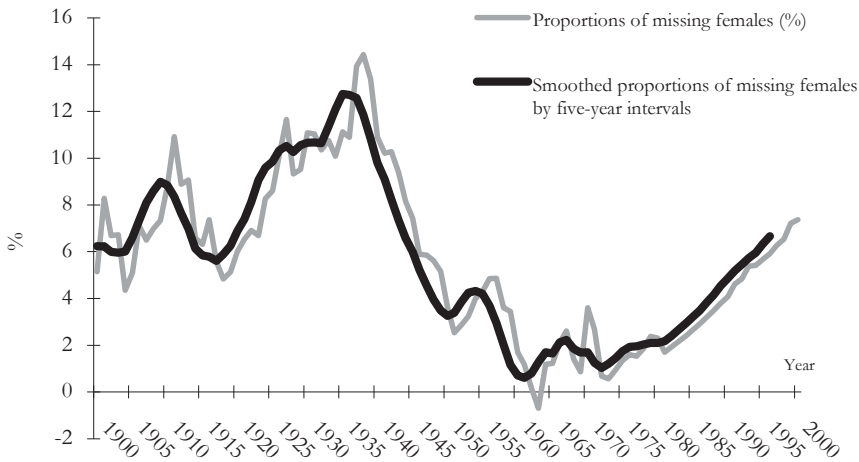


Source: Jiang *et al.* (2005).

The percentage of missing females differs greatly in different historical periods. Before 1949, the overall percentage of missing females was relatively high. Since 1900, the percentage first remained stable, and around 1910, at the end of Qing dynasty, it reached a local peak, after which it declined again. Since 1920, the percentage of missing females has generally tended to rise. In the middle and late 1930s, at the beginning of the war against Japan, it reached a peak again, and then began to decline. After 1949, although the percentage of missing females fluctuated, it remained generally low until the mid-1970s. In this period, there were two local peaks: one during the great famine of the late 1950s and early 1960s following the Great Leap Forward, and the other during the Cultural Revolution. Since the mid-1970s, the percentage of missing females has been continuously increasing, although the current value is still lower than the peak for the 20th century.

Before 1980, postnatal discrimination was one important reason for missing girls; during the Qing Dynasty female infanticide was common in families from the highest social class to the lowest (Lee *et al.*, 1994). Female infanticide and neglect of girls have become less prevalent under laws passed to promote male-female equality after the 1950s (Banister, 2004). Modern technology became widely available in rural China from the 1980s, however, and sex-selective abortion has become an important way for families to realize their preference for a son. Thus prenatal discrimination is now the primary reason for missing girls (Banister, 2004; Wei *et al.*, 2005).

## 3. The mechanisms for "missing girls"

### 3.1. The dynamics of sex ratio at birth and excess female child mortality

As mentioned above, sex-selective abortion of female foetuses, which causes high sex ratio at birth, and neglect of and insufficient investment in girls that brings about excess female child mortality, are the two mechanisms that result in "missing girls". These two mechanisms of discrimination naturally have substitutive effects. Some scholars have argued that when the desired number and sex composition of children cannot be achieved simultaneously, an ideal sex configuration of children may be realized at smaller psychological cost when prenatal sex determination is available. For the society as a whole, there is certainly not a substitutive effect when discrimination against girls occurs in thousands of families, namely SRB and EFCM change in opposite directions. Also it is possible that there is an additive effect, and the two kinds of discrimination increase simultaneously elevating both SRB and EFCM. A reductive effect is also possible, namely the two kinds of discrimination might decrease simultaneously causing the decline of both SRB and EFCM. Goodkind (1996) argued that if policy restrictions on prenatal sex selection were effective, more human suffering might result if discrimination against female foetuses were to shift from the prenatal to the postnatal period. This position accepts as given a certain amount of son preference and daughter disfavour, and simply compares techniques on the basis of whether they are more or less humane towards the unwanted females. Therefore, sex-selective abortion is not a "replacement" for female infanticide and neglect of girls (Miller, 2001).

China's sex ratio at birth and excess female child mortality have increased dramatically in recent 20 years. An additive effect is observed

at the aggregate level (Banister, 2004; Goodkind and West, 2005), but further study is needed to elucidate regional differences. Figure 10 presents the dynamic of SRB and $I_0$ in 1981, 1990 and in 2000 from the last three censuses.

**Figure 10 Dynamics of sex ratio at birth and excess female infant mortality indexes in 1981, 1990 and 2000**
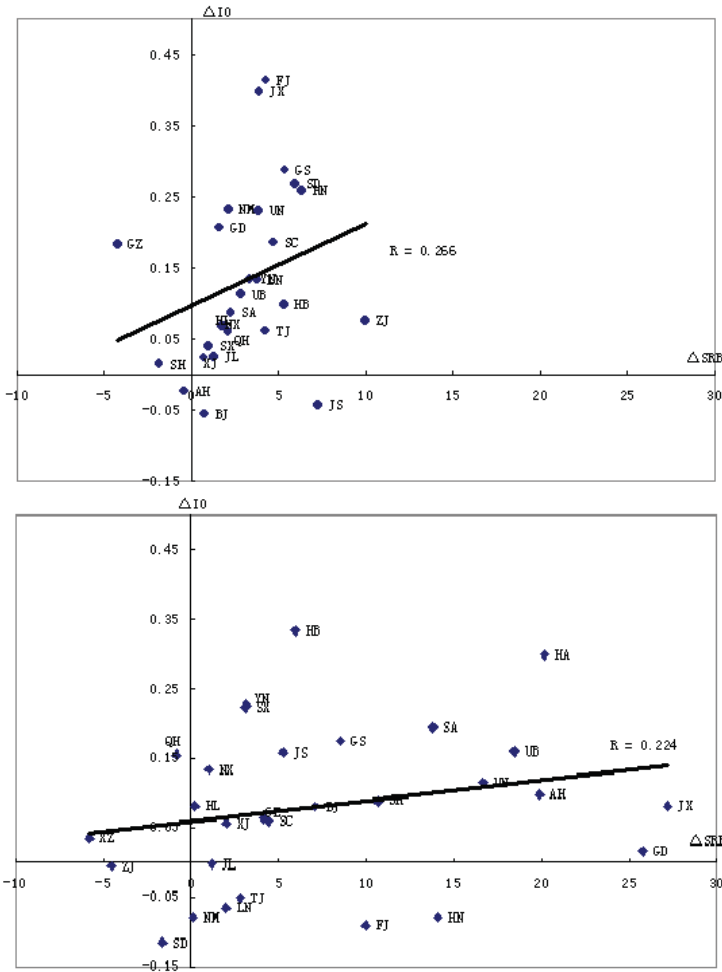


Note: Variables shown on the X and Y axes are respectively the increase in sex ratio at birth ($\Delta$SRB) and in excess female infant mortality ($\Delta I_0$) for the 1981-1990 and 1990-2000 periods.

Source: Calculation based on Figure 4 and Figure 6. For Guangxi, the variations are out of the range of this figure, in the upper right corner.

An additive effect was observed in most provinces from 1982-1990 because both SRB and $I_0$ are positive. A notable additive effect occurred in Guangxi, Henan, Gansu, Shandong, Jiangxi and Fujian, and a substitutive effect was obvious in Jiangsu and Guizhou, while both are negative in Anhui, which indicates a reductive effect there. Most provinces also evinced additive effects from 1990-2000; obvious additive effects are in the provinces Guangdong, Jiangxi, Anhui, Hunan, Hubei, Hainan, and Hebei, while relatively obvious substitutive effects occurred in provinces Fujian, Henan, and Qinghai. Shandong seems to exhibit a reductive effect.

In brief, discrimination against girls has showed mainly additive effects since the 1980s, and the discrimination itself has intensified in recent years. Before the 1990s, the additive effect was more noticeable in the coastal eastern provinces, while the substitutive effect was only observed in some developed provinces and in Guizhou, and the additive effect was more likely to appear in $I_0$. After the 1990s, the additive effect has been observed nationwide, and the number of provinces that showed substitutive effects also increased. As with the trend before 1990, substitutive effects of prenatal discrimination (rise in SRB, drop in $I_0$) are more likely to appear in developed provinces, while postnatal discrimination substitution (drop in SRB, rise in $I_0$) is more likely to appear in less developed areas and minority autonomous regions. The difference in additive effect reflects regional differences in population policy and son preference while the substitutive effect shows not only those differences, but also indicates differences in the availability of prenatal sex determination technology (Goodkind and Branch, 2005).

## 3.2. Causes of the missing females at young ages

Causes of the rise in sex ratio at birth and excess female child mortality can be classified into two categories: first, we discuss proximal reasons, and second, fundamental reasons that derive from China's culture, economics, and policies. The proximal reasons for the rise in sex ratio at birth can be summarized as follows: female infanticide, underreporting and misreporting for female infants (Attané, 2005; Banister, 2004), and sex-selective abortion of female foetuses (Gu and Roy, 1995; Li *et al.*, 2004). Recent studies demonstrate that it is sex-selective abortion rather than female infanticide or underreporting that has caused the rise in SRB (Banister, 2004; Wei *et al.*, 2005). The main reason for excess female child mortality is the inequity in medical care between male and female children (Hazarika, 2000). The deeply rooted son preference in China results in discrimination against girls in nutrition, preventive and curative health care, and these cause excess mor-

tality. With the improvement of living standards in recent years, discriminatory treatment against girls in nutrition has not been important, but discrimination in medical care has had a significant influence on excess mortality. Studies of child mortality have shown that medical treatment for boys is significantly better than for girls (Li *et al.*, 2004). Female infanticide, however, still exists (Banister, 2004; Li *et al.*, 2004).

A strict patrilineal family system has existed through most of Chinese history. Patrilineality, patrilocality and patriarchy determine the dominant status of men in inheriting property, in living arrangements, in continuity of families, and in family power structure, and result in the lower status of women (Das Gupta *et al.*, 2004). Son preference and discrimination against girls is also caused by the difference in value of sons and daughters in providing old-age support and economic status. It is the son who provides fundamental support for his parents (Sun, 2002). Some factors in China's economic system and public policy, such as the unsound system of social security, have also stimulated the need for a son (Yang, 2005). As a result, the traditionally lower status of women determines the economic dependence on men in the family. Couples may have attempted to have sons through more births before there was a strict birth control policy. With the implementation of strict birth control policies and wide availability of prenatal sex determination technology since the early 1980s, sex-selective abortion became an important mechanism for a family to realize preference for a son (Banister, 2004; Wei *et al.*, 2005). But the continuous rise in SRB and EFCM are fundamentally caused by son preference; the restrictive birth control policy of China has only intensified and made the preference easier to realize. If son preference were weak, the rapid fertility decline would not necessarily lead to an abnormally high SRB and EFCM.

In brief, sex-selective abortion, neglect of girls and female infanticide are the main reasons for the rise in SRB and EFCM (Attané, 2004; Banister, 2004; Li *et al.*, 2004). Behind these is the traditional childbearing culture plus son preference (Li *et al.*, 2004), while the current economic system and public policy are conditional factors.

## 4. Implications and policy actions

### 4.1. Demographic and social implications

The relatively high sex ratio at birth and excess female child mortality lead directly to the phenomenon of missing girls and gender imbalance, and further affect such population issues as population size,

aging, employment, shortage of marriageable females and a "marriage squeeze" for males (Das Gupta and Li, 1999; Tuljapurkar *et al*., 1995). Missing girls caused by high SRB and EFCM will decrease the population size, but will also diminish the potential for reproduction in the following cycle. Under the same levels of fertility and mortality, the decreasing population influenced by missing girls will definitely affect the process of aging, which will lead to decreased general population size and a decrease in the working age population.

The main social implication of a high sex ratio at birth and excess female child mortality is their harm to the quality of life. They hurt the girl child's rights of survival, participation in society and economic development; they hinder productivity, efficiency and economic progress, hurt the general welfare of the society and hamper sustainable development of Chinese society. Firstly, it is the most basic of human rights to enjoy right to birth and to life. High SRB and EFCM have deprived the birth right of female infants and children with the female foetus and infants suffering directly (Ma, 2004). Secondly, females suffer the tremendous psychological pressure and health risks of sex-selected abortions, which affect both their physical and reproductive health (Li *et al*., 2004). Finally, the unbalanced Chinese gender structure caused by "missing girls" will result not only in marriage pressure on young males, but may also result in a series of social problems, such as inferior psychological health of the unmarried, instability of marriages and families, problems of old age support for those who never married, increasing prostitution and possibly abduction of and trafficking in women. These social problems will impair the welfare of the overall society and harm the long-term sustainable development of Chinese population and society (Lu and Fu, 2004).

## 4.2. Policy responses

Discrimination against girls at young ages is not confined to China, but also exists in other Asian countries. Although the extent and determinative factors may differ (Shi, 2004), the reasons for inferiority of girls' survival environment are basically same as in China. The immediate cause is sex-selective abortion and discrimination against girls (Das Gupta and Li, 1999) in a context of strong son preference. In order to change the disadvantaged condition of females, the UN published its *Convention on the Elimination of All forms of Discrimination against Women*, and enjoined its member countries to eliminate all forms of discrimination against women. In 1995, the Fourth World Women's Congress passed the *Declaration of Beijing*, and *Action Plan,* which have become major principles for promoting gender equality internationally.

Each country has devoted considerable effort to the problem of high sex ratio at birth. South Korea, India and Taiwan all forbid foetal sex determination in any form (Shi, 2004). The South Korean government passed a series of laws aimed at improving the rights of children and women, improving women's status, protecting women from gender discrimination. Since the 1980s, prohibition of sex-selective abortion was included in these laws. Use of the ultrasound B device to determine the foetus' sex would be financially punished or the the operator's medical license would be cancelled. In addition, the South Korean government promoted a social environment that pays special attention to girls and women. They also recognized the inequality in status between men and women and took a series of intervention measures (Shi, 2004). Following these legal actions, sex ratio at birth in South Korea has declined gradually since the mid 1990s. In India, because of the decreasing number of girls, the government produced a new family planning policy that encourages giving birth to female infants, and also introduced comprehensive programs to change the social attitudes towards girls (Tian and Gao, 2004). Taiwan, which shares with mainland China the same Confucian culture that values males more than females, seriously punishes hospitals which practice sex selection. It has also stipulated that female children before marriage have the right to inherit the family property, and provides welfare for the aged through public departments. Also the government provides security for the elderly, and these polices have led to reduction in the SRB since 2001 (CNP, 2004).

The Chinese government pays special attention to women's legal rights and interests, and emphasizes the economic development of women and children. This is reflected in national laws and regulations of the State Council concerning women's economic and political status, namely the right to receive education, to inherit family property, laws concerning marriage and old-age support, etc. Laws such as *Stipulation of Labor of Woman Staff* (*nü zhigong laodong guiding*) implemented in 1988, and *Law Safeguarding Women's Rights and Interests* (*funü quanyi baozhang fa*) in 1992, aim to protect women's rights and interests, to promote gender equality, and to protect women's economic status. Political rights is another important area of women's social status, and the Constitution in China has ensured both women and men have equal rights to participate in national affairs, and to work as civil servants. The *Compulsory Education Law* (*yiwu jiaoyu fa*) in 1986 stipulates that all boys and girls of all nationalities and regions have the right to receive 9 years of compulsory education. The *Law of Succession* (*jicheng fa*) of 1985 stipulates that boys and girls share the same rights of succession. The *Marriage Laws* of 1950, 1981 and 2001 also protect the legal rights and

interests of women and children. The Chinese government has also adopted a series of active policies in response to the rise in SRB under current low fertility, for example, the *Law on Maternal and Infant Health Care* (*muying baojian fa*) in 1994, *Managing Stipulations on Family Planning Technical Services* (*jihua shengyu jishu fuwu guanli tiaoli*) in 2001, *Law of Population and Family Planning* (*renkou yu jihua shengyu fa*) in 2002, *Stipulation on Forbidding Non-medical Aimed Foetus Sex Determination* and *Sex-selective Abortion* (*guanyu jin zhi fei yi xue xuyao de tai'er xingbie jianding he xuanze xingbie de rengong zhongzhi renshen de guiding*) implemented in 2003. It is clearly stipulated that all organizations and individuals are forbidden to perform non-medical sex determination or sex- selective abortion.

The Chinese government has not only enacted laws and statutes to promote an equal legal environment for men and women, but has also participated actively in international women's rights activities; it signed the United Nations *Convention on the Elimination of All Forms of Discrimination against Women* (CEDAW) in 1980, the Nairobi Strategy[2] in 1985, the *Convention concerning equal remuneration for men and women workers* (*nan nü tong gong tong chou gongyue*) in 1990 etc.

## 4.3. Intervention activities

In attempting to solve the problem of high SRB and EFCM in China, many national intervention projects have been developed with the support of the government, participation of research institutions as well as cooperation with grass roots and international organizations. These activities aim to gradually reduce son preference, to establish in public opinion a survival environment more favourable for girls, to improve women's status, to change norms and preferences, and to realize gender equality through publicity and economic assistance to families with girls. These intervention activities have drawn international attention and improved the image of the Chinese government as one that is actively caring for girls' development (Zhu and Li, 2000).

Some research institutes have collaborated with the government to carry out studies with support from international organizations. For instance, Xi'an Jiaotong University has proposed policies and a framework for the intervention through systematic cultural change to improve the survival environment of girls. This was based on studies of EFCM in cooperation with the family planning infrastructure (Li and Zhu, 2001, Li *et al.*, 2004) and was first used in the program "New

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[2] i.e. the document issued following the world conference to review and appraise the achievements of the United Nations decade for women: equality, development and peace, which took place in Nairobi, Kenya, on 15-26 July 1985.

Culture of Marriage and Childbearing Entering into Thousand Families", carried out by the NPFPC in 39 counties from 1998 -2000, with positive results. With financial support from the Ford Foundation and UNICEF, and support from the NPFPC and the Anhui Provincial Population and Family Planning Commission, Xi'an Jiaotong University and Chaohu government established "Chaohu Experimental Zone for Improving the Girl Child Survival Environment" in 2000-2003. This aimed to establish a favourable survival environment for girls in Chaohu by the use of direct as well as indirect intervention measures with the aid of various reproductive health training and social development activities. It is hoped that what was learned here can be used to develop intervention measures and implementation strategies for improving girls' survival environment in rural China. Experiences in Chaohu could be extended to the whole country through training programs and social development projects at various levels. The results of these studies and community intervention projects on improving the survival environments of girls could be communicated to the broader international society. Within three years, the main objectives of the experimental zone were achieved.

Improvements in women's status and the survival environment of girls as well as protecting girls' basic rights have also been the goals of the NPFPC's experimental project "Care for Girls" which began in 2003 in 24 counties (or cities) with high SRB in 24 provinces. This program reduces the rate of increase in SRB and aims at changing the traditional idea of "value men more than women" with the ultimate development goal of gender equality in the whole society (Shi, 2005).

"Care for girls" has concentrated much effort on policies, family planning insurance, favourable treatment and girls' enrolment in school. First, the program carried out and improved the laws and policies on protecting women's rights, which truly improves women's status, eliminates social sex discrimination, and provides a good environment for women's survival and development. "Care for girls" has carried out special rectification activities in many places, and has monitored the organizations that may make foetal sex determination and terminate pregnancy, which is the key to preventing the rise in SRB. Second, the program encourages and supports families that obey the family planning policy in pilot areas. Couples with only one child or two daughters who are both farmers and over 60 years old will receive no less than 600 yuan in the support system, which provides the insurance for these couples. Third, the program encourages favorable treatment that enhances girls' growth and development while attempting to alleviate labor, schooling and housing problems of families with two girls and economic difficulties. Finally, governmental agencies in

charge of education gave special privileges to girls in families with only girls in their admittance to and tuition for high school (Shi, 2005).

During the last two years, "Care for girls" has been expanded and has achieved at least temporary improvement. For instance, SRB in the 24 pilot counties dropped from 133.8 in 2000 to 121.8 in 2004, although the SRB in China was still increasing. "Care for girls" promoted the benefit-oriented mechanism for families with only girls, and the outlay from different levels of governments and donations from public have reached over 300 million yuan. During the comprehensive program against illegal sex determination and illegal sex-selective abortion, over 3,000 illegal cases were found and punished throughout the country (Shi, 2005). The mainstream media and websites carried many reports on "Care for girls" while the public's recognition of the need to protect women and promote children's legal rights has obviously advanced. At present, the "Care for girls" program is a key component of the Chinese government's long-term population development strategy. Over one-third of the nation's counties have instituted relevant programs, extending the range and influence of the pilot work (CPN, 2005). However, there remain some problems in the project implementation. For instance, the significance of "Care for girls" has not been uniformly recognized, as some regions have not paid enough attention to the imbalance of the SRB; the cooperation between regions and administrative agencies should be enhanced; social and economic policies for girls and families with girls should be improved and implemented.

## 5. Some prospects for the future

The Chinese government has made it a high priority to address the problems of rising SRB, and implementation of the "Care for girls" project is a further step in this direction (Shi, 2005). Decreasing SRB and protecting girl children is an important part of population policy with the general goal of restoring the SRB to a normal level before 2010.

As part of this goal, the government has promoted uxorilocal marriage in some rural areas as a means of decreasing son preference (Yan *et al.*, 1999). With the demographic and economic transition in China, this is a propitious time to enhance the activities of "New Culture of Marriage and Childbearing Entering into Thousand Families", "Care for Girls", and other kinds of interventions that aim to gradually decrease son preference, and change the traditional culture of "value man more than women" (Jin *et al.*, 2004). However, changing the system

and the culture takes a long time, and it is government's responsibility to address the economic and political issues involved. Some regions have already introduced elderly support systems, centred on social support, family support, or self-support, as well as multi-level rural social support systems (Yang, 2005). At the same time, policies and regulations have been developed to help women enjoy equal rights and opportunities in resource sharing and work opportunities and to eliminate gender discrimination. Noting that son preference has been exacerbated by the family planning policy, the government is currently considering the feasibility of less restrictive birth control policies (Zhou, 2005). The government has also adopted a series of active policies; some regions have set targets for reducing SRB, including plans to evaluate county- and city-level population and family planning staff, to step up control and management of ultrasound machines and more stringent ratification procedures for terminating pregnancy. These measures have led to a decline of SRB in the regions where they were implemented (Huang and Zhou, 2005).

International experience and Chinese practices show that it is possible to improve the survival environment of girl children and thus to alleviate EFCM. It is feasible to produce a favourable environment for female children, to continue social and economic development and to establish an improved social security system. Nevertheless it will take a long time for the culture to change to the degree that at the national level the goal of gender equality for children and adults can be achieved.

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## Appendix: Abbreviations for provinces used in Figures 4, 6, 7 and 10.

| | | | | | |
|---|---|---|---|---|---|
| BJ: Beijing | LN: Liaoning | SH: Shanghai | HN: Henan | SC: Sichuan | SA: Shaanxi |
| TJ: Tianjin | JL: Jilin | JS: Jiangsu | UB: Hubei | CQ: Chongqing | GS: Gansu |
| HB: Hebei | HL: Heilongjang | ZJ: Zhejiang | UN: Hunan | GZ: Guizhou | QH: Qinghai |
| SX: Shanxi | AH: Anhui | GD: Guangdong | YN: Yunnan | NX: Ningxia | NM: Inner Mongolia |
| FJ: Fujian | GX: Guangxi | XZ: Tibet | XJ: Xinjiang | JX: Jiangxi | HA: Hainan |
| SD: Shandong | TW: Taiwan | | | | |

# Sex Ratio at Birth and Excess Female Child Mortality in India:
# Trends, Differentials and Regional Patterns

Perianayagam AROKIASAMY

## 1. Son preference and female discrimination[1]

The sex ratio of India's population has increased from 103 males per 100 females in 1901 to 107 in 2001. The century long increase in sex ratio of overall population and the greater rise in the sex ratio of children population under 6 years have led to a massive deficit of females in India. Considerable variations have been observed in the sex ratio trends across the regions revealing different degrees of female discrimination. Gender inequalities, and correspondingly the extent of female deficit, are highest in the northern and central regions of India and lowest in the southern states. Regional variations in the scale of gender biases, and gender inequalities in a broader context, reflect the extent of patriarchy and its demographic influence across the regions.

Female child neglect in nutrition and health care leading to excess female child mortality was known to be the primary determining factor of high female deficit in North Indian states until the late 1980s. However, with rapidly declining fertility in the 1990s, the release of 2001 census results indicated a sharp increase in sex ratio of the child population in age 0-6. The National Family Health Survey data (NFHS-2, 1998-99) also provides confirmation that sex ratio of recent births in the northern and western states, was abnormally high, exceeding 110 males per 100 females. In addition, NFHS-2 figures show no evidence of decline in the levels of excess female child mortality in the states with high female deficit, although overall child mortality rates have declined in several states. These two complementary patterns suggest

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[1] The author acknowledges the assistance of K.S. Bharat Kumar in data analysis.

that fertility decline has led to exacerbated parental discrimination - both prenatal and postnatal.

The massive female deficit in India is therefore the outcome of both the large volume of excess female child mortality (quantum effect of son preference) and the recent rise in sex ratio at birth (intensity effect of son preference) due to sex-selective abortion and differential stopping behaviour (DSB). An extensive literature documents evidence of DSB as a factor contributing to higher sex ratio at birth, even in the absence of sex-selective abortion (McClelland, 1979; Coombs *et al.*, 1979; Clark, 2000).[2]

The patriarchal intra-familial economic structure coupled with the perceived cultural and economic utility of boys over girls, known to be based on religious or caste-based institutional norms, have been suggested as the original determining factors of degree of son preference and the inferior status of women across the regions (see Dyson and Moore, 1983; Miller, 1981; Das Gupta, 1987; Kishor, 1993). Son preference is in the interest of the family lineage, whose continuity depends on sons alone while daughters are considered to be transient members of the kin group.

In short, sons are perceived to provide support to their parents, both before and after marriage, while daughters move on to their husband's families and provide very little economic and emotional support. Daughters are considered as a net drain on parental resources in patrilineal and patrilocal communities (Dasgupta, 2000). More importantly, in the Hindu religious tradition, sons are needed for the cremation of deceased parents in order to provide a safe passage from this world to the next (Arnold *et al.*, 1998).

In India, a large volume of evidence of son preference has been documented in terms of desired and actual sex composition of children, the ratio of the desired number of sons over daughters averaging 1.5 (NFHS, 1992-93). In the northern and western states the ratio rises between 1.5 and 1.91. In contrast, in the southern states, the ratio drops down to the range of 1.0 - 1.2, indicating an only marginal preference for sons. Parental preference for sons is also revealed by the common finding that the decision to determine child bearing is strongly related to the couple's number of surviving sons. This raises

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[2] The stopping rule behaviour of couples depends not only on the magnitude of son preference but also on its intensity (see McClelland, 1979; Coombs *et al*, 1979). Clark (2000), in her paper based on NFHS-1 data, concluded that differential stopping behaviour affects both the size of the family and the sex composition of the children ever born, leading to a negative relationship between proportion of sons and family size.

the possibility that parents may realise their desire to have fewer girls than boys by discriminating particularly heavily against some of their daughters. The evidence of strong son preference is now correspondingly matched by persuasive evidence of both prenatal and postnatal female discrimination.

## 2. Context and methodology

The region comprising the northern and western states of India, where evidence of stronger son preference is well documented, has the history of most imbalanced sex ratio. The corresponding link between adverse female/male child mortality differentials and the recent sharp rise in child sex ratios, related to foetal mortality, constitutes the main focus of this analysis. Set in this context, this chapter assesses the evidence of trends and regional patterns in sex bias against female children. It explores the dynamics of gender bias in terms of two proximate determinants of sex ratio, namely, sex ratio at birth and excess female child mortality.

Evidence on the following three aspects of sex ratio determinants are examined in this chapter:

First, the trends and regional patterns in sex ratio at birth and the last birth (SRLB) are examined. We also make use of directly related and complementary evidence on the use of ultrasound and amniocentesis as well as stopping rule behaviour.

Second, given that overall excess female child mortality averages 60 to 65 percent in the northern and northern central regions, the extent of excess female child mortality compared to boys of respective rank is explored. The evidence of female neglect in child health as the corresponding link to excess female child mortality is presented.

Third, the analysis questions whether, given the cultural constraints of patriarchy, development factors such as women's education and household economic status tend to exacerbate the rise in sex ratio at birth or, alternately, reduce gender differences in health care and child mortality. In effect, development factors might operate in the opposite direction with gender inequalities contributing to development failures in general (Drèze and Sen, 2002).

The two rounds of National Family Health Survey data (NFHS-1 and 2, 1992-93 and 1998-99) are used, both to compare and assess changing trends and regional patterns. The birth histories obtained from women's questionnaire of both rounds are used in the analysis of sex ratio at birth and excess female child mortality. NFHS-1 lists

275,172 births and 32,836 deaths within four years after birth and the respective numbers in NFHS-2 are 268,879 births and 28,854 deaths.

State-wise trends in sex ratio at birth (number of males per 100 females) are thus generated for four periods using birth histories from the two rounds of NFHS surveys. The SRBs for 1983-86 and 1987-90 have been generated from NFHS-1 (1992-93) and the SRBs for 1991-94 and 1995-98 have been generated from NFHS-2 (1998-99). Also, data from census and Sample Registration System (SRS) are referred to in the discussion concerning long-term trends in child sex ratio and sex differentials in child mortality. Data of NFHS-2 regarding the last two births in the three years prior to survey are used to find the extent of use of sonogram/ultrasound or amniocentesis on pregnancies and sex ratio at birth for these pregnancies and the correspondence between the two. This data is also used to study the emerging differentials both in sex ratio at birth and the percentage of pregnancies for which sonogram/ultrasound or amniocentesis are used following women's education and standard of living index.[3]

In assessing sex differentials in child mortality, this analysis focuses on excess female child mortality in ages 1-4 years. Multivariate logistic regression models are estimated to study sex differentials in child mortality. The odds of children dying between 12-47 months are estimated on full birth history data of NFHS-1.[4] A unique child index namely 'sex-specific rank order of children' is used to study the dynamics of sex differences in child mortality. The indexing of children by sex-wise rank provides greater precision in assessing sex differentials in child mortality than the conventionally used methods such as sequencing sex composition and sex-wise birth order of children (Arokiasamy, 2004).

Female discrimination in the use of child health care is examined in terms of various recommended child vaccinations, of sex-wise birth order for born and surviving children during the last 12 to47 months (1988-91) in NFHS-1 and 12 to35 months (1995-96) in NFHS-2. Children up to the age of 11 months are censored because all recom-

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[3] The standard of living index (SLI) is an aggregated score of values assigned to household assets such as house type, source of lighting and drinking water, separate kitchen, ownership of house, agricultural land, livestock and durable goods ownership -car, scooter/motor cycle, telephone, refrigerator, colour television, bicycle, fan, radio/transistor, sewing machine, water pump, bullock cart/thresher, mattress, pressure cooker, chair, cot/bed, table and clock/watch. The index represents the economic condition of the household with scores ranging from 0-14 for low SLI, 15-24 for medium SLI and 25-67 for high SLI.

[4] The cases that have not been exposed to mortality risk among children aged 12-47 months have been censored in child mortality models.

mended vaccinations are not complete until 12 months. The odds of child immunization for girls (with boys as the reference category) are estimated. Multivariate logistic regression models are also applied to study the effect of development factors such as women's education and household economic condition on female discrimination in health care and excess female child mortality.

Most parts of the results in this chapter are presented and discussed for the major states of India, with region-wise regression model estimates in the latter section. The five regions categorized are 'North' (Haryana, Himachal Pradesh, Jammu region of Jammu & Kashmir, and Punjab), 'North Central' (Bihar, Madhya Pradesh, Rajasthan and Uttar Pradesh) 'East' (Assam, north-eastern states, Orissa and West Bengal), 'West' (Goa, Gujarat and Maharashtra) and 'South' (Andhra Pradesh, Karnataka, Kerala and Tamil Nadu). The socio-economically less advanced states (Bihar, Madhya Pradesh, Uttar Pradesh, Rajasthan, Orissa, Chhattisgarh, Jharkhand and Uttaranchal), which constitutes 45 percent of the country's population, are designated by the Government of India as *Empowered Action Group* (EAG) states to specially focus interventions in order to improve health and socioeconomic conditions.

## 3. Factors influencing sex ratio trends in India

The demographic factors that directly determine the overall sex ratio of the population are sex ratio at birth, sex differential in mortality, sex-selective migration and sex differentials in under-enumeration. The trends and changes in these factors shape the sex ratio trends and patterns. So far, evidence in the Indian context does not point to a significant contribution of sex differences in migration and under-enumeration to the increasing sex ratio. In adult ages, the marginal surplus mortality for women over men, in the past decades, has now turned into marginal excess mortality for men.

Higher sex ratio in India was mainly attributed to higher female (child) mortality compared to that of the male, which is frequently referred to in the literature as gender bias in child mortality. Male children face hurdles of survival only during the neonatal, and possibly during the post-neonatal period. In ages 1-5, sex differentials in child mortality turn to female disadvantage. Sex differentials in child mortality are the primary factors accounting for the historically high sex ratios in the Indian population (Visaria, 1967; Bardhan, 1974). The trends in excess female child mortality constructed from SRS data show that discrimination of girls continues unabated in the northern states

(Premi, 2002). In addition to this long-term trend of female disadvantage in child mortality, the recent evidence of sex ratio at birth beyond normal range of 106 boys per 100 girls provides an early warning about sex-selective abortion, differential foetal mortality, and unreported female infanticide.

## 4. Trends and differentials in sex ratio at birth

The increase in juvenile sex ratio between 1991 and 2001 censuses shifts the concern from overall sex ratio to the child sex ratio. An excess of about 5 percent in the number of boys compared to girls reflects a natural biological balance in child sex ratio (0-5). In India, considering the level of excess female child mortality, a higher level of child sex ratio of 107 males per 100 females is considered reasonable, while child sex ratios above 107 should be viewed with serious concern. In the last fifty years, the proportion of girls has declined by 5 percent in India. During the past four decades, a clear increasing trend in the child sex ratio is evident in all states except Kerala (Parasuraman, 2001).

The increase in child sex ratio shows a close correspondence with the rising trend in sex ratio at birth in most states of India during the last two decades (Figures 1 and 2). The rise in sex ratio at birth is steeper in the states of Delhi, Haryana, Himachal Pradesh and Punjab. The average sex ratio at birth of about 110 during 1983-86 rose to an average of 118 boys per 100 girls during 1995-98 in these states. Evidence from the census shows a steeper rise in SRB in Maharashtra and Gujarat, also during the two decades. Region-wise, the northern states show the steepest rise with western and eastern regions showing moderate rise (Figure 3). The trends fluctuate in the *Empowered Action Group* (EAG) states of Bihar, Madhya Pradesh, Rajasthan, Uttar Pradesh and Orissa with South Indian states showing some intermittent and marginal increases.

The sex ratio at birth for the country as a whole, increased to 107 boys per 100 girls during 1995-98. However, abnormally high sex ratio at birth has been mostly observed in some states of North India. This is consistent with the indirect estimate of SRB of 107 during 1994-2001 based on child population of 2001 census (Parasuraman, 2001). However, the 2001 census also indicates an SRB of 110 males per 100 females for births reported during the preceding year of census, suggesting the possibility that SRB may have increased steeply during the post NFHS-2 period of 1999-2001. In any case, the absolute deficit in female births is huge.

Of greater concern is the emerging trend of higher sex ratio at birth in urban areas, compared to rural areas, in most of the states almost consistently throughout the four above mentioned periods. Two sets of maps depicting sex ratio at birth demonstrate the widening spread of higher sex ratio at birth in urban areas where the SRB is greater than 110 during the four periods between 1983 and 1998 in more than 8 states (Figures 1 & 2).

**Figure 1 Trends in sex ratio at birth, NFHS-1 (1992-93) & NFHS-2 (1998-99), rural India**
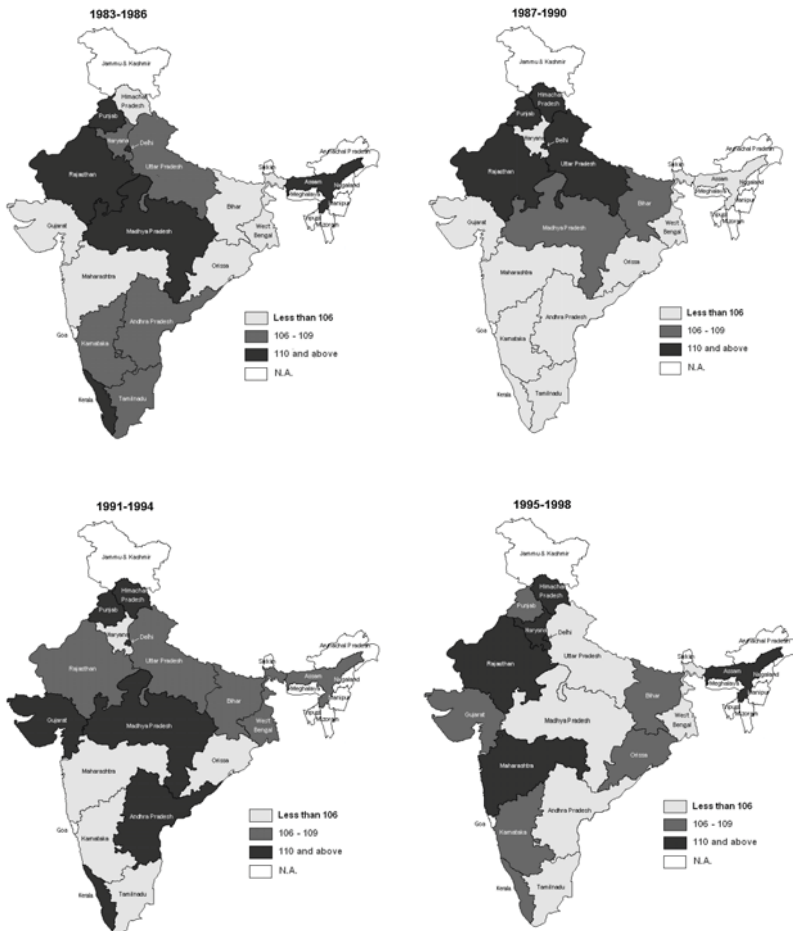
**Figure 2 Trends in sex ratio at birth, NFHS-1 (1992-93) & NFHS-2 (1998-99), urban India**
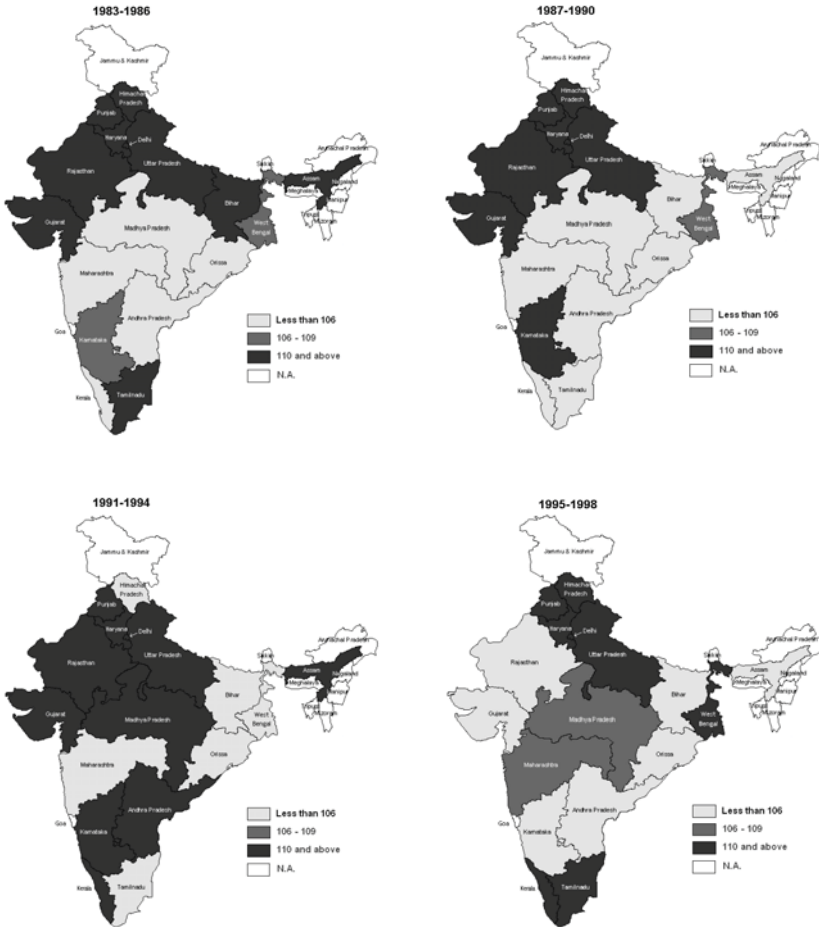


The SRB is more than 110 boys per 100 girls in urban Himachal Pradesh, Punjab, Haryana, Delhi and Uttar Pradesh, throughout the four periods, with Rajasthan and Gujarat appearing in the first three periods except the most recent period. Assam, Madhya Pradesh, West Bengal and South Indian states appear intermittently for any one of the periods.

**Figure 3 Trends in sex ratio at birth by region in India, NFHS-1 (1992-93) & NFHS-2 (1998-99)**
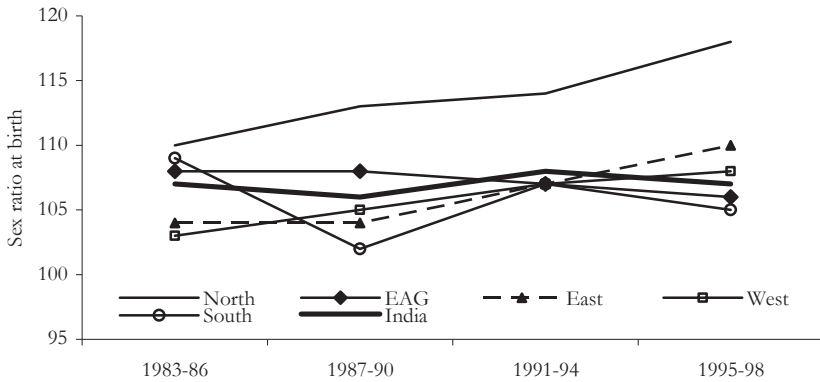


In rural areas, the sex ratio at birth is 110 boys per 100 girls and above in five states with Punjab, Himachal Pradesh and Rajasthan shown in all the four periods and Maharashtra and Madhya Pradesh emerging in the recent period. Except for the northern and western states, rural sex ratio at birth either remained the same or suggests a fluctuating trend. Rural sex ratios at birth show a fluctuating trend in southern states. Maharashtra is an exception where rural SRB is slightly higher than urban SRB for the most recent period.

Further evidence of sex ratio at birth (for two recent births in the last three years) is examined by women's education and standard of living index across the states. The evidence indicates systematic rise in sex ratio of birth both by women's education and household standard of living index (Table 1). Except in Kerala and West Bengal, the sex ratio at birth is the lowest for illiterate women and women in poor households (households with lower standard of living index scores). In eight states of North, North Central and West regions the SRB shows a sharp increase, 125 and above for women with middle school compared to illiterate women and for women in households of higher standard of living index compared to women in households of low standard of living. In Delhi, Haryana, Rajasthan, Uttar Pradesh, the SRB is extremely high, 140 boys and above per 100 girls for women with middle school education and households of high standard of living index.

**Table 1 Sex ratio at birth for recent two births in the last three years, NFHS-2 (1998-99)**

| States | Standard of living index | | | Mother's educational status | | | |
|---|---|---|---|---|---|---|---|
| | Low | Medium | High | Illiterate | < than middle school | Middle school completed | High school completed |
| Delhi | 101 | 131 | 150 | 132 | 125 | 166 | 145 |
| Haryana | 83 | 106 | 181 | 118 | 121 | 141 | 158 |
| Himachal P. | 95 | 127 | 131 | 109 | 144 | 120 | 125 |
| Punjab | 57 | 111 | 116 | 95 | 105 | 136 | 118 |
| Bihar | 116 | 116 | 90 | 109 | 111 | 140 | 103 |
| Madhya P. | 114 | 106 | 113 | 109 | 101 | 167 | 96 |
| Rajasthan | 118 | 93 | 148 | 105 | 119 | 119 | 133 |
| Uttar P. | 122 | 113 | 131 | 114 | 103 | 142 | 131 |
| Assam | 113 | 115 | 130 | 98 | 126 | 151 | 115 |
| Orissa | 104 | 135 | 110 | 109 | 126 | 121 | 122 |
| West Bengal | 122 | 107 | 114 | 122 | 114 | 104 | 105 |
| Gujarat | 100 | 105 | 125 | 101 | 102 | 132 | 122 |
| Maharashtra | 104 | 111 | 119 | 118 | 87 | 92 | 153 |
| Andhra P. | 96 | 100 | 88 | 91 | 102 | 101 | 109 |
| Karnataka | 120 | 103 | 95 | 100 | 99 | 96 | 130 |
| Kerala | 102 | 100 | 110 | 105 | 83 | 120 | 106 |
| Tamil Nadu | 99 | 103 | 147 | 110 | 101 | 103 | 113 |
| India | 109 | 107 | 120 | 108 | 104 | 116 | 121 |

Source: Computed from NFHS-2data.

## 4.1. Sex ratio at last birth and use of ultrasound/amniocentesis

The link between the rise in the sex ratio at birth and sex-selective abortion is further assessed by comparing state-wise sex ratio at birth and the extent of use sonogram/ultrasound or amniocentesis. These technologies have been widely misused as they often serve for detecting the sex of the foetuses–leading to termination of female foetuses when parents have strong desire for sons.

Between the two NFHS survey periods, the sex ratio at last birth (SRLB) shows a steep increase in northern and western states and moderate to marginal increase in the remaining states (Table 2).

The sex ratio at last birth which was in the range of 104-115 in NFHS-1 shows a record huge increase in NFHS-2, to more than 150 boys per 100 girls in Haryana, Himachal Pradesh and Punjab and to the range of 140-150 boys per 100 girls in Maharashtra, Gujarat, and Delhi. In six other states of Madhya Pradesh, Rajasthan, Bihar, Uttar Pradesh, Orissa, Assam and Karnataka, SRLB rose to the range of 120-

140 boys per 100 girls. Even more remarkably, the sex ratio at last birth increased steeply both in urban and rural areas, though more so in urban areas.

**Table 2 Sex ratio at birth and percentage of pregnancies for which sonogram or amniocentesis was performed, NFHS-1 and NFHS-2**

| States | NFHS-1 | Sex ratio for the last birth | | | Sex ratio for last two births (1996-98) | | Percentage of pregnancies (last two births, 1996-98) for which S or A was performed | | |
| | | NFHS-2 | | | | | | | |
| | | Total | Urban | Rural | All | Tested* | S | A | S or A |
| Delhi | 115 | 142 | 169 | 140 | 129 | 147 | 41 | 2 | 42 |
| Haryana | 108 | 157 | 164 | 155 | 146 | 186 | 18 | 1 | 19 |
| Himachal P. | 111 | 153 | 157 | 152 | 139 | 142 | 15 | 0 | 15 |
| Punjab | 107 | 177 | 160 | 186 | 148 | 118 | 21 | 2 | 22 |
| Bihar | 111 | 120 | 120 | 120 | 116 | 89 | 6 | 1 | 6 |
| Madhya P. | 113 | 128 | 133 | 126 | 124 | 96 | 9 | 2 | 10 |
| Rajasthan | 115 | 134 | 133 | 133 | 127 | 130 | 13 | 1 | 14 |
| Uttar P. | 110 | 123 | 127 | 122 | 118 | 163 | 13 | 1 | 13 |
| Orissa | 109 | 125 | 121 | 126 | 119 | 165 | 3 | 1 | 3 |
| Assam | 108 | 120 | 125 | 119 | 114 | 61 | 4 | 2 | 5 |
| W. Bengal | 106 | 118 | 116 | 119 | 116 | 107 | 7 | 0 | 7 |
| Gujarat | 110 | 143 | 139 | 147 | 131 | 124 | 23 | 2 | 24 |
| Maharashtra | 104 | 146 | 134 | 155 | 132 | 116 | 29 | 6 | 31 |
| Andhra P. | 104 | 118 | 115 | 119 | 119 | 91 | 23 | 1 | 23 |
| Karnataka | 107 | 122 | 116 | 126 | 116 | 120 | 22 | 3 | 23 |
| Kerala | 103 | 108 | 105 | 109 | 108 | 96 | 44 | 3 | 45 |
| Tamil Nadu | 106 | 117 | 118 | 116 | 112 | 99 | 31 | 7 | 36 |
| India | 108 | 127 | 127 | 126 | 121 | 113 | 18 | 2 | 19 |

Note: * Pregnancies on which sonogram/ ultrasound or amniocentesis were performed; S: sonogram; A: amniocentesis.
Source: computed from NFHS data.

As complementary evidence to the above trends, Table 2 also shows sex ratio at birth of recent two births that occurred in the three years prior to survey (NFHS-2). The pattern of extremely high sex ratio for both the last live birth and last two live births during the last three years, both in northern and western states, is consistent with the higher levels of use of either sonogram/ultrasound or amniocentesis in those states. However, the percentage of pregnancies covered by these tests is also higher in South Indian states where the sex ratios at birth have risen only marginally. Therefore, to establish a closer link of the impact of sex-selective abortion on female deficit at birth, the corresponding evidence is further explored on SRB of two births in the last three years, on which ultrasound or amniocentesis was performed.

Table 2 shows evidence of extremely high sex ratios of last two births on which sonogram/ultrasound or amniocentesis is performed in the northern states of Haryana (186 boys per 100 girls), Himachal Pradesh (142), Delhi (147), Uttar Pradesh (163), Rajasthan (130) and even Orissa (165). Further, the use of these technologies is concentrated mainly among urban, educated and economically better off women, where SRB is also found to be extremely high (Table 1). These tests have been used in more than 35 percent of pregnancies in urban areas, high standard of living category and those with middle school and above education (Table 3).

**Table 3 Percentage of pregnancies (last two births in 1996-98) on which sonogram or amniocentesis was performed by household standard of living and education, NFHS-2 (1998-99)**

| States | Place of residence | | Household standard of living index | | Educational level | |
|---|---|---|---|---|---|---|
| | Urban | Rural | Low and medium | High | < middle school* | Middle school and above |
| Delhi | 44 | 25 | 24 | 52 | 26 | 53 |
| Haryana | 34 | 12 | 7 | 33 | 9 | 32 |
| Himachal P. | 41 | 13 | 8 | 31 | 5 | 23 |
| Punjab | 32 | 17 | 10 | 30 | 12 | 32 |
| Bihar | 18 | 4 | 3 | 22 | 3 | 15 |
| Madhya Pradesh | 21 | 6 | 5 | 29 | 5 | 29 |
| Rajasthan | 24 | 9 | 8 | 27 | 9 | 34 |
| Uttar Pradesh | 25 | 8 | 7 | 29 | 6 | 28 |
| Orissa | 8 | 3 | 2 | 18 | 1 | 12 |
| Assam | 18 | 4 | 3 | 23 | 3 | 9 |
| West Bengal | 24 | 3 | 5 | 32 | 3 | 24 |
| Gujarat | 40 | 14 | 13 | 52 | 12 | 49 |
| Maharashtra | 48 | 20 | 23 | 61 | 20 | 50 |
| Andhra P. | 40 | 16 | 18 | 49 | 16 | 44 |
| Karnataka | 41 | 14 | 16 | 49 | 14 | 41 |
| Kerala | 58 | 42 | 37 | 64 | 30 | 50 |
| Tamil Nadu | 43 | 31 | 31 | 63 | 29 | 46 |
| India | 35 | 13 | 13 | 41 | 11 | 37 |

Note: * Illiterate and "less than middle school" are combined.
Source: Computed from NFHS-2data.

The range of above evidences point to the major role of sex-selective abortion in the rising sex ratio at birth in India. However, it is noted that 'differential stopping behaviour' (DSB) also appears to be part of the reason for the rise in sex ratio at birth. This is illustrated by the fact that the sex ratio at last birth rose substantially from NFHS-1 to NFHS-2 (in the range of 118-128 boys per 100 girls) in the five

states of Bihar, Madhya Pradesh, Orissa, Assam, and West Bengal where prenatal diagnostic tests are used in less than 10 percent of the pregnancies. Secondly, in the South Indian states, the sex ratio at last birth is high and at the same time the use of sonogram/ultrasound or amniocentesis is also the highest (45 percent and 36 percent of the pregnancies in Kerala, Tamil Nadu). Yet, the sex ratio of births for which these technologies were performed, is lower in these states, except in Karnataka, suggesting that prenatal diagnostic tests have not been misused for sex-selective abortion, unlike the more widely prevalent pattern in the above-mentioned states. If couples have a strong desire for sons, the simplest stopping rule is that they will continue to have children until they reach their desired number of sons (Clark, 2000; McClelland, 1979). With low fertility (1-2 children) and strong preference for sons (at least one son) as an intertwined norm, when sons are born first, couples will stop having children by adopting contraception. Alternatively, when daughters are born first, couples will continue to have children until they have a son. Both strategies of couples led to a corresponding rise in the proportion of sons, even in the absence of sex-selective abortion.

## 4.2. Regional pattern of the dynamics of excess female child mortality

In the past, the sex differentials in child mortality, particularly in the northern states of India, were amongst the highest ever recorded in demographic history and the resultant excess female child mortality was a major contributor to the historically high sex ratio in India. In the context of emerging evidence of widespread sex-selective abortion as a major contributor to the increase in child sex ratio in the recent decades, it is all the more important to assess the contribution of excess female child mortality to high or increasing sex ratios. Since the 1970s, India's Sample Registration System provides long-term evidence on the extent of sex differentials in child mortality. The SRS data indicate that the extent of sex differentials in child mortality has worsened during the 1980s and 1990s compared with the 1970s (Registrar General, 1991, 2003). In the absence of any biological basis, the cause of excess female child mortality is attributed to son preference, patriarchal structure and the consequent inferior position of women in society. In India and in developing countries in general, excess female child mortality tends to occur significantly and mostly over the ages 1-4 (see also Tabutin and Willems, 1998). Male disadvantage in neonatal mortality turns into female disadvantage of child mortality. Excess female child mortality tends to be small and insignificant during infancy (after accounting for biological male disadvantage) and also from age five.

NFHS-1 data shows that the female-to-male ratio of infant mortality (83.9/88.6) is 0.95, child mortality (42.0/29.4) is 1.43, and under-five mortality (122.4/115.4) is 1.06 (Table 4 and 5). It is notable that excess female child mortality is very high, 43 percent higher than males, for children in ages 1-4; however, it is not so for infancy and under-five mortality. Aggregated measures such as under-five mortality in ages 0-5 or 1-5 will be less suitable as age variations in sex differences in child mortality is seen to clearly mask the sharp excess female child mortality in ages 1-4.

**Table 4 Infant and child mortality rates for the 10 year period preceding the survey by sex, NFHS-1 (1992-93) and NFHS-2 (1998-99)**

| | Neonatal Mortality | | | | Post neonatal mortality | | | | Child mortality($_4q_1$) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | NFHS-1 | | NFHS-2 | | NFHS-1 | | NFHS-2 | | NFHS-1 | | NFHS-2 | |
| States | M | F | M | F | M | F | M | F | M | F | M | F |
| Delhi | 36.2 | 30.3 | 34.3 | 19.9 | 24.1 | 34.1 | 17.1 | 20.4 | 13.6 | 21.2 | 10.6 | 13.4 |
| Haryana | 47.1 | 37.6 | 32.2 | 36.0 | 28.8 | 45.9 | 20.6 | 30.0 | 18.4 | 43.2 | 13.8 | 30.2 |
| Himachal P. | 41.6 | 34.4 | 27.9 | 21.4 | 25.6 | 28.5 | 16.9 | 12.4 | 17.6 | 25.3 | 9.0 | 9.3 |
| Punjab | 32.9 | 27.0 | 34.4 | 37.9 | 22.8 | 22.1 | 15.3 | 27.3 | 12.7 | 23.0 | 5.9 | 23.8 |
| Bihar | 64.0 | 50.0 | 51.9 | 46.6 | 37.3 | 42.4 | 23.6 | 29.1 | 34.5 | 53.5 | 31.4 | 43.6 |
| Madhya P. | 63.1 | 49.5 | 67.3 | 51.7 | 36.7 | 43.4 | 29.8 | 35.9 | 46.7 | 56.8 | 49.4 | 66.3 |
| Rajasthan | 42.3 | 42.0 | 57.5 | 50.4 | 31.3 | 37.5 | 31.4 | 36.8 | 26.5 | 42.2 | 29.4 | 52.3 |
| Uttar P. | 71.1 | 68.3 | 64.5 | 59.4 | 41.5 | 51.6 | 30.3 | 36.5 | 38.5 | 65.6 | 28.8 | 53.4 |
| Assam | 63.0 | 47.9 | 42.1 | 31.5 | 37.9 | 36.4 | 24.8 | 24.2 | 52.9 | 59.6 | 21.4 | 16.9 |
| Orison | 70.4 | 57.6 | 64.6 | 46.4 | 56.5 | 54.1 | 29.9 | 37.8 | 16.1 | 23.4 | 29.6 | 27.9 |
| W. Bengal | 56.5 | 53.7 | 36.9 | 30.6 | 28.2 | 23.6 | 20.4 | 13.6 | 21.7 | 35.4 | 18.5 | 23.9 |
| Gujarat | 47.8 | 44.6 | 46.6 | 37.0 | 24.4 | 30.2 | 22.5 | 22.4 | 27.1 | 38.6 | 25.1 | 31.4 |
| Maharashtra | 46.2 | 28.8 | 38.8 | 37.4 | 16.5 | 20.0 | 15.9 | 14.3 | 19.1 | 23.6 | 15.5 | 20.0 |
| Andhra P. | 54.4 | 40.9 | 45.0 | 50.2 | 23.2 | 28.0 | 27.9 | 18.5 | 21.5 | 27.6 | 16.6 | 27.8 |
| Karnataka | 54.4 | 45.4 | 53.6 | 34.8 | 24.3 | 25.8 | 16.5 | 19.3 | 25.6 | 33.4 | 21.1 | 23.8 |
| Kerala | 23.4 | 20.7 | 19.6 | 10.6 | 10.5 | 7.1 | 5.1 | 6.0 | 10.0 | 9.4 | 6.0 | 4.5 |
| Tamil Nadu | 53.5 | 38.9 | 35.3 | 36.6 | 26.0 | 22.7 | 14.9 | 15.2 | 29.0 | 23.2 | 12.7 | 15.8 |
| India | 57.0 | 48.1 | 50.7 | 44.6 | 31.7 | 35.8 | 24.2 | 26.6 | 29.4 | 42.0 | 24.9 | 36.7 |

Source: Computed from NFHS data.

At childhood ages of 1-4, the female-to-male ratio of child mortality indicates an overall level of excess female child mortality for each state. The ratios show extremely high level of excess female child mortality with the highest in Haryana (+134 percent), followed by Punjab (+81 percent) and Uttar Pradesh (+70 percent). West Bengal

(+63 percent), Rajasthan (+59 percent), Delhi (+56 percent), Bihar (+55 percent), Orissa (+45 percent) and Himachal Pradesh (+44 percent) are the states that have greater excess female child mortality of 43 percent than the national level (Table 5). NFHS-2 results also indicate excess female child mortality in this order in general; however, about half of the states show a decline and other states a rise in excess female child mortality. Kerala is the only state where both NFHS-1 and 2 results indicate no evidence of excess female child mortality at all.

**Table 5 Female-to-male ratio of infant and child mortality, NFHS-1 (1992-93) and NFHS-2 (1998-99)**

| States | Neonatal mortality | | Post neonatal mortality | | Child mortality ($_4q_1$) | |
|---|---|---|---|---|---|---|
| | NFHS-1 | NFHS-2 | NFHS-1 | NFHS-2 | NFHS-1 | NFHS-2 |
| Delhi | 0.84 | 0.58 | 1.41 | 1.19 | 1.56 | 1.26 |
| Haryana | 0.80 | 1.12 | 1.59 | 1.46 | 2.35 | 2.19 |
| Himachal P. | 0.83 | 0.77 | 1.11 | 0.73 | 1.44 | 1.03 |
| Punjab | 0.82 | 1.10 | 0.97 | 1.78 | 1.81 | 4.03 |
| Bihar | 0.78 | 0.90 | 1.14 | 1.23 | 1.55 | 1.39 |
| Madhya P. | 0.78 | 0.77 | 1.18 | 1.20 | 1.22 | 1.34 |
| Rajasthan | 0.99 | 0.88 | 1.20 | 1.17 | 1.59 | 1.78 |
| Uttar P. | 0.96 | 0.92 | 1.24 | 1.20 | 1.70 | 1.85 |
| Assam | 0.76 | 0.75 | 0.96 | 0.98 | 1.13 | 0.79 |
| Orissa | 0.82 | 0.72 | 0.96 | 1.26 | 1.45 | 0.94 |
| West Bengal | 0.95 | 0.83 | 0.84 | 0.67 | 1.63 | 1.29 |
| Gujarat | 0.93 | 0.79 | 1.24 | 1.00 | 1.42 | 1.25 |
| Maharashtra | 0.62 | 0.96 | 1.21 | 0.90 | 1.24 | 1.29 |
| Andhra P. | 0.75 | 1.12 | 1.21 | 0.66 | 1.28 | 1.67 |
| Karnataka | 0.83 | 0.65 | 1.06 | 1.17 | 1.30 | 1.13 |
| Kerala | 0.88 | 0.54 | 0.68 | 1.18 | 0.94 | 0.75 |
| Tamil Nadu | 0.73 | 1.04 | 0.87 | 1.02 | 0.80 | 1.24 |
| India | 0.84 | 0.88 | 1.13 | 1.10 | 1.43 | 1.47 |

Source: Computed from NFHS data.

The reversal from male disadvantage in neonatal mortality to female disadvantage in post neonatal mortality is abrupt for most states of the North and North Central region where excess female child mortality is over 50 percent (Table 5). Two earlier studies in the Khanna and Matlab project areas (study sites located respectively in Indian Punjab and rural Bangladesh) have also observed that female mortality was lower than male mortality in the early months after birth but beginning in the later part of the first year of life female death rates were higher than male death rates (Wyon and Gordon, 1971; D'Souza and Chen, 1980).

Given the overall level of excess female child mortality, previous studies in India have demonstrated that higher mortality of girls than boys is not a general phenomenon but the extent of its concentration increases with increasing number of girls in the family (Das Gupta, 1987; Arnold *et al.*, 1998).

In order to provide greater precision about the regional pattern of such dynamics of sex differences in child mortality, results of regression models were used to provide estimates of excess female child mortality by sex-specific rank order of children (Figure 4).

**Figure 4 Excess female child mortality at 12-47 months by rank of female children and region, NFHS-1 (1992-93)**
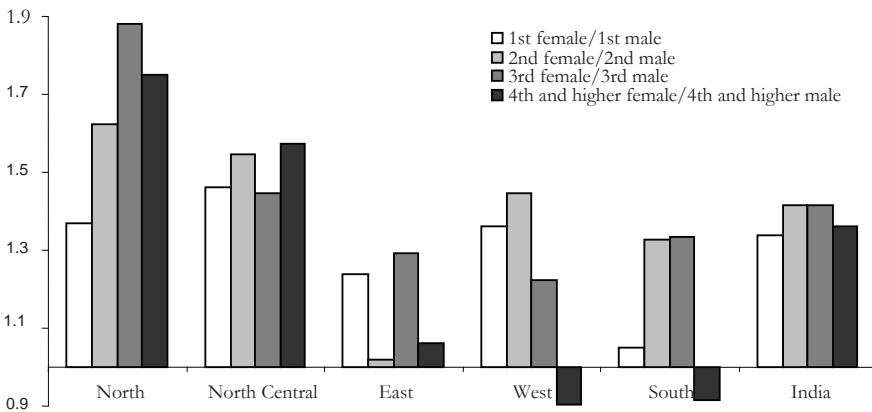


Note: Odds ratios of child mortality by sex-and specific rank order (see details in source).
Source: Arokiasamy (2004).

In the North and North Central regions, the likelihood of excess female child mortality is greater by about a third for the first girl child, two-thirds for the second and more than two thirds for the third and higher rank girls compared to the boys of the respective rank. The odds of excess female child mortality are the next highest in the North Central region but lower than in the North region. In the other regions of East, West and South excess risks of female child mortality are marginal. This apart, in both South and West regions, the risk of child mortality is greater for males compared to females for the fourth and higher rank children. This is some substantiation of the point suggested by Muhuri and Preston (1991) that parents might consciously neglect individual children. In sum, the results of regression analyses provide major evidence on the regional pattern of excess female child mortality in India. Moreover, the overall excess female child mortality of the regions have not been significantly altered in NFHS-2, clearly

providing indications that various forms of discrimination have been used against female children particularly in the North and North Cental regions.

## 5. Discrimination of female children in modern heath care provision

The excess or surplus mortality of female children in India is commonly hypothesized to be due to discrimination against female children, relative to males, in the allocation of food and health care within the household. In pioneering investigations, girls were found to be discriminated against in three categories of behaviour: feeding patterns, medical care, and the allocation of love and emotional warmth (Miller, 1981; Das Gupta, 1987). Although such cumulative neglect of female children in health and nursing, feeding and basic attention are viewed as collective mechanisms responsible for excess mortality of girls, many studies have found greater evidence to the hypothesis that discrimination of girls in the provision of both preventive and curative modern health care is the direct determinant of excess female child mortality (Chen *et al.*, 1981; Wyon and Gordon, 1971; Basu, 1989). Strong evidence of discrimination of girls in both preventive and curative care has been reported in accordance with the regional pattern of excess female child mortality in India (Timaeus *et al.*, 1998).

In this section, therefore, evidence of discrimination against female children in the provision of health care is examined as a directly contributing factor of excess female child mortality. Discrimination against female children in the provision of health care is assessed, primarily in terms of coverage of children for all recommended childhood vaccinations on which the NFHS provides data. Focussing on childhood immunization has a comparative advantage since it covers all children in the age group 12-47 months. The second domain of curative health care provision comprised indicators such as whether medical treatment was provided to the child for the reported episodes of diarrhoea, fever and cough. However, analyses of these indicators on curative treatment are not incorporated in this chapter due to apparent limitations of such data.[5]

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[5] First, data on curative care indicators deal with small number of cases, in addition to the biases in reporting episodes of diseases and treatment by the sexes and the likelihood that childhood risks of illness vary by sex. Second, recall bias, severity perception of illness for the sexes and definitional interpretations are other limita-

   The odds of utilization of full vaccination are estimated for male
and female children and by birth order of children with separate re-
gression model for each of the five regions. Figure 5 and 6 compares
the odds of using health care (full vaccinations) between the sexes by
birth order. The shortfall in the odds ratio of vaccination use for girls
compared to boys of respective birth order constitutes the extent of
female discrimination in health care. Both NFHS-1 and NFHS-2 data
show that in North and North Cental regions, the odds of being fully
vaccinated for all birth orders of female children are lower compared
with boys of the same birth order. The odds of a child being fully
vaccinated tend also to decline for girls of higher birth order compared
to boys of same birth order. By contrast, the odds ratios indicate only
minor differences between the sexes in the southern region.

**Figure 5 Sex differentials in health care (all vaccination) for children aged 12-
47 months by birth order (birord) and region, NFHS-1, 1992-93**
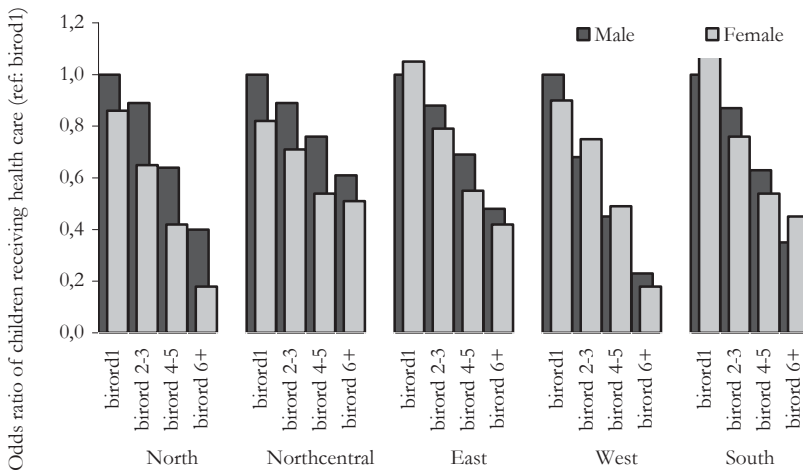


Note: Odds ratios of children receiving care by sex-and specific rank order (see details in
source).

Source: Arokiasamy (2004).

   The discrimination of female children in health care negates the
biological advantage that female children have. Providing modern
health care services always involves expenses, and when sons are per-
ceived to be more important than daughters, parents are more willing
to incur health care costs for sons than daughters. Therefore, the
extent of female discrimination in health care across the regions is

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tions of data that either leads to insignificant evidence or unreliable measurement
about female neglect in curative treatment (Timaeus *et al.*, 1998).

central in explaining the regional pattern of excess female child mortality. Inferentially, this discrimination in health care against female children contributes to the well-established pattern of excess female child mortality in the North and North Cental states of India.

**Figure 6 Sex differentials in health care (all vaccination) for children aged 12-35 months by birth order and region, NFHS-2, 1998-99**
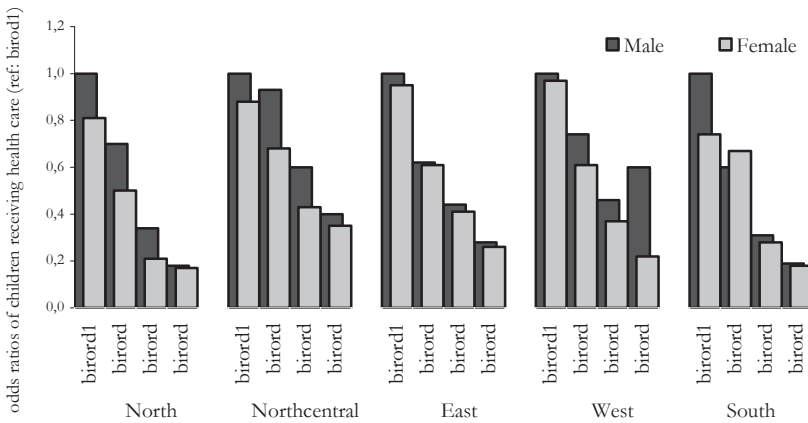


Note: Odds ratios of children receiving care by sex-and specific rank order.

## 6. Effects of development on prenatal and postnatal discrimination of female children

The above results provide evidence of net rises in sex ratio at birth and excess female child mortality as principal contributors to the overall female deficit in India. One of the main aims of this chapter is to discuss the relation between development and both prenatal and postnatal discrimination of female children. Accordingly, evidences of differentials in sex ratio at birth and excess female child mortality are examined by women's education and standard of living index (household economic condition).

The evidences of steeper rise in sex ratio at birth and the consequently greater deficit of females in urban areas, among educated and economically better off households are discussed in the previous section dealing with trends and differentials in sex at birth. Table 6 further provides evidence of logistic regression estimates of sex differentials in child mortality for each of the five regions by women's education, index of living amenities, index of mass media exposure and duration

of preceding birth interval. For women with no education and those living in poor households, the mortality risk is 69 percent greater in the North and 61 percent greater in the North Cental region for female compared to male children. By comparison, excess risks of female child mortality are much lower and statistically insignificant for women with secondary levels of education and above and women living in economically better off households. Similarly, in both North and North Cental regions, the likelihood of receive health care for female children, compared to their male counterparts, is significantly lower for illiterate and poor women than educated ones in economically better of households (Arokiasamy, 2004). In other regions, the odds ratios indicate insignificant sex differentials in child mortality risks.

The evidence is clear that levels of discrimination against female children are consistent with highly significant excess female child mortality for illiterate and poor women in the North and North Cental regions, where evidence of prenatal and postnatal discrimination is striking. Moreover, the positive association between high female child mortality and shorter birth interval demonstrates corroborative evidence of this inference, as shorter birth intervals tend to be concentrated among the illiterate and poor women. However, these results are contrary to those of previous studies suggesting that education may increase–or does not interact with female disadvantage in–child mortality (Das Gupta, 1987; Bhuiya and Streatfield, 1991). This also contrasts with the emerging evidence of steeply higher sex ratio at birth for urban, educated, and economically better of women. Such contrasting relation between development and discrimination against female children is mediated by the trade-off link between fertility decline and son preference.

A fall in fertility should benefit girls since it reduces the 'parity effect'. However, an 'intensification effect' results in increased discrimination against girls at lower parities (Das Gupta and Bhat, 1997). The parity effects refer to the higher risk of mortality of girls than boys for high parity mothers, as a result of a large proportion of girls of high parity women. This would lead to very significant excess female child mortality. The intensification effects refer to increased discrimination of girls when fertility falls rapidly and reaches low levels and where son preference continues to be strong. Girls of lower birth order and of low parity women tend to face intense discrimination. This leads to a swift choice of sex-selective abortion leading to adverse sex ratio at birth (see also Arnold et al., 2002; Bhat and Zavier, 2003). The varying parity effect on prenatal and postnatal discrimination is possibly connected to the contrasting trend of more concentrated postnatal discrimination of female children among the rural, poor and illiterate

women vis-à-vis more intense prenatal discrimination of unborn girls among urban educated and economically better off women. As Goodkind (1996) suggested, there is a possibility of substitution effect of rising prenatal discrimination of unborn girls reducing postnatal discrimination of girls among urban, educated and economically better off women.

**Table 6 Impact of development factors and birth interval on child mortality at ages 12-47 months for children born between 1982-88 by sex and region, NFHS-1(odds ratios)**

| Stratum of development variables and birth interval | North | | North-central | | East | | West | | South | |
|---|---|---|---|---|---|---|---|---|---|---|
| | F | M | F | M | F | M | F | M | F | M |
| Women's education | | | | | | | | | | |
| Illiterate | 1.69*** | 1.00 | 1.61*** | 1.00 | 1.26 | 1.00 | 1.40 | 1.00 | 0.99 | 1.00 |
| Secondary and + | 1.01 | 1.00 | 1.09 | 1.00 | 0.79 | 1.00 | 1.08 | 1.00 | 0.42 | 1.00 |
| Index of living amenities | | | | | | | | | | |
| None (0) | 1.98** | 1.00 | 1.46*** | 1.00 | 1.28 | 1.00 | 1.14 | 1.00 | 1.13 | 1.00 |
| All of them | 1.18 | 1.00 | 1.34 | 1.00 | 0.69 | 1.00 | 2.81* | 1.00 | 0.96 | 1.00 |
| Index of media exposure | | | | | | | | | | |
| None (0) | 1.94*** | 1.00 | 1.60*** | 1.00 | 1.23 | 1.00 | 1.33 | 1.00 | 1.16 | 1.00 |
| All of them | 1.17 | 1.00 | 1.44 | 1.00 | 0.86 | 1.00 | 0.87 | 1.00 | 0.82 | 1.00 |
| Preceding birth interval | | | | | | | | | | |
| Up to 24 months | 2.28*** | 1.00 | 1.71*** | 1.00 | 1.20 | 1.00 | 1.84* | 1.00 | 1.02 | 1.00 |
| 24+ months | 1.24 | 1.00 | 1.78*** | 1.00 | 1.25 | 1.00 | 1.23 | 1.00 | 1.45 | 1.00 |

Notes: ***P<.001 ** P<.01 *P<.05
- A logistic regression model was constructed by each stratum of the development indicators and by region. In a regression model, the odds ratio of child mortality was estimated by sex of child. The control variables in the regression models are women's age at birth of the child, birth order, women's employment, religion, caste and place of residence.
- The index of household amenities includes: electricity, pipe/pump water, cooking fuel gas/electricity, and indoor toilet.
- The index of exposure is computed with variables: watches TV/listens to radio once in a week, visits cinema once in a month.
Source: Arokiasamy (2004).

## 7. Conclusion

The following conclusions emerge from the trends and differentials in sex ratio at birth and the data on the use of prenatal diagnostic techniques. First, evidences indicate that prenatal diagnostic techniques such as sonogram/ultrasound or amniocentesis have been widely used for sex-detection and abortion of female foetuses in North-West India

as well as Uttar Pradesh and Orissa. The results confirm that sex-
selective abortion has played an important part in the rise in sex ratio at
birth in these states. With low fertility as an inevitable choice, parents
chose the route of sex-selective abortion to swiftly achieve their de-
sired sex composition rather than the existing option of differential
stopping behaviour that entails women undergoing repeated pregnan-
cies. The evidence of rising sex ratio at last birth and sex ratio of recent
two births in the last three years, even in the absence of use of prenatal
diagnostic techniques, suggest that parents' 'differential stopping be-
haviour' (DSB) strategy also contributes to the rise in SRB. In the
South Indian states also, the marginal rise in sex ratio at last birth
appears to be caused by stopping rule behaviour. Prenatal diagnostic
techniques in this region seem to have been used more commonly for
checking the health and growth status of foetuses.

Both NFHS and SRS data indicate persuasive evidence of excess
female child mortality as the long-term determinant of female deficit in
India. As yet, trends indicate no evidence of significant decline in sex
differentials in child mortality, which worsened during 1980s and
1990s, even with the emergent trend of exacerbated prenatal discrimi-
nation. Region-wise regression model estimates of child mortality by
sex illustrate that excess female child mortality compared with boys is
about a third higher for the first girl child and even greater for girls of
higher rank in the North and North Cental regions. In the East, West
and South regions, excess female child mortality is marginal and does
not show a systematic rise for girls of higher rank. Consistent with the
regional pattern of excess female child mortality, the levels of discrimi-
nation against female children in the provision of health care is also the
higher in the North followed by North Central region. By contrast in
the South region, there is no significant evidence of neglect of female
children in health care.

In sum, a comparison between prenatal and postnatal discrimina-
tion suggest a greater demographic impact of prenatal discrimination
on the steeper increase in child sex ratio in the recent decades. Moving
beyond the inter-regional contrasts, an important concern is the rela-
tion between development and prenatal, vis-à-vis postnatal, sex dis-
crimination of female children and the trade-off link between fertility
decline and gender bias. The impact of women's education and house-
hold economic condition on gender bias appears to mediate in the
opposite direction with respect to prenatal vis-à-vis postnatal discrimi-
nation. While the impact of son preference on sex ratio at birth and
excess child mortality for girls tends to vary with overall level of fertil-
ity.

The falling fertility in recent times has led to an intensification of gender bias among urban, educated and economically better off parents, resulting in prenatal discrimination of children as they tend to have both a greater awareness of availability and access to sex-determination techniques as well as the monetary resources required to use such sex-determination tests. By contrast, excess female child mortality tends to be somewhat greater among the poorer and illiterate women. Nevertheless, they are complementary to the trend of female disadvantage when both prenatal and postnatal female discrimination are contributing to the overall female deficit in the country.

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# A Sharp Increase in Sex Ratio at Birth
# in the Caucasus. Why? How?

France MESLÉ, Jacques VALLIN, Irina BADURASHVILI

## 1. Introduction

From the mid-1990s, sex ratio at birth in the three countries of the Caucasus (Figure 1) abruptly increased to levels that had so far only been observed in certain regions of India (Das Gupta, 1987; Nanda and Véron, 2005) and China (Zeng *et al.*, 1993; Gu and Roy, 1995) where families show a marked preference for male children. Whereas up to 1995, sex ratio at birth seemed to be closely fixed to the universal level of 105 males per 100 females, in 2000, it reaches 115 in Azerbaijan, 118 in Georgia, and as high as 120 in Armenia. The phenomenon is all the more striking that it occurred simultaneously in all three countries, in clear contrast to the neighbouring ones. This occurred at the end of the Communist era, with all the political, social, and administrative changes involved in this transition phase. One can obviously begin by questioning the reality of the phenomenon in a context where the bureaucratic and statistical instruments of the Soviet period are partially ruined and in the process of being reconstructed. However, this hypothesis does not withstand a critical examination of the data: the phenomenon is real. We will therefore attempt to discuss why and how it has occurred.

## 2. In western Asia, a phenomenon limited to the Caucasus

We have known for some time that sex ratio at birth has deviated significantly from the universal level in some regions of India and China under the influence of a strong son preference recently combined with the availability of simple and relatively effective means of foetal sex determination. Selective induced abortion therefore allows couples to choose the sex of their child. The temptation is even stronger in the context of an authoritarian population policy, like that

of China, which deprives couples of the freedom of having as many children as they wish.

**Figure 1 Trend in sex ratio at birth in Armenia, Azerbaijan, and Georgia, 1980-2001**



Source: WHO mortality data base (http://www.who.int/healthinfo/morttables/en/index. html).
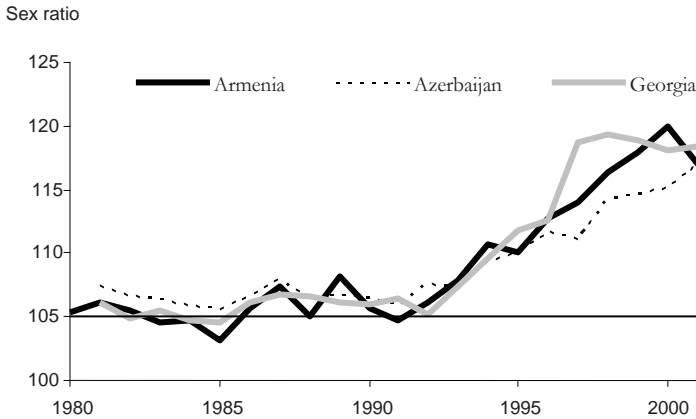
In some Mediterranean and Muslim countries, significant son preference has existed for a long time and sometimes still results in differential behaviour towards a child depending on the sex, with extreme consequences such as, for example, the excess mortality of female children in Bangladesh (Chen et al., 1981), in Tunisia (Haffad, 1984; Chekir and Vallin, 2001), in Algeria (Vallin, 1978), and more generally in the Muslim countries (Adlakha and Suchindran, 1985). Sex ratio at birth could also be expected to increase in such countries when methods of foetal sex-determination start to develop. It is however surprising that the phenomenon appears abruptly in an area where it was undoubtedly least expected: three countries of the Caucasus that were for a long time subject to the Soviet system, a system that cannot be said to have supported a preference for one sex over another. It is even more surprising that of all the former USSR countries, only three nations[1]–Georgia, Armenia, and Azerbaijan–are concerned while none

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[1] The three South Caucasian countries greatly differ in terms of religion, language, and many other cultural features. Basically, Azerbaijanis are mostly Muslim while Armenian and Georgian are Christian, but belonging to two independent Orthodox Churches. Azerbaijanis speak Azeri (a Turkic language) that used to be written in Arabic before 1928, then Latin (1928-39) and Cyrillic (1939-1998) alphabet, and

of the other Caucasian republics nor the Muslim Central Asian countries of the former Soviet Union are affected. It is all the more striking that this phenomenon has appeared first in these countries of the Caucasus rather than in the southern Mediterranean Muslim countries.

At the level of national groups, the recent trends in the Caucasian countries differ from those observed in the neighbouring countries. Since 1995, while sex ratio has been increasing in Georgia, Armenia, and Azerbaijan, it has remained stable not only in the Ukraine and Russia, but also in Kazakhstan, Uzbekistan, Turkmenistan, Tajikistan, and Kyrgyzstan (Figure 2). The ratio is just as stable in Iran, a country for which a reliable time series is available (Ladier-Fouladi, 2003). The current sex ratio at birth is close to 105 in Turkey, Syria, Cyprus and Israel. The Caucasus appears then as a dense block distinct from all the other countries in the rest of the region.

**Figure 2 Trend in sex ratio at birth in the countries of the Caucasus compared to some neighbouring countries, 1989-2001**
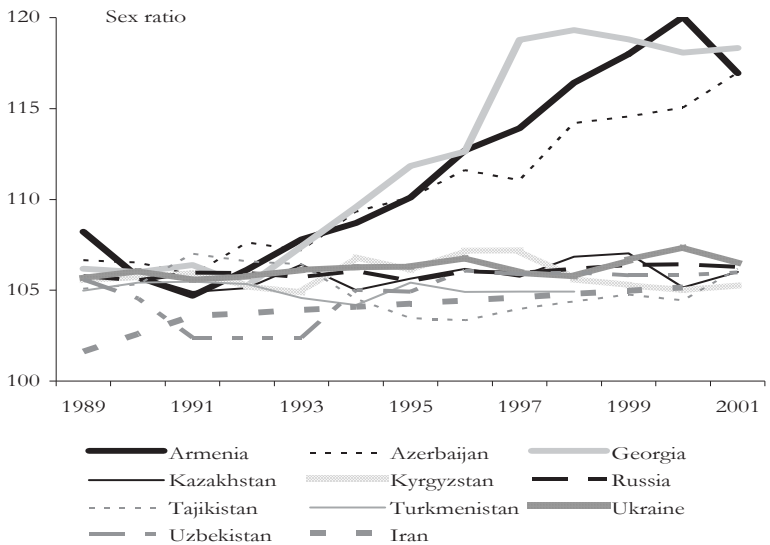


Source: WHO mortality data base (http://www.who.int/healthinfo/morttables/en/index.html); Ladier-Fouladi, 2003.

Note: For Iran, data for 1989-1990, 1992-1995 and 1997-1999 are interpolated from 1986, 1991, 1996 and 2000 data.

finally in Latin again, while Georgian and Armenian are two very different languages, each of them using their specific alphabet.

It is true that the countries of the Caucasus are very small compared to some of their neighbours and it is easy to imagine that by decreasing the scale to internal administrative districts the same phenomenon could be observed in some regions of Russia, Iran, and Turkey that are close to the Caucasus, particularly among the Azeri in Iran, in the Caucasian republics of southern Russia, and in the eastern regions of Turkey that border Armenia. It is for this reason that we have attempted to collect data by local districts in the countries of the Caucasus and also in the three closest large countries, as well as in Syria. We have thus succeeded in obtaining the sex ratio at birth, for the year 2000, for each of the 67 administrative subdivisions[2] of Azerbaijan, 11 of the 13 Georgian ones, [3] and the 11 Armenian regions. We also have obtained the same data for the 28 *ostanhas* of Iran and the 14 *muhafazats* of Syria, as well as for Russia's federate republics and *oblasts*. For Turkey, we were unable to use the distribution by sex of births for the 81 provinces due to the fact that registration is notoriously incomplete but have used the sex ratio of the children aged 0-4 recorded in the census as a proxy, after having confirmed at the national level that this ratio differed little from the sex ratio at birth provided by the surveys.

When this data is assembled on a detailed map of the region (Figure 3), two observations reinforce the contrast suggested by national indicators. On the one hand, within each of the three countries of the Caucasus, high sex ratios at birth are almost systematically observed in all the regions. The only notable exceptions concern two groups of Azeri *rayons* concentrated in the North on the border with Russia and in the South on the border with Iran. On the other hand, no such ratios are observed in the administrative districts nearest to the countries of the Caucasus, either in Russia, Iran, Turkey, or Syria. In Russia, the federated republics of the northern Caucasus such as Karachay-Cherkessia, Kabardino-Balkaria, Ingushetia, and Dagestan are all between 104 and 107. Only North Ossetia is slightly over 108. In Iran all the northern provinces and notably the four sharing a border with Azerbaijan (Gilan, Ardebil, eastern Azerbaijan, western Azerbaijan) are below 107. Finally, in Turkey there is a zone around the Van Lake, which is slightly over 107, but all the provinces along the border with Georgia and Armenia are between 104 and 107.

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[2] Including 59 *rayons*, 7 cities and 1 autonomous republic.
[3] Including 9 administrative regions, 1 city and 1 autonomous republic (Adjara), while no data are available for the two other autonomous republics (Abkhazia and South Ossetia).

**Figure 3 Geographic variations in sex ratio at birth in each of the countries of the Caucasus and in the neighbouring districts of Russia, Turkey, Syria, and Iran, around year 2000**
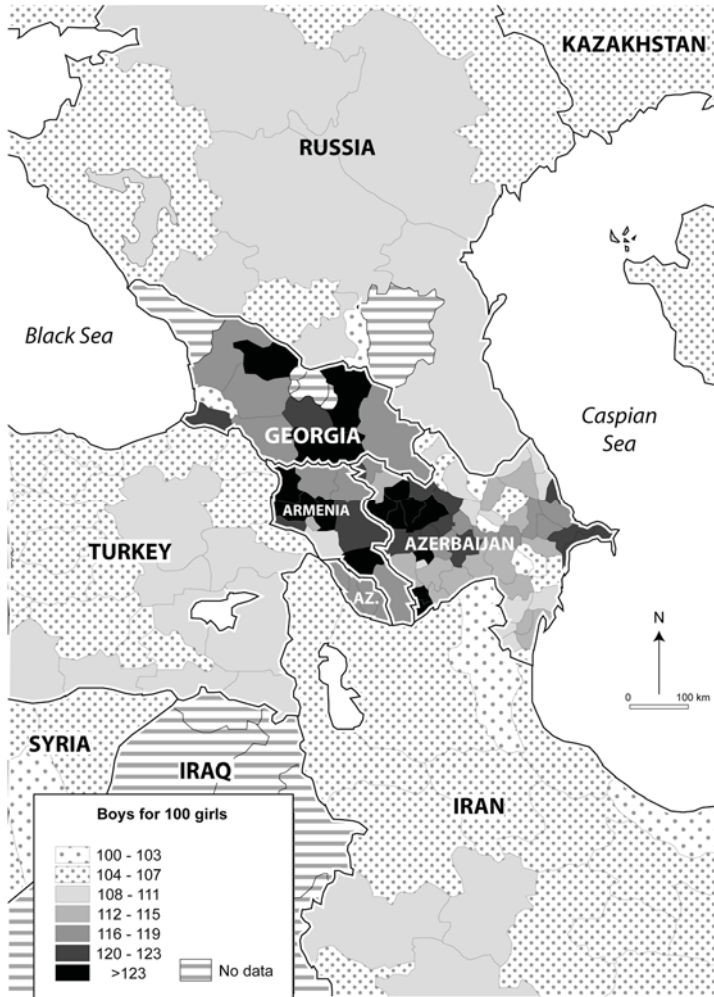


Source: computed by the authors from national data (Armenia: National Statistical Service; Azerbaijan: State Statistical Committee; Georgia: State Department for Statistics; Iran: Statistical Center of Iran; Russia: Goskomstat of Russia; Syria: Central Bureau of Statistics; Turkey: State Institute of Statistics).

Even when divided into local districts, the map of the sex ratio at birth clearly shows the national borders of the countries of the Cauca-

sus, highlighting the singularity of the phenomenon which is occurring in these countries.

## 3. Appearance or reality?

One possible explanation of this surprising trend could be the deterioration of the quality of birth registration. During the Soviet era there was already some uncertainty regarding the exhaustiveness of registration, particularly concerning births followed by deaths at a young age. With the fall of the system and the weakening of bureaucracy, the statistical coverage of civil registration may have diminished. Families subjected to less pressure than in the past, gave up sometimes complicated, time-consuming and expensive administrative procedures. In a context of son preference, the deterioration in the quality of civil registration can be expected to be more significant regarding female children with less importance being attached to officially declaring their births. Indeed, this is the explanation which is generally given in the available publications on the subject (Meladze and Tsuladze, 1998; Tsuladze and Meladze, 1998; Tsuladze *et al.,* 1998; Donahue and Fortado, 2003).

The results of the two recent fertility surveys in Armenia (ANSS and ORC Macro*,* 2001) and Georgia (Serbanescu *et al.,* 2001) enable us to assert that this hypothesis is certainly not the decisive explanation.[4] The sex ratio at birth observed during the 15 years before each survey has not shown any difference from that observed in the civil registration data (Figure 4).

The two series originating from the surveys certainly fluctuate much more as a result of their small numbers than those originating from civil registration records but the trends are similar. It is true that data taken from retrospective surveys can be affected by under-recording which is variable with time but, in this case, it is the oldest births which were likely to be under-recorded and which, due to son preference, would have caused an over estimation of the sex ratio. If this were the case, the series obtained from surveys in Figure 4 should show trends opposite to those of civil registration data. Yet these trends not only clearly move in the same direction, but in Armenia the survey suggests an even more drastic increase in the sex ratio than that suggested in civil registration. We cannot therefore in any way attribute

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[4] A similar survey was produced in Azerbaijan in the same year, but, in spite of that the publication of the final report in March 2003 (Serbanescu *et al.*, 2003), it was not possible until now for us to obtain the data file and carry out the specific analyses made here on the data from the Armenian and Georgian surveys.

this increase to a simple deterioration in the quality of birth registration. Surprisingly, authors of official reports and further scientific analyses never mention the recent rise of sex ratio at birth, even when dealing with the different factors of abortion (ANSS and ORC Macro, 2001; Serbanescu *et al.* 2001, 2003; Goldberg and Serbanescu, 2004).

**Figure 4 Trend in sex ratio at birth, Georgia and Armenia, 1985-2000**
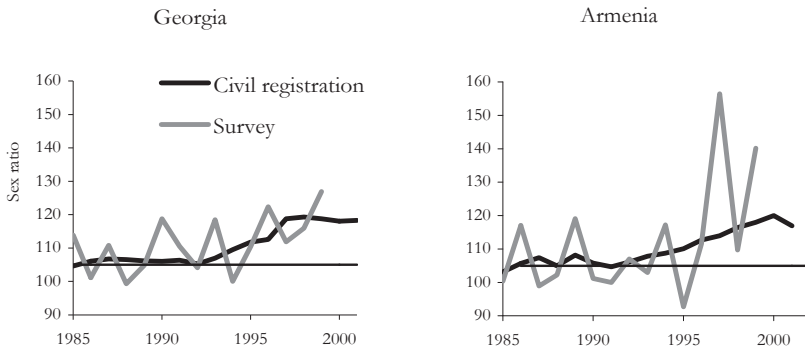


Source: computed by the authors from surveys (Serbanescu *et al.*, 2001; ANSS and ORC Macro, 2001) and civil registration data (National Statistical Service of Armenia, State Department for Statistics of Georgia).

## 4. The key role of the third child

Fertility surveys also pave the way for a certain number of analyses that are not possible using data from civil registration statistics. Examining the birth order in particular is an interesting avenue to explore. The increase in sex ratio appears to be closely associated to birth order and it seems that the essence of the recently observed phenomenon relates to third order births (Figure 5).

In Georgia, the sex ratio for first order births has not moved away from the standard ratio of 105 males per 100 females. For second order births, the situation is a little less clear as the ratio has often exceeded 105 over the past fifteen years but the trend is uneven. For third births, however, an impressive increase in the sex ratio is observed, far higher than the average ratio irrespective of order. In 1997-1999, the sex ratio for third births was 140 versus 118 for all order births, and 105 to 108 for first and second order births.

In Armenia, the situation is slightly different as the sex ratio at birth also increased in the recent years for first and second orders but again there is no possible comparison between its increase at the third

order and that observed for the preceding orders. In 1997-1999, 184 male third order births were observed for 100 females against 125 and 119 for second and third order births respectively. The average for all birth orders combined was 135.[5]

**Figure 5 Trend in sex ratio at birth by order, (3-year moving averages), Georgia and Armenia, 1985-2000**
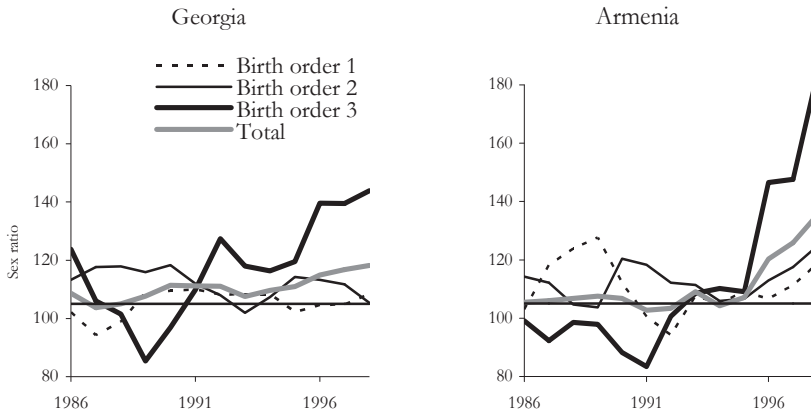


Source: computed by the authors from surveys data (Serbanescu *et al.*, 2001; ANSS and ORC Macro, 2001).

This large difference between the birth orders suggests that if the excess masculinity of births results from parents' behaviour, it is also significantly associated with the stages of family formation and the concern with having a certain balance of sexes.

## 5. An indirect indicator of son preference

Neither the Armenian nor the Georgian surveys include any questions pertaining to whether the parents have any preference regarding the sex of their children. Nevertheless, it is possible to examine the influence of these preferences, at least following the first birth, by analyzing the parity progression ratios by the sex of the children already born (Figure 6).

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[5] This figure is much higher than that given by Civil Registration data for the same three years (116). One, if not both, of the two sources is surely incorrect but the direction of the difference reinforces the idea that the phenomenon is in no way linked to the deterioration of birth registration.

After a first birth, the probability of having a second child is barely different in Georgia or Armenia whether the first child is male or female. The probability is slightly higher following a first female birth but, considering the sample size, this difference is hardly significant, even though it follows the same direction in both countries.

At the third order, on the contrary, the parity progression ratio varies significantly according to the composition by sex of the siblings already born. More precisely, the probability is much higher when the first two births are female than in any of the three other cases. One can indeed hardly stop at the differences observed between these three other cases which are too slight to be significant. In Georgia, the probability of having a third child after two daughters is 42%, although it is only between 18 and 26% in the three other cases. In Armenia, it is 57% against 33 to 38%.

**Figure 6 Parity progression ratio according to the sex of the children already born, Georgia and Armenia (2nd or 3rd birth in 1985-1999 after 1st birth in 1985-95)**
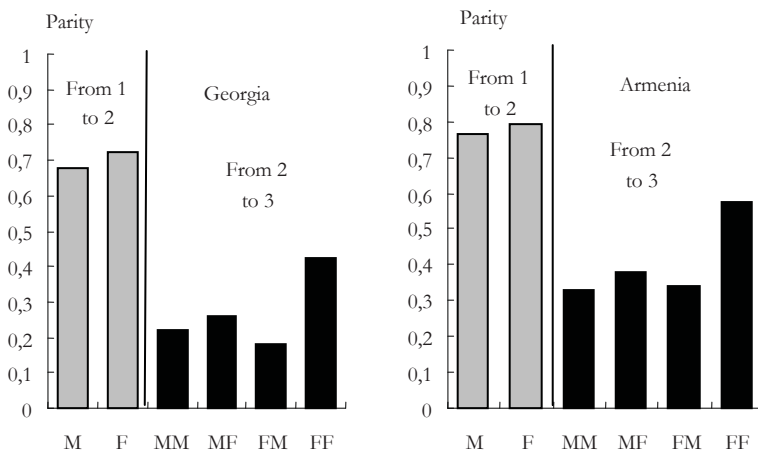


Source: computed by the authors from surveys data (Serbanescu *et al.*, 2001; ANSS and ORC Macro, 2001).

This disparity in the parity progression ratio in the context of controlled fertility clearly indicates that in some cases son preference is strong enough to result in higher fertility when the composition by sex of children already born is unsatisfactory and lower when the reverse is the case. In the absence of any other information on the sex of the foetus, such a result can be achieved through contraception or induced abortion.

## 6. The role of induced abortion

The most probable hypothesis to explain the excess masculinity of births resulting from son preference is obviously selective induced abortion, as has already been shown in India and China (Miller, 1996; Arnold *et al.*, 1998; Croll, 2000; Das Gupta and Bhat, 1997; Nanda and Véron, 2005), a hypothesis which has indeed been suggested for the Caucasus by some authors (Totadze, 2001; Donahue and Fortado, 2003). It now remains to be confirmed.

First, let us note that the scan, a relatively simple and cheap method of detecting the sex of a child *in utero,* appears to have started to spread in the countries of the Caucasus at the beginning of the 1990s (Donahue and Fortado, 2003).

It could be argued that the number of induced abortions in these countries has decreased significantly since the fall of Communism and, that consequently, the recent increase in sex ratio can hardly be associated with induced abortion, which is being increasingly replaced by contraception to achieve desired fertility. In reality, the decrease in induced abortion rates is based on figures that were incomplete from the beginning. If this decrease undoubtedly shows induced abortion being progressively replaced by contraception as a method of birth control, as has already been demonstrated in the case of Russia (Philipov *et al.*, 2004), the results of the fertility surveys clearly show that recourse to induced abortion remains much more frequent than the current figures indicate. The Georgian survey revealed an induced abortion rate of 154 per thousand in 1998 for women aged 15-34 while current statistics only indicated 30 per thousand. The same case is observed in Armenia, where the gap is 81 to 21 for women aged 15-49 (Table 1).

However, these results do not mean that the surveys reflect perfectly the frequency of induced abortion and, even less, its trend. It is indeed probable that the surveys themselves under-record induced abortion and especially for less recent periods. We cannot therefore use Table 1 to argue that recourse to induced abortion did not diminish in the 1990s. On the contrary, it is highly likely that there was a decrease due to the increase in contraceptive use, as was the case in Russia. However, we can see that the use of induced abortion remains widespread, leaving wide open the hypothesis that the trend in sex ratio is due to selective induced abortion.

**Table 1 Induced abortion rates according to current statistics and according to surveys, Georgia and Armenia, 1991 and 1998 (abortions per 1000 women)**

| Year | Current statistics | Surveys |
|---|---|---|
| Georgia (15-34 years) | | |
| 1991 | 57.5 | 140.5 |
| 1998 | 27.9 | 153.7 |
| Armenia (15-49 years) | | |
| 1991 | 29.2 | 92.1 |
| 1998 | 21.2 | 80.9 |

Sources: Serbanescu *et al.*, 2001; ANSS and ORC Macro, 2001; Tsuladze et al., 2006; National Statistical Service of Armenia.

Unfortunately, although the Armenian and Georgian surveys are very recent, they were not designed to directly address this issue. Admittedly, there is a question in the Georgian survey on the reason for the most recent induced abortion, but the limited list of possible answers makes no allusion to a preference for one sex in particular.[6] We can therefore only attempt to confirm our hypothesis in an indirect way.

A first possible method would be to study the duration of gestation at which the induced abortion is performed. The detection of the sex of the foetus required for an induced abortion requires scans, as earlier methods are not only more invasive but also more costly and not very accessible. Yet sex determination through scans only begins to be possible after a certain length of time, around 10 to 12 weeks of gestation. We therefore attempted to analyze the gestation period at the time of the induced abortion according to the position of the induced abortion in the birth order. Unfortunately, the enormous imprecision in the declared gestation periods meant that we had to abandon the analysis. However, the same idea could still be indirectly used as, over recent years, a significant trend of substituting induced abortion by curettage for an earlier, lighter procedure has appeared: induced abortion by vacuum aspiration, also called mini-abortion. The Georgian survey enables us to distinguish between these two methods of induced abortion and it is clear that while the general trend is to replace traditional induced abortion by the mini-abortion, the trend differs significantly at the approach of the third birth (Figure 7).

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[6] The answers to choose from were: "pregnancy that is life threatening to the mother", "risk of malformation of the child", "socioeconomic reasons", "the respondent does not want any more children", "the respondent's partner does not want any more children", "the respondent does not have a partner" and "other".

When the induced abortion took place between the first and second birth[7] or after a second birth which was not followed by a third, the proportion of traditional induced abortions dropped from 93% in 1985 to 60% in 1998. On the contrary, when the induced abortion preceded a third birth, this proportion was still 85% in 1998. Figure 7 shows that this proportion in fact increased again at the beginning of the 1990s following a reduction similar to that of the two cases in the previous figure. It seems to us that this is a serious indicator of a possible recourse to induced abortion in order to satisfy the son preference observed above in the parity progression ratio.

**Figure 7 Proportion of traditional induced abortions in total induced abortions, by birth order, Georgia, 1985-2000 (in percent)**
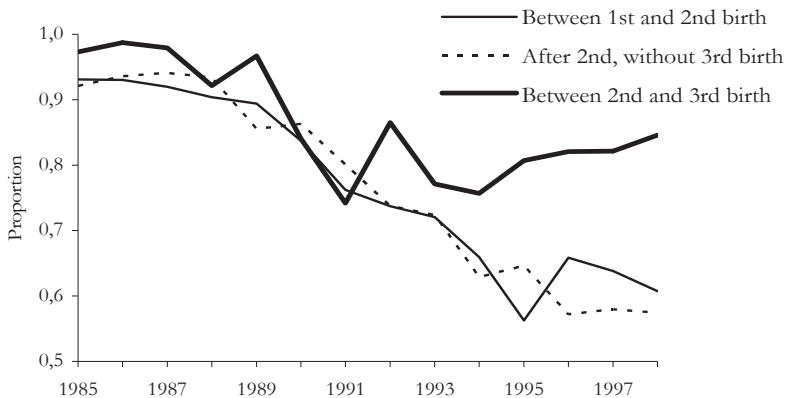


Source: computed by the authors from surveys data (Serbanescu *et al.*, 2001).

In addition, this hypothesis is reinforced when analyzing the frequency of induced abortions performed between the second and third births according to the sex of the third birth and those of the first two (Figure 8).

There are four possible scenarios for the first two births according to whether they are both male (MM), both female (FF) or of a different sex (MF or FM). In reality, we have combined the latter two as they did not show any significant differences. For the three cases thus constituted, we examined the average number of induced abortions performed between the second and third births according to the sex of the third birth. To concentrate the analysis on the most recent period, we

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[7] In Georgia, induced abortion is nearly non-existent before the first birth (only 131 of the 13,000 induced abortions observed in the survey since 1985).

have limited it to the cases where the first birth occurred after 1990. In the case of Georgia, the result is very clear. While the frequency of induced abortions hardly varies according to the sex of the third child if at least one of the first two children already born is male, when the first two children are female the average number of induced abortions per woman is 0.7 for a third male birth against 0.2 for a third female birth.

**Figure 8 Average number of induced abortions per woman between the second and third births, Georgia and Armenia (2nd or 3rd birth in 1985-1999 after 1st birth in 1985-95)**
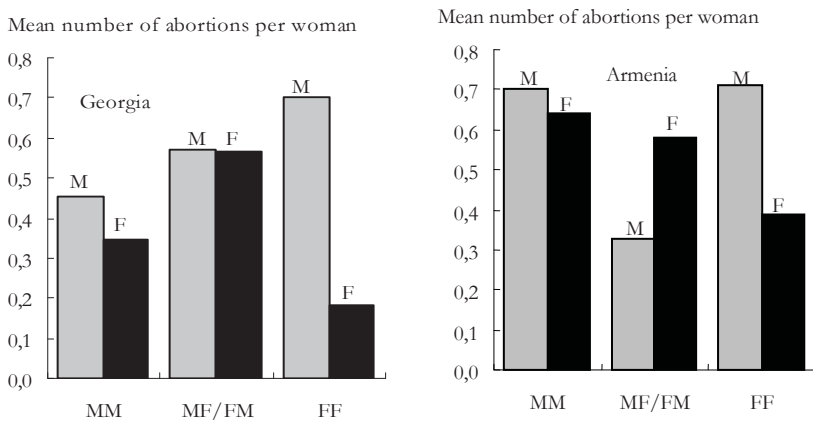


Source: computed by the authors from surveys data (Serbanescu *et al.*, 2001; ANSS and ORC Macro, 2001).

This result can be interpreted as the direct consequence of the fact that couples who wish to balance their offspring with the birth of a son are more likely to induce abortion than others. The case of Armenia is less clear. When the first two births are of a different sex, the frequency of induced abortion is greater before the birth of a third child of female sex, a phenomenon which may cause us to doubt the quality of the analyzed data. However, once again the frequency of induced abortions following two female births is higher if the third child is male rather than female. The gap is less important than in Georgia but the increase is nevertheless double.

## 7. Conclusion

As convincing as these indicators may be, we do not have definitive proof that the increase in sex ratio at birth in the countries of the Caucasus is due to the spread of scans and the practice of sex-selective abortion. Research must therefore continue.

A first step, that should be rapidly feasible, would be to access the data of the Azerbaijan survey to verify whether the observations made in Armenia and Georgia can also be made there.

Beyond this, an element that would enable progress in this area would certainly be access to regional information on the real spread of scanning resources. Such information could be compared to geographic variations of sex ratio, a study which would be particularly interesting in Azerbaijan where we observed a contrast between the majority of the country and its Russian and Iranian fringes.

It would also be interesting to associate this research to an anthropological study that would enable us to better understand how a preference for the male sex was able to withstand 70 years of Communist rule to suddenly re-emerge as soon as the technical facilities became available. It is also necessary to understand how such a phenomenon has been able to simultaneously affect three countries that differ in a number of sociocultural aspects.

But the most decisive progress in explaining the phenomenon can possibly only be found in new surveys which include questions specifically designed to achieve this objective, such as the inclusion of a module on couples' preferences regarding their children's sex according to their fertility history.

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# Son Preference, Female Deficit and Singapore's Fertility Transition

### Elspeth GRAHAM

## 1. Introduction

Over the past two decades or so demographers have noted worrying trends in the sex ratio at birth in some of the most populous countries in Asia, most notably India, China and the Republic of Korea (Das Gupta *et al.*, 2003). Increasing numbers of male births relative to female births have prompted discussions of 'missing' women or girls (Sen, 2003; Croll, 2000). Despite the different cultural contexts in which this phenomenon has been identified, there is some measure of agreement that fertility decline and strong son preference have commonly combined to provide the major impetus for sex selection (Li *et al.*, 2000). Thus female demographic deficit is associated with discrimination in favour of boys through such practices as sex-selective abortion, infanticide and neglect leading to excessive female foetal, infant and child mortality (Croll, 2002).

Unsurprisingly given its small population size (4.02 million at the last census in 2000), Singapore has rarely featured in these discussions. Yet the rapid decline in fertility since independence in 1965 and the dominance of the Chinese in the ethnic composition of the resident population (76.8 percent in 2000) suggest that Singapore too may have experienced an increasing imbalance in sex ratios at birth. Indeed Goodkind (1996) cited the Chinese in Singapore as having ratios above the normal range in the early 1980s. Wongboonsin and Prachuabmoh (1995:53) identified Singapore among the South-East Asian countries where people follow "the general Oriental pattern of a preference for sons". In the latter study, the authors placed Singapore with Malaysia and Vietnam, a group of countries showing trends towards 'boy bias', which they contrasted with a second group comprising Indonesia, the Philippines and Thailand where no sex bias was apparent. However, they did not base this conclusion on a detailed examination of sex

ratios at birth in Singapore. Although there is ample evidence that son preference has been, and possibly remains, deeply ingrained in Singaporean culture, whether or not this has resulted in the growing female demographic deficit apparent in other countries of the region requires further investigation.

In this chapter, I examine recent demographic trends in Singapore within three time periods defined by the trend in total fertility rates: (1) the fertility transition, a period of rapid fertility decline between 1965 and 1986; (2) the temporary fertility revival, a short-lived increase in fertility from 1986 to 1993; and (3) the resumption of fertility decline from 1993 to the end of the study period in 2004. My primary research question is whether the secular fertility decline in post-independence Singapore was accompanied by the intensification of active discrimination against daughters, leading to the significant female demographic deficit seen in other countries in Asia. The analysis focuses on the detail of trends in the sex ratio at birth, or secondary sex ratio, and their interpretation.

## 2. Pre-conditions for bias in sex ratios at birth

The two main pre-conditions–rapid fertility decline and strong son preference–found to be the catalysts of female deficit in the populations of, for example, China and the Republic of Korea were also present in Singapore in the 1960s and 1970s. The total fertility rate fell from 4.7 births per woman in 1965 to below replacement level by 1977, then to an historic low level of 1.4 in 1986 (Drakakis-Smith and Graham, 1996). The government maintained a strongly anti-natalist "stop at two" policy during this period and the Abortion Act of 1974, which meant that women were able to terminate unwanted pregnancies up to 24 weeks gestation on request, created at least the potential for sex-selection prior to birth.

By the early 1980s, Singapore's anti-natalist policies had become a victim of their own success and were replaced by a cautious, but ambitious, pro-natalism with a new slogan: "Have three or more if you can afford it". The government offered new incentives to women to start reproduction earlier and to shorten birth intervals in the hope of increasing the population by 40 percent over 25 years (Palen, 1986). Women contemplating a termination were now required to go for counselling first. However, the new population policy has proved far less effective than its anti-natalist predecessor and after a modest rise in the late 1980s, fertility appears to have resumed a long-term decline. In

2004, the total fertility rate reached another historic low of 1.24, significantly below generational replacement level.

Figure 1 illustrates the fertility trend in Singapore between 1965 and 2004 in relation to the population policies in force over that period. Of particular note is the sharp decline in the period up to 1986 and the more gradual decline from the early 1990s onwards.

At the same time, a preference for sons appears to have been strong in Singapore society. There is a considerable body of evidence on the patriarchal nature of the Chinese family (Pyle, 1997), as well as on the gendered nature of state discourses (Heng and Devan, 1995). As Lee (1998) has pointed out, Chinese women were not seen as equals to Chinese men in Singapore, and the traditional female subservience still prevails. In the realm of family reproduction, the Confucianist ideal of obedience gave sons a special responsibility for the welfare of their parents later in life and for continuing the family line (Graham *et al.*, 2002). The responsiveness of the national fertility trend to cultural beliefs is well illustrated in Figure 1 with local peaks and troughs clearly related to particular years in the Chinese calendar thought to be inauspicious or auspicious for births, especially of daughters.

**Figure 1 Total fertility rate, three time periods and two generations in Singapore, 1965-2004**
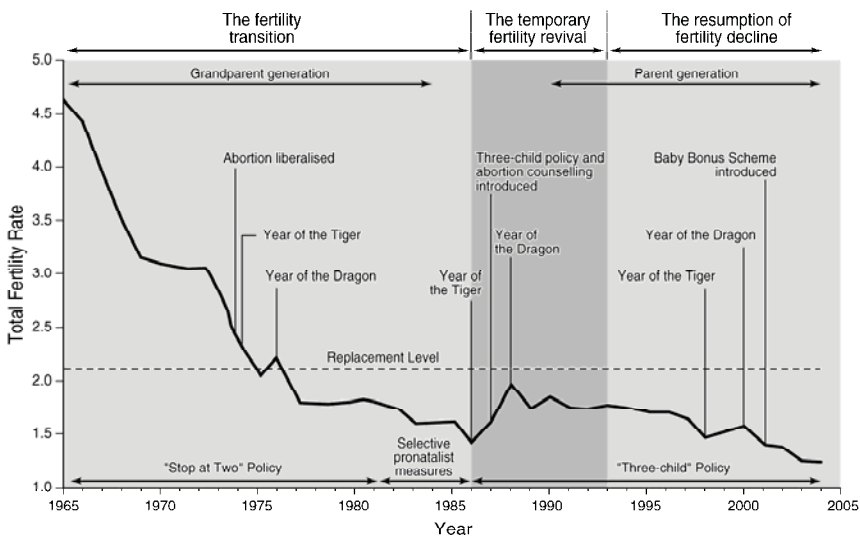


Source: Population Report (1992, 1998); Graham (1995); Singapore Census of Population, 2000; Statistics Singapore (http://www.singstat.gov.sg).

Croll (2000) used ethnographic evidence to good effect in her discussion of endangered daughters, as did Murphy (2003) in her work on rural China. There are multiple and complex resonances between the voices of Chinese women they quote and the voices of Chinese Singaporean women in a recent study conducted by this author and colleagues at the National University of Singapore. Our study involved in-depth interviews, carried out during 2001 and 2002, with 21 well-educated married women of child-bearing age, their husbands and their mothers and/or mothers-in-law (Graham *et al.*, 2002). The older women (the grandparent generation) had their own children prior to 1984, mostly in the period of dramatic fertility decline when government policies encouraged much smaller family sizes. The younger women (the parent generation) began their childbearing in 1990 and a few had not had children by the time of the interviews. All, however, entered their main childbearing years in a very different policy context than that of their older relatives. As women who had achieved higher educational qualifications, they were and are an important target group for the government's pro-natalist incentives.

The themes that emerge from the life stories of the grandparent generation demonstrate the multiple ways in which son preference impinged on their lived experiences. Speaking of the birth of their own children, these women gave voice to the different values attached to the birth of a son and the birth of a daughter. Most had limited the size of their family in line with the official anti-natalist message of the time but the perceived need for a son sometimes overrode the desire for a small(er) family, a phenomenon identified in many parts of Asia. Interestingly these women saw the need for a son as a response to pressure from other family members, from which they distanced themselves to varying degrees. This is illustrated by one woman who had her first child, a son, in 1965:

> "My ideal was to have a boy as my first child. Later on, if I were to have girls, I didn't have to be bothered. I wouldn't have to be worried because during our time, for the older folk, they preferred the boys, particularly because [husband] is a Hokkien. He likes boys."

Another woman, who gave birth to two daughters in the early 1970s, recalled the reaction of her mother-in-law to the birth of her third child, a son:

> "[She was] very happy. She treated me well. Waited on me like I was an emperor. During the confinement I did not have to do anything. She brought everything into the room for me. When I gave birth to [second daughter] she did not

even come into the room. She was from China, my
mother-in-law came from China. […] My own mother
should not have been like that because big family, many
people so do not have this sort of thing."

The association between smaller family size and what Li *et al.*
(2000) called *sex-selection pressure* is evident. These authors also noted the
variability in *son-preference potency* (the probability that a woman has a
sex-selected son) in their pioneering work on modelling China's demo-
graphic future. Thus son-preference potency may be interpreted as the
product of motivation (sex-selection pressure) and opportunity (the
ability to practice gender discrimination). In Singapore, it appears, there
was sex-selection pressure. If women had the opportunity to practice
gender discrimination around birth, then, as fertility declined, we could
expect to see an increasing imbalance in favour of males in sex ratios at
birth.

## 3. Sex ratios at birth during the fertility transition

Official data from the vital registration allow the reconstruction of
sex ratios at birth for the resident population as a whole and for each
of the main ethnic groups for the period 1965 to 2004 (Figure 2).

**Figure 2 Sex ratio at birth for total population and three ethnic groups (3 year
moving means), 1965-2004**
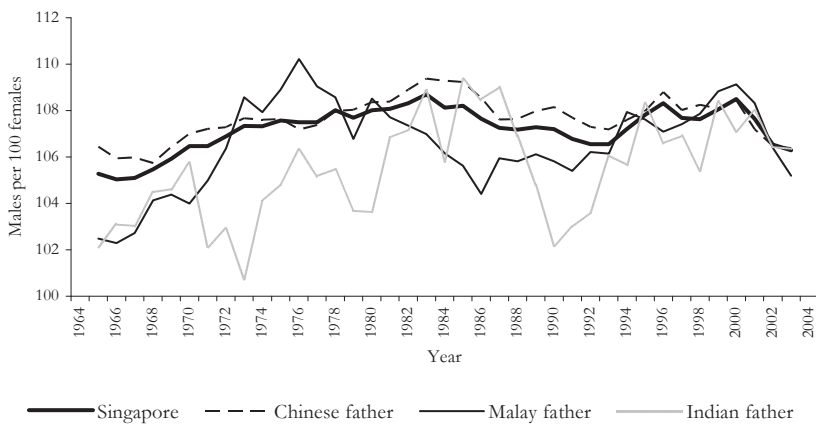


Source: Annual Reports on Registration of Births and Deaths, Singapore.

Given the small numbers involved for the ethnic minority groups,
and the possibility of stochastic variation, I have used the three-year

moving average to reveal the temporal trend. The expected increase in sex ratios at birth up to the early 1980s is confirmed as national rates rose from around 105 male births per 100 female births in 1966 to over 108 male births per 100 female births by 1983. Moreover, for births to Chinese fathers, sex ratios were above the national average for most of this period, reaching levels of over 109 male births per 100 female births in the early 1980s. It would seem that, for the national population, son-preference potency intensified towards the end of the period of rapid fertility decline.

More surprising, perhaps, is the earlier, and apparently more dramatic, response of the Malay population to reducing family size. In the late 1960s, their total fertility rate was around 4 children per woman, higher than that of the Chinese. It then fell precipitously to below replacement level in the mid-1970s, shadowed by an equally marked increase in the proportion of male births from a low of 102 per 100 females in 1965 to a high of over 110 per 100 females by 1976. The small number of annually recorded births to Malay fathers (5,470 in 1976) suggests that ratios may be subject to random fluctuations and thus a five-year moving average is used to smooth the trend (Figure 3). It is noteworthy that the increasingly masculine sex ratios at birth revealed by these official data pre-date the general availability of reliable technologies for sex identification in early pregnancy, such as have been implicated in many explanations of later aberrant sex ratios at birth in Asia (Hull, 1990; Park and Cho, 1995; Gu and Roy, 1995; Ganatra et al., 2001). As one of the older women in our ethnographic study commented in relation to the births of her own children in the early 1970s, "If it's a boy, then boy. Or girl. There was no such thing as ultrasound then".

For the presumed tension between an emerging small family norm and preferred family sex composition to impact on aggregate sex ratios at birth, a mechanism is required that allows parents to exercise their preferences. There was an intensification of male bias in sex ratios at birth during the period of fertility transition in Singapore. Nevertheless, before we assume this to be evidence for active discrimination against daughters, we need to look more closely at the opportunities for putting motivation into practice and at the alternative, or additional, possibility of a non-motivational explanation for this increasing bias in favour of males.

**Figure 3 Malay sex ratio at birth (5 year moving mean) and total fertility rate, 1965-1976**
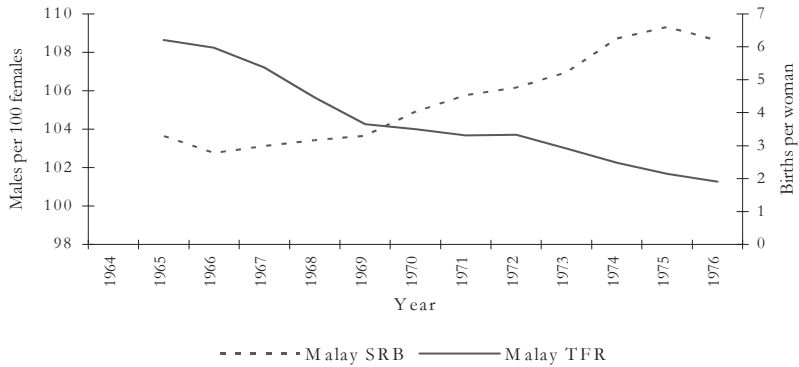


Source: Annual Reports on Registration of Births and Deaths, Singapore.

## 4. The implications of sex ratio imbalances

The received wisdom from the growing demographic literature on the subject is that, before the spread of foetal sex-identification technologies in the early 1980s, increasingly masculine sex ratios at birth must be associated more with the under-registration, neglect or infanticide of infant daughters than with pre-birth selective abortion (Goodkind, 1996). In the context of the well-ordered bureaucracy of Singapore and the absence of any disincentives for reporting female births as in China, the first of these seems unlikely. Whether the practice of infanticide or selective abortion can be inferred from trends in secondary sex ratios is a moot point, although it is common practice in the demographic literature. Sex ratios at birth of 116.9 in the Republic of Korea and 114.7 in China in 1990 (Gu and Roy, 1995) have been confidently interpreted as revealing the persistence of preference for sons over daughters and the opportunity for parents to practice gender discrimination. In Singapore, however, annual national sex ratios at birth have never exceeded 110 male per 100 female and have fluctuated mainly within a relatively narrow range between 105 and 109, with a high of 109.4 in the individual year 1982.

It is widely accepted that sex ratios at birth in any large population show an excess of males over females and vary within a range assumed to be biologically 'normal'. The certainty with which gender discrimination can be inferred from the statistical trend alone must therefore depend on the extent to which actual ratios deviate from this 'normal'

range. Hull (1990) takes 106 male births per 100 female births as a reference point for normality and Johannson and Nygren (1991) suggest a narrow range of between 105 and 106 as normal, whereas others prefer a wider band of between 104 and 107 (Lai, 2005). The latter corresponds roughly to the range found in Europe and North America where gender discrimination is considered to be minimal. Rates marginally above 107 may be taken as suggestive of the effects of son preference but they are not conclusive since the biological basis of sex ratio variation is as yet poorly understood (Wells, 2000). The difficulties of deriving a secure standard against which "excess" female mortality might be judged were discussed by Hill and Upchurch (1995: 129) in their study of child mortality. They comment, "It is impossible to be sure that gender-specific discrimination is entirely absent from any population". Equally, in the absence of supporting contextual evidence, it is impossible to be sure that sex ratios at birth slightly above the conventional limit of 'normality' reveal active discrimination against daughters.

If we assume that sex ratios at birth above 108 are more likely to be indicative of widespread daughter discrimination, then there are only four years in the early 1980s when the national sex ratio at birth in Singapore exceeded that level, although the ratio for the Chinese population shows a slightly more sustained imbalance. The margin of doubt is such that supporting evidence is needed before these apparently abnormal sex ratios can be confidently interpreted. Two questions thus arise. First, is there evidence of opportunity, as well as motivation, which could have resulted in an intensification of son-preference potency at this time? Secondly, is there a competing biological mechanism that might explain the 'abnormal' ratios?

By 1980, the total fertility rate had fallen to 1.74 children per woman, an historic low plausibly contributing to a heightening in sex-selection pressure. Abortion was available on demand from the mid-1970s, and the abortion ratio increased rapidly to reach over 40 percent of live births in the early 1980s. Although the sex ratio at birth also peaked in the early 1980s, this must be recognized as a continuation of a trend recorded over the previous decade. However, the timing may be significant. The introduction of new medical technologies would have provided at least the possibility of foetal sex-identification and it is likely that, as sex-selection pressure intensified, some women would have taken advantage of the opportunity and undergone a sex-selective abortion. Yet, in the absence of clinical evidence on sex-selective abortion, there are reasons to doubt that selective foeticide was the sole, or even perhaps the main, explanation of the excess of male births beyond the 'normal' range.

Although the abortion ratio rose to very high levels over the period of the fertility transition, there is no indication of a step change at the time when reliable methods of foetal sex-identification became available, suggesting that it was responding more to general anti-natal pressures than to sex-selection pressure. Moreover, by 1980 the trend towards greater masculinity in sex ratios at birth was already established. Thus there may have been an underlying biological cause not directly connected to gender preferences. Goodkind (1996) noted that the force of biological factors can change over the course of development. The 1970s was a decade of unprecedented economic growth in Singapore and living standards improved significantly. Infant mortality rates fell by over 48% for males and 38% for females, narrowing the gender gap. In these circumstances, it may be that improvements in maternal nutrition disproportionately advantaged male foetuses and contributed to rises in secondary sex ratios. In a recent study of trends in sex ratios at birth in India, Jayaraj and Subramanian (2004) demonstrated that, assuming a primary sex ratio of around 130 males per 100 females, an intensification of imbalance in sex ratios at birth can result even from a gender-neutral reduction in overall foetal wastage. This they linked to enhancements in women's wellbeing and it is possible that better maternal health also contributed to the relatively greater improvement in male, compared to female, survival in the first year of life in Singapore. The relationship between trends in male infant mortality and sex ratios at birth in the same time interval provides some indirect support for the possibility that a biological mechanism produced increased male bias at birth in Singapore. However, data that would allow us to estimate the contribution of better male survival between conception and birth to increases in the secondary sex ratio are not available.

It seems likely that a number of factors combined to produce the unbalanced sex ratios at birth of the early 1980s. Sex-selective abortion may well have been one of them but, if so, the significant downward trend in sex ratios at birth after 1983 is all the more surprising. If son preference was motivating discrimination against daughters prior to birth and new technologies were providing the opportunity for selective abortions, then either motivation or opportunity, or both, must have changed significantly in a relatively short space of time.

## 5. The temporary fertility revival: a return to 'normality'?

Whatever the causes of the rising proportion of males in recorded live births during the period of rapid fertility decline in Singapore, the trend after 1983 was quite different to that experienced in other coun-

tries in the region. At the national level fertility remained below re-
placement level yet sex ratios at birth also declined, at least initially, to
levels within the normal range, reaching a low of 106.4 males per 100
females by 1990. In the same period equivalent ratios exceeded 114
males per 100 females in both China and the Republic of Korea (Gu
and Roy, 1995). This comparison is, however, misleading as ratios vary
geographically within these large populations and lower ratios in urban
areas are common (Das Gupta *et al.*, 2003). A more appropriate com-
parison is between the city-state and other more prosperous urbanized
populations in the region. Figure 4 compares sex ratios at birth for
Singapore with those for the municipalities of Beijing and Shanghai,
and Taiwan. Although the excess of male births over female births in
Singapore was greater than that for the other three populations in
1981, it was lower than the comparable figures for Taiwan in both
1990 and 2000. Most strikingly, the extraordinary increase in female
deficit between 1990 and 2000 evident in the cases of Beijing and
Shanghai was absent in Singapore. We know that Singapore's total
fertility rate continued to decline into the new millennium yet it ap-
pears that the effect on sex ratios at birth was small relative to that for
the metropolitan populations of China.

**Figure 4 Sex ratios at birth, Beijing, Shanghai, Taiwan and Singapore, 1981,
1990 and 2000**
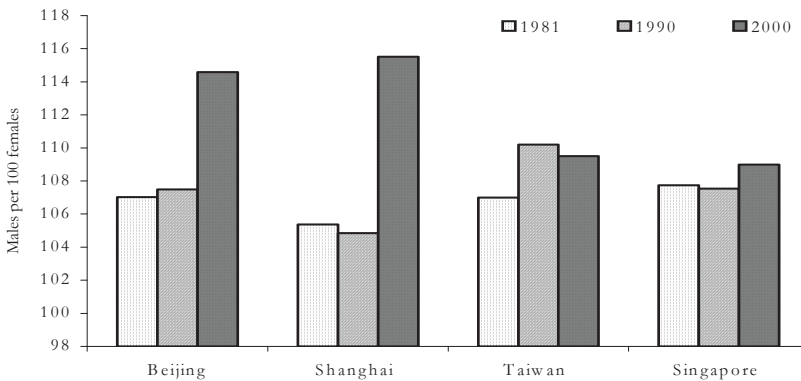


Source: Lai (2005) [Beijing, Shanghai]; Gu and Roy (1995); Glenn (2004) [Taiwan]; Annual
Reports on Registration of Births and Deaths [Singapore].

The emergence of such dramatic increases in male excess at birth
in Beijing and Shanghai is most likely to be related to the use of sex-
determination technologies prior to higher order births and the selec-
tive abortion of female foetuses, especially after a woman has given

birth to one or two daughters. In China and Korea greater imbalance in favour of boys has been found for third and higher order births relative to first and second births (Park and Cho, 1995). Gender-specific data on live births by parity is not released for Singapore and, to my knowledge, there are no sample studies based on primary data collection. However, in 1995 the *Statistics Singapore Newsletter* published an analysis of sex ratio by birth order that compared ratios for Singapore with those for China and South Korea between 1982 and 1993 (Koh, 1995).

The data used in the article are reproduced in Figure 5 and support the author's conclusion that, in contrast to China and South Korea, Singapore does not appear to have widespread gender-specific birth control. Thus he was able to claim that population projections for the year 2010 indicated that the sex ratio would be within the biological range.

**Figure 5 Sex ratios at birth by birth order, Singapore, China and South Korea, 1982-1993**
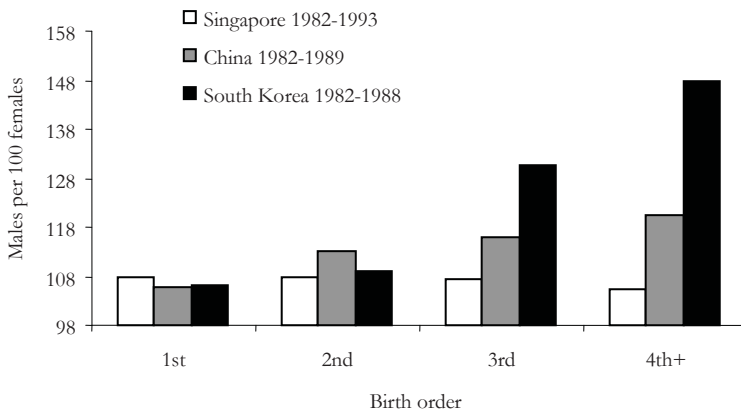


Source: Koh (1995).

There are a number of factors that could explain the relative absence of daughter discrimination at higher birth orders in Singapore during this period. The first, and possibly most influential, factor is the policy context. Pro-natalism began to replace anti-natalism in government thinking from 1983, heralding the introduction of new population policies in 1987, which encouraged the better off to have larger families (Graham, 1995). Despite the failure of these policies to produce a sustained increase in fertility, they created a climate in which

families of three or four children were no longer seen as a threat to economic progress. This is in stark contrast to the highly negative connotations associated with "illegal births" at higher parities in China (Hemminki *et al.*, 2005) where the main reason for defying the strong anti-natalist policies is to produce a son. This pre-selection of couples going on to have higher order births does not seem to have been present in Singapore, or at least not to the same degree. However, as others have pointed out (Coale and Banister, 1994), female deficit at birth in the South Korean population showed an increase similar to that in China but there was no one child policy to blame. Nevertheless, and again in contrast to Singapore, negative views of higher order births associated with poverty at the family level and lack of economic progress at the national level may have been prevalent. If the strength of the impact on secondary sex ratios in South Korea is surprising, as well as disturbing, the apparent absence of an equivalent impact in Singapore cannot, I think, be explained by the more favourable policy context alone.

The second factor relates to the role of the state in Singapore. Strong government control over many aspects of life in the city-state has been credited with the country's economic success and development. The power of the central bureaucracy over the lives of Singaporeans extends to the attempted micro-management of fertility for the common good. It is clear from Koh (1995) that the Ministry of Health was well aware of the threat posed by imbalances in the sex ratio at birth to future marriage patterns. In 1987, the abortion regulations were amended to introduce mandatory counselling prior to and following a termination, as well as a requirement that, save in exceptional circumstances, a pregnant woman must wait forty-eight hours after receiving counselling before she can give consent. This tightened control over the process of abortion and may have reduced the scope for sex-selective intervention. It is impossible to estimate the influence of such indirect government control on sex ratios at birth but the abortion ratio has declined steadily, if not dramatically, since the introduction of compulsory counselling.

The third factor to consider is the strength of son preference among couples in Singapore during the 1980s and 1990s. If this had diminished over time, then it may explain some of the difference between sex ratios at birth in Singapore and those in China and South Korea. For Singapore, there is little direct evidence on which to base any analysis. The results of the Fifth National Family Planning and Population Survey in 1992 recorded 31 percent of married women aged 15-44 years as having no preference for either sons or daughters (Koh, 1995), suggesting that the majority still preferred sons. Our own

ethnographic research among well-educated Chinese Singaporeans of the current parent generation points to a variety of gender preferences in family composition, from 'one of each' to a tendency for wives to prefer daughters and husbands to prefer sons. However, two characteristics of the thinking of the younger generation are notable (Graham *et al.*, 2002). First, the wishes of the grandparent generation for a grandson are recognized but tend to be marginalized as 'traditional'. Couples view fertility decisions as matters to be settled between themselves and claim not to be influenced by either the expectations of their elders or government policies. Secondly, economic and practical considerations mean that small family sizes are favoured over continuing the family name by providing a male heir. The narratives of some of the younger women from our ethnographic work illustrate their thinking. One mother, with two daughters born in the early 1990s, explained,

> "I don't have [a gender preference] but that time my husband said that he hoped to have a son lah. Be it the first one or the second one, he hoped to have one... But, um, you know that they prefer but if there isn't any, they are not old-fashioned thinking in that sense that they must keep on trying, in that sense lah. But myself I do not have a preference."

Another mother, whose first child is a daughter and whose second child was born in 2000, declared her disappointment that it was a boy!

> "I had her [daughter] and when I was going to have the second one, I was hoping and hoping it will be a girl… Maybe I thought because it is more economical. Her clothes will go on to the second one. I don't have to spend money all over again. So that was the idea but after some time when I realized that it's actually a boy. I got used to the idea okay, it's a girl and a boy. I don't know why. Again I guess it's because of my background. Two boys in a family, enough. I want a girl. I prefer girls. Girls are closer to their mums I guess."

This ethnographic evidence hints at a considerably greater flexibility in the kinship system amongst Chinese Singaporeans compared to patterns found in China and South Korea (Das Gupta, 2003), although the extent to which these 'non-traditional' attitudes are common across the Singaporean population is unknown. However, it may be that significant increases in female participation in higher education and salaried employment in the last decade have contributed to a diminution in son preference in some groups, as reflected in our group of well-educated women. The limited evidence supports this conclusion

but births to university-educated mothers, for example, comprised just over 18 percent of all live births in 2000. Unless attitudes in other groups have also changed, the overall diminution of sex-selection pressure could be small.

## 6. The resumption of fertility decline and the puzzle of rising sex ratios at birth

After a period of decline in the decade between 1983 and 1993, national sex ratios at birth began to climb again to a level above the 'normal' range. This is a particular puzzle in that it appears to undermine the hypothesis that a weakening of son preference explains the previous decline. All the available evidence points to an improvement in the status of women compared with a decade before, which in turn leads to the expectation that daughters would become more valued. A similar paradox is apparent if Fong's (2002) optimistic analysis of the impact of China's one-child policy on the empowerment of urban daughters is contrasted with the increasingly masculine sex ratios at birth in Beijing and Shanghai.

Singaporean women are better educated and more likely to be employed outside the home than they were ten years ago. Female labour force participation rates for 25 to 29 year olds rose from 75.6 percent in 1991 to 84.5 percent in 2001. More females than males now attend institutions of higher education and the sex ratio of university graduates fell from 95.9 males per 100 females in 1996 to 92.4 males per 100 females in 2001. The total fertility rate also fell to a new low. Croll (2002: 17) concluded from her survey of the demographic literature that "the phenomenon of 'missing girls' occurs alongside economic development and the improved status of women and is more likely to be correlated with declining fertility than any other common factor." Singapore is more urbanized and economically prosperous than most other countries in the region. Nevertheless, there is a temporal coincidence between the trends in sex ratios at birth and fertility rates, even to the extent that a short-term rise in the latter was negatively mirrored in a declining male excess at birth in the late 1980s. The explanation of this coincidence is less easy to identify. If sex-selective abortion is the main mechanism producing abnormal gender imbalances at birth then we are forced to accept the perhaps implausible conclusion that the rate of sex-selective abortions increased over the 1990s, at a time when the government was vigorously promoting its pro-natalist message.

In 2000, the sex ratio at birth peaked at 108.99 males per 100 females, slightly below the level recorded in 1982 but above the 'normal'

range. It is difficult to formulate a satisfactory hypothesis that might explain this return to aberrant male excess at birth. Although the opportunity for pre-natal sex-determination may have increased over time, the number of abortions performed annually has continued to decrease and there is no direct evidence of sex-selective foeticide. In one study of a sample of women who had their pregnancies terminated, the reasons given were predominantly socioeconomic (Singh *et al.*, 2002) but the reporting form does not list son preference among possible reasons. Establishing any increase in the motivation of pregnant women to seek sex-identification of the foetus and then to choose to abort daughters is equally problematic.

The alternative to accepting a motivational explanation involving an increase in son-preference potency is to look for a biologically-based explanation of recent trends. As Goodkind (1996) warned, sex ratios at birth may not always be good proxies for discrimination against daughters. However, the biological causes that plausibly contributed to sex ratio imbalances during the period of rapid fertility transition are less likely to be part of the explanation of more recent imbalances. Infant mortality rates for males and females were already low when the sex ratio at birth exceeded 107 in 1995, being 4.6 and 3.3 per 1,000 respectively. Male infant mortality did improve disproportionately over the next five years, but the scope for a markedly differential improvement in the survival of male foetuses was probably limited. Nevertheless, a less sinister explanation than that of sex-selective abortion should not be rejected out of hand. In a study of human sex ratio variation, Martin (1994) found that rates of coital frequency can impact on sex ratios at birth, with greater frequency being associated with higher male excess at birth. He admits that the basis of this connection remains obscure but argues that variation produces more variation in a process that may generate systematic historic oscillations in a population's age and sex structure even when vital rates are stable. For Singapore, whether or not changes in coital frequency have contributed to the recent rise in sex ratios at birth either directly or indirectly, through their impact in the past, is unknown. In the absence of a convincing alternative, however, this is a hypothesis that merits further research.

## 7. Conclusion

The period of rapid decline in fertility in post-independence Singapore saw the emergence of sex ratios at birth that increasingly favoured males over females and that have been interpreted as evidence for active discrimination against daughters in other more populous

countries of the region. Son preference appears to have been prevalent at least among the majority Chinese population and the liberalization of abortion laws, coupled with the availability of medical technologies that allowed sex-identification in early pregnancy, may have added opportunity to motivation resulting in an increase in sex-selective abortion. The alternative, or perhaps additional, explanation is that improvements in male foetal survival resulted in an increasingly masculine sex ratio at birth. In any event, abnormal sex ratios prevailed only for a short period of time and at a level not far above the conventional range of normality. In the absence of clinical evidence on the gender of deliberately and spontaneously aborted foetuses, the relative contributions of human intervention and biological process must remain uncertain.

Across the whole time period of this study, a period from 1965 to 2004 when the total fertility rate more than halved, the mean sex ratio at birth in Singapore was 107.19 males per 100 females. This indicates that, in general, fertility decline was not accompanied by an abnormal increase in the proportion of males at birth. In addition, the infant mortality rate for males has improved more than that for females. Thus the sustained bias in sex ratios prevalent in other Asian countries is absent in Singapore and the city state is not currently facing the social problems thought to arise from a significant female demographic deficit and predicted for China and South Korea (Park and Cho, 1995). It might be concluded that economic development and changing social attitudes have operated effectively to reduce sex-selection pressure. However, a closer examination of trends in sex ratios at birth and other demographic rates has revealed a more complex story in which short-term fluctuations in the secondary sex ratio closely follow those in fertility. A decline in fertility was associated with an increase in male excess at birth and *vice versa*. This is consistent with the alternative hypotheses that sex-selection pressure intensified as family size declined and parents responded by selectively aborting female foetuses. Yet this too is not entirely convincing since male prevalence at birth exceeded the 'normal' biological range only in selected years. The possibility that biological mechanisms, rather than individual motivation and opportunity, explain these fluctuations requires further investigation. There is no evidence in the demographic record that Singaporeans neglected daughters after birth but the question of whether or not the secular fertility decline in post-independence Singapore was accompanied by the intensification of deliberate pre-natal discrimination against daughters remains unresolved.

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*Part II*


*DIFFERENTIALS IN DISCRIMINATORY BEHAVIOUR*

# The Geography of Deteriorating Child Sex Ratio in China and India[1]

**Christophe Z GUILMOTO, Isabelle ATTANÉ**

## 1. Introduction

China and India share a large number of common traits in their recent social and economic transformations. While the most single visible facet of this convergence tends to be the economic surge both countries have experienced over the last two decades, demographic commonalities are also numerous. In particular, the deterioration of child sex ratio has run parallel in China and India over three decades with no sign of improvement during the last ten years.[2] In both countries, fertility decline has been accompanied during the same period by a strong desire by couples to intervene on the sex composition of their offspring. While excess female mortality among girls (including cases of sex-selective infanticide) played a role in the skewed sex distribution observed in the past, sex-selective abortions are probably the main cause today for the rapid degradation of child sex ratio, which is above 110 boys per 100 girls in India and above 117 in China (Das Gupta *et al.*, 2003; Chu Junhong, 2003).

When comparing the trajectory of both demographic billionaires, it is important to stress that the increase in child sex ratio started earlier in China and distorted sex ratio levels are today both more widespread and pronounced. To some extent, this may be related to the course of fertility transition which took off earlier in China, starting from the 1960s whereas sustained decline in birth rates in India only dates back to the 1970s, and which was much more drastic in China, especially in rural areas (Figure 1). Interestingly enough, there is an almost similar

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gap in the timing of the reforms that launched the economic liberalization in both countries and inaugurated a period of uninterrupted growth.

This paper will therefore start with a comparative analysis of fertility change and policies in both countries. But we will also examine the spatial patterns of sex ratio differentials, which are indeed quite different in China and India. To do that, we will provide sex ratio maps for China and India and estimate the magnitude of local changes in child sex ratio values between the last two censuses. The paper concludes with a discussion related to the nature of the mechanisms at work in the degradation observed in both countries, followed by a brief explanation of some of the possible factors behind the spatial patterning of sex ratio differentials and trends observed both in China and India.

## 2. China and India: Similarities and differences

The similarities between China's and India's experiences offer an interesting material to examine the dynamics of sex ratio deterioration that has run unabated in both countries during the last phase of their fertility transition.

## 2.1. Divergent birth control policies and recent fertility trends

Both China and India experienced sustained fertility decline over the last thirty years. The mean number of children per woman decreased from 5 in 1971 to 2 in 2000 in India.[3] The decline was even more significant in China, with this value dropping from 5.4 to 1.8 in the same period of time (Figure 1).

In both China and India, but to different extents, large-scale fertility decline started with government encouragements, although birth control policies were implemented with various degrees of efficiency from the 1950s (Attané, 2002; Greenhalgh and Winckler, 2005; Guilmoto and Kulkarni, 2004). This section sums up the history of family planning policies in both countries.

India has the distinction of introducing the first family planning programme sponsored by a government. The programme was initiated in 1951 as a part of the First Five-Year Plan of India, but without any significant contraceptive acceptance during this period. By 1961, when the Third Five-Year Plan (1961-66) was introduced, it was realised that

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[3] The latest estimate from the National Family and Health Survey puts fertility at 2.7 children per woman for 2005-06.

fertility had not declined and that population growth needed to be controlled through fertility regulation. A number of developments took place in the mid-1960s, in technology, emphasis, strategy, and organization. The intra-uterine device became widely available and the 'target approach', which specified targets for contraceptive acceptance, was introduced. A broad consensus emerged among the elite during the 1960s about the need for fertility regulation. A related development was the liberalization of induced abortions in India in 1972 and the first mass sterilization camps organized in Kerala from 1970. Acceptance of contraception increased substantially throughout the late 1960s and the early 1970s, but the trend was irregular.

**Figure 1 Trends in total fertility rates in China and India, 1971-1999**
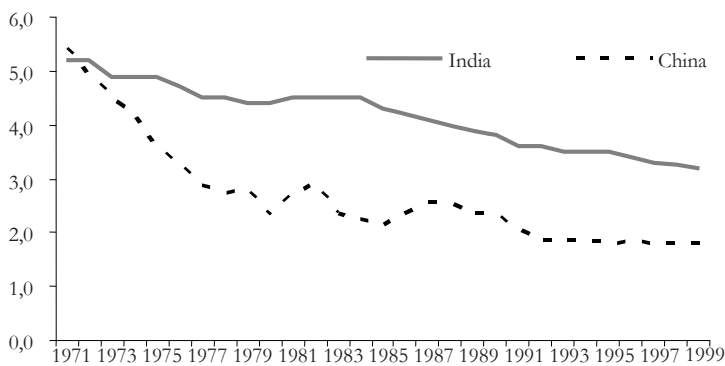


Sources: For India, Sample Registration System: SRS; For China: (1971-1990) Chen, Coale, 1993; (1991-1999) Attané, 2001.

The most severe intensification in the programme took place during 1975-76 as the state of national emergency was declared in India in 1975 and the administrative machinery acquired a range of unprecedented powers. Various government programmes including family planning were given priority and specific targets and there was greater pressure on health workers to achieve the quotas in terms of family planning acceptors. The imposition of press censorship prevented any organized opposition to government programmes. Finally, in 1976, the first explicit National Population Policy for India argued that it would not be wise to merely wait for economic development to achieve demographic changes as stipulated during the Bucharest Conference. A number of measures were proposed to achieve the goal of reducing the birth rate by 10 points by 1984 among which the demand for compulsory sterilization was explicitly recognized. There was a phenomenal

rise in the acceptance of sterilization. But these pressure tactics became so strong that the distinction between persuasion and coercion got blurred and there were numerous complaints and protests against compulsion and post-sterilization deaths. Compulsion in family planning became a major issue in the elections to the Indian parliament held in early 1977, which were finally lost by the ruling Congress Party.

One of the severest critics of the emergency period family planning programme became the Minister for Health and Family Planning in 1977 and his new population policy categorically ruled out any compulsion in family planning. While the new policy also made it clear that the new government was committed to promoting a small family norm and supporting family planning, the programme stood totally discredited. Acceptor targets were termed as "guidelines" and family planning workers were not given quotas. Moreover, after the experience of the 1977 elections, family planning became a risky programme for political leadership to support. In spite of the overall setback, acceptance of reversible contraception increased steadily. Oral pills were introduced in the programme in the mid-1970s and the acceptance gradually rose. Resentment towards the programme weakened over time, acceptor targets were specified, and acceptance increased steadily in the 1980s. Thus, the 1980s was a period of balanced approach with greater integration of health and family planning, relatively free of controversies and it witnessed a slow rise in acceptance of contraception. By the early 1990s, the family planning programme in India had reached a stage where awareness about contraception was nearly universal among the adult population.

In 1993, the Indian government constituted a committee, known as the Swaminathan Committee, to formulate a population policy. This committee submitted its report in 1994, which was nearly contemporaneous with the 1994 International Conference on Population and Development (ICPD). The issues addressed were fairly similar and, like the ICPD, the Swaminathan Committee report also reflected the new approach to population. A small family norm was advocated, yet the choice was left to the couple. Population policy was to be driven by the perceived needs of people rather than imposed from the top. Finally, in February 2000, the Government of India announced its latest population policy. It contained several elements of the policies recommended by the Swaminathan Committee and the ICPD.

During the same period, China opted for a coercive birth limitation policy in order to promote its economic development. At the start of the 1970s, the demographic transition in China was still modest. Mortality was declining. Life expectancy at birth had gained twenty

years since the 1949 Revolution, from 41 years in 1950-1955 to 60 years in 1965-1970 (Huang and Liu, 1995). But the birth rate kept rising to all-time highs. With fewer deaths and more births, population growth peaked at more than 2% per year, hitting 2.8% in 1968. Twenty million people were being added each year. After having been left aside for some years, birth control became a national priority again. In 1971, the State Council Directive 51 marked the official launch of the third birth-control campaign which, unlike its two forerunners, would be pursued relentlessly in the following decades. Three directives were issued in 1973, summarized by the slogan "late, spaced, few" ("*wan, xi, shao*"), i.e., marry late, space births, and have fewer children (Attané, 2002). Annual birth quotas were imposed. However, the infinite diversity of settlement patterns, cultures, contexts, constraints, modes of production, and other factors did not escape the promoters of this third campaign. The population was officially classified into three groups: urban, rural, and ethnic minorities. From the outset, urbanites were subjected to the strictest rules: no marriage before 25 for women, before 28 for men, and no more than two children. By comparison, peasants were privileged: they were allowed three children and their minimum legal age at marriage was set at 23 for women, 25 for men. No prescribed conduct was defined for ethnic minorities. In any event, as small groups mostly confined to low-density peripheral areas and accounting for a limited share in the total population, they did not have a major role to play in fulfilling the birth-control objectives.

In less than ten years, fertility was halved–from an average 5.7 children per woman in 1970 to 2.8 in 1979. This was the steepest decline ever recorded in the world in such a short time span. In urban areas, women already had fewer children than needed for cohort replacement: the number had fallen to 1.4, compared with the 2.1 required to ensure that two children replace their two parents, allowing for mortality. At Mao Zedong's death in 1976, the birth-control program had already achieved remarkable results and dispelled the threat of a population boom that the country could not support. But this was still not enough. Signs pointed to a resurgence of the birth rate that threatened to jeopardize these fragile gains. Birth control had to be tightened even further. The "*reform and opening policy*" (*gaige kaifang zhengce*), inaugurated in 1978 by Deng Xiaoping, was therefore assigned a second objective: to curb population growth in order to finally ensure economic take-off. A new policy officially announced in January 1979 imposed the draconian rule of the single child. Moreover, the rule applied to almost all of China: 95% of urban dwellers and 90% of rural dwellers were supposed to comply. To promote the measure, the authorities established a reward system. Couples had to pledge to have

only one child by signing the "*one-child certificate*" (*du sheng zinü zheng*). In exchange, they would receive various compensations, which varied considerably from one locality to another: monthly bonuses of a few yuan, free medical care and education for the child, easier access to housing, allocation of an additional small plot for peasant families, retirement bonus for employees of State-owned enterprises, and so on. Reversely, couples who resisted the government injunctions faced a variety of penalties, such as the obligation to reimburse the bonuses received, income deductions, fines, partial confiscation of the family plot, and dismissal for recidivist employees of State-owned enterprises (Attané, 2002).

Since 1984, given the presence of hot spots of resistance, the one-child rule is thus no longer systematically enforced in rural areas. There, families–in particular among certain ethnic minorities–are generally allowed to have a second and even a third child. But the eligibility criteria for a second child, however, can vary from one province to another and sometimes even from one district or village to another.

Today, family planning still relies on the same weapons: persuasion, coercion, and fines. But reforms have led families to gradually emancipate themselves from collective institutions. Birth control is slipping out of the hands of the regime's cadres, and coercive measures are failing. To remain effective, regulations need to be adjusted. By promoting local initiatives, decentralization has made it possible to institute new types of penalties more directly targeted at family interests. Nevertheless, the "Population and Birth Control Act" passed in September 2002 reasserts the goal of strict limits on the number of children. Recent developments suggest, however, changes in the means used to reach the objective. The program's emphasis has been shifting toward voluntarism for two reasons: first, because it is increasingly difficult for the authorities to interfere in couples' private lives; second, because the threat of unsustainable population growth has now been eliminated. The new focus is on health: reproductive health, education, and information being the main priorities (Scharping, 2003).

These divergent trajectories toward birth control–closely related to the nature of the political regime ruling each country–have probably had a strong impact on fertility decline, India displaying in 2001 fertility levels almost twice higher than those observed in China.

## 2.2. Deteriorating sex ratio at young ages

Fertility decline in both countries has been accompanied by a more rapid decline in female births than of male births, inducing deteriorating sex ratio at birth. In both countries, a large segment of couples chose not only to select the number of children to be born, but also to manipulate their "quality" by reducing actively the share of girls in their offspring.

Abnormally high male proportions are not a new phenomenon in China and India, the overall sex ratio reaching 108 males per 100 females in both countries in 1950 as against values below 100 observed elsewhere (United Nations, 2006). India's demography had long been characterized by high sex ratio value as was observed from the first census in 1871-72. This was especially true of areas in the Punjab region of colonial India where the practice of female infanticide had been identified early on. In China during the 1930s and 1940s, gender distribution, especially at young ages, was already imbalanced as a result of excess female infant and child mortality associated with sex-selective infanticide. A weakening of this practice and the improved status of women in the Communist era contributed to retaining sex ratio at birth within the normal range (Chen Wei, 2003). But from 1979, the one-child policy turned de facto into a one-son policy. In India, long-time distorted sex ratios were traditionally due to excess female mortality at reproductive ages and to infanticide, while sex-selective abortions are as in China increasingly responsible for the deteriorating sex ratio at birth. Today, discrimination against girls is rising year by year. Thus, the sex ratio at birth–lying usually between 103 to 106 boys for 100 girls (Chahnazarian, 1988)–rose from 105.0 to 112.0 in India between 1982 and 1999, and from 107.2 to 116.9[4] in China between 1982 and 2000. This substantial deviation from the normal range implies deliberate interventions on the roughly equal probability of a male or a female birth. Although the influence of each method used to reach this outcome may vary, sex-selective abortions and excessive mortality among female children are the main determinants of observed distortions, while female infanticide and pre-conception sex selection are probably far less common.

In China and India as well, the gender differential infant mortality gap widened to the detriment of girls as child survival gradually improved. But mortality during the first year of life is usually higher among males. Excess male infant mortality is a universal phenomenon. Hill and Upchurch (1995) calculated the observed normal female

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[4] This figure refers to births between November 1, 1999 and October 31, 2000.

advantage by establishing the ratio of female-to-male infant mortality at 0.78 for a male probability of dying in the first 5 years of life below 0.05. In China, this advantage had already been lost by 1973-75, with a ratio of 0.875, and is increasingly waning: 0.948 in 1981, 1.156 in 1990, and 1.465 in 2000 (Attané, 2004). In India, data are often less reliable and therefore trends appear less discernible (see however Arokiasamy in this volume). Sex differentials in child or infant mortality are however more pronounced in north-western areas and almost absent in the rest of the country. Excess female infant mortality remains visible at the national level, with female-to-male ratio above the expected levels: 0.9 in 1992-93 and 1.0 in 1998-99.

The reasons of this excess female infant mortality are well-established and somewhat related to fertility decline, which caused the expression of son preference to escalate. In China, for instance, as the family planning policy imposes a prior authorization for each birth, and inflicts administrative, financial, and occupational penalties on non-compliant couples, girls become unwanted simply because they deny their parents the possibility of a son. In both China and India, poor rural families, in particular, allocate more food to a son than to a daughter and are more inclined to provide them with costly medical care. However, the emergence during the last 20 years of sex-selective abortion has gradually displaced the role of "traditional methods" of sex selection such as neglect or infanticide.

## 2.3. Traditional son preference[5]

Discrimination against females is a product of Chinese culture. Traditionally confined to the domestic sphere, a good wife had "to serve her husband and his parents, to take care of the house and to have male heirs". Supported by her family until her marriage, the daughter was then entirely devoted to her husband's family. So, a female birth rarely causes delight, especially for the poorest. Because of superstition, millions of parents still name their daughters "Laidi" (literally "A boy is following"), "Pandi" ("Hoping for a son") or "Zhaodi" ("Bring us a son"). After marriage, a girl owes nothing to her parents. She does not have to take care of them when they become old; that is the duty of a son–and of a daughter-in-law. In the countryside, people still have to "have a son for old age", as they will never have any retirement pension. For hundreds of millions of peasants, a son is the only guarantee for old age, and against illness or disability.

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[5] Descriptions of local contexts for son preference in Chinese and Indian settings are provided in particular in the chapters written in this book by Sekher *et al.* and by Bossen.

In spite of the recent economic development, the Chinese woman remains "inferior to man" and some wives are still ill-treated or repudiated when they are "incapable" of giving birth to a son. The patriarchal clan system–the foundation of traditional social organization–requires early marriage and numerous children, especially males, to maintain clan and family power. Today, family solidarities remain strong and many features of patriarchal culture still dominate daily life such as patrilocal marriage, patrilineal filiation or ancestor worship. Moreover, perpetuating the family name is one of the fundamental male duties in Confucian culture and the absence of a male heir is the worst dereliction of filial devotional rules, especially in rural areas. To have a son is ultimately an indispensable condition for perpetuating ancestor worship.

Rural decollectivization provided another reason to discriminate against girls. The family recovered its function as an economic unit, of which it had been deprived during the collectivist period. Thus, the larger the family, the greater are its opportunities to become richer, as land allotment is made on the basis of family size. In the countryside, people often consider that "the early marriage of a son has three advantages: daughter-in-law, descendants and land". In cities, a child costs more than he yields. In the countryside, he has an economic value as he works in the fields, takes out the livestock, etc. Rural exodus and growing disinterest for land labour have not altered the necessity to have a son; if he leaves the farm, he will get a more lucrative job in the city.

Many of the features observed for China hold true in rural India where girls are perceived of lesser values than boys. Several cultural traits of the kinship systems tend to reinforce women's inferiority and subordination to men. One recent development that probably reflects very accurately the declining status of women is the institution of dowry. The dowry paid by the bride's family to the groom's tends to be perceived as an extra burden imposed on parents with girls. While dowry was historically a custom restricted to some communities (especially high castes or specific communities in North India), the institution has rapidly spread across regions and across social categories. It is now fairly common among lower-status groups that use to practise in the past bride-price instead; dowry is also practised today in most regions of South India, where it was previously rare except among some Brahmin castes.

At the same time, the dowry inflation has been flourishing unchecked for reasons of social and economic pressure that are still now not well understood. It is clear that a dangerous combination of eco-

nomic development, prosperity and social diffusion of new family norms has fuelled the propagation and inflation of dowry. But whatever the cause of these inflationary trends, the result has been to put additional pressure on families with girls and serves as a strictly economic justification for sex selection. Traditional preference for sons, inherited from the landed classes of rural society, has now turned into an economic rationale pursued by upwardly mobile middle-classes seeking to maximize their social benefits (reputation, prestige, alliance, etc.) in the marriage market.

Dowry has long been officially banned in India, but this prohibition has had almost no impact on actual marriage transactions. Its rise over the last four decades points not only to the very limited influence of the Law on private social arrangements, but also its rather weak implementation, which indicates the prevalence of double standards in such matters. As the Indian government has recently strengthened its regulations banning sex-detection tests, it will be crucial to monitor the implementation of this law to assess the exact nature of the impact of the government's involvement.

## 3. Trends in spatial heterogeneity

### 3.1. Sex ratio statistics

We will now examine the geographical distribution of child sex ratio in both countries. For this purpose, we make use of disaggregated data from the last two censuses in China (1990 and 2000) and India (1991 and 2001). No other data set provides an exhaustive sex and age count for both national populations. We will use the sex ratio computed for the child population, a measurement that combines the effect of various sex discrimination practices such as sex-selective abortion, female infanticide and excess girl infant and child mortality among girls. This offers a rather synthetic measure of gender discrimination especially as it is not known either to be significantly affected by sex differentials in migration rates.

While China follows standard age classification (below 1 year, 1-4 years, 5-9 years etc.), India's data are not always available in the usual quinquennial age format. Figures given by the Census of India often relate to the populations aged "less than 7 years". While different from the standard age classification, this age format is not without advantages: Owing to the relatively high level of age heaping in India, which is also associated to sex of the children such as for exact age 5, the 0-6 year age group tends to offer a more robust measurement of sex ratio

than the usual 0-4 group. The difference in age group between the two countries has little impact in our comparison since adding ages 5 and 6–when child mortality is very low–is unlikely to alter the overall sex ratio among children.

Data from these censuses are available at various administrative levels in both countries.[6] In China, the larger units are the 33 province-level units (provinces, municipalities and other regions), further divided into 333 prefectures while the finer units correspond to counties (*xian*). There were 2391 counties in China at the time of the 2000 census out of which 2368 spatial units could be retained in this study. In India, sex ratio data can be examined on the basis of the 35 States and Union Territories, but use of the 593 district units (as of 2001) provides a finer mapping of sex ratio variations. Data are also available in a GIS format that will allow us to conduct a detailed spatial analysis of inter-censal changes in sex ratio in both countries.

## 3.2. Mapping sex ratio in China and India

Child sex ratio is characterized everywhere by pronounced geo-graphic disparities. While many areas are unaffected by sex ratio imbal-ances, there are on the contrary so-called hot spots of girl deficit, i.e. compact areas where sex ratio is uniformly much higher than the national average. As a result, it is often less than half of the country that is responsible for the bulk of sex ratio distortion, while the rest of the country display normal values.

We prepared several maps based on the 1990 and 2000 censuses for China and on the 1991 and 2001 censuses for India. We used here the sex ratio computed for the age group 0-6 for India while retaining the 0-4 age group for China. Data pertain to the Chinese counties (*xian*) and the Indian districts, administrative units of roughly compa-rable demographic size (Guilmoto and Oliveau, 2007). However, instead of keeping the original administrative boundaries, we computed the surface values for each map and contoured them in class intervals. Surface estimation was conducted using the standard geostatistical kriging method (Fotheringham *et al.*, 2000). As a result of this proce-dure, original administrative boundaries are no longer visible. Large contiguous areas of homogeneous sex ratio levels appear now more clearly on the final cartography, even when they cut across higher-level units such as Chinese provinces or Indian states. We also used the same class break values for both countries, though average levels of

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[6] Data are missing for Taiwan (China) and for a few districts in Jammu-Kashmir and Gujarat (India).

child sex ratio are different with India recording significantly lower values than China. This may not be appropriate for individual maps, but it facilitates the comparison between the two countries. Scales for each country are also comparable.

It is beyond the scope of this paper to produce a detailed geographic analysis of sex ratio variations within both countries (Guilmoto 2005). Maps shown here (Figures 2 and 3) illustrate clearly several common features. First, sex ratio imbalances are not equally distributed in each country. Child sex ratio is almost normal in all provinces of West China (not shown on the maps). Many regions in India appear similarly unaffected by the national rise in child sex ratio. Moreover, there is a distinct clustering of regions with high values. Areas characterized by higher sex ratio tend to be close to each other and the geographic distribution is far from being random. This translates into high levels of spatial autocorrelation for the child sex ratio variable. A further point is that maps tend to exhibit the same patterns across time and there is no radical change in the geography of sex ratio after ten years in spite of the rapid increase observed during this period.

A closer examination helps, however, to identify some significant variations between both Asian countries. For example, female discrimination is more acute in urban areas in India than in the country-side, a feature not found in China where some of the largest cities appear rather less affected than rural areas. An equally puzzling aspect of this comparative cartography relates to the geographical patterning of child ratio in both countries. Regarding China, we may first note that child sex ratio is close to normal values in most regions where minority nationalities predominate. This is the case for most provinces in western China not displayed here. But this does not signify that the rest of the country is homogeneous with higher sex ratio values observed everywhere. Central and East China is characterized in fact by a great number of regional hot spots with high child sex ratio surrounded by other counties with lower values. There are indeed many zones characterized by extreme sex ratio values above 120 flanked by adjoining areas where sex ratio is below 110. Consider for instance the large pocket encompassing the bordering counties of Anhui, Hubei and Henan where sex ratio is often above 150. Our map shows it to be surrounded by counties within the same provinces (especially Anhui and Hubei) where sex ratio levels are almost normal.

On the contrary, India is characterized by a single, global orientation of its sex ratio patterns, with higher than usual values recorded in the north-western quadrant of the country from Gujarat to Punjab along India's western border. In the rest of the country, child sex ratio

hardly exceeds normal values and hot spots of abnormal sex ratio tend to be few and small. A systematic geostatistical analysis of child sex ratio data confirms this observation. Spatial autocorrelation appears in India much stronger than in China and extends over a larger radius (Guilmoto, 2005). This means that irrespective of the fact that sex ratio levels are on the whole considerably higher in China than in India, the spread of sex discrimination appears more compact in India and less scattered away across different subregions.

**Figure 2 Child sex ratio (0-4 years), East China, computed from county data, 2000 census**
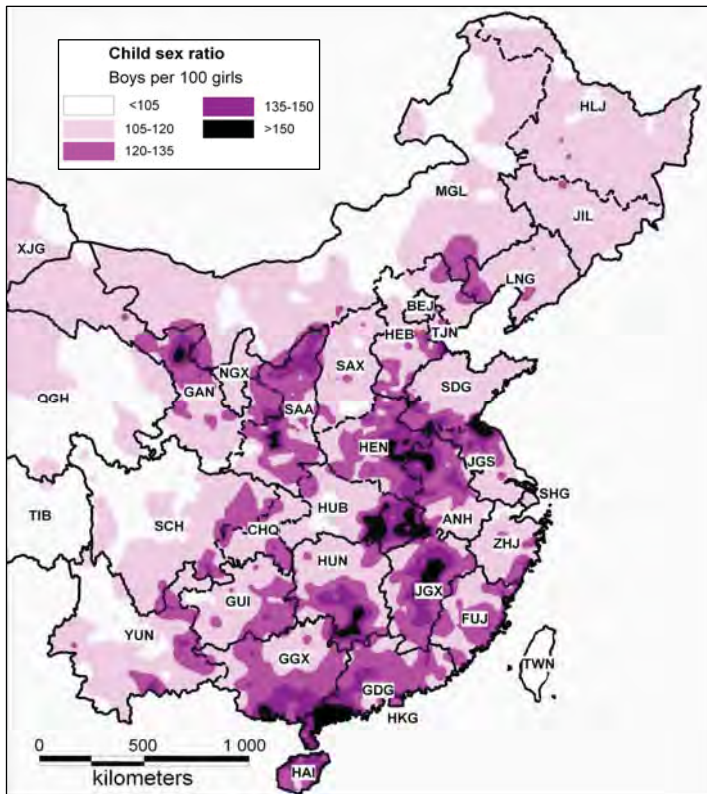
**Figure 3 Child sex ratio (0-6 years), India, computed from district data, 2001 census.**
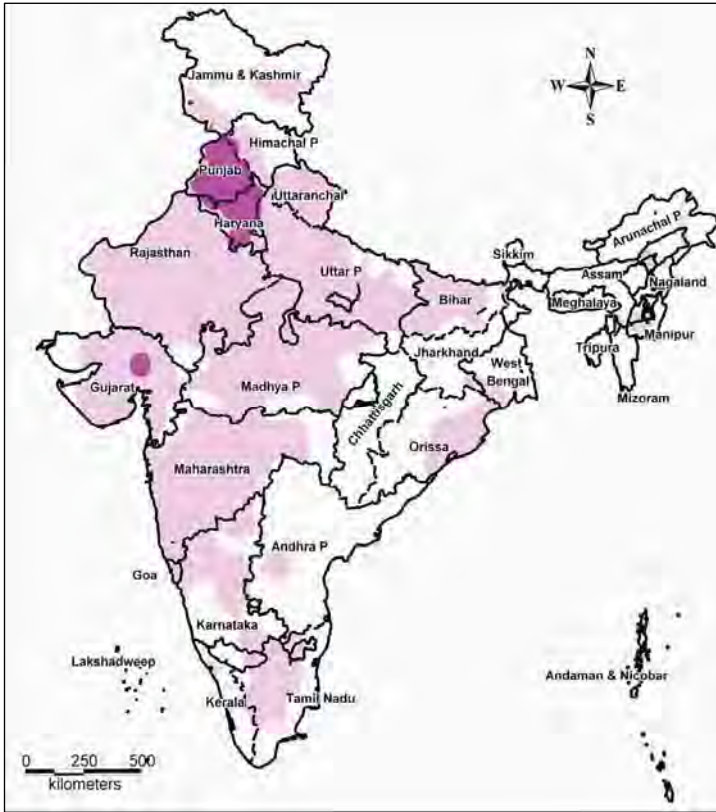


This geographic pattern obtained in China may appear surprising in view of the seemingly stronger political and cultural homogeneity of this country. Demographic behaviour and gender bias would be expected to follow heterogeneous ethnic or social lines, but it appears that variations in sex ratio are most prominent within the *Han*-dominated areas that constitute most of eastern and central China. On the contrary, one would presume that India's sex ratio would be extremely segmented in view of the internal cultural diversity of the country. But high sex ratio areas in India illustrated by the maps cut across several states from Punjab to Maharashtra with different linguistic, religious and cultural characteristics. The spatial patchwork observed on the Chinese map would actually be less surprising in India, a cultural area characterized by its heterogeneous social composition, than in China where the homogenizing impact of state policies on the social fabric should be more pronounced.

## 3.3. Spatial trends of child sex ratio in China and India

The second part of the study concentrates on the spatial examination of the trends in sex ratio by comparing the last two censuses in China and India. However, a strictly longitudinal approach is made difficult, if not impossible, by the numerous changes in the administrative structure of each country between successive censuses. Figure 4 provides an example of administrative redistricting: unit A is bifurcated into units A1 and A2 while units C and E give rise to a new unit C-E. India had for instance 593 districts in 2001 as against only 466 in 1991. Intercensal comparison is therefore not readily possible as sex ratio estimates for the first census are not available for all the new districts that appeared only in the second census.

The use of GIS-based interpolation techniques makes it however possible to estimate child sex ratio values for administrative units that do not exist in a given census. The method consists in using surface maps of child sex ratio for two periods rather than try to use administrative units that may change between subsequent censuses. As stressed above, surface maps do not follow the original administrative structure of each census. They are based on interpolated values for individual spatial cells of given size (Figure 4). Once continuous maps are available for two different periods, the trend map can be computed by superimposing both maps and computing the difference in cell values.

**Figure 4 Illustrations of change in administrative boundaries and gridded map**



first census          second census          gridded map
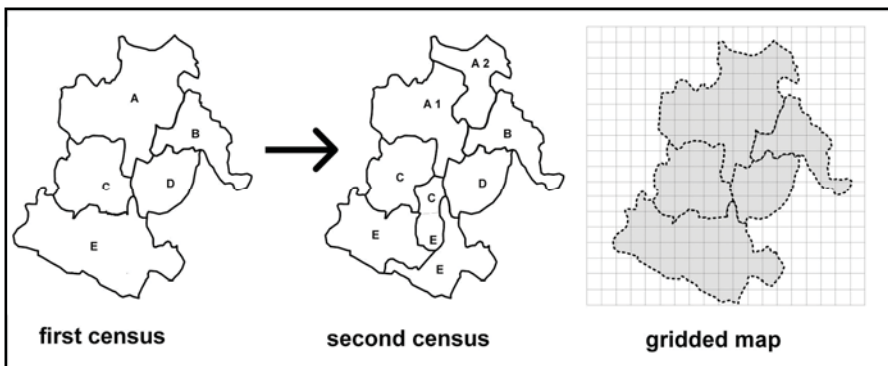
The resulting contoured maps of intercensal change in child sex ratio are shown below (Figures 5 and 6) and refer to the 1990s for both China and India. These maps indicate precisely where the increase in child sex ratio took place during the ten years under study. And as can be seen, this rise in sex discrimination is not at all uniform across both countries. Nor has this change been spatially random. In each case, the

increase in the proportion of boys has been concentrated in a few regions. By and large, these regions coincide with the areas where the sex ratio was already abnormally high ten years earlier.

## 3.4. Structural or local changes?

To understand the implications of this analysis, it may be useful to re-examine the process of spatial change. From a theoretical viewpoint, change may also be divided into two components: a national trend affecting all regions simultaneously and regional trends that are found only in given areas. The national trend would be associated to structural factors likely to have had a similar impact on every region. To some extent, this component of change can be considered "a-spatial" as it does not possess any distinctive spatial property. This would imply in particular that the increase in sex ratio observed in China or India would have been the result of broader change in the social or economic structure of society. On the contrary, regional (or local) factors are delimited and pertain more specifically to local social or economic characteristics and dynamics.

The trend maps shown here indicate that the structural component *per se* appears to have played but a rather limited role in the change that has occurred during the ten-year period. China offers probably the most vivid illustration of this as several areas along the coast (in Zhejiang or Shandong) have actually registered a sizeable *decline* in sex ratio during the 1990s: these distinctive areas where the decline between 1990 and 2000 was of more than 5 boys per 100 girls are shown on the map with a dotted contour (Figure 5). This reverse trend is similar to what has been recently observed in South Korea (Kim, 2005). At the same time, sex discrimination has clearly intensified in contiguous provinces such as Jiangsu or Anhui.

In India, no significant improvement in child sex ratio is perceptible as most districts did record at least a slight increase in child sex ratio during the 1990s. However, the surge has been acute in the western states (Punjab, Haryana, and Gujarat) and appears much clustered in geographical terms. Elsewhere, the change has been far more modest and seems to proceed at a much slower tempo, with the notable exception of parts of coastal Orissa.

Changes in child sex ratio have therefore not been evenly distributed within both countries. Consequently, it is difficult to interpret the increase observed in China and India as a mechanical consequence of broader, structural trends affecting all regions equally. The regional factor seems much more significant in describing the pattern of change

that has occurred and there is a need for local explanations of the increase in sex ratio rather than wide-ranging explanations (such as economic, social and demographic change).

**Figure 5 Change in child sex ratio (0-4 years) in 1990-2000, East China, computed from census county data**
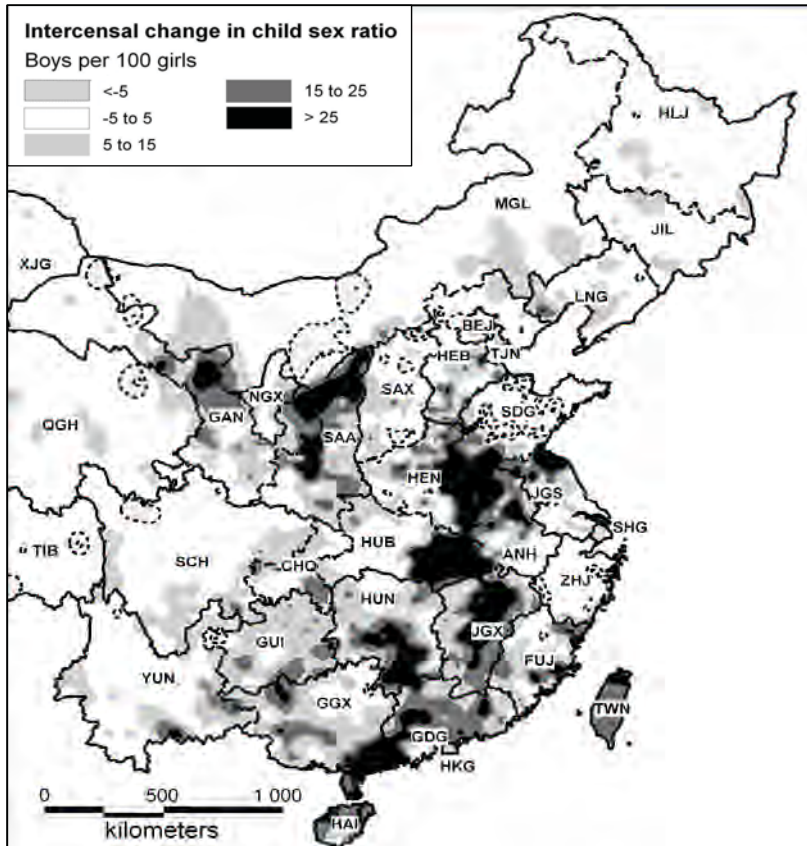


The influence of fertility decline or of rapid economic development on discriminatory behaviour should probably be understood within local contexts: this means that responses to new social and economic opportunities are mediated by local factors such as cultural value systems or bureaucratic institutions. As the observed increase tends to be clustered around pockets, the analysis further suggests the specific role that might be attributed to propagation mechanisms in regional change. Firstly, discriminatory practices tend to gradually spread across all social groups irrespective of community or class within given localities. But secondly, the influence of core areas -where girl discrimination is widely practised and socially acceptable- makes

itself felt on adjacent regions: this proves to be a crucial mechanism to explain how areas with high sex ratio tend to expand over the years as can be seen on our maps. But once again, the demographic billionaires seem rather different on that account because of the respective role of political structures in China and of larger social and cultural regions in India.

**Figure 6 Change in child sex ratio (0-6 years) in 1991-2001, India, computed from census district data.**



## 4. Discussion

Several unresolved issues remain about the causes of the sex ratio differentials observed in these two countries, but it is important to stress at the outset that the impact of fertility decline on the expression of son preference is in no way automatic: among early decliners, fertility decline in many regions caused little impact on the sex composition of the child population.[7] This is true of several regions of India such as

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[7] On regional fertility decline in China, see King (2007).

Kerala or Andhra Pradesh where the fall in birth rates has not been accompanied by a gradual increase in the proportion of boys. Likewise, there are a few Chinese provinces such as Jiangsu or Tianjin where low fertility is not associated with increased discrimination towards girls as compared to adjacent provinces exhibiting high sex ratio. When examined more closely, several areas in the interior such as Anhui, Henan or Jiangxi, where sex ratio has reached levels above 135 boys per 100 girls, are rural or peri-urban and do not necessarily coincide with the lowest-fertility zones. Furthermore, our analysis has indicated that the average child sex ratio has slightly improved in some highly urbanized and more prosperous areas such as in the Beijing or Shanghai regions.

The persistent difference in the geography of child sex ratio refers to the specific interplay of traditional and government institutions in gender arrangements prevailing in both countries. While the Indian pattern can be broadly interpreted through a combination of local traditional institutions favouring patriarchal values and of rapid, economy-driven modernization processes, there are probably distinct diffusion mechanisms that helped new sex selection techniques and modern gender bias to spread from core areas to adjacent districts. To some extent, India exhibits a textbook example of demographic *laissez faire* in which established local institutions and dissemination processes are by and large responsible for the ultimate shape of demographic outcomes. On the contrary, the determinants of sex ratio differentials across China are less easily understood as closer examination indicates that *Han* China itself is still very heterogeneous with no clearly distinguishable anthropological patterns based on language or historical entities. Regional variations are much more likely to be caused by local party regulations and their impact on both demographic outcomes and statistical manipulations through channels described by Greenhalgh and Winckler (2005). But the confrontation of recent census data at different dates demonstrates the existence of spatial patterns that are rather stable over time on both countries. While this was expected for India, where census data have long revealed regional disparities, this result is important for China as the quality of reported data (such as female under-registration) was often mentioned as a possible source for distorted sex ratio values.

The examination of China's and India's sex ratio maps should help us to monitor the patterns of forthcoming change and to identify the hot spots where policy intervention is most urgently required. But our investigation also leads to a reappraisal of the recent deterioration of the sex ratio. The existence of firmly established spatial patterns for the phenomenon suggests that structural factors of demographic and economic change play a lesser role than the entrenched system of

patriarchal values. Patriarchy has clearly modernized over the last 30 years by absorbing some of the main ingredients of economic and demographic change such as fertility decline or increased monetization. However, its geographic contours have remained rather fixed and the impact of state intervention may remain limited, especially in the Indian case, if the root causes of son preference are not addressed.

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## Annex 1 Abbreviations of province names used in China's regional maps

| ANH | Anhui | HAI | Hainan | JGX | Jiangxi | SAX | Shanxi |
|---|---|---|---|---|---|---|---|
| BEJ | Beijing | HEB | Hebei | JIL | Jilin | SCH | Sichuan |
| CHQ | Chongqing | HLJ | Heilongjiang | LNG | Liaoning | TIB | Tibet |
| FUJ | Fujian | HEN | Henan | MGL | Inner Mongolia | TJN | Tianjin |
| GAN | Gansu | HKG | Hong Kong | NGX | Ningxia | TWN | Taiwan |
| GDG | Guangdong | HUB | Hubei | QGH | Qinghai | XJG | Xinjiang |
| GGX | Guangxi | HUN | Hunan | SAA | Shaanxi | YUN | Yunnan |
| GUI | Guizhou | JGS | Jiangsu | SDG | Shandong | ZHJ | Zhejiang |

# Factors Influencing the Use of Prenatal Diagnostic Techniques and Sex Ratio at Birth in India

**P. N. Mari BHAT, A. J. Francis ZAVIER**[1]

## 1. Introduction

The Indian subcontinent is one of the few regions in the world where there are more males than females in the population. Before the landmark study of Pravin Visaria on the sex ratio of India's population, several hypotheses were in circulation to account for this unusual occurrence. Visaria (1971) persuasively argued that excess female mortality is the main reason for this anomaly and laid at rest other competing explanations. But India's sex ratio (males per females) has shown a more or less steady increase since 1901, even though the data from India's Sample Registration System suggest narrowing of the sex differentials in mortality in recent years. The latest census in 2001 has recorded a significant increase in the sex ratio of children age 0-6 while registering a decline in the overall male-female ratio from the previous census in 1991. Many attribute the increase in the child sex ratio to a possible rise in the sex ratio at birth (SRB) owing to the increasing incidence of female foeticide in regions where son preference remains strong (Das Gupta and Bhat, 1997; Sudha and Rajan, 1999; Arnold, Kishor and Roy, 2002). But it has also been pointed out that there could be other factors at work such as changing pattern of age mis-statements by sex, and increase in the SRB because of improvements in health status and midwifery practices and from the decline in the proportion of higher-order births (Bhat, 2002).

Although it is well established that under normal circumstances, more males than females are born among all human populations, the SRB cannot be regarded as a universal constant. But often the observed variations are due to smallness of the sample of births from which the ratio is calculated or incomplete coverage of births of particular sex. From an analysis of data for countries with relatively complete registration, Visaria (1971) concluded that the SRB varies generally between 103 and 106. There also is some evidence of secular trends in the SRB, predating the invention of modern technologies of sex selection. Some western countries with reliable and longstanding registration data, such as Sweden and England, have recorded increase in the SRB of the order of 2-3 percent over a period of one or two centuries (Klasen, 1994). The data for British India complied by Visaria (1971) from the civil registration system showed that male-female ratio at birth increased from 107 in 1901-10 to 110 in 1940-46. The decline was seen in all the major provinces of British India except Bombay and Assam. However, Visaria was of the view that the observed trend was a spurious result of deterioration in the completeness of registration system in British India. But fairly complete vital registration data available for four districts of Maharashtra (known as of Berar during British rule) also showed a similar upward trend in the SRB during the first half of 20th century (Dyson, 1989; Bhat, 2002).

The spatial and temporal variations in the SRB arise from social, demographic and biological factors affecting the SRB. The literature on the issue is replete with many speculations regarding these factors. The review of literature on this subject has shown that while a large number of factors are considered to be important, there are only a few studies that analyzed the relationship in the multivariate context (Teitelbaum, 1972; Chahnazarian, 1988). One of the main reasons for the paucity of such studies is because, national vital statistic systems, which provide data on large sample of births required for such an analysis, have information only for a limited set of associated factors. The data from India's National Family Health Surveys provide an opportunity to analyze the effect of a larger set of factors from a fairly sizeable sample of births using multivariate techniques. Also, as the second round of the survey (NFHS-2) had collected data on the use of ultrasound and amniocentesis during pregnancies of live births born during the three-year period preceding the survey, they additionally made it possible to analyze how socioeconomic and demographic factors affect the SRB through the 'misuse' such techniques. Although some attempts have already been made to analyze this data set for this purpose (Arnold *et al.*, 2002; Retherford and Roy, 2003), its potential is yet to be fully exploited. An attempt in this direction is made in this chapter. We also

take advantage of recently released data from the 2001 Census on fertility and age-sex distribution of the population in single years to study the influence of some key factors on the SRB in India.

## 2. Evidence from Census of 2001

Information on the sex ratio of children of age 0-6 years was one of the first data to be released from the 2001 Census. It caused widespread anguish as it showed significant fall in the proportion of females in this age group, indicating dramatic increase in the incidence of prebirth elimination of females (Registrar General, India, 2003). But data on child sex ratios are also affected by sex differentials in child mortality, under-enumeration and age misreporting (Bhat, 2002). Recently, census data on population by single years of age have been released. This information can provide further clues on the nature of changes in the child sex ratio and its causes. In analyzing this information, before computing sex ratios, we applied three-point moving average formula to smooth the single year age data. In Figure 1, for all-India and the state of Punjab, we have plotted the difference in the sex ratio (males per 100 females) at the same single-year of age between 1991 and 1981, and between 2001 and 1981. However, the graph shows instead of age, the year of birth of children implied by their reported age in the census. For both Punjab and India, the increase in the sex ratio is more pronounced for more recently born children (i.e. at younger ages). As per the 1991 census data, the sex ratio steadily increased between 1985 and 1990 by three percentage points for India as a whole, and by nine percentage points for Punjab. As per the 2001 Census data, the sex ratio steadily increased between 1995 and 2000 by another three percentage points at the all-India level, and by another eleven percentage points in Punjab.

The pattern of change observed in the census data discounts the possibility of this change emerging from a rise in the excess female child mortality in recent times. If it were the cause, owing to the cumulated impact of the mortality differential, sex ratios at ages 3-4 years would have shown greater change than at ages 1-2 years. The systematic age (or time) pattern in the sex ratio increase raises doubts whether it could be explained by more accurate reporting of children's age. However, the role of age misreporting in distorting the trend in sex ratios cannot be completely ruled out since for the overlapping period of 1988-1990, the rise in the sex ratios indicated by the 1991 and 2001 are not identical - while the former census indicates significant increase, the latter census indicates no change or a even a decline (in comparison to the sex ratios of 1981 Census at corresponding ages).

**Figure 1 Increase in child sex ratios between 1981 and 1991 and between 1981 and 2001 by single year of age, for India and Punjab**
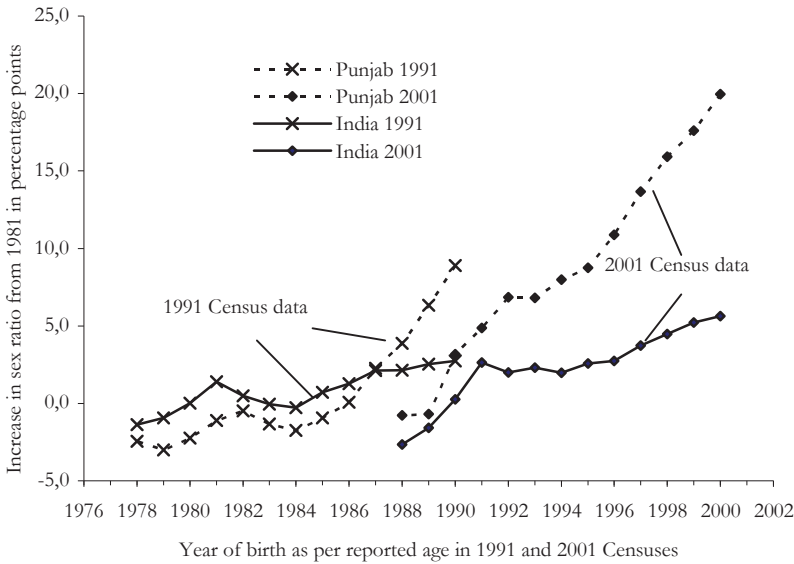


Source: Census of India, 1981, 1991 and 2001.

To large extent, the systematic rise in the sex ratio in the years preceding the census must have been due to the rising trend in the SRB. If it were the only cause, the implication is that between 1985-2000 the sex at birth increased by six percentage points at the all-India level, and by as much as twenty percentage points in Punjab. Table 1 shows the sex ratio for the age group 0-2 years from the censuses of 1981, 1991 and 2001. Between 1981 and 2001 the sex ratio in this age group has increased in all the states. The increase is particularly large in states in North and West India. To check whether the 2001 Census implies a steady increase in the sex ratio in the years before the census, the single-year sex ratios for the period 1995-2000 (i.e., for ages 1 to 5) were regressed on time (or age). In all states in North and western India, except in Goa, the observed rise in the sex ratio during this period was statistically significant. But in the states in southern and eastern parts of India, except in Karnataka, the recorded rise during this period was not statistically significant. Thus, at least in northern and western parts of India, there have been sharp increases in the SRB.

**Table 1 Sex ratio for the age group 0-2 years in 1981, 1991 and 2001 Censuses**

| State | Sex ratio | | | Change |
|---|---|---|---|---|
| | 1981 | 1991 | 2001 | 1981-01 |
| All-India | 102.7 | 105.4 | 108.3 | 5.6* |
| North-West | | | | |
| Jammu & Kashmir | 104.2 | na | 109.0 | 4.8* |
| Himachal Pradesh | 103.2 | 107.1 | 113.9 | 10.7* |
| Punjab | 107.3 | 116.2 | 127.2 | 20.0* |
| Haryana | 107.8 | 114.7 | 124.2 | 16.3* |
| Delhi | 106.1 | 109.1 | 116.5 | 10.4* |
| | | | | |
| North-Central | | | | |
| Rajasthan | 103.0 | 108.1 | 111.4 | 8.4* |
| Uttar Pradesh | 103.1 | 105.9 | 108.8 | 5.6* |
| Bihar | 100.5 | 103.5 | 105.3 | 4.8* |
| Madhya Pradesh | 101.5 | 103.6 | 106.1 | 4.6* |
| East | | | | |
| Assam | na | 103.4 | 103.8 | 0.4 |
| North-East | 101.6 | 101.8 | 103.3 | 1.7 |
| West Bengal | 101.9 | 103.4 | 104.3 | 2.5 |
| Orissa | 101.0 | 103.3 | 105.8 | 4.8 |
| West | | | | |
| Gujarat | 104.6 | 107.4 | 114.3 | 9.7* |
| Maharashtra | 105.1 | 107.0 | 111.3 | 6.2* |
| Goa | 104.5 | 103.7 | 108.1 | 3.6 |
| South | | | | |
| Andhra Pradesh | 100.5 | 102.5 | 103.6 | 3.2 |
| Karnataka | 102.3 | 104.4 | 106.0 | 3.7* |
| Kerala | 102.7 | 104.8 | 104.1 | 1.4 |
| Tamil Nadu | 102.9 | 105.2 | 106.0 | 3.1 |

Notes: * Linear change with age statistically significant; North-East: Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura.

Source: Census of India, 1981, 1991 and 2001.

The data on fertility from the 2001 Census provide more direct information on the SRB. They also make it possible to study factors influencing the SRB at greater detail as they have been cross-tabulated by more variables than the child sex ratios. Two types of data on fertility were collected in the Census of 2001: (i) live births during the one-year period preceding the census for all currently married women (i.e., current fertility) and (ii) number of children ever born for all ever-married women (i.e., lifetime fertility). In both cases, data have been collected on the sex of the child. These data have been tabulated by mother's age, religion, and educational level for rural and urban areas

of all states. Table 2 shows for all-India the SRB by mother's back-ground characteristics.

**Table 2 Sex ratio of children aged 0-6 and sex ratio at birth by selected background characteristics, 2001 Census**

| Background characteristics | Sex ratio of children | Sex ratio at birth | |
|---|---|---|---|
| | | Births during previous year | Birth to women aged 20-34 |
| All | 107.8 | 110.4 | 106.7 |
| Residence | | | |
|    Rural | 107.1 | 110.4 | 106.3 |
|    Urban | 110.3 | 110.6 | 108.3 |
| Religion | | | |
|    Hindu | 108.2 | 110.9 | 106.9 |
|    Muslim | 105.3 | 107.4 | 105.3 |
|    Christian | 103.7 | 103.8 | 103.0 |
|    Sikh | 127.3 | 129.8 | 119.1 |
|    Buddhist | 106.2 | 108.4 | 105.2 |
|    Jain | 115.0 | 118.0 | 110.5 |
|    Other religious communities | 102.5 | 106.5 | 102.3 |
| Caste/Tribe | | | |
|    Scheduled tribe | 102.8 | 106.4 | 103.1 |
|    Scheduled caste | 106.6 | 108.6 | 105.8 |
|    Others | 108.8 | 111.5 | 107.4 |
| Mother's age | | | |
|    < 15 | na | 105.9 | na |
|    15-19 | na | 108.2 | na |
|    20-24 | na | 111.4 | na |
|    25-29 | na | 113.2 | na |
|    30-34 | na | 112.1 | na |
|    35-39 | na | 109.1 | na |
|    40-44 | na | 103.7 | na |
|    45-49 | na | 99.7 | na |
|    50+ | na | 75.7 | na |
| Mother's educational level | | | |
|    Illiterate | na | 108.7 | 106.0 |
|    Literate but below primary | na | 110.0 | 106.3 |
|    Primary but below middle | na | 111.8 | 107.1 |
|    Middle but below Matric/secondary | na | 113.0 | 107.5 |
|    Matric/ secondary but below graduate | na | 115.3 | 109.4 |
|    Graduate and above | na | 114.1 | 109.7 |
| Numbers (in thousands) | 163,820 | 19,887 | 237,622 |

Notes: na - not available/applicable. Source: Census of India, 2001.

In all, nearly 20 million live births were reported during the year preceding the census. They imply a SRB of 110 males for 100 females.

This sex ratio is higher than the sex ratio of 108 for children of age 0-6 years at the time of the census. As in India child mortality is higher for girls than boys, the child sex ratio should have been higher than the SRB. The discrepancy could be indicating either a rise in the SRB during the years preceding the census, or underreporting of female births that occurred during the year preceding the census, or greater exaggeration of age for boys than girls in the census. The foregoing analysis of child sex ratios by single years of age strongly supports the first possibility.

The census data on children ever born show a steady rise in the SRB from 105 for women aged 15-19 to 113 for women aged 45-49 in 2001. This is probably due to the failure of older women to report female children who died many years ago or who are married and living with their husbands. To minimize the effect of such recall errors, Table 2 shows the SRB implied by the data on children ever born to women age 20-34 years. In all, these women reported 238 million live births in their lifetime, with a SRB of 107. As these children were born on average 5-10 years before the survey, they would be indicating a SRB lower than that for the year preceding the census if the SRB has been rising.

Interestingly, the data on births for the year preceding the census shows negligible rural-urban difference in the SRB, whereas data on children ever born shows, as expected, higher SRB in urban areas (108) than in rural areas (106). This may be indicating either that the rural-urban difference has disappeared in more recent years or that rural women have underreported more female births that occurred during the last year than urban women. But the analysis of child sex ratios by single years of age did not indicate a convergence of sex ratios in rural and urban areas. For example, the child sex ratio for the age group 0-2 years in 2001 was 111 in urban areas compared with 108 in rural areas. The analysis of the increase in child sex ratios since 1981 by single-years of age (similar to the one shown in Figure 1) showed that the SRB may have increased by eight percentage points in urban areas compared with five percentage points in rural areas. It is therefore likely that in the census data on current fertility, the underreporting of female births was more acute in rural areas than in urban areas.

However, data on current as well as lifetime fertility show that the SRB increases with mother's educational level. The data on births for the year preceding the census show that the SRB increases from 109 for illiterate women to 115 for women who have completed matriculation. But those graduated from college have reported a SRB of 114.

The data on children ever born show that the SRB increases steadily from 106 for illiterate women to 110 for women with a college degree.

Religion is another variable that shows a systematic relationship with the SRB. As per both types of data, the SRB is 103-104 for Christians, indicating little practice of sex-selective abortions. But the SRB is much higher than the normal range among Sikhs and Jains. As per the data on births during the last year, it is 129 for Sikhs and 118 for Jains while as per the data on children ever born it is, respectively, 119 and 111. Hindus, the main community numerically, have a SRB of 111 and 107, as per the two types of data. The data on scheduled tribes indicate no evidence of female foeticide (sex ratio being 106 and 103, respectively). As per both types of data, the SRB for scheduled castes is two percentage points higher than that for scheduled tribes.

The data on births for the year preceding the census have been tabulated by mother's age at the time of the census. As in this case, the time lapsed since the birth is less than a year and the mother's age is essentially her age at the time of birth. The SRB calculated from these data shows a curvilinear relationship with mother's age. It increases from 106 for mothers aged less than 15 to 113 for mothers aged 20-29 and then decreases steadily to 75 for women aged more than 50 years. Many studies have reported such a curvilinear relationship (e.g., James, 1987; Chahnazarian, 1988), which could be due to the relationship of maternal age with stillbirth rate and coital frequency. Such a pattern may be accentuated in a situation where female foeticide is practiced because this practice peaks around the third birth order.

Table 3 shows the SRB computed from the two types of census fertility data for the states of India. None of the states in the southern and eastern parts of India show any evidence of sex-selective abortions, as the computed SRB from both types of data are well within the normal range. In these states, even births born to women who completed matriculation show no evidence of female foeticide. But there is a strong evidence of sex-selective abortions in northern and western parts of the country, especially in the states of Punjab, Haryana and Gujarat. For the year preceding the survey, the SRB is 127 for Punjab and Haryana and 120 for Gujarat. The SRB computed from the data on children ever born to women aged 20-34 is 118 for Punjab, 116 for Haryana and 112 for Gujarat. In all the states of northern and western India (except Goa), the SRB reported by women who had passed matriculation is higher than 106. In Punjab and Haryana, the SRB for this group of women is as high as 139-141 as per the data on births during last year, and 122-125 as per the data on children ever born.

**Table 3 Sex ratio at birth by residence and mother's educational level, 2001 Census**

| Region & State | Births during the previous year | | | | | Birth to women age 20-34 years | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Mother's education | | | | | Mother's education | |
| | Total | Rural | Urban | Illiterate | Matriculation or higher | Total | Rural | Urban | Illiterate | Matriculation or higher |
| All-India | 110 | 110 | 111 | 109 | 115 | 107 | 106 | 108 | 106 | 109 |
| North-West | | | | | | | | | | |
| Jammu & K | 105 | 105 | 103 | 102 | 114 | 109 | 108 | 113 | 107 | 116 |
| Himachal P. | 118 | 119 | 117 | 112 | 127 | 109 | 109 | 114 | 105 | 115 |
| Punjab | 127 | 127 | 126 | 118 | 139 | 118 | 118 | 119 | 114 | 125 |
| Haryana | 127 | 127 | 127 | 120 | 141 | 116 | 115 | 117 | 113 | 122 |
| Delhi | 117 | 121 | 117 | 110 | 125 | 112 | 114 | 112 | 109 | 116 |
| North-Central | | | | | | | | | | |
| Rajasthan | 116 | 115 | 119 | 113 | 124 | 109 | 108 | 111 | 108 | 113 |
| Uttaranchal | 117 | 117 | 117 | 114 | 124 | 107 | 106 | 110 | 105 | 112 |
| Uttar P. | 111 | 111 | 109 | 110 | 119 | 107 | 107 | 110 | 107 | 111 |
| Bihar | 109 | 109 | 109 | 107 | 118 | 107 | 107 | 109 | 107 | 110 |
| Jharkhand | 110 | 110 | 114 | 109 | 116 | 104 | 104 | 107 | 104 | 107 |
| Chhattisgarh | 108 | 107 | 109 | 107 | 112 | 102 | 102 | 104 | 101 | 107 |
| Madhya P. | 111 | 110 | 113 | 109 | 116 | 106 | 106 | 109 | 105 | 109 |
| East | | | | | | | | | | |
| Assam | 106 | 106 | 102 | 105 | 106 | 104 | 104 | 106 | 104 | 104 |
| North-East | 103 | 103 | 101 | 102 | 101 | 102 | 103 | 102 | 103 | 103 |
| West Bengal | 103 | 103 | 99 | 102 | 102 | 104 | 104 | 105 | 104 | 104 |
| Orissa | 108 | 108 | 105 | 106 | 111 | 104 | 103 | 105 | 103 | 105 |
| West | | | | | | | | | | |
| Gujarat | 120 | 118 | 125 | 114 | 134 | 112 | 110 | 115 | 109 | 119 |
| Maharashtra | 114 | 115 | 112 | 110 | 118 | 108 | 107 | 108 | 106 | 111 |
| Goa | 109 | 106 | 112 | 105 | 109 | 105 | 104 | 106 | 105 | 105 |
| South | | | | | | | | | | |
| Andhra P. | 105 | 106 | 103 | 105 | 106 | 104 | 104 | 104 | 104 | 104 |
| Karnataka | 103 | 103 | 104 | 102 | 104 | 105 | 105 | 105 | 105 | 105 |
| Kerala | 103 | 103 | 104 | 102 | 104 | 104 | 104 | 104 | 105 | 104 |
| Tamil Nadu | 107 | 109 | 104 | 108 | 106 | 105 | 105 | 104 | 106 | 104 |

Source: Census of India, 2001.

**Figure 2 District-wise sex ratio at birth:**

**a- among children ever born to women aged 20-34 years in 2001**

**b- among those born during the year preceding 2001 Census**
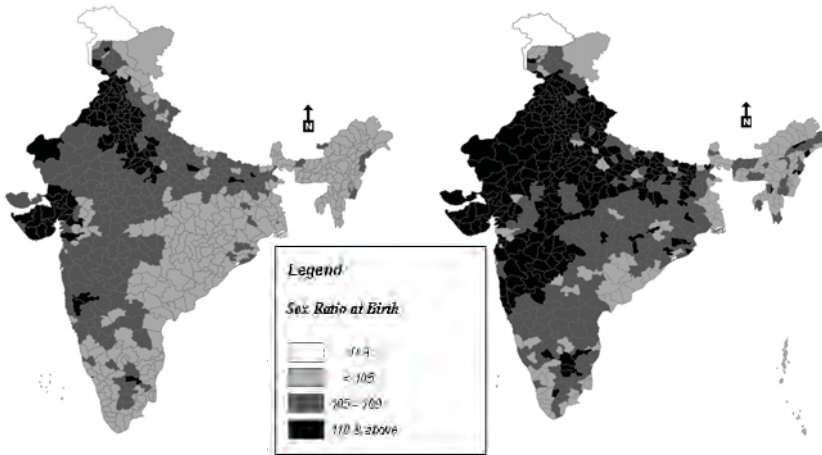


Source: Census data.

The existence of strong regional pattern in the SRB becomes even more evident when the SRB for the districts of India is mapped. Figure 2-a shows such as map drawn using the data on lifetime births for women aged 20-34, while Figure 2-b shows the map drawn using the data on births during the year before the census. As the former map is based on more number of births per district, it may be more reliable than the latter but refers to an earlier period than the map in Figure 2-b. In Figure 2-a, a line drawn diagonally separating the southern and eastern India from northern and western India would neatly demark the two regions of low and high SRB. Except for some isolated pockets (such as around Salem district in Tamil Nadu), the SRB was less than 105 in East and South India. In much of northern and western India, the SRB was more than 105, and was in excess of 110 in Punjab, Haryana and Gujarat. The map drawn using the data on births during the year preceding the census (Figure 2-b) shows that the region with the SRB in excess of 110 has expanded considerably to cover virtually the entire area above the diagonal line that had SRB higher than 105. Also, the area with SRB less than 105 has shrunk considerably in South India, as many districts in Karnataka, Andhra Pradesh and Tamil Nadu have crossed the threshold. But North-East India has remained relatively untouched by this change.

## 3. Evidence from National Family Health Surveys

The National Family Health Surveys conducted in 1992-93 (NFHS-1) and 1998-99 (NFHS-2) were designed on the lines of Demographic and Health Surveys (DHS) carried out in many developing countries with the financial assistance of USAID. They provide valuable information on birth histories of women, their background characteristics, including antenatal and delivery care during the pregnancy of most recently born children (during the four-year period preceding the survey in NFHS-1 and three-year period preceding the survey in NFHS-2). From NFHS-2, data on anthropometrical indicators and anaemia for all women, and the use of ultrasound and amniocentesis during the pregnancy of the recently born children are also available. As the micro data from the surveys are available in electronic form, they provide greater scope than the census data for the analysis of determinants of the SRB as well as the use of prenatal diagnostic techniques (PNDT). But, as data on the number of births available from the NFHS surveys are relatively small compared to that from the census, the results tend to be more suggestive than confirmatory.

### 3.1. Use and Misuse of Prenatal Diagnostic Techniques (PNDT)

A factor recently emerged that has a strong influence on the SRB: the use of sex determination tests during pregnancy followed by abortion of foetuses of unwanted sex. Although conducting abortion became legal in India in 1971, it is only recently that prenatal diagnostic techniques became widely available. Because of its relative rarity, information on the use of these techniques was not collected in NFHS-1. But in NFHS-2, this information was collected from mothers who gave birth during the three-year period before the survey. In this survey, the use of PNDT (mainly ultrasound) was reported by mothers in 13 percent of 32 000 live births that occurred during the three-year period before the survey. The SRB in the reported cases of PNDT was 112 compared with 107 among live births to women who did not report the use of PNDT. Clearly, in a significant percentage of cases, PNDT was misused to abort female foetuses, since if sex-selective abortions were not practiced, the SRB would have been close to 105. Even the reported SRB for non-PNDT cases is relatively high indicating that some women may not have disclosed its use.

From the survey data, it is possible to arrive at rough estimates of the misuse of PNDT for sex selection and the true extent of the use of PNDT. To do this, we assume that abortion after PNDT is done only when the foetus is detected to be female. Although some couples may

abort male foetuses when all previous births are male, we shall later show that this tendency is quite weak in India. Though male foetuses may get aborted because of wrong diagnosis, we shall assume that such failures of PNDT are rare.

Let $M_U$ and $F_U$ be the number of male and female live births to reported users of PNDT during the pregnancy of these births. Also let $M_N$ and $F_N$ be the number of male and female live births to reported non-users of PNDT. Let $S$ be the ratio of male-to-female live births when no sex-selective abortion is practiced. Using these notations, the SRB among reported users of PNDT can be written as

$$S_U = \frac{M_U}{F_U}$$

Similarly, the SRB among reported non-users of PNDT can be written as

$$S_N = \frac{M_N}{F_N}$$

If it is assumed that only female foetuses are aborted after PNDT, the number of abortion of female foetuses after PNDT can be computed as

$$A_U = \frac{M_U}{S} - F_U = M_U\left(\frac{1}{S} - \frac{1}{S_U}\right)$$

It may be noted that for $A_U$ to be positive, $S_U > S$. If it is not the case, it will be assumed that $A_U = 0$.

We define the index of the misuse of PNDT as the proportion of female foetuses aborted after the use of PNDT. If all women correctly reported the use of PNDT, then this index is given by

$$\frac{A_U}{F_U + A_U} = 1 - F_U\,\frac{S}{M_U} = 1 - \frac{S}{S_U}$$

However, not all users may disclose the use of PNDT. This is indicated by $S_N$ being significantly higher than $S$. The number of abortion of female foetuses done by reported non-users of PNDT can be computed as

$$A_N = \frac{M_N}{S} - F_N = M_N\left(\frac{1}{S} - \frac{1}{S_N}\right)$$

As before, for $A_N$ to be positive, $S_N > S$. If it is not the case, it will be assumed that $A_N = 0$

Thus, the adjusted proportion of female foetuses aborted after PNDT can be computed as

$$\frac{A_U + A_N}{F_U + A_U + A_N}$$

We can also estimate the proportion of foetuses actually subjected to PNDT as

$$\frac{M_U + F_U + A_U + A_N}{M_U + F_U + M_N + F_N + A_U + A_N}$$

In making actual computations, there is the practical problem of assuming a value for S, the SRB in the absence of sex-selective abortions. Although it is thought to be close to 105 males for 100 females, as the census data reviewed earlier show, it could be as low as 103 in India. In order to study the sensitivity of the estimates to the assumed value of S, Table 4 shows estimates of the misuse of PNDT and corrected estimates of PNDT use obtained from the NFHS data using the values of S ranging from 103 to 106.

**Table 4 Effect of assumed value of normal sex ratio at birth on estimates of use and misuse of prenatal diagnostic techniques**

| Assumed normal sex ratio at birth | Estimated percent of female foetuses aborted after PNDT | | Adjusted percent of births subjected to PNDT |
|---|---|---|---|
| | Est. 1 | Est. 2 | |
| 103 | 7.9 | 26.6 | 14.7 |
| 104 | 7.0 | 22.0 | 14.3 |
| 105 | 6.1 | 16.9 | 13.9 |
| 106 | 5.2 | 11.3 | 13.5 |

Source: NFHS-2 micro data.

As can be seen from the table, the corrected estimate of PNDT use for all India is not sensitive to the assumed value of the sex ratio. It varies from 13.5 to 14.7 percent (against the uncorrected value of 12.8 percent) when the normal SRB varied from 106 to 103. The estimate of misuse of the technology by those who reported the use of PNDT is also not very sensitive to the assumption on the normal SRB. It varies from five to eight percent when the normal SRB is varied from 106 to 103. However, if the observed higher SRB (107) among those who did not report the PNDT use is because of undisclosed use, the estimated misuse of the technology increases from eleven to twenty

seven percent when the normal SRB is varied from 106 to 103. None-theless, these results amply show that a majority of the users of PNDT in India do not misuse it to abort female foetuses.

**Table 5 Reported and adjusted use of prenatal diagnostic technologies and estimated percentage of females foetuses aborted after the use of these technologies by selected background characteristics, NFHS-2, 1998-99**

| Variable | Sample births | Births (%) subjected to PNDT | | Sex ratio at birth | | | Female foetuses (%) aborted after PNDT | |
|---|---|---|---|---|---|---|---|---|
| | | Reported | Adjusted | All births | PNDT not reported | PNDT reported | Est. 1 | Est. 2 |
| Total | 32,228 | 12.8 | 13.9 | 107.7 | 107.1 | 111.8 | 6.1 | 16.9 |
| ANC status at pregnancy | | | | | | | | |
| No ANC | 10,987 | 0.0 | 0.0 | 102.4 | 102.4 | | 0.0 | 0.0 |
| ANC by doctor | 15,745 | 24.5 | 27.0 | 112.6 | 113.1 | 111.1 | 5.5 | 22.8 |
| ANC by others | 5,395 | 5.0 | 5.3 | 104.7 | 104.0 | 119.5 | 12.1 | 12.1 |
| Residence | | | | | | | | |
| Rural | 25,064 | 7.7 | 8.8 | 107.6 | 107.4 | 109.8 | 4.4 | 24.4 |
| Urban | 7,164 | 30.8 | 31.8 | 108.1 | 105.7 | 113.6 | 7.5 | 8.9 |
| Region | | | | | | | | |
| East | 4,421 | 5.0 | 8.7 | 114.2 | 114.6 | 106.5 | 1.4 | 62.8 |
| South | 6,132 | 27.9 | 27.9 | 102.0 | 102.7 | 100.2 | 0.0 | 0.0 |
| West | 4,421 | 26.0 | 27.3 | 108.8 | 107.1 | 113.9 | 7.8 | 12.6 |
| North-West | 2,047 | 17.2 | 22.0 | 119.2 | 114.6 | 144.4 | 27.3 | 46.7 |
| North-Central | 15,211 | 4.6 | 5.2 | 106.4 | 105.5 | 126.4 | 16.9 | 24.3 |
| Birth order | | | | | | | | |
| 1 | 9,299 | 20.8 | 21.8 | 106.9 | 108.3 | 101.8 | 0.0 | 10.3 |
| 2 | 8,333 | 15.5 | 16.9 | 108.9 | 108.8 | 109.3 | 3.9 | 19.4 |
| 3 | 5,708 | 9.3 | 10.5 | 108.0 | 106.3 | 126.1 | 16.7 | 25.2 |
| 4+ | 8,892 | 4.3 | 5.3 | 107.3 | 105.3 | 166.9 | 37.1 | 40.0 |
| Sex composition of sibling | | | | | | | | |
| All sisters, no brother | 7,874 | 13.9 | 18.9 | 119.1 | 116.2 | 138.7 | 24.3 | 51.2 |
| All brothers, no sister | 7,176 | 11.7 | 11.7 | 100.5 | 100.3 | 102.2 | 0.0 | 0.0 |
| Other combinations | 17,182 | 12.8 | 13.2 | 105.9 | 106.2 | 104.0 | 0.0 | 7.2 |
| Religion | | | | | | | | |
| Hindus | 25,534 | 12.2 | 13.5 | 108.3 | 107.4 | 114.7 | 8.5 | 21.1 |
| Muslims | 5,042 | 12.0 | 12.0 | 101.4 | 101.8 | 98.0 | 0.0 | 0.0 |
| Others | 1,570 | 26.1 | 28.3 | 111.9 | 112.5 | 110.2 | 4.8 | 19.9 |
| Castes | | | | | | | | |
| Scheduled caste/tribe | 9,491 | 6.3 | 7.8 | 108.7 | 108.8 | 107.7 | 2.5 | 35.8 |
| Other backward caste | 10,358 | 14.0 | 14.1 | 105.4 | 105.3 | 106.6 | 1.5 | 2.9 |
| Others | 12,000 | 17.4 | 19.2 | 110.0 | 108.7 | 116.5 | 9.9 | 22.0 |

*(Table continues on the following page)*

**Table 5 Reported and adjusted use of prenatal diagnostic technologies and estimated percentage of females foetuses aborted after the use of these technologies by selected background characteristics, NFHS-2, 1998-99** *(continued)*

| Variable | Sample births | Births (%) subjected to PNDT | | Sex ratio at birth | | | Female foetuses (%) aborted after PNDT | |
|---|---|---|---|---|---|---|---|---|
| | | Reported | Adjusted | All births | PNDT not reported | PNDT reported | Est. 1 | Est. 2 |
| Parents' educational level | | | | | | | | |
| Both parents illiterate | 8,922 | 2.7 | 2.8 | 105.1 | 105.3 | 96.7 | 0.0 | 10.2 |
| Only father literate | 9,890 | 5.3 | 5.7 | 104.3 | 103.4 | 121.5 | 13.6 | 13.6 |
| Mother < middle | 5,821 | 14.2 | 14.2 | 103.2 | 103.3 | 102.5 | 0.0 | 0.0 |
| Mother ≥ middle | 7,510 | 33.8 | 37.6 | 119.0 | 121.4 | 114.2 | 8.1 | 27.8 |
| Standard of living | | | | | | | | |
| Low SLI | 11,638 | 3.8 | 4.5 | 105.9 | 106.5 | 93.9 | 0.0 | 24.6 |
| Medium SLI | 15,068 | 11.8 | 12.2 | 106.1 | 106.0 | 107.4 | 2.2 | 8.4 |
| High SLI | 5,125 | 35.8 | 38.8 | 116.2 | 114.2 | 120.0 | 12.5 | 23.3 |
| Mother's media exposure | | | | | | | | |
| No exposure | 15,314 | 2.7 | 2.9 | 105.2 | 104.9 | 115.9 | 9.4 | 9.4 |
| Regular exposure | 16,885 | 22.0 | 23.7 | 110.0 | 109.7 | 111.3 | 5.7 | 18.0 |
| Mother's work status | | | | | | | | |
| Not working | 22,282 | 14.9 | 16.7 | 109.8 | 108.6 | 116.3 | 9.7 | 23.9 |
| Working, not for wage | 5,135 | 9.1 | 9.1 | 104.1 | 104.7 | 97.9 | 0.0 | 0.0 |
| Working for wage | 4,804 | 7.4 | 7.4 | 102.4 | 103.2 | 91.9 | 0.0 | 0.0 |
| Mother's ideal family size | | | | | | | | |
| 1-2 | 15,480 | 21.5 | 24.4 | 113.8 | 114.3 | 112.1 | 6.4 | 28.0 |
| 3 | 8,675 | 5.8 | 7.7 | 109.5 | 108.8 | 120.7 | 13.0 | 43.8 |
| 4+ or non-numeric | 8,073 | 3.9 | 3.9 | 95.1 | 95.1 | 96.2 | 0.0 | 0.0 |

Source: NFHS-2 micro data.

It is useful to investigate whether the use of PNDT and its misuse vary according to background characteristics of women. Table 5 presents information on them. The estimates presented in this table are computed assuming a normal SRB of 105. For India as whole, the SRB of 112 among those who used PNDT indicates that six percent of female foetuses were aborted after PNDT. But if it is assumed that some of those who did not use PNDT may have actually used it the estimated percentage of female foetuses aborted rises to seventeen percent, and the adjusted use of PNDT is fourteen instead of thirteen percent. Those who did not avail antenatal care (ANC) services clearly could not have used PNDT and resorted to female foeticide. Their SRB of 102 also testifies to this. But the SRB among those who availed ANC from a doctor is 112. Twenty-five percent of them had reported

PNDT, which rises to twenty seven percent if adjustment is made for the suspected non-disclosure of its use. If the normal sex ratio is 105, the SRB of 111 among PNDT users indicates that six percent of the users may have used the technology to abort female foetuses. But this estimate rises to twenty three percent if an adjustment is made for the possibility that some of the reported non-users of PNDT users did not disclose its use (since the SRB among this group is 113). Among women who availed PNDT from providers other than the doctor, five percent had reported the use of PNDT, and it is estimated that twenty four percent of them had misused it. In this group, among those who did not report the use of PNDT, the SRB is 104, indicating no misreporting of the PNDT status.

In urban areas, thirty one percent of live births were reportedly subjected to PNDT compared with only eight percent in rural areas. On the assumption that reported PNDT use is correct, eight percent of those who used PNDT misused it in urban areas while four percent did so in rural areas. But the sex ratio of those who did not report the use of PNDT shows that thirty two percent in urban areas and nine percent in rural areas may actually have used it, and among them nine percent in urban areas and twenty four percent in rural areas may have misused it. Thus the use of PNDT is certainly much higher in urban areas than in rural areas, but it is not altogether clear as to where the actual misuse is higher.

The use of PNDT is relatively high in southern and western regions of India where the reported use is 27-28 percent. The reported use is less than five percent in East and North Central regions of India. In north-western parts of the country, where the child sex ratios are high, the reported use is moderate (seventeen percent). The strong regional pattern in the reported use is clearly seen in Figure 3 where we have mapped the use-rate for 77 natural regions of the country. One reason for the relatively high use of PNDT in southern and western parts of the country could be that there the use of ANC services, especially from a doctor, is high. However, as the map in Figure 4 shows, even when only cases with ANC by a doctor are considered, the regional pattern in the use of PNDT does not disappear. Reported use of ultrasound or amniocentesis is rare in East and North Central India, even when ANC is availed from a doctor.

Although South India shows the highest use rate of PNDT, misuse of the technology is rare; as a consequence, the SRB is less than 105 in this region among both users and non-users (Table 5). In the north-central region, though the use of PNDT is rare, misuse among those who use it is high (17-24 percent). But it is in the north-western

region, where the misuse of PNDT is most frequent (27-47 percent). For north-western India, when the reported use is adjusted for its possible underreporting, the implied use rate increases from seventeen to twenty two percent. In other regions, the implied corrections for underreporting are small. Although East India shows the highest percentage of misuse if the high SRB for non-users is taken into account, it is most probably due to sampling errors in the data than the actual misreporting of PNDT status.

**Figure 3 Reported use of prenatal diagnostic techniques in 77 natural regions of India, NFHS-2, 1998-99**
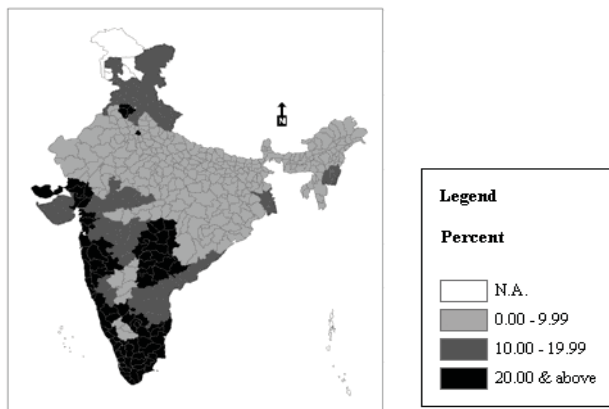


Source: NFHS-2 micro data.

The reported use of PNDT declines as the order of birth increases. But the misuse of the technology increases with the birth order. The reported use is twenty one percent for the first birth order but the estimated misuse, at the maximum, is only ten percent. On the other hand, when the birth order is four or more, only four percent report the use of PNDT but nearly forty percent resort to abortion if the foetus is female. Thus in the case of first birth, the predominant reason for the use of PNDT is to detect abnormalities of the foetus, while at higher orders the main reason for the use is to detect the sex of the child. The reported use of PNDT doesn't show significant variations with sex composition of previous children born to the woman. But the misuse of the technology is highest when the woman had no son, but had one or more daughters. Among such women, the misuse is estimated to be 24-51 percent. When women had no daughter but had one or more sons, the SRB is 101, and 102 for women reporting PNDT use. While this may be suggesting abortion of male foetuses by such women, the difference from the normal sex ratio can also be due to sampling errors. On the other hand, the SRB for women

who had no sons but had two or more daughters is substantially high enough to be attributed to sampling errors (119 for all births and 139 for births with reported use of PNDT).

**Figure 4 Reported use of prenatal diagnostic techniques when doctor is the ANC provider, 77 natural regions of India, NFHS-2, 1998-99**
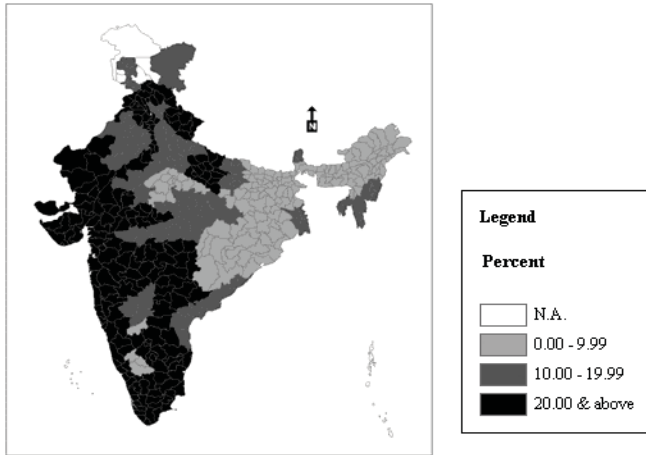


Source: NFHS-2 micro data.

The reported use of PNDT is twelve percent among Hindus and Muslims, and twenty six percent among other religions (mainly Christians and Sikhs). While those who misuse the technology are negligible among Muslims, it is 8-21 percent among Hindus and 5-20 percent among other religions. As would be expected, the reported use of PNDT increases from six percent among scheduled castes/tribes to fourteen percent among other backward classes (OBCs) and seventeen percent among others. But the misuse of the technology is least among OBCs (2-3 percent) while it is relatively high among other castes (10-22 percent).

The use of the technology increases with the level of education of parents. When both the mother and father are illiterate, only two percent use PNDT. When only the father is literate, this increases to five percent. When the mother has completed high school or gone to college, the reported use is forty two percent. The misuse does not show a consistent relationship with education. It is low when both the mother and father are illiterate (0-10 percent), but relatively high when father is literate but mother is not (fourteen percent) and when the mother has competed high school or gone to college (9-28 percent). Interestingly, misuse is almost negligible among mothers who are literate but not completed middle school. To study the relationship of

use and misuse of PNDT with prosperity of households, we used an index of standard of living (SLI) computed from household amenities and assets (see IIPS and ORC Macro, 2000). The reported use of PNDT increases from three percent in low SLI households to thirty eight percent in high SLI households. The estimated misuse among reported PNDT users also increases from zero percent in low SLI group to two percent in medium SLI group and thirteen percent in high SLI group. But when adjusted for the possible misreporting of PNDT status, the estimated misuse of PNDT in low SLI group (twenty four percent) turns out to be as high as in high SLI group (twenty three percent) and substantially higher than the medium SLI group (eight percent).

**Table 6 Results of logit analysis of determinants of the use of prenatal diagnostic technologies, NFHS-2, 1998-99**

| Explanatory variables | Coefficient |
| --- | --- |
| Maternal age | 0.105** |
| Maternal age squared | -0.0008 |
| Paternal age | 0.134*** |
| Paternal age squared | -0.0017*** |
| Order of birth 3+ (no = 0) | -0.260*** |
| No surviving male sibling and order 2 or higher (yes = 0) | 0.082 |
| No surviving female sibling and order 2 or higher (yes = 0) | -0.206*** |
| Urban residence (rural = 0) | 0.743*** |
| Educational level (mother & father illiterate =0) | |
|    Mother illiterate, father literate | 0.360*** |
|    Mother less than primary | 0.683*** |
|    Mother middle school | 0.819*** |
|    Mother high school + | 1.189*** |
| Regular exposure to mass media (no = 0) | 0.661*** |
| Standard of living (low = 0) | |
|    Moderate | 0.415*** |
|    High | 1.107*** |
| Religion (Hindu = 0) | |
|    Muslim | 0.101 |
|    Christian | 0.485*** |
|    Sikh | 0.094 |
| Others | 0.374** |
| Caste/tribe (others = 0) | |
|    Scheduled tribe | -0.589*** |
|    Scheduled caste | -0.308*** |
|    Other backward castes | -0.086 |

*(Table continues on the following page)*

**Table 6 Results of logit analysis of determinants of the use of prenatal diagnostic technologies, NFHS-2, 1998-99** *(Continued)*

| Explanatory variables | Coefficient |
|---|---|
| Female work status (Not working=0) | |
|    Working for wages | -0.015 |
|    Others | -0.199** |
| Ideal number of children reported by mother | -0.449*** |
| Ideal number of children squared | 0.0278*** |
| Non-numeric ideal children (numeric = 0) | -1.000*** |
| Health worker visit during pregnancy (no = 0) | -0.275*** |
| Region (South=0) | |
|   East | -1.755*** |
|   West | 0.060 |
|   North-West | -1.225*** |
|   North-Central | -1.529*** |
| Constant | -5.697*** |
| Number of births | 31,481 |
| -2 Log-likelihood | 16,671 |
| Pseudo R$^2$ | 0.231 |

Notes: * $p<0.05$, ** $p<0.01$, *** $p<0.001$

Source: NFHS-2 micro data.

The reported use of PNDT increases with the mother's exposure to media. But it does not show a clear relationship with misuse. When only the reported use of PNDT is considered, misuse is marginally lower among women regularly exposed to media. But when adjusted for possible underreporting of PNDT, the estimated misuse is higher among women regularly exposed to media. Women's work status, however, has a clear relationship with both use and misuse of PNDT. Both use and misuse are higher among non-working women compared with women working for wage or not for wage (i.e. self employed or working in family farm or business). Reported, as well as adjusted, use rates increase with mother's ideal family size. When the ideal family size is one or two, 22-24 percent had PNDT. When the ideal family size is four or more, only four percent use PNDT. The misuse is highest when the ideal family size is three (13-44 percent), moderate when it is one or two (6-28 percent) and negligible when it is four or more.

The foregoing analysis shows that the use of PNDT tends to be systematically related to socioeconomic factors, and the adjustments needed for possible underreporting of its use are relative minor. Therefore, without significantly biasing the results, one can apply the multivariate techniques to the reported data on PNDT use to study the

independent effects of key socioeconomic variables on the use of PNDT. Accordingly, Table 6 shows the results of logistic regression of the determinants of PNDT use. As the table shows, most of the variables used in the regression have significant, independent effects on the use of PNDT. The use of PNDT increases with maternal as well as paternal age. But the use of this technology is lower if the order of birth is three or more. It is particularly low if the mother already has given birth to a son.

Urban residence, educational level, exposure to media and standard of living show strong, independent and positive effects on the use of PNDT. Its use is higher among Christians, and if the religion is other than Hindu, Muslim or Sikh. The use is lower among members of scheduled tribes and scheduled castes, even after controlling for standard of living and educational level. When compared with non-workers, the use is lower among mothers who work but not for wage. The use of PNDT is lower among mothers having larger ideal family sizes and among those who gave non-numeric answer to the question on ideal family size. Women who were visited by health workers during the pregnancy report lower use of PNDT. This finding is directly in contradiction with the claim of some activists that public health workers act as conduits of this technology in rural areas. Even after controlling these variables, eastern, north-central and north-western parts of India show lower use of PNDT than southern states. In other words, the geographical pattern seen in the PNDT use cannot fully be explained by the observed socioeconomic variations. This indicates the influence of neighbourhood on the use of technology.

## 3.2. Determinants of Sex ratio at Birth

In recent years the use of PNDT has emerged as the key intervening variable through which other factors influence the SRB in India. There are, however, a number of factors that independently affect the SRB. Teitelbaum (1972) provides an early review of the literature on this subject. James (1987) and Waldren (1998) provide a more recent review of the literature. Chahnazarian (1988) has applied multivariate techniques to test the independent effects of some of these variables using vital statistics data for several countries. For India, Retherford and Roy (2003) have used the NFHS data to test the significance of a limited set of factors. Here, using the same data set, an attempt is made to test the significance of far more variables on the SRB.

**Table 7 Results of logit analysis of determinants of probability of having a male birth NFHS-1, 1992-93 and NFHS-2, 1998-99**

| Explanatory variables | Births during 0-14 years before survey | | Births during | |
|---|---|---|---|---|
| | | | 1989-92 | 1996-98 |
| | NFHS-1 | NFHS-2 | NFHS-1 | NFHS-2 |
| Maternal age | 0.015** | -0.004 | 0.013 | 0.012 |
| Maternal age squared | -0.0003** | 0.0002 | -0.0003 | -0.0002 |
| Paternal age | -0.009* | -0.006 | -0.005 | -0.030** |
| Paternal age squared | 0.0001* | 0.0001 | 0.0001 | 0.0005*** |
| Paternal age not reported (reported = 0) | 0.027 | -0.070 | na | na |
| Order of birth | 0.002 | 0.000 | 0.011 | 0.011 |
| No surviving male sibling and order 2 or higher (yes = 0) | -0.002 | 0.043*** | 0.004 | 0.110*** |
| No surviving female sibling and order 2 or higher (yes = 0) | -0.025* | -0.022* | -0.035* | -0.041 |
| Urban residence (rural = 0) | 0.024** | -0.017 | 0.016 | -0.039 |
| Educational level (mother & father illiterate =0) | | | | |
|    Mother illiterate, father literate | -0.014 | -0.007 | -0.010 | -0.025 |
|    Mother less than primary | -0.016 | 0.011 | -0.073** | -0.017 |
|    Mother middle school | 0.005 | 0.020 | 0.009 | 0.090* |
|    Mother high school + | -0.064*** | 0.038* | -0.127*** | 0.068 |
| Regular exposure to mass media (no=0) | 0.000 | 0.020 | -0.020 | -0.009 |
| Standard of living (low = 0) | | | | |
|    Moderate | -0.018 | -0.026** | -0.014 | -0.005 |
|    High | 0.007 | -0.020 | 0.029 | 0.044 |
| Religion (Hindu = 0) | | | | |
|    Muslim | -0.028* | 0.013 | -0.035 | 0.020 |
|    Christian | 0.013 | 0.045* | 0.012 | 0.031 |
|    Sikh | 0.043 | 0.033 | -0.014 | -0.092 |
|    Buddhist | 0.028 | 0.055 | 0.197* | -0.107 |
|    Others | 0.040 | 0.057 | -0.001 | 0.064 |
| Caste/tribe (others = 0) | | | | |
|    Scheduled tribe | 0.015 | 0.016 | 0.027 | 0.006 |
|    Scheduled caste | 0.020 | 0.010 | 0.025 | 0.060* |
|    Other backward class | | 0.011 | | -0.006 |
| Female work status (Not working=0) | | | | |
|    Working for wages | -0.013 | -0.010 | -0.059** | -0.051 |
|    Others | 0.004 | -0.002 | 0.014 | -0.014 |

*(Table continues on the following page)*

**Table 7 Results of logit analysis of determinants of probability of having a male birth NFHS-1, 1992-93 and NFHS-2, 1998-99** *(Continued)*

| Explanatory variables | Births during 0-14 years before survey | | Births during | |
|---|---|---|---|---|
| | | | 1989-92 | 1996-98 |
| | NFHS-1 | NFHS-2 | NFHS-1 | NFHS-2 |
| Ideal number of children reported by mother | -0.043*** | -0.070*** | -0.043** | -0.064* |
| Ideal number of children squared | 0.0018** | 0.0046*** | 0.0016 | 0.0003 |
| Non-numeric ideal children (numeric = 0) | -0.134*** | -0.156*** | -0.076 | -0.232*** |
| Consanguinity (no = 0) | -0.016 | na | 0.012 | na |
| Health worker visited during pregnancy (no = 0) | na | na | 0.032 | -0.017 |
| Birth attendance (untrained birth attendant=0) | na | na | | |
| Trained birth attendant at home | na | na | 0.085*** | 0.076* |
| Trained birth attendant at institution | na | na | 0.040 | 0.070** |
| Iron and folic acid supplementation (no = 0) | | | | |
| Received tablets/syrup | na | na | 0.016 | 0.022 |
| Fully consumed | na | na | na | -0.041 |
| Number of antenatal checkups | na | na | 0.008* | 0.000 |
| Maternal anaemia at survey | | | | |
| Mild | na | -0.015 | na | 0.002 |
| Moderate/severe | na | -0.044*** | na | 0.002 |
| Not tested | na | -0.025 | na | -0.113** |
| Mother's body-mass index at survey (normal = 0) | | | | |
| Low (below 18.5 kg/m2) | na | 0.005 | na | 0.032 |
| High (25 kg/m2 or more) | na | -0.048** | na | -0.109* |
| Not measured | na | -0.202*** | na | -0.119*** |
| Mother's height at survey | na | 0.007 | na | -0.001 |
| Mother's height not measured (measured = 0) | na | -0.029 | na | 0.029 |
| Use of PNDT (no=0) | na | na | na | -0.056 |
| Interaction with PNDT use | | | | |
| No surviving male sibling and order 2 or higher | na | na | na | 0.228*** |
| No surviving female sibling and order 2 or higher | na | na | na | 0.015 |
| Altitude more than 1,000 meters (lower=0) | na | -0.035* | na | 0.029 |

*(Table continues on the following page)*

**Table 7 Results of logit analysis of determinants of probability of having a male birth NFHS-1, 1992-93 and NFHS-2, 1998-99** *(Continued)*

| Explanatory variables | Births during 0-14 years before survey | | Births during | |
| | | | 1989-92 | 1996-98 |
| | NFHS-1 | NFHS-2 | NFHS-1 | NFHS-2 |
|---|---|---|---|---|
| Region (South = 0) | | | | |
| East | 0.023 | 0.043** | 0.079** | 0.078* |
| West | -0.002 | 0.041* | 0.040 | 0.060 |
| North-West | 0.043** | 0.090*** | 0.129*** | 0.147*** |
| North-Central | 0.051*** | 0.082*** | 0.090*** | 0.090** |
| Constant | 0.110 | 0.317*** | -0.051 | 0.550 |
| Number of live births | 175,815 | 158,840 | 53,591 | 31,353 |
| -2Log-likelihood | 243,431 | 219,726 | 74,163 | 43,234 |
| PseudoR² | 0.001 | 0.002 | 0.002 | 0.005 |

Notes: *$p<0.10$, **$p<0.05$, ***$p<0.01$; na-not available/applicable.
Source: NFHS-2 micro data.

Accordingly, Table 7 shows the results of the logit analysis of determinants of the SRB using the data from NFHS-1 and NFHS-2. The results presented are with respect to the probability of having a male birth. Two sets of regression results are presented for each of the surveys, one using data on births that occurred during the 0-14 years before the survey, and another using data on births that occurred 0-4 years (for NFHS-1) and 0-3 years (for NFHS-2) before the survey. While the first set of regressions is based on larger sample of births, the latter set takes advantage of having information on more variables for the more recent births. Nonetheless, none of the regressions is able to account for more than one percent of the variation in the probability of male birth (as indicated by values of pseudo $R^2$), which underscores the random nature of sex determination at birth. Since in such a situation statistically significant effects could be detected only in large samples, we have checked whether some additional variables become significant when a 10 percent probability level is employed for the rejection of null hypothesis.

The most notable results from these regressions are with respect to the effects of sex composition of previously born children and the use of PNDT on the probability of male birth. Although order of birth doesn't show statistically significant relationship in any of the regressions, regressions using the NFHS-2 data set show that if the mother had at least one previous birth but had no son at the time of current birth, the probability of the birth being a male is higher and this effect is strongly significant. This suggests that such women were not resort-

ing to female foeticide in the 1980s but had begun to do so in the 1990s. The female-selection situation, characterized by women who had at least one previous child but had no daughter, reduces the probability of male birth, but its effect in the regressions is only mildly significant at ten percent level.

Information on the use of PNDT is available only for the recent births from NFHS-2. The regression using this data shows that PNDT use does not have a direct effect on the SRB. To test whether its effect depends on the sex-selection situation, we have interacted its use with dummy variables for male- and female-selection situations. As the results show, when women in male-selection situation (at least one previous birth and no sons) use PNDT, it has strong positive effect on the probability of male birth. Its effect in the case women with female-selection situation is not in the expected direction (i.e., negative), and also not statistically significant. It may be noted that male-selection situation shows positive effect on the probability of having a male birth even in the absence of PNDT use, indicating that some women must have suppressed its use.

Another important result is with respect to the effects of antenatal and delivery care. In both NFHS-1 and NFHS-2, data on antenatal and natal care are available only for the recent births (for the last four years in NFHS-1 and last three years in NFHS-2). Both data sets show that the SRB is higher when trained personnel attend the birth. This is could be due to the reduction in stillbirths when they attend the birth. But number of antenatal care checkups and consumption of iron and folic acid tablets or syrup during pregnancy appear to have no effect on the SRB.

Urban residence, educational level, standard of living, exposure to mass media, religion and caste generally do not show statistically significant or consistent relationship in all the regressions. Mothers with high school education or higher have reported lower proportion of males in their births in NFHS-1. But in NFHS-2 they have reported more males in their births, and the effect is mildly significant in the regression using data for births during 0-14 years before the survey. Mothers working for wage report lower probability of male births in all the regressions but the effect is statistically significant only in data on births during 0-14 years before NFHS-2. The regression results show that the SRB increases as the mothers' ideal number of children decreases, though in a non-linear fashion. This effect is strongly significant in all the regressions. Also, those who gave non-numeric response to the question on ideal family size had fewer sons. This would seem consistent with the contention of some female activists that incidence

of female foeticide increases with the decrease in family size. However, the fact that this effect is also found in NFHS-1 data for the period when the incidence of female foeticides were rare (as indicated by the insignificance of the variable representing the male-selection situation) suggests that the observed relationship is spurious: Those who had sons tend to use contraception more than those who had daughters; in order to justify their non-use of contraception, the latter group has the tendency to report higher ideal family size.

Maternal and paternal ages show a statistically significant relationship with the SRB in some of the regressions. In births that occurred during 0-14 years before NFHS-1, maternal age shows statistically significant non-linear relationship, indicating initially a rise in the SRB with maternal age and then a fall at older ages. This may be attributed to a similar relationship of maternal age with stillbirth rate. But this relationship is not seen in the data from NFHS-2. As the role of men in sex determination of the foetus is well established, their age could have a bearing on the SRB. Some researchers have found that the SRB decreases with paternal age and speculated that it is due to the decrease in coital frequency with age (Chahnazarian, 1988). All of our regressions indicate that the SRB initially decreases with paternal age and then rises at advanced ages. This effect is strongly significant in births that occurred 0-3 years before NFHS-2 and mildly significant in the regression that used births during 0-14 years before NFHS-1. While the initial decrease is as expected, the suggested rise after age 30 or so needs further investigation. The significance of the quadratic term in the regressions may simply be indicating that the rate of decrement diminishes with age.

The possibility of maternal malnutrition influencing the SRB has been discussed in the literature. Andersson and Bergstrom (1998) had found that short maternal stature and obesity were independently related to low SRB in Africa. Data on mother's nutritional status and anaemia are available only from NFHS-2. When data on births during 0-14 years are used (i.e., larger sample of births), moderate and severe anaemia show strong negative effects on the SRB. Mother's height does not show any effect on the SRB, but the results strongly suggest that obese women tend to have fewer sons. But it should be noted that NFHS data on maternal anaemia and body-mass index refer to the time of the survey rather than to the time of birth. Also to be noted is that women for whom data on body-mass index were not available had significantly lower SRB. This index was not calculated for pregnant women and those who had given birth during the two months before the survey. Such women were likely to have had more female births in

the past because in societies with strong son preference, those who had sons are more likely to use contraception and stop childbearing.

Data on altitude are available only from NFHS-2. When births during the 0-14 years before the survey are considered, there is a meek indication that higher altitudes reduce the chance male birth. This may be because of lower temperature and higher male foetal mortality at higher altitudes. It is also possible that people living at higher altitudes are genetically different from those living in low-lying areas. The information on consanguinity was collected only in NFHS-1. It shows no statistically significant relationship with the SRB. But owing to the limitations of the information on consanguinity collected in NFHS-1, it served as a poor proxy for the level of inbreeding. In all the regressions, even after controlling for the foregoing factors, the SRB is significantly higher in north-western and north-central regions. This could be because of greater misuse of PNDT in these parts. However, as these regional differences are also significant (but smaller) in the regressions that use NFHS-1 data, they may be indicating the presence of some genetic factors such as levels of circulating gonadotropin, or a tendency to underreport of female births in northern India.

## 4. Summary and Conclusion

In recent years the use of prenatal diagnostic techniques (PNDT), followed by sex-selective abortion has emerged as a powerful determinant of SRB in India. In this chapter we have analysed the factors influencing the use of PNDT as well as SRB. We present evidence from the recently released data on fertility from the 2001 Census as well as from the National Family Health Surveys (NFHS). The census fertility data suggest that SRB in India may have increased to 110, and in some areas, to as high as 130. But the data may have been affected by underreporting of female births. But even this data show that the SRB in southern and eastern India is well within the range observed under normal circumstances, thus discount the possibility of widespread use of sex-selective abortions in these areas. The census data also show that though there may be little rural-urban difference in the SRB, among the educated class the SRB is abnormally high.

The data collected in NFHS-2 (1998-99) show that thirteen percent of live births were subjected to PNDT, and six percent of female foetuses may have been aborted after PNDT. But, if possible underreporting is taken into account, PNDT may have been used in fourteen percent of the cases, and in seventeen percent of such cases female foetuses may have been aborted. The use of PNDT is higher in south-

ern and western regions of India while its misuse for selectively abort-
ing female foetuses is higher in north, especially in north-western parts
of the country. Also, the use of these techniques is higher at lower
parities but their misuse is more at higher parities, especially if women
had only daughters.

As would be expected, the use of PNDT is much higher in urban
areas, among educated women, those with higher levels of standard of
living, non-working women and regularly exposed to media. The mul-
tivariate analysis applied to the data shows that these factors have
independent effects on the use of PNDT. But they do not show a
clear-cut relationship with its misuse. This may be because users of
PNDT in the NFHS sample are not large enough to infer the patterns
unambiguously. Interestingly, the analysis shows that those who re-
ported the visit of health workers during pregnancy of the index birth
have used the PNDT less than others. This contradicts the allegation
of some activists who claim that government health workers are often
used as conduits by private agencies to promote the use of this tech-
nology in rural India.

The analysis of determinants of SRB shows that PNDT use does
not have a direct effect on the SRB because it is not generally misused.
But the analysis shows that when women in male-selection situation
(i.e., with at least one previous birth but no sons) use PNDT, it has a
strong positive effect on the probability of male birth. It was found
that women in male-selection situation have higher SRB even in the
absence of PNDT use, indicating that some women must have sup-
pressed its use in the survey.

Beyond the use of PNDT and sex composition of previously born
children, several other factors are also found to influence the SRB. The
SRB was higher when a skilled person attended the delivery. There was
evidence suggesting that the SRB initially increases and then deceases
with maternal age. On the other hand, there was even stronger evi-
dence indicating that the SRB decreases with paternal age initially and
then increases with it. Maternal anaemia and obesity are found to
decrease the SRB. There was evidence, albeit weak, that SRB is lower
at higher altitudes. Urban residence, educational level, standard of
living, religion and caste/tribe belonging failed to show significant or
consistent relationship with the SRB. However, regressions suggested
that probability of male birth was lower for wage-earning women. In
spite of controlling for many socioeconomic and demographic factors,
the SRB was higher in North India, especially in north-western parts,
indicating that women in these regions misused the technology more
than others. But the role of some genetic factors or underreporting of

female births in explaining a part of the remaining regional variations cannot be completely ruled out.

In conclusion, although the use of PNDT is now fairly common in many parts of India, only a minority of couples who use these techniques misuses it for aborting female foetuses. While income and education do increase the use of PNDT, their misuse is governed more by cultural factors and sex composition of children already born. The higher SRB observed among more educated and higher income groups is mainly because of their better access to these techniques rather than from their greater misuse.

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# Decreases in Male and Female Mortality and Missing Women in Bangladesh[1]

Nurul ALAM, Jeroen VAN GINNEKEN, Alinda BOSCH

## 1. Introduction

Amartya Sen (1990) estimated that there were about 100 million fewer women than men in South Asia, China, West Asia and parts of the North Africa as a result of higher than expected (or "excess") female mortality. He called the girls and women who died as a result of infanticide and differential access to nutrition and health care "missing women". To this group also belong female foetuses that were aborted due to the practice of sex-selective abortion. Klasen and Wink (2002) estimated the number of missing women, at nearly 88 million around 1980, or 7.7 percent of all females in countries affected. Ten years later the corresponding estimated figure was 94 million and 6.8 percent. They estimated the number of missing women in Bangladesh at 3.8 million (8.9 percent of the female population) around 1980 and 3.7 million (or 6.9 percent) around 1990. All these estimates confirm the enormity of the problem and the toll that excess female mortality was (and is) exacting in female-deficit regions and countries, including Bangladesh.

In Bangladesh, parents have a preference for a balance in sex composition of children; most couples want two sons and one daugh-

ter (Chowdhury and Bairagi, 1990). There is a debate over whether the
pro-son bias is the result of economic structure or due to sociocultural
reasons. The social institutions that shape norms and values prevailing
in a number of Asian countries dispose parents and other caretakers to
treat boys and girls differently on the ground of their sex, which does
not imply deliberate discrimination. Parents do not engage in conscious
discrimination between sons and daughters, but sex discrimination is
embodied in cultural beliefs (Waldron, 1987). The differential treat-
ment on the ground of sex often leads to poor health and survival of
girls. For this reason the 1994 Cairo International Conference of Popu-
lation and Development placed special emphasis on the need to im-
prove the health, welfare and survival of girls.

A consequence of discrimination against girls and women is the
low male-to-female mortality ratio (or excess female mortality) in ages
below 5. This ratio depends on the level and age structure of mortality,
cause of death patterns and other factors. The child (aged 1-4 years)
sex-specific mortality rate is an especially sensitive indicator of female
disadvantage, because in childhood, exogenous causes rather than
genetic causes of death predominate. Klasen and Wink (2003) point
out that the comparative neglect of female children is in general worse
in rural areas and is particularly severe for later born girls, and even
worse for girls with elder sisters.

In Bangladesh, under-five mortality fell very slowly from a very
high level in about 1970 until about 1985. Bhuiya and Streatfield (1991)
and Bairagi (1986) analyzing mortality data in Matlab in the early 1980s,
reported that higher socioeconomic status and higher mother's educa-
tion did not help to reduce female disadvantage, although these vari-
ables helped to improve the chances of survival and nutritional status
of children in general. Muhuri and Preston (1991) reported with Matlab
data that the disadvantage of female children was selective: girls who
had sister(s) at the time of their birth were more disadvantaged than
girls who did not have a sister. Das Gupta (1987) and Amin (1990)
showed similar results in Punjab, India.

However, a couple of studies analyzing child mortality and nutri-
tion data in Matlab in the late 1980s and early 1990s, the period of
rapid under-five mortality decline, suggest that the disadvantages of
female children in survival and nutrition diminished (Alam and Bairagi,
1997). The mortality decline has been faster for girls than for boys,
which resulted in higher life expectancy at birth for females than for
males since 1988 (ICDDR,B, 2004). The mortality decline has not been
uniform everywhere; the decline occurred at a faster rate in the area
with more easy accessible primary health care services (the MCH-FP

area) than in an adjacent area with less easy accessible primary health care services (the comparison area) (ICDDR,B, 2004).

While increasing availability of health (preventive and curative) services and changing attitudes towards girls are important for lowering, if not for stopping, maltreatment of girls, the fertility decline which has taken place in the 1980s and early 1990s also lowers female disadvantage by lowering the percent of families with higher order girls (who experience higher mortality) (Muhuri and Preston, 1991). For example, in Matlab the percent of third and higher rank order female births was reduced from 27.5 percent in the 1982-84 birth cohort to 16.8 percent in the 2000-2003 birth cohort.

Another factor that could account for high female compared to male mortality is higher prevalence of illness among girls compared to boys. However, in Matlab it was found that sex differences in prevalence of childhood diseases were in general insignificant (Hossain and Glass, 1988; Alam, 2000). Therefore, the explanation for excess female child mortality must be found in differences in the case-fatality rate. Case-fatality is largely determined by nutritional status and curative care, provided both within home and by health care providers. Undernourished children are at higher risk of dying than well-nourished children (Bairagi, 1981). Poor nutritional intake in combination with repeated illnesses results in malnutrition. Discrimination against female children in distribution of food has been noted in Bangladesh and India in the 1980s (Chen *et al.*, 1981; Das Gupta, 1987) and more research is needed to determine the role of this factor as well as unequal access to health care.

Basu (1989) debates the issue whether discrimination in feeding practices is a cause of excess female child mortality, especially in India. A strong preference for sons may induce parents to provide better medical treatment to sons than to daughters when they become ill. Only girls who are considered to be in excess may suffer more from relatively poor treatment. Several small-scale studies have shown modest sex differences in the treatment of sick children (Hossain and Glass, 1988; Alam, 2000). Timaeus et al. (1998) raise the question whether moderate or small sex differences in sickness care are enough to explain the excess female mortality.

A very different mechanism that may contribute to female disadvantage in survival is the family formation pattern. In Bangladesh the birth of a daughter is often followed swiftly by another birth (Chowdhury and Bairagi, 1990) in the hope that the additional child will be a son. Conversely, parents to whom a son has been born may be more likely to discontinue childbearing or delay the next birth. Such a pattern

of family formation may disadvantage girls because they are at higher risk of death in the short subsequent birth intervals after their birth (Muhuri and Menken, 1997). In order to determine the impact of the family formation pattern on discrimination against girls, parity specific probabilities of dying need to be taken into account.

The decline in child mortality levels and in sex differentials in mortality may also have been facilitated by the impact of women-focused development programmes, for example, stipends for girls' primary and secondary education, micro-credit schemes open to women and leading to income generating activities, awareness raising campaigns, etc. Education may erode sex differentials in child mortality by advocating more modern egalitarian values; it may lead to more income and other resources, and may lead to making better use of this income and resources.

Based on this review of the literature we are now in a better position to formulate the objectives of our study. The objectives are to examine whether discrimination against girls persists or has shifted over time and to identify the behavioural mechanisms involved in these changes. This study will focus on male/female differentials in mortality of infants and children aged 1-4 years and male/female differences in nutritional status of children aged 1-4 years old. Sex differentials in use of child health services are also considered as well as changes in patterns of enrolment in education for girls versus boys.

## 2. Data and methods

The data for this study came from number of sources; sex ratios in the Bangladesh population from censuses undertaken during 1951-2001; infant and child mortality data generated by the Matlab Health and Demographic Surveillance System (HDSS) during 1966-2003 (Bangladesh Population Census 2001; ICDDR,B, 2004); and data on nutritional status and use of child health services from cross-sectional surveys conducted both in Matlab and Bangladesh. Since many of the results to be reported here come from Matlab, we will now provide more details on this source of data. Matlab is the site of operations of the HDSS of the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B). It is located in a rural and a low-lying deltaic floodplain intersected by canals and branches of two big rivers of Bangladesh. It is about 50 kilometres South-East of Dhaka ((see the map in Figure 1 in the introduction). In Matlab, travel between villages and the market town is on foot or by country boat during the rainy season when -except for household courtyards- most of the area goes

under water. Floods, which occur quite frequently, create havoc in the area. Farming is the main occupation, but 60 percent of families are landless or marginally landless (own land less than 0.5 acre).[2] Muslims account for 89 percent of the population and the rest are Hindus.

A description of HDSS and the Matlab MCH-FP Project is available in several publications (e.g., Phillips *et al.*, 1982; Van Ginneken *et al.*, 1998). The Matlab MCH-FP project was introduced in late 1977 in one half of the Matlab HDSS area (called the MCH-FP area) with a population of about 100,000. MCH-FP services were improved in an incremental fashion in the MCH-FP area. The other half of the HDSS area (called the comparison area), and also with a population of about 100,000, has received the same governmental services as other rural areas of Bangladesh.

At the beginning of the MCH-FP project, both areas had a similar level of socioeconomic development and similar demographic rates. Since then the MCH-FP area experienced a faster decline in fertility and mortality than the comparison area till 1993. Subsequently, the differences between these two areas have narrowed. The trends in life expectancy at birth, and of infant and child mortality by gender were examined for the entire period of 1966-2003.

Mortality of children under five years of age by sex and sex-specific order of the child was examined for five birth cohorts of 1976-79, 1980-84, 1985-89, 1990-94 and 1995-99. The 1976-79 birth cohort was selected purposively instead of 1975-1979 because in 1975 the population was seriously affected by the famine that took place in 1974-75. The under-five mortality was divided into neonatal (0-28 days), post-neonatal (29 days–11 months) and child mortality (12-59 months). Independent variables used in the analysis of male/female mortality included sex and sex-specific rank order of the child, maternal age and education, household wealth index, religion and area (MCH-FP and comparison area). Household socioeconomic information was recorded in 1974, 1982 and 1996 censuses. A wealth index was constructed based on information on household durable articles (cot, wardrobe, chair and table, quilt, watch, radio, television, bicycle, motorcycle, house construction material, sanitary toilet, remittance and land in ownership). Principal component analysis was used in this process of construction of the index.

To assess whether levels of malnutrition, prevalence of morbidity, use of health services for treating illness and education differed be-

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[2] Land is the most valuable and durable asset to the villagers, and is a proxy for economic vulnerability.

tween boys and girls and whether there were changes over time, use was made of data from different national surveys conducted in Bangladesh.

The genetic evidence of difference between boys and girls in susceptibility to disease serves to demonstrate the difficulty of reaching an objective definition of female disadvantage or excess female child mortality. Biologically, females have higher rates of survival than males. So for any age group, the male-to-female mortality ratio should be greater than one. Gender inequalities in mortality in the childhood period are less likely to be influenced by genetic factors than in other age groups and this is thus the reason why we will focus on mortality in this age group 1-4 years old. In developed countries, the 1-4 year old male-to-female mortality ratio is on average around 1.05. This ratio, therefore, measures the disparity between males and females: the more this ratio is below 1.05, the higher is the disparity for females in survival and vice versa.

The analysis of the Matlab starts by comparing mortality risks in different cohorts using cross-tabulation and simple statistical tests. In addition, logistic regression is used to estimate the effect of sex and sex-specific rank order of the child on mortality, controlling for maternal age and education, households asset index, religion and area (area exposed to the MCH-FP intervention versus area with normal government services).

## 3. Gender discrimination at early stages of life

### 3.1. Trends in sex ratios in population censuses and at birth

The overall male-to-female sex ratios in national censuses show a continuous decline in 1951-1991 and some increase in 1991-2001 (Table 1). The little increase in the sex ratio in 2001 compared to 1991 is contrary to the evidence, to be shown below, of the faster female than male child mortality decline in the 1980s and 1990s. Various other factors may have been responsible for this reversal and we are unable to specify their various separate contributions.

The overall sex ratios of the *de jure* population censuses undertaken in Matlab HDSS area show a gradual declining trend during from 103.1 in 1974 to 97.3 in 1996 (Table 2). The sex ratios of under-ten children, who are subject to less (and not sex-selective) migration than older age groups, increased a little between 1974 and 1982 followed by a fall in 1996. The sex ratio at birth (data not shown here) was very

constant in 1974-2003 (ranging from 104.2 in 1974-1979 to 103.5 in 2000-2003) suggesting that in this period there was no or little sex-selective abortion in the Matlab HDSS area.

**Table 1 Sex ratio in Bangladesh *de facto* population censuses, 1951-2001**

| Year | Population (in million) | Sex ratio (males/100 females) |
|------|------------------------|-------------------------------|
| 1951 | 41.912 | 109.61 |
| 1961 | 50.840 | 107.59 |
| 1974 | 71.476 | 107.74 |
| 1981 | 87.120 | 106.44 |
| 1991 | 111.456 | 105.86 |
| 2001 | 123.850 | 106.56 |

Source: Bangladesh Population Census Report 2001.

**Table 2 Sex ratio in *de jure* population censuses in Matlab HDSS area**

| Year | Population | Sex ratio (males per 100 females) | | | | | |
|------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| | | All ages | 0-4 years | 5-9 years | 10-14 years | 15-50 years | 50 years+ |
| 1974 | 167641 | 103.1 | 105.2 | 106.3 | 103.0 | 97.3 | 119.5 |
| 1982 | 187574 | 102.5 | 108.7 | 109.8 | 108.1 | 94.3 | 113.9 |
| 1996 | 212328 | 97.3 | 102.3 | 101.2 | 107.3 | 93.8 | 93.0 |

Source: Matlab Household Socioeconomic Censuses 1974, 1982 and 1996.

## 3.2. Levels and Trends in Life Expectancy and Under-Five Mortality

Figure 1 shows that life expectancy at birth in Matlab HDSS area has slowly increased for both males and females since 1966 from about 51 years in 1966 to about 68 years in 2003.

There were exceptions in 1970-1973 and in 1974-1975. The decrease in the first period was due to the Bangladesh liberation war while the second decrease resulted from the 1974-75 famine. Life expectancy at birth was higher for males than for females until 1984 by about two years (and in some years more than 2 years). However, from 1985 onwards, the rise in life expectancy has been faster for females than for males, resulting in higher life expectancy for females than for males since 1989. Females live longer than males by more than two years since 2000.

Parallel to the rise in life expectancy, declines in below five mortality rates took place. The infant mortality declined from about 111 per 1,000 live births in 1966-1967 to about 45 in 2003 although there were increases in 1970-73 and 1975 for reasons mentioned above (Figure 2).

On the whole there was little difference in infant mortality between boys and girls in the past 35 years.

**Figure 1 Life expectancy at birth by sex in Matlab, 1966-2003**



**Figure 2 Under 1 year mortality rate by sex in Matlab, 1966-2003**
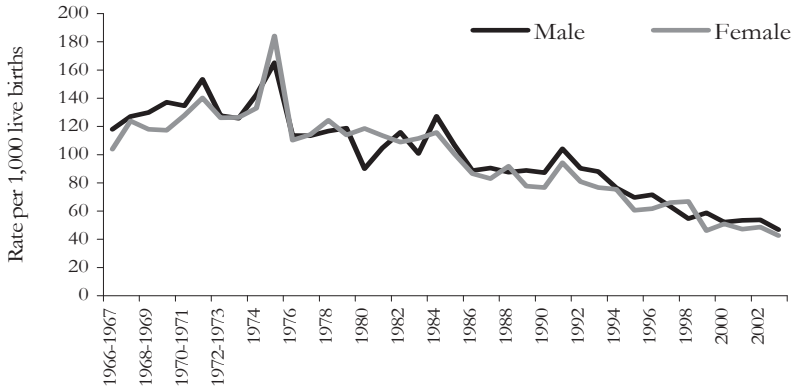


The decline in child mortality was also substantial namely from 25 per 1,000 population in 1966-1967 to about 4 in 2003 although there were temporary increases in several years in the period 1970-1985

(Figure 3). Mortality for girls 1-4 years old was substantially higher than for boys until about 1990 after which there were no or little differences.

**Figure 3 Child (1-4 yrs) mortality rate in Matlab, 1966-2003**
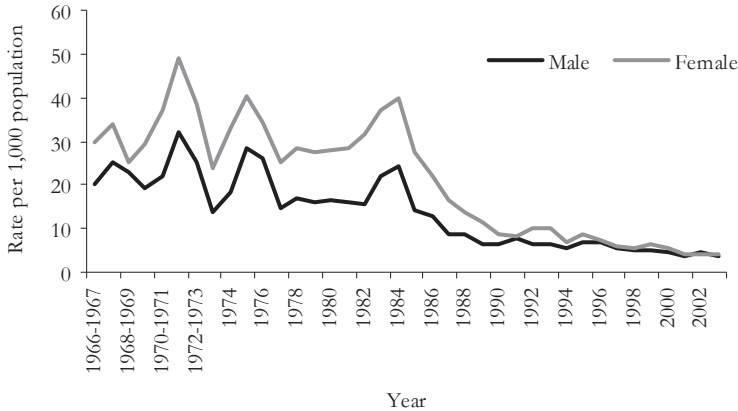


## 3.3. Sex Differentials in Child Mortality

Table 3 shows that sex differentials in child mortality are associated with several factors. Neonatal mortality rates are higher for males than for females in all birth cohorts in both areas, and the opposite is true for the post-neonatal mortality rates (with one exception). A further breakdown of male-to-female mortality ratios within the post-neonatal period, namely in the age group 29 days-5 months and 6-11 months, revealed ratios very close to one in the first half of the this period and ratios less than one in the second half (data not shown here). During the childhood period (between ages 12 and 60 months), male-to-female mortality ratios increased (especially in the 1980s and 1990s) while mortality rates in general fell. The ratios increased earlier (since 1980) in the MCH-FP area than in the comparison area (since 1990).

The results of the logistic regression models for each birth cohort in each area reveal that sex differentials in child mortality persisted for a longer period in the comparison area than in the MCH-FP area (Table 4). The odds of death of boys compared to girls were 0.56 to 1.00 in the comparison area for the 1976-1979 birth cohort and 0.53 to 1.00 in the MCH-FP area for the same cohort.

**Table 3 Neonatal, post-neonatal and child mortality rates and male-to-female mortality ratios, by birth cohort and area, Matlab HDSS, 1976-1999**

| Birth cohort (size) | Neonatal mortality rate | | | Post-neonatal mortality rate | | | Child (1-4 years) mortality rate | | |
|---|---|---|---|---|---|---|---|---|---|
| | Male | Female | M/F ratio | Male | Female | M/F ratio | Male | Female | M/F ratio |
| Comparison area | | | | | | | | | |
| 1976-79 (14793) | 74.3 | 63.9 | 1.16 | 44.5 | 53.4 | 0.83 | 71.8 | 120.4 | 0.60 |
| 1980-84 (20199) | 70.8 | 67.3 | 1.08 | 49.7 | 56.6 | 0.88 | 73.5 | 100.2 | 0.59 |
| 1985-89 (20201) | 62.0 | 53.7 | 1.15 | 39.5 | 44.3 | 0.89 | 32.5 | 53.8 | 0.60 |
| 1990-94 (16982) | 59.7 | 52.6 | 1.13 | 39.3 | 39.5 | 0.99 | 27.6 | 35.8 | 0.77 |
| 1995-99 (14960) | 48.8 | 40.5 | 1.20 | 25.8 | 27.8 | 0.93 | 21.7 | 27.9 | 0.78 |
| MCH-FP area | | | | | | | | | |
| 1976-79 (13478) | 70.2 | 61.6 | 1.14 | 38.9 | 47.9 | 0.81 | 55.2 | 99.0 | 0.56 |
| 1980-84 (15878) | 60.3 | 60.4 | 1.00 | 43.9 | 48.9 | 0.89 | 49.4 | 81.5 | 0.61 |
| 1985-89 (15200) | 48.2 | 40.5 | 1.19 | 36.3 | 34.7 | 1.05 | 24.8 | 31.3 | 0.79 |
| 1990-94 (12863) | 51.1 | 39.6 | 1.29 | 28.6 | 29.8 | 0.96 | 19.9 | 27.3 | 0.73 |
| 1995-99 (12468) | 32.5 | 30.9 | 1.05 | 16.7 | 22.2 | 0.75 | 17.0 | 15.4 | 1.10 |

Note: Child (1-4 years) mortality rate: death rate due of drowning has remained constant over the time, but the rate from other causes has declined. Denominator of mortality rates was number of survivors at beginning of neonatal, post-neonatal and childhood periods. Rates per 1000. Source: ICDDR,B, Matlab HDSS data, 1976-99.

**Table 4 Male-to-female odds ratios of dying at age 12-59 months by birth cohort and area, Matlab HDSS, 1976-1999**

| Sex of the child | Birth cohorts | | | | |
|---|---|---|---|---|---|
| | 1976-79 | 1980-84 | 1985-89 | 1990-94 | 1995-99 |
| Comparison area | | | | | |
| Female (ref) | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Male | 0.56** | 0.56** | 0.59** | 0.76** | 0.77* |
| No. of deaths | 1161 | 1625 | 731 | 449 | 297 |
| No. of children | 12137 | 16538 | 16948 | 14186 | 12029 |
| MCH-FP area | | | | | |
| Female (ref) | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Male | 0.53** | 0.58** | 0.79* | 0.74* | 1.10 |
| No. of deaths | 874 | 884 | 369 | 257 | 171 |
| No. of children | 11417 | 13592 | 13170 | 10884 | 10538 |

Notes: Odds ratio controlled for maternal age and education, birth order, household economic status and religion, and number of children of the same women in the same cohort. *P<0.05, **P<0.01
Source: ICDDR,B, Matlab HDSS data, 1976-99.

These odds ratios are fairly close to the crude estimates of the male-to-female mortality ratios of 0.60/1.00 and 0.56/1.00 respectively for the same birth cohort in Table 3. The odds ratios increased faster in the MCH-FP area than in the comparison area especially in the

cohorts 1985-89 and 1995-99. However, the odds ratios (differences between males and females) remained statistically significant in all birth cohorts except for the 1995-99 cohort in the MCH-FP area.

## 3.4. Sex-Specific Rank Order of Index Child and Child Mortality

Table 5 highlights the shift in the risk pattern of child mortality by looking at the sex-specific rank of the index child in the family in the comparison and the MCH-FP areas over the years.

**Table 5 Odds ratios of dying at age 12-59 months, by birth cohort, rank order and area, Matlab HDSS, 1976-1999**

| Sex of specific rank order of the child | Birth cohorts | | | | |
|---|---|---|---|---|---|
| | 1976-79 | 1980-84 | 1985-89 | 1990-94 | 1995-99 |
| Comparison area | | | | | |
| First female child (ref) | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Second female child | 1.42** | 1.23* | 1.26$ | 1.50* | 1.38$ |
| Third or higher order female child | 1.41** | 1.34** | 1.70** | 1.99** | 1.43$ |
| First male child | 0.57** | 0.53** | 0.62** | 0.94 | 0.86 |
| Second male child | 0.77* | 0.63** | 0.84 | 1.14 | 0.99 |
| Third or higher order male child | 0.79* | 0.82* | 0.84 | 1.29 | 1.01 |
| MCH-FP area | | | | | |
| First female child (ref) | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Second female child | 1.26$ | 1.49* | 1.28 | 0.89 | 0.63 |
| Third or higher order female child | 1.35* | 1.47** | 1.46* | 1.44$ | 1.19 |
| First male child | 0.51** | 0.75** | 0.80 | 0.69$ | 1.04 |
| Second male child | 0.69** | 0.64** | 0.99 | 0.89 | 1.05 |
| Third or higher order male child | 0.72* | 0.82 | 1.17 | 0.83 | 0.98 |

Notes: Odds ratios controlled for maternal age and education, household economic status, religion and number of children of the same women in the same cohort. $P<0.1, *P<0.05, **P<0.01

Source: ICDDR,B, Matlab HDSS data, 1976-99.

Let us first compare the situation of the first female child in the family (which includes an only female child) with the situation of the first male child in the family (including an only male child). The male child in this situation experienced lower mortality than in the situation of the only female child in the cohorts 1976-79, 1980-84 and 1985-89 in the comparison area, and in the 1976-79 and 1980-84 birth cohorts in the MCH-FP area. More crucially, we compare secondly the situation of the first female child in the family with higher rank-order female children in families. The higher rank order female children continued to experience higher mortality in all birth cohorts in the com-

parison area and in all birth cohorts in the MCH-FP area (but the difference was not statistically significant in the 1995-99 cohort). In the third place we compare first male children with higher-order male children and it can be seen that higher order male children experienced higher mortality than first male children in both areas in nearly all birth cohorts. In summary we can say that in general higher order children experience higher mortality than first born children and this applies, therefore, also to girls. This is, however, hardly true anymore for girls in the 1995-1999 cohort.

## 3.5. Maternal Education and Household Wealth Index and Sex Differentials in Child Mortality

Table 6a shows that maternal education was not associated with a reduction in differentials in child mortality over time. There were hardly any difference in male-to-female child mortality ratios between mothers who had completed 5 or more grades and mothers who had not gone to school. This was found to be the case in both areas in all birth cohorts.

**Table 6a Maternal education and male-to-female child mortality ratio, Matlab HDSS area, 1976-1999**

| Birth cohort | Sex of child | Comparison area | | MCH-FP area | |
| | | Education | | Education | |
| | | none | grade 5+ | none | grade 5+ |
| --- | --- | --- | --- | --- | --- |
| 1976-79 | Female | 1.00 | 1.00 | 1.00 | 1.00 |
| | Male | 0.54** | 0.64* | 0.55** | 0.51** |
| 1980-84 | Female | 1.00 | 1.00 | 1.00 | 1.00 |
| | Male | 0.56** | 0.57** | 0.58** | 0.51** |
| 1985-89 | Female | 1.00 | 1.00 | 1.00 | 1.00 |
| | Male | 0.57** | 0.54* | 0.84 | 0.85 |
| 1990-94 | Female | 1.00 | 1.00 | 1.00 | 1.00 |
| | Male | 0.72** | 0.89 | 0.81 | 0.73 |
| 1995-99 | Female | 1.00 | 1.00 | 1.00 | 1.00 |
| | Male | 0.81 | 0.72 | 1.06 | 0.91 |

Notes: - Maternal education analysis excluded children born to mothers having education grade 1-4. - Male-to-female child mortality ratio controlled for maternal age, household economic status, religion and number of children of the same women in the same cohort. *$P<0.05$, **$P<0.01$

Source: ICDDR,B, Matlab HDSS data, 1976-99.

Table 6b leads to the same conclusion as Table 6a with respect to household assets. Sex differentials in mortality in more wealthy households were the same as in less wealthy households. Both Tables 6a and 6b confirm what was already found in Tables 3 and 4 namely that the

female-to-male disadvantage in survival decreased over time and more in the MCH-FP than in the comparison area.

**Table 6b Household wealth index and male-to-female child mortality ratio, Matlab HDSS area, 1976-1999**

| Birth cohort | Sex of the child | Comparison area | | MCH-FP area | |
| --- | --- | --- | --- | --- | --- |
| | | Lowest two quintiles | Top two quintiles | Lowest two quintiles | Top two quintiles |
| 1976-79 | Female | 1.00 | 1.00 | 1.00 | 1.00 |
| | Male | 0.56** | 0.54** | 0.49** | 0.58** |
| 1980-84 | Female | 1.00 | 1.00 | 1.00 | 1.00 |
| | Male | 0.55** | 0.51** | 0.62** | 0.75** |
| 1985-89 | Female | 1.00 | 1.00 | 1.00 | 1.00 |
| | Male | 0.55** | 0.56** | 0.79$ | 0.83 |
| 1990-94 | Female | 1.00 | 1.00 | 1.00 | 1.00 |
| | Male | 0.84 | 0.88 | 0.66* | 0.74 |
| 1995-99 | Female | 1.00 | 1.00 | 1.00 | 1.00 |
| | Male | 0.76 | 0.66$ | 1.26 | 1.15 |

Notes: - Household wealth index analysis excluded children born to households in middle (3rd) quintile. - Male-to-female child mortality ratio controlled for maternal age and education, religion and number of children of the same women in the same cohort. $P<0.1, *P<0.05, **P<0.01

Source: ICDDR,B, Matlab HDSS data, 1976-99.

## 3.6. Sex Differentials in Nutritional Status

Table 7a compares the nutritional status (indicated by weight-for-age as a percent of median weight using the WHO standard) of children aged 1-4 years in 1978 and 1996 in the Matlab HDSS area. One can see in the first place that there was a substantial reduction in the prevalence of severe malnutrition (defined by weight-for-age below 60 percent of the median of WHO standard) for both boys and girls between 1978 and 1996. One can notice in the second place that differences in malnutrition between boys and girls continued to exist in 1996 (especially with respect to moderate malnutrition), but differences were considerably smaller than in 1978.

Table 7b shows the degree of underweight as measured with the weight-for-age Z-score and stunting by height-for-age Z-score in the National Nutrition Programme baseline survey of 2004. For children aged 6-23 months old, the prevalence of severe underweight (weight-for-age <-3 SD) and severe stunting (height-for-age <-3 SD) was low and sex differentials did not exist. Levels of moderate underweight and stunting were, however, high, but, again, there were no sex differentials for these types of malnutrition. However, in the group of children 24-

59 years old both underweight and stunting are more common among girls than among boys.

**Table 7a Percent of malnourished children aged 1-4 years by sex, Matlab HDSS area, 1978 and 1996**

| Level of wasting | 1978 | | 1996 | |
|---|---|---|---|---|
| | Boys | Girls | Boys | Girls |
| Mild/normal ( 80% +) | 40.1 | 26.0 | 54.5 | 43.1 |
| Moderate (60%-79%) | 54.8 | 59.6 | 42.3 | 53.6 |
| Severe (<60%) | 5.1 | 14.4 | 3.2 | 3.3 |

Notes: Level of wasting defined by weight-for-age as percent of median weight in WHO standard population.
Sources: Chen *et al.*, 1981; Matlab Health and Socioeconomic Survey, 1996.

**Table 7b Sex differentials in nutritional status in Bangladeshi children, 2004**

| Sex of the child | Age 6-23 months | | | Age 24-59 months | | |
|---|---|---|---|---|---|---|
| | <-3 SD | -3SD<-2SD | ≥ -2 SD | <-3 SD | -3SD<-2SD | ≥ -2 SD |
| Weight-for-age Z-score | | | | | | |
| Male | 14.3 | 34.5 | 51.2 | 10.7 | 39.6 | 49.7 |
| Female | 13.6 | 35.4 | 51.0 | 16.2 | 44.2 | 39.6 |
| Height-for-age Z-score | | | | | | |
| Male | 13.7 | 27.9 | 58.4 | 16.5 | 29.2 | 54.3 |
| Female | 13.9 | 27.4 | 58.7 | 20.5 | 31.9 | 47.5 |

Note: SD: standard deviation
Source: NNP Baseline Survey 2004.

## 3.7. Sex Differentials in Health Service Use

The Bangladesh Demographic and Health Survey (BDHS) 2004 reported equality between boys and girls in immunization coverage (Table 8a).

**Table 8a Percentage of children aged 12-23 months who received specific vaccinations by sex, 2004**

| Sex of the child | BCG | DPT | Polio | Measles | All | Number of children |
|---|---|---|---|---|---|---|
| Male | 93.4 | 81.2 | 82.6 | 75.6 | 73.4 | 589 |
| Female | 93.4 | 80.8 | 82.0 | 75.7 | 72.8 | 676 |

Notes: Complete coverage of immunization includes BCG, three doses of DPT (3 doses) and polio (3 doses) and measles.
Source: BDHS, 2004.

The same survey also reported small differences between boys and girls in percentages of children reported to be sick with symptoms of fever and diarrhoea during the two weeks preceding the survey (Table

8b). There were somewhat larger differences with respect to presence of ARI (Acute Respiratory Infection) symptoms (male/female difference was 1.12 or 22 percent for boys versus 19.6 percent for girls). There was also nearly equality in use of curative care provided by trained providers for children who were sick with fever or diarrhoea. However with respect to children who showed symptoms of ARI there was a difference by sex (male/female differential is 1.39 or 23.3 percent for boys and 16.8 percent for girls).

Somewhat different results were found in BDHS 1993-94 (Table 8c). This survey reported larger differences in male/female differences in prevalence of ARI symptoms (1.26) than in BDHS 2004 (1.12). On the other hand, BDHS 1993-94 showed smaller difference in use of curative services between boys and girls who were reported to be ill with ARI (1.06) than BDHS 2004 (1.39). Results of the 2004 survey are, therefore, not always consistent with those of the 1993-94 survey. The tentative conclusion to be drawn from Tables 8b and 8c is that prevalence of childhood illnesses (as reported in surveys) could be somewhat higher for boys than for girls and there could be similar differences with respect to provision of curative care for these illnesses by medical providers.

**Table 8b Children aged under 5 with illness and percentage taken to health provider, by sex and illness, 2004**

| Morbidity type | Percentages of under-5 with illness (%) | | Under-5 taken to a health facility or provider (%) | |
|---|---|---|---|---|
| | Boys | Girls | Boys | Girls |
| ARI | 22.0 | 19.6 | 23.3 | 16.8 |
| Fever | 40.8 | 39.3 | 19.8 | 17.2 |
| Diarrhoea | 7.7 | 7.3 | 16.3 | 15.1 |

Source: BDHS, 2004.

**Table 8c Male-to-female ratios of diarrhoea and ARI morbidity and treatment among children aged under 3 years, BDHS 1993-94**

| Morbidity type | M/F ratios | | |
|---|---|---|---|
| | Prevalence of illness | Any treatment (among those sick) | Visit to health facility/ provider |
| ARI (2 weeks recall) | 1.26 | 1.12 | 1.06 |
| Diarrhoea (1 week recall) | 0.92 | 0.98 | 0.96 |

Source: BDHS, 1993-94.

## 3.8. Sex Differentials in Education

Table 9 shows that education has become more widespread over the years among both men and women. Rates of women ever enrolled in school or who completed grade 5 and above are a little higher than for men in 2004. This was not yet the case in 1993-94. The rates of men who completed grade 10 or more are higher than for women in both 2004 and 1993-94. This is due to the fact that more women married earlier than men (i.e., in age group 15-19 years old) and, therefore, dropped out of school earlier than men.

**Table 9 Percentage of the *de facto* household population aged 6-24 years by school enrolment, age and sex, BDHS 1993-1994 and 2004**

| Age group | Ever enrolled in school (%) | | Completed grade 5 and above (%) | | Completed grade 10 and above (%) | |
|---|---|---|---|---|---|---|
| | Male | Female | Male | Female | Male | Female |
| BDHS 2004 | | | | | | |
| 06-09 | 84.5 | 87.6 | - | 0.5 | - | - |
| 10-14 | 91.3 | 92.7 | 34.9 | 43.2 | - | 0.1 |
| 15-19 | 86.7 | 88.0 | 66.7 | 70.5 | 8.9 | 7.7 |
| 20-24 | 84.2 | 76.1 | 66.8 | 72.9 | 23.8 | 16.4 |
| BDHS 1993-94 | | | | | | |
| 06-09 | 76.5 | 73.6 | 0.3 | 0.2 | - | - |
| 10-14 | 79.1 | 77.8 | 17.9 | 18.1 | - | 0.1 |
| 15-19 | 73.6 | 63.8 | 43.3 | 33.1 | 5.9 | 4.7 |
| 20-24 | 67.0 | 50.6 | 42.1 | 23.5 | 15.6 | 6.4 |

Sources: BDHS, 1993-94 and BDHS, 2004.

## 4. Gender discrimination and policy implications

In this study we provided strong evidence that the female-to-male disadvantage in survival has decreased considerably in Bangladesh in the past 25 years. All the evidence on this point came from Matlab, but it is very likely that this also is the case in rural Bangladesh as a whole in view of the representativeness of the comparison area for these rural areas. The evidence concerning a decrease in female disadvantage in nutrition and use of health care also points in the direction of a decrease in female disadvantage, but is less convincing due to limitations of data on trends and to inconsistencies in the available data. We found strong evidence for a decrease in female/male disadvantage in primary education.

We started our search for evidence by looking at trends in sex ratios both in Bangladesh as a whole as well as in Matlab. At the national

level we did find evidence towards diminishing sex ratios derived from censuses conducted in the past 50 years (except between 1991 and 2001). The sex ratio in a population is determined by many factors and changes in this trend do not mean that one can conclude that they were due to faster improvements in health conditions of females than of males. The decline in sex ratios in Matlab HDSS area in 1974-96 was, however, more substantial than in Bangladesh as a whole and in accordance with the hypothesis of considerable improvements in female-to-male survival and health and less missing girls than in the past. In spite of existence of strong parental son preference in Matlab, the sex ratio at birth remained very constant over the years, suggesting that there was little or no sex-selective abortion.

Next, we looked at trends in male-to-female life expectancy and in survival in infancy and childhood in Matlab. We observed substantial improvements in female survival in the past 20 to 25 years for the various mortality indicators considered. We then decided to focus on male/female differences in mortality in the age groups 1-4 years old. The male/female mortality odds ratio increased considerably in recent birth cohorts with a marked difference between the comparison and the MCH-FP areas. This ratio increased from 0.56/1.00 in the 1976-79 birth cohort to 0.77/1.00 in the 1995-99 cohort in the comparison area and from 0.53/1.00 in the 1976-79 cohort to 1.1/1.0 (which means complete elimination of the female disadvantage) in the 1995-99 cohort in the MCH-FP area. It could quite well be that since around 1995 boys and girls in the MCH-FP area benefited equally from easy access to and use of high-quality child health services. This suggests that high-quality health services can be important in reduction of the female disadvantage in survival.

The decrease in the male/female mortality ratio especially in children 1-4 years old occurred in a period in which fertility also declined (until 1993) or remained at the same level (after 1993). The fertility decline contributes to reduce sex differentials in mortality by lowering the so-called "parity effect" that changes the balance between boys and girls at different parities. Our results showed that first female children (e.g., in families with one girl only) had a better chance of survival than higher order girls (girls in families with older sisters) and the same applies to a lesser extent to first male boys compared to higher order boys. This is consistent with results of other studies (Muhuri and Preston, 1991; Das Gupta, 1987). We had, however, more data at our disposal than these two studies and, therefore, could conclude the following. Neglect of and discrimination against higher order girls (measured in terms of mortality) continued to exist in Matlab in most

birth cohorts, but this became less so or ceased completely for children in the most recent birth cohort (1995-99).

There is a debate on the issue if increases in maternal education and household economic status are mediating factors that explain the decreases in the sex differentials in child mortality. Arokiasamy (2004) reports that women's education (secondary and above and) and better-off households reduce excess female child mortality in India. In contrast, our results revealed that in Matlab maternal education did not reduce the sex differential in mortality in either area. This last finding is consistent with results of earlier studies (Bhuiya and Streatfield, 1991; Das Gupta, 1987). In addition, household wealth did also not help to reduce the sex differential in mortality in Matlab.

We found relatively small differences in nutritional status between boys and girls both in Matlab and in Bangladesh. For example, in a recent national survey it was found that more girls are undernourished than boys at ages 24-59 months old, but not at ages 6-23 months. This finding is consistent with the conclusion of Sommerfelt and Arnold (1998), who analyzed child nutrition data of 41 surveys from 31 countries and found relatively small differences between boys and girls in terms of prevalence of stunting, underweight and wasting. These results corroborate our finding that the diets of girls and boys differ to some extent, but not radically.

Although boys and girls are now equally immunized in Bangladesh, boys may still be favoured to girls with respect to treatment of major infectious diseases like diarrhoea and ARI–major killer diseases in the country (BDHS, 2004). The evidence was, however, inconclusive because results of BDHS 2004 were not consistent with those of BDHS 1993-94. It is likely, however, that parents may continue to be somewhat more willing to incur more health costs for sons than for daughters.

As already said before, a major conclusion we reached is that the male-to-female ratios in mortality declined over time. This raises the question whether one can estimate the impact of a decline in male/female mortality by looking at changes in population sex ratios. We are of the opinion that this is very difficult to do. Sex ratios in the population are influenced by a large number of factors relating to patterns of and changes in fertility, mortality and migration and it is difficult to separate the effect of decreases in male/female mortality from all the other factors. It is especially hard to quantify the impact of changes in migration patterns on the sex ratio. For the same reason we think that methodologies used to determine trends in missing women

on the basis of changes in the population sex ratio suffer from inaccuracies. There is a need here to develop more refined methods.

Excess female mortality in childhood is a reflection of wider economic and social realities that assign a higher value to boys than to girls. Part of this reality is that women's economic contributions are restricted to domestic domain and that daughters are considered to be expensive due to the dowry system. Conversely, sons are valued for the potential wealth they bring to their parents and the extended family. From this it follows that the obvious long-term policies to be pursued by the Government of Bangladesh is to press ahead with reforms that will facilitate greater educational, employment and financial opportunities to women and better access to high-quality health services. In accordance with this policy, the Government of Bangladesh in partnerships with national and international NGOs is in the process of implementing various women development programmes, for example, stipends to girl students for primary and secondary schooling, microcredit schemes aimed at women for social and economic empowerment and economic policies leading to more employment for women in the formal sector. Moreover, the Government of Bangladesh is committed to eliminate all forms of discrimination against women and children. Commitments are not enough, however. Resources have to be mobilized and allocated to these programmes and monitoring has to be in place to determine whether these programmes succeeded in attaining their objectives. In addition, sanctions have to be taken against those who oppress women and children, acid throwers, women and child traffickers and family members who demand unreasonable dowries.

This study indicates that high-quality free primary health care result in more egalitarian sex mortality ratios in childhood in Bangladesh. Such high-quality services were available in the MCH-FP area, but less so in the comparison area. This led to disappearance of the sex differential in mortality in the MCH-FP area and to continuation of existence of the sex differential in mortality in the comparison area, but at a much lower level than in the past. The government policy shift towards greater cost recovery and reliance on the private sector is of concern because poor families may be less able and willing to spend money on daughters than on sons. Concomitant improvements in the social, economic and political status of women continue, therefore, also to be needed to eliminate inequalities.

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# Does Religion Matter?
# A Study of Regional Variations in Sex Ratio at
# Birth in Korea[1]

**KIM Doo-Sub, SONG Yoo-Jean**

## 1. Introduction

Korea is well known for having a tradition of son preference. This preference for sons is rooted in Confucian values. Based on a patriarchal and patrilineal system, only sons can pass on family lineage and perform ancestor worship ceremony. In addition, sons, particularly the eldest, have had primary responsibility providing old age support for parents, although this tradition is becoming weaker.

Despite strong preference for sons, swift industrialization and urbanization in Korea have led to a rapid fertility transition way below the replacement level during the past several decades. The total fertility rate (TFR) decreased sharply from about 6.0 in the early 1960s to the replacement level (2.1 children per woman) in 1983 and has now dropped to 1.16 in 2004.

However, with this decline in fertility below the replacement level, serious distortions in sex ratio at birth began to emerge in the mid-1980s. The sex ratio at birth was estimated at 109.5 in 1985 and reached 115.2 in 1994. An examination of the sex ratio distribution by parity suggests that sex ratios at birth for the first child have been relatively low in the past two decades. However, high sex ratios at birth keep growing markedly as the birth order progresses. Figure 1 shows that sex ratios at birth for the third and the fourth child began to rise dramatically in the mid-1980s, and peaked at the highest level at over 200 in the early 1990s. After then, a downward trend in sex ratio at

birth at high parity can be observed in Figure 1. The overall sex ratio at birth decreased to 108.2 in 2004 (KNSO, 2006).

**Figure 1 Trends in Sex Ratio at Birth by Parity, Korea, 1980-2004**
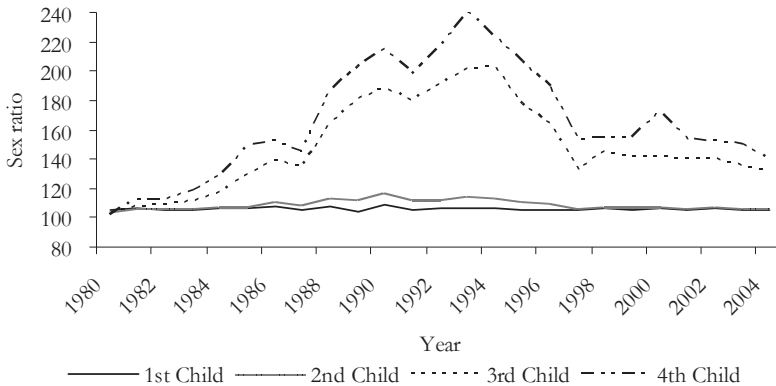


Sources: Kim Doo-Sub (2004), KNSO (2006).

In the literature, high sex ratio at young ages in Asia has been attributed to three factors: under-registration of female births, sex-selective abortion, and excess female infant mortality (Roy, 1994; Das Gupta, 1999; Bélanger *et al.*, 2003). Given that unregistered females and female infanticide are not common in Korea, distorted sex ratio at birth is mainly attributed to sex-selective abortion (Cho *et al.*, 1994; Park and Cho, 1995). Kim Doo-Sub (2004) conducted demographic simulations and argued that sex-selective abortion raises sex ratio at birth and, at the same time, plays a role in lowering the level of fertility in Korea.

Sex ratios at birth vary from region to region in Korea. Distortions in sex ratio at birth have been most serious in the south-eastern part (hereafter, Youngnam) of the Korean peninsula. In 1994, sex ratios reached 121.4 in Taegu city, and over 120 in two provinces in Youngnam. In contrast, sex ratios appeared to be relatively low in the south-western part (hereafter, Honam) of the peninsula (Park and Cho, 1995; Kim Doo-Sub, 2004).

Evidence indicates that compared to the rest of the country, Taegu city and the two provinces in Youngnam do not present any distinctive characteristics with regard to the level of fertility, family and household structure, and practice of family planning. The only common factors are that Youngnam has relatively fewer Protestant and Catholic churches, and a long history of conservative cultural traditions (Kim Doo-Sub, 2004).

Despite an enormous amount of research regarding high sex ratios at birth in Korea, there have only been a few studies covering its causal mechanisms (Kim Doo-Sub, 2004). Mainly due to the lack of hard information, the nature and theoretical basis of the causal mechanisms and regional variations in sex ratio at birth have not yet been sufficiently explored.

The main objective of this study is to develop explanations for the causal mechanisms and regional variations in sex ratio at birth in Korea. In this study, it is assumed that sex ratio at birth is associated with social culture and regional characteristics, which affect an individual's values and attitudes toward son preference and sex-selective abortion. More specifically, this chapter attempts to explore the effects of religion as well as residential and socioeconomic factors on the regional level of sex ratio at birth. In order to enhance our understanding of the causal mechanisms of sex ratio at birth, this paper also conducts micro-level analyses on whether or not and to what extent religion influences the individual's values and attitudes toward son preference and abortion. Micro-data from vital statistics, various reports on regional statistics for years 1994 and 2000, and the 2000 Korea National Fertility Survey data are exploited.

## 2. Religion and abortion in Korea

Korea does not have a state religion, Buddhism, Protestantism, and Catholicism being the three most prevalent religions. In 2003, 46.1 percent of those 15 years of age and above do not belong to a religion. Among those who claim to belong to a religion, Buddhists account for 47.0 percent, Protestants total 36.8 percent, and Catholics number 13.7 percent, while the remaining percentage corresponds to "other religions" (KNSO, 2006). Although Confucianism has exerted a great influence on the daily life and values of the people, few consider it as a religion. Rather, Confucianism is regarded to be part of the culture that is embedded in people's lives.

As each country mixes its native culture with religious beliefs and rituals, Korea combines diverse religions with Confucian values and Shamanism. For example, many Protestants still perform ancestor worship ceremony and consult traditional fortune-tellers. Collective religious activities, such as group prayer meetings, particularly distinct in Protestantism, are common. Also, religion in Korea is often described as self-centred and worldly (Chung and Kim, 1993). The fact that mass prayer meetings for parents are held before university en-

trance examinations reflects the Korean's reliance on religion to achieve secular or worldly desires.

As shown in Figure 2, religious prevalence differs substantially by region. The Youngnam and Honam regions reveal the greatest contrast by religion. Buddhism is most popular in Youngnam, while the majority of people belonging to a religion in Honam are Protestants (Kim Mi-Ok, 2004; KNSO, 2006). Catholicism is relatively less prevalent than the other two religions and does not show a dominant pattern in its distribution.

**Figure 2 Number of religious institutions per 10,000 inhabitants by region, Korea, 2000**
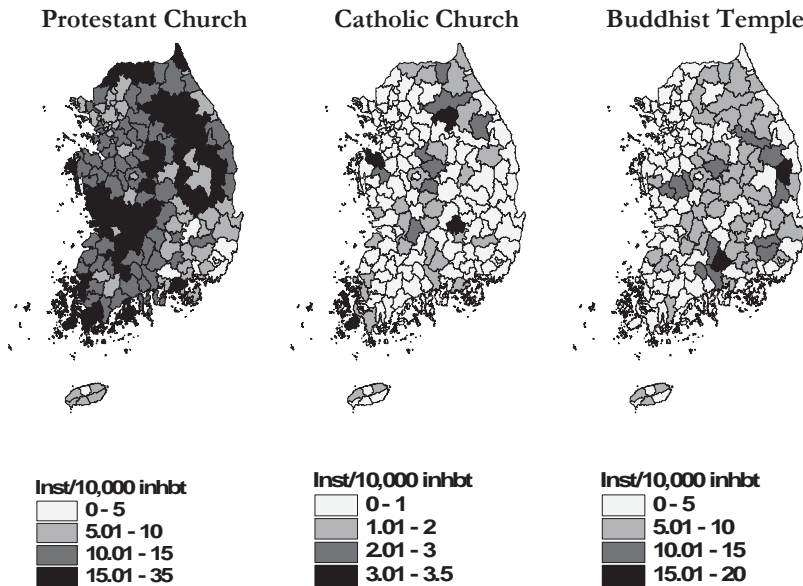


Source: Korea National Statistical Office (2001).

Buddhism has a long history and is compatible with Confucianism, which was the dominant culture in the Chosun Dynasty (1392-1910). In contrast, originating from western countries, Protestantism was introduced to Korea in the late 19th and early 20th centuries, and came into conflict with Confucianism. Thus, Buddhism prevailed in regions where tradition and Confucianism were stabilized. Protestantism diffused to regions where traditional values and Confucianism were weak and a strong innovative motivation emerged (Chung and Kim, 1993).

Historically, the Honam region has been poor in terms of economic prosperity and political power compared to Youngnam. Feeling this exclusion and antipathy toward tradition, Honam people were more likely to accept new religions. The fact that the first peasant uprising (*Donghak*) began in Honam in the late 19th century implies that people in this region harboured resentment and challenged the political regime. Historical documents also show that most Confucian temples were concentrated in Youngnam. During the past few decades, not only political dominance but also the level of economic development in Youngnam has been much higher than that of Honam. In order to maintain their dominant power, the Youngnam people are rather conservative and have strictly retained traditional Confucian values. As a result, Buddhism has dominated this region. In contrast, Honam has accepted more western values along with Protestantism.

Assuming that religion exerts a great influence on people's values and attitudes, research has examined to what extent religion affects the individual's attitudes toward abortion (Sullins, 1999; Petersen, 2001; Strickler and Danigelis, 2002). Heated debates on abortion between pro-choice and pro-life advocates have also centred on religion. Both religious affiliation and frequency of attendance at religious activities are considered to be important factors influencing attitudes toward abortion, although these effects have decreased (Sullins, 1999).

Abortion has never been brought up as a social issue or evoked much controversy in Korea. Nor have religious groups in Korea strongly indicated their views on abortion, whereas Catholics and Protestants in many western countries have firmly held their positions against abortion and have been actively involved in heated discussions. Catholics and Protestants in Korea began to manifest their opposition toward abortion only recently, but not as strongly as in western countries (Yoo, 2003). However, Buddhist organizations do not have clear positions on this issue (Oh, 2003; Kim Mi-Ok, 2004).

Although abortion is illegal in Korea, a government report estimated that 422,000 married women had induced abortions in 1990 (Kim Doo-Sub, 2004). Despite the government's strong regulations and penalties, prenatal sex screening and sex-selective abortion have been widely performed since the mid-1980s. Abortion has become an open secret and most people tolerate it.

Drawing on the World Value Survey data conducted in 1995, Eun (2002) argued that religious affiliation does not show any significant effect on people's attitudes toward abortion in Korea. Based on a small survey, Oh (1993) also argued that religious affiliation in Korea does not exert any significant effect both on the attitude toward abortion

and on its actual practice. Religion is not known to be an important factor differentiating fertility level in Korea (Kim, 1987). In contrast, in Latin America, the United States, and other European countries, religious affiliation turns out to exert significant effects. It is found that both the importance of religion in life and the frequency of attendance at religious activities have greater effects on people's attitudes toward abortion than religious affiliation itself.

## 3. Conceptual framework, hypotheses, and data

Given that an imbalanced sex ratio at birth in Korea is mostly due to sex-selective abortion, this study examines which factors influence sex-selective abortion, and how to understand the imbalanced sex ratio at birth and its regional differences in Korea.

It is hypothesized that residence, socioeconomic level, and religion of the given region are associated with sex-selective behaviour in Korea. Residence and socioeconomic level of the region are used to measure accessibility and measure the likelihood of abortion. These two factors are also related to regional differences in religious prevalence. Religious prevalence is assumed to create an atmosphere and culture that may affect people's values and attitudes in the region. As mentioned above, son preference is rooted in Confucianism, and Buddhism is relatively more compatible with Confucianism than Protestantism or Catholicism. Therefore, we expect that the prevalence of Buddhism is positively associated with sex ratio at birth.

Provided that practicing abortion is accompanied by high costs, we hypothesize that the socioeconomic level of the region is positively associated with sex ratio at birth. Not only the economic level of the region but also the medical environment and level of education are assumed to be positively related. The region of residence may have contrasting effects. In terms of values, son preference is assumed to be higher in rural areas than in metropolitan and urban areas. In terms of actual circumstances, practical resources can be more available in metropolitan and urban areas than in rural areas.

For the purpose of testing the causal mechanisms, this study utilizes micro-data from vital statistics, household registration data, and various reports on regional statistics for the years 1994 and 2000. Vital statistics are originally included for 239 *Si* (cities), *Gun* (counties), and *Gu* (districts). Without dividing the seven metropolitan cities into districts, however, we calculated the sex ratios at birth for 165 *Si* and *Gun*.

In order to measure the socioeconomic level of the region, the percentage of high school graduates, the average amount of local taxes paid per person and the number of medical institutions per 10,000 inhabitants were calculated for 165 cities and counties. Due to the lack of specific information on the number of obstetricians and gynaecologists by region, the overall number of medical institutions was used as an alternative measure. Regarding the regions of residence, we divided them into three categories: metropolitan, urban, and rural areas. Metropolitan areas include seven major cities, while urban areas include small and medium size cities. Rural areas include 84 counties.

As for religious prevalence, we used the number of Protestant churches, Catholic churches, and Buddhist temples per 10,000 inhabitants in the region (KNSO, 1995, 2001). However, the number of churches and temples per 10,000 inhabitants may not be the best indicator of religious prevalence in the region. The absence of specific information on the size and scale of churches and temples may also hamper an accurate understanding of the regional prevalence of religion. In addition, for years 1994 and 2000, data on the proportion of inhabitants by religion in each region are not available.

Although the main focus of this chapter is an aggregate level of analysis, an individual level of analysis was also carried out. Drawing on the 2000 Korea National Fertility Survey data, we examined whether or not and to what extent religion influences an individual's values and attitudes regarding son preference and abortion. In addition to religion, age, marital status, residence, educational attainment, and occupation were employed as independent variables at the individual level of analysis.

## 4. Methodology and results

In order to provide a general idea on the pattern of regional variations, this chapter presents maps of sex ratios at birth by region and parity for 1994 and 2000. In 1994, the overall sex ratio at birth was 115.5. As shown in Figure 3-a, it becomes substantially higher and more widespread all over the nation as parity progresses. Sex ratio at birth for the first child was 106.0. It increased to 114.1 for the second child and reached 204.8 for the third child and above (KNSO, 2006).

Figure 3-b presents maps of sex ratios at birth by region and by parity for 2000. Compared to 1994, the overall sex ratio at birth and sex ratios by region and by parity became substantially lower in 2000. The overall sex ratio at birth in 2000 was 110.2. As the level of sex ratio decreases, differences by region and by parity also become less

striking. While high sex ratios at birth for parity 2 are concentrated on the Youngnam region in 1994, the pattern turns out to be less distinct and less concentrated in 2000. Although the map still shows dark colours for parity 3 and above, it is much less dominant than in 1994.

**Figure 3 Sex Ratio at Birth by Region and Parity, Korea, 1994 and 2000**
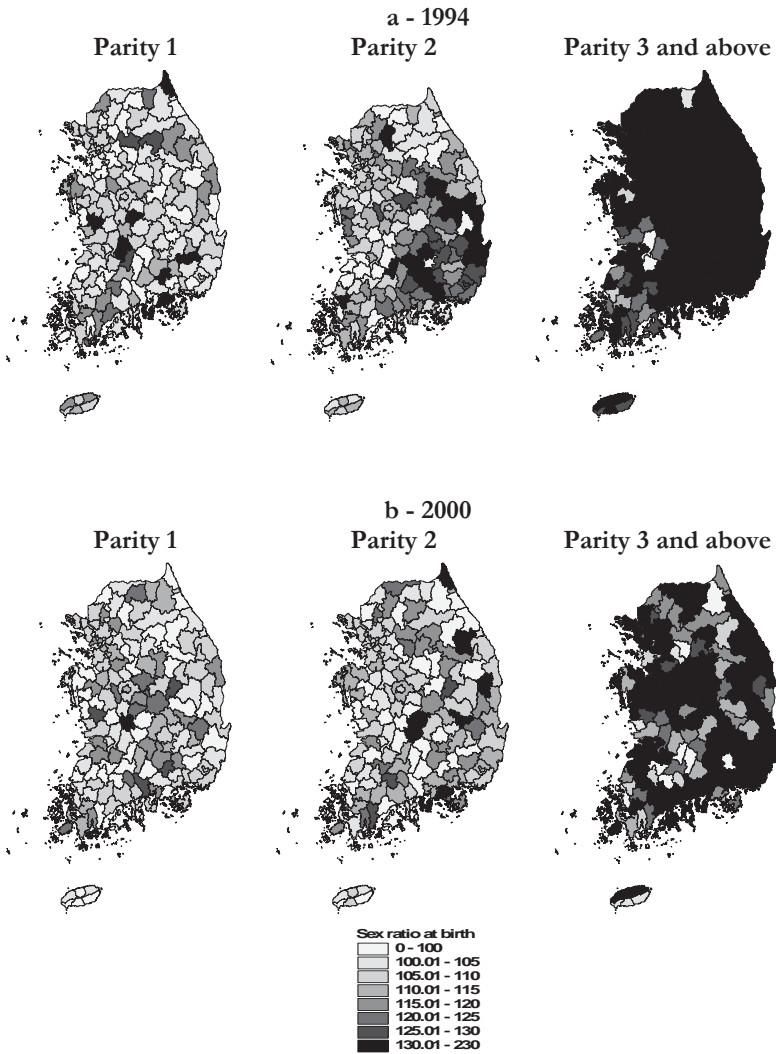


Sources: Vital statistics of Korea (1994 and 2000).

In order to understand the general associations between various factors and sex ratio at birth by parity, an analysis of variance (ANOVA) was first carried out. Table 1 shows that, in 1994, sex ratios at birth for parity 2 or for parity 3 and above are significantly different according to the level of all factors employed. However, few show significant effects in 2000. Residence is the only variable that produces a significant difference in sex ratios at birth for parity 3 and above. Along with decreases in the level of sex ratio at birth, regional variations became substantially smaller in 2000 compared to 1994.

In general, both residence and socioeconomic level of a region are found to be positively related to the sex ratio at birth for parity 3 and above. In 1994, with minor exceptions, the prevalence of Protestant and Catholic churches reveals a negative relationship to sex ratio at birth, while Buddhism shows a positive relationship. The effects of Protestantism and Catholicism are statistically significant for parity 2 and for parity 3 and above, while those of Buddhism turn out to be significant only for parity 2.

Recognizing the presence of significant differences in sex ratio at birth according to socioeconomic factors and religion, we examined the correlation coefficients among these variables. Table 2 shows that, compared to 1994, statistical significance of correlation becomes weaker in 2000. In 1994, as parity rises, the percentage of high school graduates, the average amount of local taxes paid per person, and the number of medical institutions per 10,000 inhabitants are all positively related to sex ratio at birth, particularly showing statistical significance for parity 3 and above. However, in 2000, no socioeconomic factors reveal a significant relationship with sex ratio at birth.

In 1994, the prevalence of Protestant and Catholic churches is negatively related to sex ratio at birth. Statistical significances are noted for parity 2 and for parity 3 and above in the case of Protestant churches, whereas it is only noted for parity 3 and above in the case of Catholic churches. Buddhism is found to be positively related as hypothesized, although statistical significance is observed only for parity 2. In 2000, no correlation coefficients among variables are significant except the prevalence of Protestant churches. The prevalence of Protestant churches is negatively related to sex ratio at birth, significant only for parity 3 and above.

**Table 1 Sex ratio at birth by major factors and parity, Korea, 1994 and 2000**

| | 1994 | | | | 2000 | | | |
| | Parity of women | | | | Parity of women | | | |
| | 1 | 2 | 3+ | Total | 1 | 2 | 3+ | Total |
|---|---|---|---|---|---|---|---|---|
| Residence | | | | | | | | |
|   Metropolitan | 106.0 | 115.7 | 230.3 | 115.8 | 105.0 | 108.0 | 158.0 | 110.5 |
|   Urban area | 105.4 | 113.2 | 207.6 | 115.0 | 106.4 | 107.5 | 145.7 | 110.5 |
|   Rural area | 108.5 | 112.3 | 171.5 | 116.2 | 105.5 | 108.6 | 136.4 | 110.2 |
|   *F* Ratio | 1.66 | 0.23 | 11.55** | 0.41 | 0.18 | 0.13 | 3.38* | 0.03 |
| % of high school graduates | | | | | | | | |
|   Low | 108.7 | 111.1 | 167.4 | 116.0 | 106.9 | 109.3 | 136.1 | 111.3 |
|   Medium | 107.0 | 114.3 | 189.5 | 116.6 | 105.3 | 106.7 | 141.0 | 109.7 |
|   High | 105.3 | 113.1 | 213.3 | 114.3 | 105.4 | 108.2 | 147.3 | 110.0 |
|   *F* ratio | 1.43 | 0.76 | 10.66** | 1.02 | 0.42 | 0.55 | 2.14 | 0.65 |
| Local taxes paid per person | | | | | | | | |
|   Low | 108.4 | 112.0 | 162.4 | 115.9 | 106.9 | 107.8 | 139.0 | 110.9 |
|   Medium | 107.5 | 112.9 | 193.0 | 116.6 | 105.9 | 108.2 | 140.6 | 110.3 |
|   High | 105.0 | 113.5 | 216.3 | 14.4 | 104.8 | 108.2 | 144.8 | 109.8 |
|   *F* ratio | 1.43 | 0.17 | 15.86** | 0.99 | 0.60 | 0.02 | 0.61 | 0.26 |
| No. of medical institutions  per 10,000 inhabitants | | | | | | | | |
|   Low | 107.0 | 112.5 | 174.7 | 115.3 | 105.2 | 108.3 | 139.9 | 110.2 |
|   Medium | 108.1 | 113.3 | 189.4 | 116.9 | 106.0 | 109.7 | 141.5 | 111.2 |
|   High | 105.9 | 112.8 | 205.6 | 114.8 | 106.6 | 106.1 | 143.0 | 109.7 |
|   *F* ratio | 0.59 | 0.04 | 4.61* | 0.89 | 0.25 | 1.04 | 0.15 | 0.50 |
| No. of Protestant churches  per 10,000 inhabitants | | | | | | | | |
|   Low | 104.7 | 117.6 | 222.7 | 116.7 | 105.9 | 108.1 | 146.7 | 110.3 |
|   Medium | 107.2 | 112.2 | 184.4 | 115.9 | 106.1 | 105.9 | 143.7 | 110.2 |
|   High | 109.0 | 108.8 | 163.1 | 114.4 | 105.8 | 110.1 | 134.0 | 110.5 |
|   *F* ratio | 2.32 | 6.22** | 20.47** | 1.07 | 0.02 | 1.44 | 3.01 | 0.02 |
| No. of Catholic churches  per 10,000 inhabitants | | | | | | | | |
|   Low | 105.8 | 112.5 | 212.8 | 115.0 | 105.8 | 108.1 | 148.7 | 110.7 |
|   Medium | 106.6 | 116.6 | 193.4 | 117.5 | 106.1 | 109.0 | 136.5 | 110.3 |
|   High | 108.5 | 109.4 | 164.8 | 114.5 | 105.8 | 107.1 | 139.0 | 110.1 |
|   *F* ratio | 0.94 | 4.00* | 12.01** | 1.94 | 0.01 | 0.28 | 2.86 | 0.08 |
| No. of Buddhist temples per 10,000 inhabitants | | | | | | | | |
|   Low | 106.3 | 110.4 | 194.5 | 113.8 | 105.5 | 106.7 | 145.4 | 109.6 |
|   Medium | 106.3 | 110.8 | 181.2 | 114.2 | 106.2 | 110.5 | 136.7 | 111.1 |
|   High | 108.3 | 117.3 | 194.4 | 118.9 | 106.0 | 107.0 | 142.3 | 110.4 |
|   *F* ratio | 0.67 | 4.77** | 1.06 | 6.67** | 0.07 | 1.39 | 1.29 | 0.49 |

Notes: *: $p < 0.05$; **: $p < 0.01$

Sources: Vital statistics of Korea (1994, 2000).

These descriptive statistics indicate that the socioeconomic factors and religion of a region are related to sex ratio at birth, although the statistical significance of the effects may not be consistent. To clarify the independent effects of each factor on sex ratio at birth, regression analyses were carried out. When we employ the socioeconomic and

residential factors with the exclusion of religion, the region of residence was found to be positively related to sex ratios at birth for parity 3 and above in 1994 and 2000. Also, the average amount of local taxes paid per person was significant for parity 3 and above in 1994. In 2000, however, the effects of the socioeconomic levels of the regions lost statistical significance.

**Table 2 Correlation coefficients between socioeconomic factors, religion, and sex ratios at birth by parity, Korea, 1994 and 2000**

|  | 1994 Sex ratios at birth | | | | 2000 Sex ratios at birth | | | |
|---|---|---|---|---|---|---|---|---|
|  | Parity of women | | | | Parity of women | | | |
|  | 1 | 2 | 3+ | Total | 1 | 2 | 3+ | Total |
| % of high school | -0.13 | 0.05 | 0.36** | -0.09 | -0.03 | -0.04 | 0.15 | -0.06 |
| Local taxes paid per | -0.14 | 0.07 | 0.39** | -0.06 | -0.09 | -0.03 | 0.06 | -0.09 |
| Medical institutions | -0.04 | 0.04 | 0.18* | -0.03 | 0.04 | -0.08 | 0.00 | -0.04 |
| Protestant churches | 0.09 | -0.22** | -0.50** | -0.15 | -0.05 | -0.01 | -0.19* | -0.07 |
| Catholic churches | 0.08 | -0.12 | -0.30** | -0.07 | 0.02 | -0.05 | -0.00 | 0.02 |
| Buddhist temples | 0.02 | 0.26** | 0.08 | 0.28** | 0.04 | 0.00 | 0.06 | 0.09 |

Notes: *: $p < 0.05$; ** $p < 0.01$. Number of institutions per 10,000 inhabitants.

Sources: Vital statistics of Korea (1994, 2000).

As religion is included in the model as shown in Table 3, the effects of residence and of local taxes paid become insignificant in 1994. Instead, the number of medical institutions in the region is found to exert a negative effect on sex ratio at birth for parity 3 and above. It is contrary to our expectations and to the results observed from the ANOVA and correlation coefficients. The fact that the number of medical institutions was not specified by specialization may have caused these unexpected results. According to Table 4, the inclusion of religious factors does not change the pattern of residence effects in 2000. Results indicate that religious factors, rather than the socioeconomic factors of the region, are more strongly associated with sex ratio at birth. This is similar to recent findings in India that the overall impacts of the religious factors are of more relevance than that of socioeconomic factors, while the sex ratio may be slightly higher among those more affluent (Guilmoto, 2005; Bhat and Zavier, 2005).

Both Tables 3 and 4 reveal that religious factors are clearly related to sex ratio at birth in Korea. Protestantism consistently shows a negative relationship to sex ratio at birth, while Buddhism is positively related. In 1994, for parity 2 and for parity 3 and above, the prevalence of Protestant churches had negative effects on sex ratio at birth, while that of Buddhist temples had positive effects. In 2000, Protestantism

maintained negative effects but the effects were significant only for parity 3 and above. Although the effect of Buddhism lost statistical significance in 2000, the direction of the effects remained positive. In terms of the effects of Catholicism on sex ratio at birth, an unexpected relationship was found in 2000. The prevalence of Catholic churches revealed positive effects for parity 3 and above.

**Table 3 Regression analysis of factors related to sex ratio at birth by parity, Korea, 1994**

|  | Parity of Women | | | | | | | |
|---|---|---|---|---|---|---|---|---|
|  | 1 | | 2 | | 3+ | | Total | |
|  | b | ß | b | ß | b | ß | b | ß |
| Residence |  |  |  |  |  |  |  |  |
| Metropolitan area | -3.80 | -0.07 | 1.49 | 0.02 | 39.86 | 0.14 | -1.20 | -0.03 |
| Urban area | -3.03 | -0.14 | -1.81 | -0.07 | 12.51 | 0.11 | -2.03 | -0.12 |
| Socioeconomic Level |  |  |  |  |  |  |  |  |
| % of high school graduates | -0.05 | -0.04 | 0.15 | 0.10 | 1.22 | 0.19 | -0.02 | -0.02 |
| Local taxes paid per person | -4.91 | -0.10 | -1.83 | -0.03 | 32.19 | 0.12 | -3.58 | -0.09 |
| Medical institutions | 1.43 | 0.11 | 0.13 | 0.01 | -11.99 | -0.19* | 0.42 | 0.04 |
| Religion |  |  |  |  |  |  |  |  |
| Protestant churches | -0.03 | -0.01 | -0.76 | -0.25* | -4.60 | -0.37** | -0.52 | -0.27** |
| Catholic churches | 0.29 | 0.02 | -1.79 | -0.09 | -6.02 | -0.08 | -1.27 | -0.10 |
| Buddhist temples | -0.18 | -0.04 | 2.05 | 0.37** | 6.75 | 0.30** | 1.07 | 0.30** |
| Constant | 118.67 | | 114.95 | | 128.60 | | 127.02 | |
| $R^2$ | | 0.03 | | 0.16 | | 0.36 | | 0.15 |
| $F$ ratio | | 0.67 | | 3.79** | | 11.11** | | 3.32** |
| No. of cases | 165 | | 165 | | 165 | | 165 | |

Notes: *: $p < 0.05$; **: $p < 0.01$. Number of institutions per 10,000 inhabitants.

Sources: Vital statistics of Korea (1994).

Considering that Buddhism unequivocally prohibits the taking of life of any living being, the positive relationship between Buddhism and sex ratio at birth is puzzling. Ling (1969) and Perret (2000) provided theoretical discussions on whether or not Buddhism plays any role in the widespread and tolerated practice of abortion in Asia. They pointed out that neither the explicit prohibition of abortion nor formal doctrine stating that life begins at the moment of conception exists in Buddhism. In contrast, Protestantism and Catholicism clearly state that the foetus is a living being from the point of conception (Perret, 2000; Petersen, 2001).[2]

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[2] In western countries, Catholicism is strongly associated with anti-abortion activities, while Protestantism has different perspectives on abortion, either liberal or conserva-

**Table 4 Regression analysis of factors related to sex ratio at birth by parity, Korea, 2000**

| | Parity of Women | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | | 2 | | 3+ | | Total | |
| | b | ß | b | ß | b | ß | b | ß |
| Residence | | | | | | | | |
| Metropolitan area | 0.68 | 0.01 | -0.56 | -0.01 | 32.52 | 0.23* | 2.38 | 0.06 |
| Urban area | 2.31 | 0.11 | -0.98 | -0.04 | 17.35 | 0.30** | 2.26 | 0.14 |
| Socioeconomic Level | | | | | | | | |
| % of high school graduates | 0.01 | 0.01 | -0.12 | -0.07 | 0.71 | 0.19 | -0.04 | -0.03 |
| Local taxes paid per person | -9.85 | -0.18 | -0.88 | -0.01 | -25.05 | -0.17 | -7.08 | -0.17 |
| Medical institutions | 0.22 | 0.02 | -1.55 | -0.13 | -4.68 | -0.18 | -0.82 | -0.11 |
| Religion | | | | | | | | |
| Protestant churches | -0.27 | -0.14 | -0.13 | -0.05 | -1.28 | -0.24* | -0.33 | -0.23 |
| Catholic churches | 1.40 | 0.10 | -1.91 | -0.10 | 8.80 | 0.22* | 1.06 | 0.10 |
| Buddhist temples | 0.12 | 0.04 | -0.24 | -0.06 | 1.53 | 0.19 | 0.13 | 0.06 |
| Constant | 129.80 | | 123.68 | | 191.35 | | 133.20 | |
| $R^2$ | | 0.03 | | 0.02 | | 0.14 | | 0.05 |
| $F$ ratio | | 0.67 | | 0.41 | | 3.18** | | 0.98 |
| No. of cases | | 165 | | 165 | | 165 | | 165 |

Notes: *: $p < 0.05$; **: $p < 0.01$. Number of institutions per 10,000 inhabitants.

Sources: Vital statistics of Korea (2000).

It is hypothesized in this study that a clear statement against abortion in formal doctrine plays a symbolic role in influencing people's values. Based on belief in reincarnation, Buddhism considers that if the foetus is aborted, it is not meant to be born in the current world and can be born in the next life. Although Buddhism neither encourages nor approves of abortion, it responds to abortion in a passive manner. Facing blame for its ambiguous position on abortion, Buddhism in Korea has recently attempted to manifest opposition to it, but not as strongly as Protestantism and Catholicism (Kim Mi-Ok, 2004).

Perret (2000) argued that the passive reaction of Buddhism to abortion is due to Buddhism's dual commitment, on the one hand, to refrain from killing living things, and, on the other hand, to expressing compassion for the pregnant woman. The dual commitment in Buddhism reflects conflicting positions between pro-life and pro-choice. To accommodate these alternative perspectives, Buddhism in Japan performs a ritual, which is called the *mizuko kuyo*. The purpose of the

tive. However, both Catholicism and Protestantism in Korea hold positions against abortion at a lower degree.

ritual is to acknowledge the mother's guilt and to improve the karmic situation of the aborted foetus. Buddhism in Korea recently started holding a similar ritual to comfort both the mother and the aborted foetus.

Even if the doctrine of Buddhism had opposed abortion strongly, its direct influence on people's values and behaviours would have been relatively weak in Korea. Petersen (2001) argued that the effective conveyance of religious doctrine depends on a social network among believers in each religious body. In Korea, Protestantism organizes diverse group activities besides Sunday services. By applying Korean people's collectivism to religious activities, group prayer meetings, bible studies, and other socializing activities are organized. Through these group activities, social networks among Protestants are tightly formed and the doctrine of Protestantism is more effectively conveyed.

In contrast, the religious activities of Buddhism are relatively individual and loosely organized. Emphasis on self-discipline and meditation in Buddhism indicates its personal features. Compared to Protestants, Buddhists tend to participate less actively in religious ceremonies. The difference may be partly due to the location of churches and temples. Most Buddhist temples are located in remote areas or mountainous regions. In contrast, Protestant churches are spread out all over the country, and are particularly concentrated in cities and towns.

Another plausible explanation for the positive relationship between Buddhism and sex ratio at birth is that Buddhism has relatively less conflict with traditional Confucian values than Protestantism. Based on the Ten Commandments, Protestantism is strongly opposed to the ancestor worship ceremony. Compared to Protestantism, Buddhism is more likely to respect Confucian traditions and ancestor worship ceremony. Respecting Confucian tradition can be translated into an acceptance of patriarchal tradition, which may subsequently lead to son preference values. It should be noted that Buddhism neither encourages nor supports son preference and other Confucian values. However, no strong opposition to it grants some leeway to people.

To strengthen our findings at the aggregate level that religion exerts significant effects on sex ratio at birth, micro-level analyses were also conducted in this study. It was assumed that regional variations in sex ratio at birth reflect people's values and attitudes toward son preference and abortion in each region, and that religion may influence these values and attitudes. Using the 2000 Korea National Fertility

Survey data, a binary logit analysis of factors related to son preference[3] was conducted. Respondent's age, marital status, place of residence, educational attainment, occupation, and religion were introduced as independent variables in our analysis.

Table 5 shows that those in their twenties, thirties, forties and fifties are more likely than those who are over sixty to oppose son preference. Compared to those currently married, those who are divorced, separated or widowed tend to have negative opinions on son preference. Place of residence does not reveal a significant effect on people's values towards son preference. As for the effects of education, those who received high school education or higher do not reveal strong son preference. In contrast, those who work as farmers, fishermen, or manual workers tend to have strong son preference. Regarding the effects of religion, Buddhists are more likely than those who have no religion to favour the opinion on son preference. However, being Protestant or Catholic does not show a significant effect on people's values towards son preference.

Given that son preference is rooted in traditional Confucian values, most results of our analyses are understandable. Those who hold conservative values and those who do work that requires hard labour tend to favour son preference. The effects of religion, however, are not consistent with the results of our analyses at the regional level. Although Buddhists are found to have a stronger son preference, affiliation with other religions does not show significant effects. It can possibly be attributed to the lack of information on frequency of attendance at religious activities or on the importance of religion in life. Self-reported religious affiliation does not always correspond to religiosity.

In this study, a multinomial logistic regression analysis was conducted to find the major factors related to the individual's attitudes toward abortion.[4] Table 6 reveals that marital status, place of residence

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[3] Son preference was measured by respondent's opinion on the following statement, "couples should have at least one son." Suggested answers were "strongly disagree," "disagree," "agree," "strongly agree," and "don't know." By grouping these five types of answers into two categories, "agree" versus "disagree," the dependent variable of this analysis became binary. A few answers of "don't know" were grouped into the "disagree" category.

[4] Attitudes toward abortion was measured by a respondent's opinion on the following question, "what do you think about having an abortion after knowing that it would be a girl?" Answers were "strongly disagree," "disagree," "neither disagree nor agree," "agree," "strongly agree," and "never thought about it or don't know." For multinomial logistic regression analysis, answers were grouped into three categories:

and educational attainment do not exert significant effects on an individual's attitudes toward abortion.

**Table 5 Binary logit analysis of factors related to son preference, Korea, 2000**

|  | b |
| --- | --- |
| Age |  |
| 20-29 | -1.72** |
| 30-39 | -1.60** |
| 40-49 | -1.36** |
| 50-59 | -0.62** |
| (reference: 60-64) |  |
| Non-married# | -0.31** |
| (reference: currently married) |  |
| Residence |  |
| Metropolitan area | -0.16 |
| Urban area | -0.11 |
| (reference: rural area) |  |
| Educational attainment |  |
| High school | -0.32** |
| College | -0.35** |
| University | -0.55** |
| (reference: middle school and lower) |  |
| Occupation |  |
| Professional worker | 0.05 |
| Semi-professional worker | -0.19 |
| Farmer, Fisherman, etc | 0.88** |
| Service worker | 0.01 |
| Manual worker | 0.16* |
| (reference: housewife, retired employee, non-paid family employee, and others) |  |
| Religion |  |
| Protestant | 0.06 |
| Catholic | 0.02 |
| Buddhist | 0.34** |
| (reference: no religion) |  |
| No. of cases | 8,822 |
| Likelihood ratio | 1147.75** |

Notes: 1) *: $p < 0.05$; **: $p < 0.01$. ; 2) #: Non-married includes divorced, separated, and widowed.

Sources: The Korea National Fertility Survey (2000).

"disagree," "agree," and "neutral." Answers of "neither disagree nor agree" and "never thought about it or don't know" were grouped into the "neutral" category.

**Table 6 Multinomial logistic regression analysis of factors related to abortion, Korea, 2000**

|  | Disagree vs. Agree | Neutral vs. Agree |
|---|---|---|
| Age | | |
|   20-29 | 0.86** | 0.59 |
|   30-39 | 0.33 | 0.42 |
|   40-49 | 0.11 | 0.13 |
|   50-59 | 0.26 | 0.12 |
|   (reference: 60-64) | | |
| Non-married# | 0.14 | 0.12 |
|   (reference: currently married) | | |
| Residence | | |
|   Metropolitan area | 0.17 | -0.01 |
|   Urban area | 0.58 | 0.39 |
|   (reference: rural area) | | |
| Educational attainment | | |
|   High school | -0.03 | -0.01 |
|   College | -0.47 | -0.40 |
|   University | 0.14 | 0.03 |
|   (reference: middle school and lower) | | |
| Occupation | | |
|   Professional worker | 1.84 | 1.78 |
|   Semi-professional worker | 0.51 | 0.64 |
|   Farmer, Fisherman, etc | -0.19 | -0.22 |
|   Service worker | 0.00 | -0.06 |
|   Manual worker | -0.34* | -0.38* |
|   (reference: housewife, retired employee, non-paid family employee, and others) | | |
| Religion | | |
|   Protestant | 0.51** | 0.05 |
|   Catholic | 0.55* | -0.15 |
|   Buddhist | -0.18 | -0.35** |
|   (reference: no religion) | | |
| No. of cases | 8,821 | 8,821 |

Notes: 1) *: $p < 0.05$; **: $p < 0.01$ ; 2) #: Non-married includes divorced, separated, and widowed.

Sources: The Korea National Fertility Survey (2000).

It can be concluded that the effects of religion on an individual's values and attitudes are not observed as being distinct as those of religion on regional variations in sex ratio at birth. The inconsistency may be due to different units of analysis. Micro-level analyses included those who have no religion as a reference group and made a comparison between religious people and non-religious people. In contrast, analyses at the regional level measured prevalence of religion for each region using the number of churches or temples per 10,000 inhabitants. Thus, the prevalence of religion did not reflect how many resi-

dents in each region did not have religion. Therefore, the regional level of analysis may have ignored those who have no religion and highlighted the effects of religious factors.

However, the analysis of regional variations in sex ratio at birth suggests that Protestantism is negatively associated with sex ratio at birth, whereas Buddhism is positively associated. A consistent finding from the individual and regional level of analysis is that Buddhists tend to favour son preference and are less likely to hold a neutral perspective on abortion.

## 5. Concluding Remarks

In the second half of the 1980s and the early 1990s, sex ratios at birth rose markedly in Korea. Distortions in sex ratio at birth have been most serious in the Youngnam region, while sex ratios have been relatively low in the Honam region. This study aims to develop explanations for high sex ratio at birth and its regional variations in Korea. As major determinants of sex ratio at the regional level, it employs prevalence of religion as well as residential and socioeconomic factors. Micro-data from vital statistics, household registration data, various reports on regional statistics for years 1994 and 2000, and the 2000 Korea National Fertility Survey data were used.

This chapter first presents maps of sex ratio at birth by parity for 165 *Si* and *Gun* for years 1994 and 2000. The maps reveal a general pattern where sex ratio at birth becomes substantially lower in 2000 than in 1994, and that sex ratio increases as parity progresses. Findings from ANOVA and regression analyses at the regional level suggest that religion has stronger effects than socioeconomic factors on regional variations in sex ratio at birth. Buddhism is found to have a positive relationship with sex ratio at birth, while the prevalence of Protestant churches is negatively associated with sex ratio at birth. Yet, the effects of religion are weaker in 2000 than in 1994, due to the overall level of the sex ratio decreased in 2000. Sex ratios at birth are also found to be higher in metropolitan and urban areas than those in rural areas, and the socioeconomic level of the region shows a positive relationship to sex ratio at birth.

In an effort to generalize the effects of religion on sex-selective reproductive behaviour and sex ratio at birth, this study expanded its research scope from the regional level to the individual level of analysis. It was assumed that religion affects the individual's values and attitudes toward son preference and abortion. The results of the logit analysis and multinomial logistic regression analysis at the individual

level suggest that Buddhism is positively related to son preference. Both Protestants and Catholics are more likely to oppose abortion than those who have no religion. However, the effects of religion on the values and attitudes of individuals were found to be less important, compared to the results of the analysis at the regional level.

Based on the findings, this chapter provides explanations for why religion exerts different effects on sex ratio at birth. Given that son preference, which is rooted in Confucian values, is related to high sex ratio at birth, the compatibility of each religion with Confucianism provides part of the explanation. Buddhism is more compatible with Confucianism than Protestantism. For example, Buddhism respects the tradition of the ancestor worship ceremony, whereas Protestantism is strongly against it. Traditionally, only sons can perform the ancestor worship ceremony, and respect for this tradition implicitly approves of son preference.

As for each religion's stand on abortion, Buddhism does not actively manifest its position toward abortion. It is apparent that Buddhism encourages neither son preference nor abortion. However, Buddhism also shows neither strong opposition nor active involvement with social movements against abortion, while the doctrine of Protestantism specifies that abortion is the same as murder. Belief in reincarnation and dual commitment of compassion for the aborted foetus and the mother in Buddhism results in a moral dilemma and a weaker opposition toward abortion. Even if the doctrine of Buddhism had stated its opposition to abortion, it would have been conveyed less effectively. Compared to Protestantism, the religious activities of Buddhism are more individualistic and less tightly organized.

It should be noted that this study has a few limitations in its data. By employing the administrative region as a unit of analysis, the prevalence of religion was measured by the number of religious churches and temples per 10,000 inhabitants in the region without counting their size or scale. Due to the unavailability of information on medical institutions with obstetrics and gynaecology departments, the variable of medical institutions adopted in the regional level of analysis included private clinics, general hospitals, and public health centres. Some of these medical institutions might be less closely associated with sex ratio at birth. The micro-level analysis of this study also suffered from a lack of information on the frequency of attendance with regards to religious activities or degree of religiosity.

Despite these limitations, based on the regional and individual levels of analysis, it can be concluded that religion is an important factor in explaining the high sex ratio at birth and sex-selective reproductive

behaviour in Korea. It is not our intention to be judgmental or criticize a certain religion because of its association with sex ratio at birth or its stand on abortion. Rather, we attempt to provide explanations for high sex ratio at birth and its regional variations, and thereby adopted religion as an important cultural determinant. Further research on the effects of religion, in particular Buddhism, in other Asian countries may contribute to enhance our understanding of the causal mechanisms of sex ratio at birth and sex-selective reproductive behaviour.

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*Part III*


*LOCAL PERSPECTIVES ON GENDER BIAS*

# Missing Girls, Land and Population Controls in Rural China[1]

### Laurel Bossen

*"The dearth of girls is now more extreme in the PRC than anywhere else in the world." "One of the toughest challenges is to modify China's rigid custom of patrilo-cal and patrilineal marriage, the restriction of land rights to the males of the patri-lineal clan."*

Banister (2004)

## 1. Missing girls

Despite the growing media and scholarly attention that missing women in Asia have received, there is remarkable uniformity in the explanations and remarkably little challenge to received wisdom. For China, three basic explanations for gender discrimination reoccur in scholarly and popular discourse. These are that sons are necessary for heavy labour on the farm, to support their parents in old age, and to carry on the family line. All are problematic.

1) Heavy labour. Rural women have contributed a large proportion of the farm labour in China for nearly fifty years. The fact that farming has become more mechanized challenges the "heavy labour" argument, particularly at a time when many men have left farming to women and migrated to towns and cities in search of better incomes.

2) Old age support. The patrilineal family system requires that sons stay home to support their parents, and that daughters marry out

to support their husband's parents. Nevertheless, it is not uncommon to find cases where parents receive as much or more economic and personal-needs support from their married-out daughters living in another village or district than from their sons or daughters-in-law.

3) The family line. Continuing the family line from father to son is a mandate and perhaps even a mantra. China has a long cultural history of writing and teaching about patrilineal traditions. Without doubt, the concept of the family line is a powerful force in Chinese society. But the communist government had worked hard to displace it, to suppress the power of lineages, and to create an independent source of opportunities. Why has it re-emerged and become so important in some areas? Why do some regions and groups place much more importance on lineages than others (M. Han, 2001; Cohen, 1990)? Why does the search for expanded networks and social relationships often continue to exclude women from its formal mapping?

In addition to the three explanations above, social scientists have probed more deeply. Demographer Judith Banister (2004) has provided one of the most comprehensive reviews of the problem. She examined a series of reasons for China's growing sex imbalance. They include poverty, the political or economic system, socioeconomic development, educational level, Chinese culture, the one-child policy, low fertility, and ultrasound technology. She found that China's shortage of girls cannot be explained by poverty, political or economic system, by the level of socioeconomic development or by educational level as these variables do not correspond to the demographic evidence. However, the distribution of daughter shortage within China is closely associated with the distribution of Han Chinese culture within China proper, while the peripheries and most minority areas have more balanced sex ratios. Banister argues that the introduction of the state family planning policy is associated with rising proportion of sons, and that this rise became even more marked once ultrasound technology for sex testing became available (though illegal for this purpose), followed by abortion for sex choice. The recent demographic data support the view that female disadvantage in mortality has been transformed into female disadvantage in natality. Prenatal female mortality (through abortion) is obviously less distressing than female infanticide. As a result, the sex biases inherent in the culture can be expressed more easily, and the proportion of girls has plummeted.

> "One of the toughest challenges is to modify China's rigid customs of patrilocal and patrilineal marriage, the restriction of land rights to the males of the patrilineal clan, the traditional weakening of daughters' ties to their natal fami-

lies after marriage, the dependence on sons but not own-daughters for old age support, and other customs that make daughters worth little in the eyes of their natal families (Das Gupta et al., 2004). So that China's daughters may survive and be valued as much as sons, they need rights and responsibilities to have lifelong close ties to their natal families. The government has promoted some of these changes and has passed egalitarian laws. The need now is to more vigorously enforce the laws giving daughters equal rights and responsibilities." (Banister, 2004:15).

Here we find one of the few clear references to the property system as a factor in China's son preference. I argue that more than labour or the family "line" is at stake. The system of family property and the political institutions for holding and transmitting land and property rights need to be more carefully examined.

My aim is to consider the links between property rights and population control to see how these two policies work together to produce the enormous deficit of daughters. Who exercises *de facto* control over land and property? Despite government efforts to legislate gender equality, patrilineal institutions retain considerable power in many rural areas. Their workings within village power structures need to be made more visible. The close ties to women's natal families that Banister advocates would be stronger if daughters were in line for a share of the family house and land.

Although China has a long history of practicing female infanticide, in the post-revolutionary period the missing girls problem arises simultaneously with increased wealth (Croll, 2000). The sex imbalance can be seen as a product of development and a problem for development. As with environmental degradation, social institutions can propel societies to follow a pattern of maximizing immediate advantage that can have negative consequences for the future. Targeting girls as a lesser good harms women throughout their lives, and creates a cohort of males assured of their superiority, yet unable to find wives and form families. In a variant of the law of unintended consequences, the rootedness of the male population as the basis for son preference ends up creating a class of rootless males.

While it is common to point to son preference in traditional culture, sex ratios evened out during the collective years (Banister, 2004; Greenhalgh and Li, 1995), with the surplus of males only reappearing during the reform period. Clearly, questions about the family line, the patriline, and the lineage are relevant here. Why is patrilineal culture still so compelling in reform China?

The period of rural collectives (excluding the Great Leap Famine of 1958 to 1961) witnessed rapid population growth. For two decades, up to 1980, collective resources supported children so that economic incentive for couples to keep reproduction in tune with household resources (or else become poorer) was lifted. In China as a whole, the growing population consumed economic gains without improving standards of living.

The 1980s reforms gave the rural population more incentives for production, and more responsibility. To stabilize rural society (and avoid massive urban migration), the revival of family farming meant that the government had to limit land holding by instituting a system of village-based land allocation, and limit reproduction by instituting the one-child policy. Otherwise, large variations in family economic and reproductive outcomes would rapidly lead to large social inequalities in rural areas, exactly the conditions the Chinese Communist Party originally promised to eliminate. Rationing land and rationing children was the answer. Rural families would get equal amounts of land to use (not to own), and would have equal numbers of children. This would provide social insurance for all, and prevent the reduction in resources and income per capita caused by population growth. What policy makers very surprisingly forgot to consider (or did consider but dismissed), was that children are not equal, and in Chinese society, men and women are not equal (Greenhalgh and Winckler 2005).

Before I illustrate how these linked policies work out in a particular village (the ethnographic portion of this presentation), I review the simple gender probabilities implied by the family planning policy in rural China. Not surprisingly, there is a big gap between the abstract way the national government envisioned family planning and land contracting, and the local understandings of the rural population.

In local understandings of gender, marriage was followed by patrilocal residence and patrilineal heirs. Parents supported sons by giving them houses and land, and sons supported parents in old age (Croll, 2000). The link between them was property. Daughters had economic value, or not, according to the value of their current labour. Parents did not form a multi-generational contract involving land with daughters, although they might love them and otherwise treat them well. These local understandings were the products of long-standing patrilineal tradition in most of China, supported up to mid-century by organized lineages and clans. These lineages and clans, when politically and economically successful, often supplanted local government (Watson and Watson, 2004). The local practice might be more flexible

in some parts of China than in others, but these local patrilineal models remained intact. Thirty years of Maoism disrupted many lives and youths destroyed many lineage temples, but they left intact the tradition of making daughters marry out while keeping sons to inherit their parents' living space and their father's kinship ties. Sons were considered crucial to the contract between generations and to defining village membership as well. "Outside" men were distrusted by Chinese villagers who had reason to fear bandits and rival clans.

Under these local understandings, the policy of limiting parents to one or two children directly affected the ability to obtain sons. Its impact was differentially felt, according to what Attwood (1995) has called "demographic roulette" or to what peasants traditionally called "fate"–that element of life that they could not control.

Taking this knowledge of the importance of sons, the family arithmetic is apparent where local policy allows two children. At the birth of the first child, roughly 50 percent of the families will get a son and be satisfied. The remaining 50 percent will eagerly await the birth of the second child. At the birth of the second child, half of these will get a son, bringing the total number with sons to 75 percent. This is an important figure. Because many parts of rural China have been limited to two children, it means that a 75 percent majority has their basic demand met, and 25 percent of the population will have two sons. On the less fortunate side of the roulette table are the 25 percent whose first two tries give them daughters. These are the families that will strongly oppose family planning. They are the ones who will break the quotas, hide or give away girls, or even abandon, neglect, or kill their infant daughters in their concern to get a son. To these families, ultrasound machines and abortion of female offspring are very attractive, low-cost alternatives in their quest to get a son, just like the other 75 percent of the population whom luck has favoured.

With only a minority of 25 percent directly discontented within the villages, perhaps the government thought that would be a small price to pay for the stability of land and population. The formula overall would be a fair one, and "chance" or "fate" rather than the government would be to blame for those who did not get a son. The formal arithmetic would contain no provision for gender bias. Still, because local officials who enforce policies from above also live among angry villagers demanding the right to have sons, the policy has not been easy to enforce on the 25 percent who feel cheated. Thus, China now faces the problem of millions of missing girls and women and millions of bachelor men, worrisome for both sexes. Girls are raised in a culture where they are second choice, where they are a minority

throughout their lives, and always feel less worthy. They are the easiest group to exclude or victimize when competition or conflict erupts. The rules and structures of village life combined with those of the national government produced the unforeseen consequences that embarrass and concern China today.

## 2. The Yellow Earth: Huang Tu Village, Henan

I began fieldwork Huang Tu Village in spring, 1989 with brief visits in the 1990s and again in 2004. Interested in gender and rural development, I selected this farming village in Henan (see location map in Figure 2 in the introduction) for two reasons. First, as early as 1981 the census data for Henan Province showed a demographic pattern favouring sons, with a birth sex ratio of 110 males per 100 females (China Official Yearbook, 1984: 420-427). Sex ratios that rise above the expected norm of 106 male births per 100 female births are a warning sign that female children are endangered in a particular region.[2] In 1989, Henan's birth sex ratio rose to 116, the third highest in China (Zeng Yi *et al.*, 1993: 294). Second, the village was located in a traditional wheat-growing region, like most of the North China plain, with cotton as a subsidiary crop. In the early 20th century, this region was associated with a relatively strong system of gender discrimination against women in the labour force compared to parts of southern and south-western China. When I arrived in 1989, over 80 percent of Huang Tu Village labour force was employed in farming, with construction as the next largest occupation. The communist revolution had required women to become an active part of the agricultural labour force during the Maoist era (1949-1976) and in the reform period women still did much of the manual farm work, as I observed in 1989. Huang Tu Village seemed like an appropriate place to examine the extent to which development contributed to or undermined what has been called "fierce" patriarchy (Drèze and Gazdar, 1996).

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[2] See Croll (2000), Sen (2000:104-107), and Banister (2004) for explanations of this standard and for an introduction to the general problem of missing girls. Throughout this chapter I use "sex ratio" to measure males per 100 females, the standard usually used for China. Studies for India often use the inverse ratio of 94.3 females per 100 males to represent the normal birth sex ratio. In the latter case, birth sex ratios below 94 females per 100 males suggest discrimination against daughters.

## 3. Henan Province and local county: population and missing girls

By 2000 Henan Province had become China's most populous province, with a total population of more than 91 million and a density of 554 persons per square kilometre (Henan, 2005). The sex ratio for the total population in 2000 was 106 males per 100 females, having risen from 104 in 1981.[3] The sex ratio for children aged 1-4 in 2000 had shot up to 136 males per 100 females, with nearly ½ million girls missing for the previous four years, 1996-1999.[4] Henan's disturbingly high child sex ratio is among the highest in China.

The county in which Huang Tu Village is located had about 529,000 people in 1988, and reached nearly 643,000 in 2000 (China Census 2000). A breakdown of population by age and sex at the county level shows that sex ratios began to rise in the mid-1980s, shortly after the one-child policy was established, and rose rapidly at the end of that decade (Figure 1).

Starting in 1985, a similar rise in the proportion of boys was recorded at the township (administrative village) level, a unit that encompasses more than ten large villages. Abnormally high sex ratios thus appeared in this rural area fairly soon after the family planning policy was introduced, and before ultrasound machines were commonly available in rural areas and county hospitals (Figure 2).

These county and township data show that the broad pattern of missing girls was not acute until the 1980s. In 2000, the pattern of elevated child sex ratios persists. When compared to the provincial child sex ratios (aged 1-4) with an alarming ratio of 136 males per 100 females, the county shows an even higher sex ratio of 146 males per 100 females for children aged 1 to 4. Based on the number of recorded male children, 23,253 females were expected, but only 16,859 were counted. An estimated 6,394 female children were missing (Table 1).

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[3] This is an abnormally high sex ratio for total population. Normally, sex ratios for total population are much lower due to the greater longevity of women.

[4] The population of boys age 1-4 in Henan in 2000 was 2,360,487. Dividing this number by 1.06 gives 2,225,939, the expected number of girls. The reported number of girls was only 1,731,048, a difference of nearly 1/2 million.

**Figure 1 County sex ratio by birth year 1967-87**
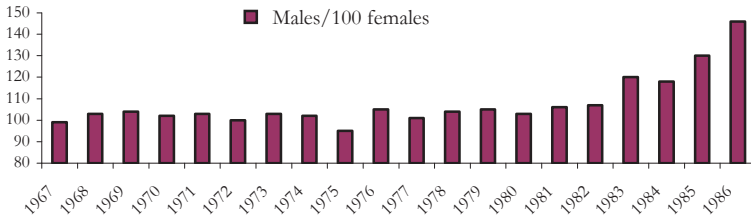


Source: county police records, 1988.

**Figure 2 Township sex ratio by birth year, 1957-1987, encompassing Huang Tu Village**
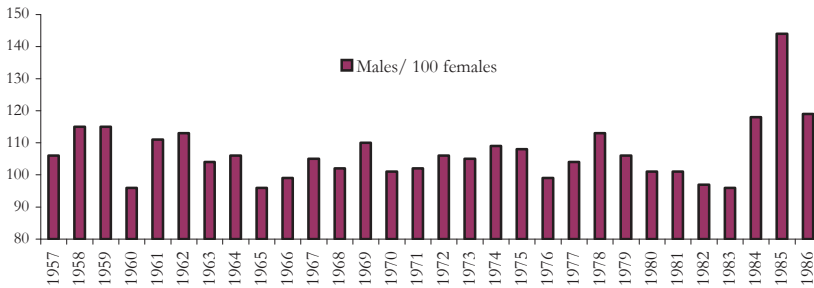


Source: county police records.

**Table 1 Population, child sex ratios, and missing girls (age 1 to 4) for Henan province and county, 2000**

| Place | Total popula-tion | Children aged 1-4 | Sex ratio (M/100F) | Estimated missing girls |
|---|---|---|---|---|
| Henan    prov- | 91,237,000 | 4,091,535 | 136 | 495,826 |
| County | 642,000 | 41,508 | 146 | 6,394 |

Note: Missing girls are estimated by dividing number of male children (for Henan, N=2,360,487) by 1.06, a conservative standard for the normal sex ratio at birth, and subtracting the reported number of girls (1,731,048) from the expected number of girls (2,226,874). Using a standard that takes into account the normally higher mortality rate of boys up to age five (Attané, 2002) would yield an even higher number of missing girls.
Source: county police records 1988.

Moving to the village level, it is hard to identify significant trends because smaller numbers are involved. In 1988, Huang Tu had a population of 2416 in 520 households. The households were divided into eight "teams," or "small groups." Each "team" was the equivalent of a small village in size, but they were all fused together into what, in this part of Henan is called a village (*cun* or *cunzhuang*). The village itself was under the authority of a township, or "administrative village" located several kilometres away and including about 15 surrounding villages comparable to Huang Tu. Two sets of local demographic data, from 1989 and from 2004, supplement the official data on sex ratios from higher levels of government and offer a glimpse at local conditions. In 1989, I conducted a survey of 50 households selected from each of the 8 teams. My sample of 83 children aged 0 to 14 shows evidence for skewed sex ratios, with a sex ratio of 152 males per 100 females (Table 2). Due to the small numbers in the sample, the sex ratios fluctuate widely from year to year and are not statistically significant, but they suggest that the sex bias may have been present even before the family planning policy began to be strictly enforced in the early 1980s.

In 2004 I obtained access to more recent household registration records for one of the eight teams. Counting all living children in this sample of 130 aged 0 to 19 also yielded a high sex ratio of 113.[5] Given the small number of births allowed in any village, it is difficult to identify reliably local trends without referring to larger samples of births or age-sex distributions from more villages or longer time periods. But the Huang Tu data are consistent with the high sex ratios in the township, county and province.

**Table 2 Child sex ratios by age (Males per 100 females) for Huang Tu Village, 1989**

| Year of birth | Age | Number | Sex ratio |
|---------------|-----|--------|-----------|
| 1984-1988 | 0-4 | 24 | 200 |
| 1974-1983 | 5-14 | 49 | 133 |
| 1974-1988 | 0-14 | 83 | 152 |

Source: author's interview sample of 50 households 1989.

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[5] The team had very few births after 2000, but surprisingly reported more girls than boys. After the 2000 national census revealed the shocking deficit of girls across China, national attention to the sex selection problem may have given local officials incentives to report more equal birth sex ratios. With greater government scrutiny and penalties for sex-selective abortion, local officials may try to conceal the birth of sons because illegal abortions of females can be inferred from improbably high birth sex ratios.

The local demand for sons is also reflected in family composition. With the team data from 2004, I calculated the number of households with children who remain sonless and daughterless. Out of 88 households, 66 had children under age 15. In these 66 households, 36 had a child of each sex, leaving 30 couples with children of only one sex. There were 18 couples with no daughter, but only 12 had no son. Seven of the sonless 12 had only one daughter and would be able to try again. Only five of the daughterless 18 would be allowed to try again. Thus at a minimum 13 families end up with no daughter, and five end up with no son, unless they either have a child outside the quota or adopt one. This gives a rough measure of the number of families that have already broken the rules, as well as those that might want to do so. Nine of the daughterless couples have not born a child in 10 years, suggesting their reproductive period has ended. Of the five couples who have no sons (and already have two daughters), only two have not born a child in ten years, suggesting the other three may still want to break the quota. This exercise in numbers resembles the kind of thinking that family planning cadres across China must conduct if they are to keep village reproduction within the quotas. Yet a glance at the family composition within this same team shows that 17 households have couples who have gone over the quota of two children in the past 17 years. Nine of them had several daughters followed by a son. Only one had sons first with a daughter as the final child.

## 4. The Women's Director

In 2004, the problem of imbalanced sex ratios had clearly been publicized in the village and officials were concerned about it. The wall of one central building carried a large banner proclaiming, "Girls are as good as boys." The Women's director told me that she did not have any exact statistics on village family planning because she simply passed these data on up to the authorities. However, she told me, "The population must not increase. We must keep the proportion of births to 1 percent of the population per year." The director also affirmed that for everyone, the third birth is the last. "If a woman is pregnant with the third, she must get an ultrasound test (*B-chao*) and see if it's a girl. If it's a girl, she must have an abortion (*yin chan*). If it's a boy, she can have it and pay a fine." This statement suggests that family planning officials are colluding with the private use of ultrasound tests in order to meet their quotas and allow villagers to meet their demand for a son.

## 5. Land, landholding group, and lineage

> "The god of land brings a lawsuit against a farmer who has too many children." Li Hongkui, fine-arts teacher, Beiguodong Village, Wuzhi county, Henan (*People's Daily*, Jan. 1, 2000)

Each of the 8 teams in Huang Tu is associated with a section of a large rectangle formed by the grid of streets that compose the village. Each team has it own household registration records, conducts its own land allocation, and is responsible for its own family planning. The village as a whole has a village council, a set of leaders responsible for managing local government, with the most authority vested in the Party Secretary.

Land was first contracted to individual households in 1980. In 1985 land was re-divided and administered by the eight teams, so that each team had its own leaders who would reallocate land among the constituent households. Team subgroups, or *xiaozu* (groups, not clans), subdivide land according to population changes. Each group has slightly different amounts of land per capita, according to population growth or decline. These are the groups that readjust the amount of land, by drawing lots, each five years.

In 1988 the village had 4155 *mu* of land with about 1.7 mu of land per person. In 1980 when they first divided the collective land, everyone–male or female, young or old–got exactly the same amount distributed to her or his family.[6] By 1985, due to family variation in births and deaths, differences in the amount of land per capita had emerged. In addition, some teams lost members due to official outmigration for urban jobs. The village redistributed land but only within each team in 1985. Thus, some teams had larger or lesser amounts per capita according to whether they had gained or lost population. The village conducted a second land redistribution in 1990 and at that time the variation ranged from 1.8 mu to 1.3 mu per person, with the average amount of land per capita of 1.6 mu. In 2004, population growth had reduced the amount of land per capita to 1.2 mu. The team with the least land per capita had dropped down to .9 mu per person, while the team with the most had almost twice as much, with 1.5 mu. The population was now 3,207 and the farmland had declined to 3,953 mu because some land was converted to residential house plots for new families (Table 3).

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[6] A *mu* is 0.0667 hectares.

**Table 3 Huang Tu Village changes in land per capita by team 1989-2004**

| | Mu per capita | | |
|---|---|---|---|
| Team | 1989 | 1993 | 2004 |
| 1 | 2.0 | 1.8 | 1.4 |
| 2 | 1.7 | 1.6 | 1.1 |
| 3 | 1.9 | 1.7 | 1.3 |
| 4 | 1.8 | 1.6 | 1.5 |
| 5 | 1.5 | 1.5 | 1.5 |
| 6 | 1.3 | 1.3 | 0.9 |
| 7 | 1.5 | 1.3 | 1.0 |
| 8 | 1.9 | 1.7 | 1.4 |
| Total | 1.7 | 1.6 | 1.2 |

Source: village records from various years, from party secretary and team leaders.

As informal institutions, lineages often exercise considerable power over property rights in rural China. Lineages are not officially part of the government, but are maps of kinship networks within the community that affect alliances and group membership. Outlining the kinship structure is thus an important part of understanding power and property relations within a village.

When I first came to Huang Tu Village, it appeared to be a multi-lineage village, even though it bore the name of a dominant lineage, here called "Huang."[7] Table 4 shows lineage distribution with different letters of the alphabet substituting for actual surnames. Lineage "A" is the one with the most numerous surname in the whole village, Huang.

The numerical dominance of the Huangs was over 50 percent in three of the eight teams, but it did not reach the level of 80 percent, a convenient benchmark for considering a village a "single lineage" village. Thus, even though the Huangs were the most numerous of the diverse surnames in Huang Tu Village as a whole, three other lineages were the most numerous in other teams, and none seemed have enough members to be a completely dominant lineage. This impression was reinforced by the fact that the Party Secretary and Vice Party Secretary and the majority of the village council were not named Huang. Thus the village as a whole appeared to belong to the "multi-surname" type in which no lineage dominates.

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[7] The pseudonym, Huang, was chosen to indicate that they are the dominant family, as well as to suggest the pervasive Yellow Earth of their environment.

**Table 4 Huang Tu Village distribution of lineages among 8 village teams, 1989**

| Team | Primary lineage | Percent | Secondary lineage | Percent |
|------|-----------------|---------|-------------------|---------|
| 1 | A | 77 | H | 14 |
| 2 | A | 70 | B | 8 |
| 3 | A | 56 | B | 8 |
| 4 | A | 46 | B | 30 |
| 5 | A | 45 | C | 17 |
| 6 | B | 43 | A | 32 |
| 7 | D | 48 | E | 27 |
| 8 | F | 62 | G | 17 |

Notes: The primary and secondary lineages in each team are here defined as the surname group that accounts for the most households and second most households, respectively. The letters A through H to stand for the different dominant surnames in Huang Tu Village.
Source: village household registration records for head of household.

Names can be misleading, however. In this case, the village method of keeping track of household heads unintentionally concealed the lineage affiliation of a portion of the households. The household registration booklets record the eldest male of the senior couple as head, and when he dies, the widow is regarded as household head, even when she is living with adult, married sons. Because women do not take their husband's surname at marriage,[8] the registers list these female household heads by their natal surname, which differs from the surname of their children. Thus, the listing for female heads of household does not reflect the lineage affiliation of the next generation. This inadvertently disguises the degree of lineage concentration among the males of the village. Because I could not obtain registration information for all 2,500 individuals in 1989, a method of reducing the distortion regarding lineage concentration is to omit the female-headed households from the sample and analyze just the surnames of the male heads. This is reasonable if there is no systematic bias to make some surname groups likely to have more widows or female-headed households than others.

Re-examination of the 1989 evidence (Table 5) suggests that Huang Tu Village is not best described as a multi-surname village, but as a village with strong surname concentration within each team. Structurally, the eight teams resemble "natural villages" (a term used in China to suggest they all descended from the same founding family, and defining patrilineal descent as "natural") composed of a dominant lineage which has the largest number of households, and a secondary

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[8] Before the 1949 revolution, women took the surname of their husband when they married, and were known by the two lineage surnames, their husband's and their father's plus "*shi*" which, like "Mrs." denoted a married woman.

lineage which has the next largest number of households. Each team has a single surname that accounts for 50 to 83 percent of the households, and a secondary lineage comprising from 10 to 36 percent of the total households. Together, the two main surnames accounted for 73 to 100 percent of the male household heads in each team.[9]

In 2004, I collected household membership from the registration books for every member (total 408) of one team, including the households headed by women. Classifying them according to the surname taken by the children of the household showed that 70 percent of the households belonged to the dominant lineage, supporting the evidence for surname concentration from 1989. Huang Tu Village thus resembles an association of eight "single-lineage" communities (three of them dominated by non-Huang lineages) with a few minor lineages distributed among them. The fact that each landholding team is very strongly associated with one or two surname groups suggests that son preference in this area is related to the social significance of lineages and not just to the labour, old-age security, and lineal continuity concerns of individual families. Lineage identities exercise considerable influence on the alliances and rivalries of everyday life.

**Table 5 Huang Tu Village: surname concentration among male household heads, for each of the eight teams, 1989**

| Team | Primary lineage Percent | Secondary lineage Percent | Primary & secondary lineage Percent |
|------|-------------------------|---------------------------|-------------------------------------|
| 1 | 83 | 10 | 93 |
| 2 | 82 | 12 | 94 |
| 3 | 78 | 20 | 98 |
| 4 | 77 | 18 | 95 |
| 5 | 64 | 36 | 100 |
| 6 | 57 | 36 | 93 |
| 7 | 53 | 20 | 73 |
| 8 | 50 | 35 | 85 |

Notes: - Primary lineage is the lineage with the most households bearing the same surname within each team. Secondary lineage refers to the second most common surname in the team. Source: Village registration books.

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[9] This is very similar to Hu Mingwen's description of Liuxia village (Jiangxi Province, Wannian county, Huyun township). Liuxia village is composed of four "natural villages" in which each has a different dominant surname (2004:6).

## 6. Land for houses

One couple that I interviewed is a case of endogamous marriage in Huang Tu Village. Both the husband and the wife have become state sector teachers with household registration in the township. Neither receives farmland. Nonetheless, they built a new house in the village two years ago. They explained, "All sons born in the village have a right to a house lot (*zhaijidi*) of 3 *fen* (0.3 *mu*, or 200 square meters)." When I asked about daughters, they said that an *unmarried* daughter in theory also has that right, but the ones who actually receive it are sons, married or not, whether they work outside the village or not. For example, a married son of the village who has urban household registration and has lived in the city for more than fifteen years told me he no longer has a house, but he still has 3 fen of land in Huang Tu Village. According to local rules, however, a married daughter loses the right to inherit the house plot.

Another example of gender and land transfer comes from an extended family with two married sons, each with a child. Several years ago, their daughter married out to a neighbouring village. Because the land has not been redistributed yet, their daughter has no farmland in her husband's village while her two sisters-in-law in Huang Tu Village have received her share of the farmland, until they are each given a full portion at the next land adjustment. These examples show how rural communities continue to exclude daughters from direct inheritance of farmland or house lots, and require them to marry in order to obtain land rights through their husbands.[10] In this setting, it is no wonder that many village women expressed the view that bearing a son is their duty or obligation (*ren wu*). It often sounded as if they were describing a job they were hired to do. Bearing a son creates the next property owner, and secures a woman's claims to land in her husband's village. This is vitally necessary for her because, as a married woman, she loses these rights in her natal village.

## 7. Land control policy in practice: the lineage as land entitlement arbiter

Over the years, I have spoken with villagers and officials about anomalous household situations such as uxorilocal marriage and widow remarriage to better understand how well families or individuals

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[10] See also Bossen (2002) and Jacka (1997) for descriptions of rural women's land rights.

outside the patriline were tolerated with respect to membership and land rights. In one team, I found that uxorilocal marriages accounted for only two percent of all marriages. When I interviewed a leader about uxorilocal marriage in his team, he seemed extremely embarrassed, speaking of the two cases in hushed tones. I comment on the embarrassment because it contrasts so greatly with the many cases of uxorilocal marriage I encountered in a Han village in Yunnan province where uxorilocal marriage was an accepted alternative even in families with both sons and daughters (Bossen, 2002). In Huang Tu Village, one case of uxorilocal marriage occurred in a household that had three daughters and no son, and another in a household where a virilocally married widow with young children remarried. Years earlier, I was told about another case of a widow with young children who attempted to bring in a husband from outside the village. In the first attempt, the husband mysteriously died (drinking himself to death in the company of another Huang Tu villager), and in the second attempt the man was beaten up and driven out by the nephews of her deceased husband (Bossen, 2007).

Some have predicted that the one-child policy would eventually lead to the acceptance of uxorilocal marriage in rural communities (H. Han, 2003). This is because roughly half of all families would have a single daughter and, without a son, this large group of parents would view their daughter as their heir and source of old age support. However, the two-child policy and the use of sex-selective abortion seem to have delayed any such transition by providing the large majority of families with at least one son.

In addition to a very low incidence of uxorilocal marriage in Huang Tu Village, divorce is exceedingly rare. In Chinese villages, variations in local practice such as the acceptance or rejection of uxorilocal marriage or of divorced women as entitled to a share of the marital property are linked with the strength of patrilineal organization. Where villages are dominated by a single lineage in numerical terms, whether or not it announces itself as a corporate group (by constructing lineage temples, for example), it still has considerable informal power to police its boundaries and exclude outsiders. One of the major principles of the lineage as an institution is its exclusion of men who are not members by birthright.[11]

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[11] Regarding lineages that lack corporate property in the northern part of China, see Cohen (1990, 1992), and M. Han's study of a lineage (2001) in Shandong. For South China, see Watson and Watson (2004).

## 8. The village itself as corporate property

I suggest that debate about whether or not Chinese patrilineal groups require "corporate property" in order to qualify as lineages, may not recognize that the village itself is, in some way, patrilineal corporate property as long as the village leadership can make decisions about who can or cannot become a member. This sense of "ownership" does not depend on title deeds, but on lineage strength in using political connections or force if need be to defend village interests. The strong lineage, with its control of written records, can include or exclude members. While membership in a village or in the Communist Party is officially lineage-neutral, the bonds that bring people into relations of trust with one another are still greatly strengthened by lineage affiliation, reinforced by a history of family and residential ties and obligations as brothers, and neighbour-cousins (often called "brothers.").

Lineage theorists tend to think of property as belonging to the individual, household, or lineage and to look for signs of joint ownership of land, temples, schools, or other buildings.[12] But the village itself is a unit whose property is managed by a leadership operating largely under patrilineal rules. Even though individuals contract property for household production, the land remains effectively the property of the corporate group headed by village leaders (Guo, 1999: 74-75). These leaders also represent their lineage interests. Over the years, as the status inversions of the Maoist years that elevated men of poor families are forgotten, the influential leadership positions of party secretary and the village head often return to members of the dominant lineage (M. Han, 2001: 146). In regions where there is no dominant lineage and many different surname groups compete for power, the enforcement of gender rules strictly delimiting lineage membership may be less stringent (Li Shuzhuo *et al.*, 2000, 2003, and Bossen, 2002).

How is power actually exercised within the village? Is party membership strong enough to counter lineage membership as a basis for power? Gao (1999:201) wrote about clan power in terms of family planning, and made some interesting comments on the relationship between clans and the party.

> "We must be cautious not to overstate the similarities be-
> tween the periods before 1949 and that in post-Mao
> China. For one thing, the clans and the Communist local

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[12] See M. Han's comparison of lineage models (2001).

officials have not yet totally merged as one political body.
… in present-day China clan power and the local official
authorities still comprise two distinct political entities.
Nonetheless there is a great deal of overlap. Furthermore,
if the state chooses to, it can still exert power over the lo-
cal authorities. A clear example of this is the implementa-
tion of family planning policies. Since the early 1990s, a
large number of abortions and IUD operations have been
forcefully carried out in Qinglin and Gao Village, and local
clan power has been unable, and in fact has never tried, to
stop these brutal measures" (1999:201).

While it is important to note that much of the birth control
burden falls on women who are outsiders to the lineage, Gao's point is
still valid. Perhaps the view here should be the optimistic one that
when the state sees its vital interests at stake, it is capable of projecting
power to the village level. As long as missing daughters are not seen in
this light, however, the state is prepared to accept the power of
lineages and other local elites.

## 9. Conclusion

Some scholars have explicitly linked China's family planning policy
to missing girls (Greenhalgh and Li, 1995 and Greenhalgh and
Winckler, 2005) but few have linked the household responsibility
system to increasing sex ratios. Households are now in charge of their
own labour force and their own social security. Their security comes
from their land and their land rights are enforced by lineage-dominated
groups. There is clearly a relationship between the land system and the
son system.

How high will the sex ratio go? If we assume everyone has two
children and the 25 percent who are "boyless" carry on to have one
boy, with the third (and subsequent) girls being aborted, unregistered
or something else, then the resulting ratio is 125. If we limit the
number of pregnancies to five, then the sex ratio is 122 males per 100
females. I suggest that a sex ratio of around 125 is an upper limit
allowing all families to have at least one son when a two-child policy is
in effect and sex-selective abortion is widely practiced. However, in
those provinces that enforce a one-son-or-two-child policy and practice
sex-selective abortion, the ratio could go as high as 200. That is, 50
percent of the families will stop at one son, and the remaining 50
percent who had a daughter the first time will carry on with sex
selection for the second child until they all get a son. For 100 couples,

this would add up to 100 boys for 50 girls, or a hypothetical maximum sex ratio of 200, or 193 if we limit the number of pregnancies to five.

Son preference in rural China is exacerbated by population control. Insistence on having a son is importantly motivated by land allocation practices and patrilineal rules of male land inheritance. The significance of the patriline is not merely that the "line" is a ritual link between ancestors and descendents, but is very importantly about land, local territory, and territorial integrity, concerns that fall within the traditional domain of lineage interests.[13] Lineage ties that prescribe loyalty and solidarity remain a potential source of village political power and brute force.

In rural China, patrilineal groups retain power for several reasons.

- The central government is weak on the ground. It cannot enforce its regulations without cooperation from local leaders who are surrounded by patrilineal kin groups with claims upon them. This, of course, is a specific instance of the classic observation that "Heaven is high and the Emperor far away."

- Private property in land is not allowed, so local allocation is the practice by which villagers' property rights are defined, with patrilineal principles operating to determine who belongs to the community and can contract farmland. While the introduction of private property in land will not solve this problem as long as the lineage system remains intact in rural areas, the current system unquestionably devalues daughters.

- Although the state systematically works to eliminate other centres of power, rural lineages are "below the radar" and "traditional," often operating as an agent of the state. They thereby pose a relatively low level of threat to state power. Lineage organization thus enters the vacuum which exists where the institutions of civil society otherwise would be.[14]

While there are of course cultural elements in this formulation, son preference can best be seen as a response to specific policies and circumstances.

The land reform of the 1950s stressed that women were to have equal rights to land, and they were counted in the distribution of land

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[13] See Watson and Watson (2004) for a description of the role of lineage militia in defending lineage interests.
[14] See Hu (2004) and Zeng Guohua (2004) for opposing positive and negative views on the revival of lineage and clan strength in Jiangxi, as well as Ruf (1999, 2000) for Sichuan.

to households in its first phase. Collectivization, however, erased those rights for men and women as they became landless workers on larger collective farms managed by village committees under the direction of the state. Decollectivization did not bring a return to either the pre-revolutionary situation of larger and smaller landowners, nor to the immediate pre-collectivization situation where women were supposed to have gained title to land. Rather, as explained above, decollectivization brought a mixed system of contracting to households based on patrilineal birthright, with the village government as the effective owner-allocator of the village land. Because current village practice still treats daughters' land rights in the family and village as temporary, the accepted way for women to regain a claim on land and housing is to raise a son for their husband's family and patrilineage. The reform period has witnessed the revival of patrilineal control over village land rights and the implementation of a national birth control policy. Acting together these developments have contributed to the extreme shortage of daughters in rural China.

Missing daughters are a human development problem per se. The Chinese government and outside development workers are increasingly seeing them as a problem with respect to development as well. The argument that a generation of bachelor males risks being a challenge to social stability is one element.[15] Missing daughters' devalued sisters may also have less to contribute to society than had they been raised in a more female-friendly environment. Interestingly, neither the United Nations Human Development Index nor the related Gender Development Index contains a sex ratio measure. The significance of skewed sex ratios to human development needs to be recognized.

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[15] Watson and Watson (2004) noted the link between involuntary bachelorhood and violence in South China. Hudson and den Boer's broad examination of the historical role of unmarried males in China concludes, "Throughout Chinese history, men at the margins of society have been available for work that involves violence. Occasionally they changed the destiny of a nation" (2004:226).

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# Social Networks and Son Preference among Rural-Urban Migrants in China: A Study in Shenzhen[1]

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## 1. Introduction

Son preference is embedded in traditional Chinese culture and has been a fundamental cause of the high sex ratio at birth in China (Zeng *et al.*, 1993). Since the mid 1990s the number of migrants from rural areas to Chinese cities, whom we refer to as rural-urban migrants, has increased dramatically, and to some extent, strong son preference among the rural-urban migrants results in a high sex ratio at birth in urban areas (Wu *et al.*, 2005). After migration, rural-urban migrants rebuild their social networks along with changes in their occupations and surroundings. Social interactions among network members have an impact on the attitudes and behaviours of rural-urban migrants (Bongaarts and Watkins, 1996; Friedkin, 1997; Kohler *et al.*, 2001). Accordingly, some aspects of the culture of childbearing among rural-urban migrants are expected to change during the process of reconstruction of their social networks after migration. It is possible that modification of son preference among the rural-urban migrants will exert an influence on the sex ratio at birth in urban areas. Social network theory offers an important framework in which to analyze the determinants of the attitudes and behaviours related to son preference among the rural-urban migrants. Such analysis may lead to alleviation of the dangerously high sex ratio at birth in contemporary urban China.

Some studies of marriage and fertility control indicate that social

interactions among network members will increase women's desired age at first marriage and diversify their contraceptive use after migration (Yang *et al.*, 2004; Jin *et al.*, 2005). Thus research on migration based on social networks may help to understand the evolution of migrants' attitudes and behaviours (Bongaarts and Watkins, 1996; Friedkin, 1997; Kohler *et al.*, 2001; Yang *et al.*, 2004; Jin *et al.*, 2005). Although some studies have indicated that migrants' son preference may change after migration, and are affected by other factors such as age and education (Hong, 2005; Yang *et al.*, 2002), there have been few empirical studies focusing on attitudes and behaviours related to son preference among migrants. Using data from a survey of temporary immigrants in Shenzhen conducted by the Institute for Population and Development Studies at Xi'an Jiaotong University in April 2005, this chapter investigates such attitudes and behaviours. Logistic regression is used to analyze the effects of social networks, migration and individual factors on these attitudes and behaviours of the rural-urban migrants in China.

## 2. Study design and Analytic Framework

Rural-urban migration may dramatically change individuals' lifestyles. During the process of migrants' adaptation to cities, their attitudes and behaviours may also change. Research on Chinese migration and change of attitudes towards childbearing indicate that social networks, migration history, and individual factors have effects on migrants' attitudes and behaviours concerning son preference.

### 2.1. Social network factors

A social network is a set of nodes (people, organizations or other social entities) connected by a set of relationships, such as friendship, affiliation or information exchange (Mitchell and Clyde, 1969). Personal networks have the capacity to meet individuals' emotional needs, and to provide instrumental assistance, information and advice on daily life, all of which can affect individual's attitudes (Shye *et al.*, 1995). The social network can also provide individuals with examples of behaviours that may alter or reinforce their attitudes, and may eventually influence their behaviours, a process referred to as social learning and social influence (Bongaarts and Watkins, 1996; Friedkin, 1997; Kohler *et al.*, 2001). Thus, rural-urban migrants' attitudes and behaviours related to son preference are expected to be influenced by the overall effect of their network members' attitudes towards son preference.

Relations between individuals and their network members have effects on their attitudes (Bott, 1971). Granovetter (1973) divided social network relations into strong and weak ties based on the number of contacts, the emotional bond, the degree of intimacy, and reciprocity. Specifically**,** strong ties refer to contacts between network members who are likely to be homogeneous in terms of gender, age, education, occupation, and income, while weak ties are between members with heterogeneous identities and can be regarded as an "information bridge" among network members (Granovetter, 1973). Chinese rural society is highly respectful of familial and geographical relations. Bian (1997) classified relations in the social networks of Chinese rural-urban migrants as follows: strong ties include "blood relationship" and "geographical relationship", such as between family members, kin and countrymen; weak ties are formed by "job relationship" and "friend relationship", involving friends, bosses and fellow workers. Accordingly, in this chapter, those connections in migrants' networks between members with high homogeneity of social characteristics are classified as strong ties, and involve self-employed workers, workers in the commerce and service industries, industrial workers, and the unemployed; those with heterogeneous identities, classified as weak ties, involve managers, owners of private enterprises, professional or technical personnel, and officers. We confirm that weak ties tend to make rural-urban migrants' attitudes and behaviours more consistent with those of the permanent urban residents, but this depends on details of the migrant's history, for example the length of time they have resided in the urban areas.

## 2.2. Migration experiences

Migration helps to change individual attitudes and behaviours (Goldstein *et al.*, 1997). Both attitudes towards childbearing formed before migration, and adaptation to the host culture and customs in urban areas after migration, might have effects on son preference among rural-urban migrants. Hence we ask whether age at first migration, years of living in urban areas and times back home per year have impacts on son preference among rural-urban migrants after migration. First, according to Riley's age stratification theory, at the point of initial out-migration, attitudes towards childbearing should differ greatly among age cohorts, according to family economic condition, education, life courses, and period of history (Riley, 1971). For example, young people care little about marriage and childbearing, and may therefore be less likely to have a preference for sons. By contrast, older people, especially those who are married, have usually been influenced for years by the patrilineal family system, and are likely

to have a stronger son preference. Consequently, age cohort could affect son preference (Hui *et al.*, 2001). Second, rural-urban migrants will gradually change their attitudes and behaviours during their adaptation to the urban society, so length of residence in cities might affect their son preference (Riley, 1971; Hui *et al.*, 2001; Harding and Jencks, 2003). Social organization theory suggests that members entering an organization earlier have a greater impact on those entering later, and are not much influenced by the latter (Pfeffer, 1983). Son preference among permanent urban residents is weaker than that among people in rural areas, and some permanent urban residents in China even prefer girls to boys (Feng and Zhang, 2002). Thus permanent urban residents could have a greater influence on rural-urban migrants' attitudes and behaviours towards childbearing and might tend to weaken son preference among migrants. Migrants living longer in urban areas should tend to have greater changes in their attitudes and behaviours (Yu *et al.*, 1996). Third, because these rural-urban migrants reside in cities without permanent legal status under the household registration system, they return to their original houses annually at agricultural harvest seasons or during traditional festivals (Ou and Xie, 1996). When they return home, "blood relationship" and "geographical relationship", such as family members and local friends, could reinforce their son preference; this constitutes a negative effect on their transition to a more urban attitude concerning son preference. Thus, the fewer times migrants go home each year, the weaker their son preference is expected to be.

## 2.3. Individual factors

Individual factors, such as age, education, sex of children ever born, etc., affect individuals' attitudes and behaviours related to son preference. Fewer males are born as paternal age increases (James, 1987). Sons are particularly preferred among less educated parents (Arnold and Liu, 1986). Couples with only a girl have been slightly more likely than those with only a boy to have a second child; those with two girls have been 5-6 times as likely as those with two boys to have a third child in China (Maureen, Ulla and Xu, 1998). In addition, gender, education, and marital status will also affect attitudes and behaviours of son preference indirectly through their social network effects (Fischer, 1982; Marsden, 1987). In sum, social networks, migration and individual factors might influence migrants' attitudes and behaviours concerning son preference. Son preference among rural-urban migrants might therefore be expected to change during the process of reconstruction of social networks after migration.

## 3. Data and methods

### 3.1. Data

Data used in this study come from a survey of temporary immigrants in Shenzhen conducted by the Institute for Population and Development Studies at Xi'an Jiaotong University in April 2005. Shenzhen is located in the South of Pearl River Delta (see location map in Figure 2 in the introduction) and is a bridge linking Hong Kong and inner areas. Shenzhen also serves as an important transportation hub in South China. In May 1980, Shenzhen was formally nominated as a "special economic zone" by the Central Committee of the Communist Party of China and the State Council. Now, Shenzhen boasts one of the most robust and fastest-growing economies in China. The economic development has been shifted to low input, low consumption, high output and high efficiency in recent years. By the end of 2004, the gross domestic product (GDP) of Shenzhen reached 342.88 billion yuan, with a year on year increase of 17.3 percent. The growing industries in urban areas demand a great number of cheap labourers and attract the surplus rural labour. The population has increased continually from 1980, reaching 10,350,000 in 2004, only 16.5 percent of whom are permanent urban residents, and the proportion of rural-urban migrants is the highest in China (Yang, 2005). Shenzhen therefore provides an excellent location to study the evolution of attitudes and behaviours of those rural-urban migrants who have changed residency status from rural to urban areas, but without permanent legal status because of the household registration (*Hukou*) system (Chan and Zhang, 1999).

A structured household questionnaire and a structured community questionnaire were used in the survey. The respondents are rural-urban migrants, including "concentrated" and "scattered" residents. Concentrated residents live together in a relatively isolated community with a low proportion of permanent urban residents, while scattered residents live in communities with a high or medium proportion of permanent urban residents. For the survey, five companies in three districts were selected by cluster sampling, and five communities in three districts were selected by systematic sampling. The survey was conducted in April 20-28, 2005, and all respondents were above 15 years old. The survey provides data about personal characteristics, attitudes and behaviours towards marriage and family, childbearing,

and old age support, as well as information about social support networks and social discussion networks. Consistent with the categories made by Van del Poel (1993), social support networks in our study include instrumental support networks, emotional support networks, and social contact networks. Social discussion networks are of four kinds: concerning marriage and family, contraceptive use, childbearing, and old-age support. The number of satisfactory responses was 1,739. The average age of respondents was 31, 51 percent of whom were men, 67 percent were younger than 35, and 68 percent were ever-married. The average number of years lived in urban areas was 6.78, and about 50 percent of respondents had lived in urban areas for more than five years. Details of objectives, contents, implementation and data quality of the survey are provided in our research report (Institute for Population and Development Studies at Xi'an Jiaotong University, 2005). Because of their low level of education and lack of modern vocational skills, rural-urban migrants often have to change jobs and residences frequently; it is therefore hard to do follow up surveys on "floating population". Thus our final data are cross-sectional. The main objective of the survey was to study attitudes and behaviours related to marriage, childbearing, old-age support among migrants after migration, and the survey was not specifically designed to study son preference among rural-urban migrants. Some factors that may influence son preference, such as social conditions in the city and an individual's actual childbearing needs, have therefore not been included in our questionnaire. Further, attitudes and behaviours of permanent residents have not been investigated. Comparison of fertility attitudes and behaviours among rural-urban migrants with those of permanent urban residents is not possible with the data from our survey.

### 3.2. Methods

Our analysis is divided into two parts. First, the status of migrants' son preference after migration is analyzed, including attitude about son preference and sex ratio of ever-born children. Attitude of son preference among rural-urban migrants is assessed by "what will you do when your first child is a girl", which has been shown to be a reliable measure of son preference in rural China (Li and Feldman, 1999). In addition, those whose first child is a girl are permitted to have a second child in rural China. The government also encourages such families to stop childbearing. To some extent, this indicator also reveals the effect of the family planning policy on rural people. Based on the data on migrants' childbearing behaviours after migration, the sex ratio of ever-born children is calculated, and the difference between the sex

ratio of migrants' ever-born children and the standard sex ratio (105) is tested.

Secondly, cumulative and binary logistic regression models are employed to explore the impacts of social network factors on attitudes and behaviours related to son preference among these rural-urban migrants, with migration and individual factors also being considered. Since the mid 1980s the majority of provinces in rural China have been subjected to a "one and a half child" policy among Han people. Only a few provinces carry out a universal "two child" or "one child" policy (Peng, 1993). It is common to have two children in rural areas, but having more than two children is strongly prohibited. In addition, sex ratio at birth increases with parity from the second birth, as a function of the gender of prior parities (Gao, 1993). We confirm that after migration, the gender of the second birth (the first birth is before or after migration) when the first birth is alive reflects strong son preference. Hence, our analysis of migrants' son preference behaviour after migration focuses only on the second birth.

The dependent variable in the cumulative logistic analysis of migrant's attitudes about son preference is based on their response to the question "what will you do when your first child is a girl". Responses can indicate no son preference ("stop childbearing"; value=1), weak son preference ("have a second child and stop childbearing"; value=0), and strong son preference ("have more children until have a boy"; value=-1). The dependent variable in the binary logistic models for analyzing behaviour of son preference is the gender of the second birth after migration. Here, "without son preference" and "giving birth to a girl" are regarded as reference categories respectively.

The independent variables in the analysis both of attitude and behaviour of son preference include social network, migration and individual factors.

Social network factors: For the social discussion networks, individuals' attitudes and behaviours tend to be influenced by their network members but also to influence their network members (Marsden, 1987). In this study, individuals' childbearing discussion network is regarded as a social network factor and includes two variables: the overall effect of network members and weak ties.

In social networks the higher the degree of intimacy between an individual and another network member, the more the latter should affect the former's attitudes and behaviours (Granovetter, 1973; Fischer, 1982). Therefore, we combine the desired fertility of network

members with the degree of intimacy between individual and network member to calculate the overall effect of network members using the expression:

$$\text{Overall effect of network members } = \sum_{i}^{n} I_i \times A_i, \qquad (1)$$

where *I* is the degree of intimacy of a network member, classified as very intimate (value=5), intimate (value=4), ecumenical (value=3), not very intimate (value=2) and not intimate (value=1); *A* is the attitude of a network member, scored as without son preference ("stop bearing"; value=1), weak son preference ("have a second child and stop"; value=0), and strong son preference ("have more children until have a boy"; value=-1); *n* is the number of network members; *i* refers to the $i^{\text{th}}$ network member with $i \in (1, 2, \dots, n)$.

In the logistic models the overall effect of network members has three categories: no effect (the overall effect of network members equals zero), negative effect (the overall effect of network members is below zero), and positive effect (the overall effect of network members is above zero).

To form a dichotomous variable, weak ties are divided into "weak ties absent" and "weak ties present". Weak ties are present when an individual's childbearing discussion network includes at least one member who is a manager, an owner of a private enterprise, a professional or technical person, or a government officer. Here "weak ties absent" is regarded as the reference.

In analyzing attitude of son preference, the effects of all network members are taken into account, while in analyzing the behaviour of son preference, only the effects of those network members whom respondents knew before the pregnancy of their second birth are considered (we assume that those network members' attitudes about son preference never change).

Migration experience: Age at first migration, years of living in urban areas and times returning home per year are included as an individual's migration experience. In the analysis of son preference attitude, years of living in urban areas is dated from the first migration until the survey was conducted, and is counted from the first migration to the year the second child was born in the analysis of son preference behaviour. Age at first migration, years of living in urban areas and times returning home per year are all included in the models of attitude and behaviours of son preference. Age at first migration is numerical. In the analysis of son preference attitude, years of living in urban areas are divided into below 1 year, 1-4 years, 5-7 years and 8 years and

above, while in analysis of behaviour they are divided into 4 years and below, 5-7 years and 8 years and above. Times returned home per year are categorical (we assume that this does not change over time) with options twice and above, once and no times.

Control variables: Individual factors treated as control variables include gender, education, marital status, sex composition of ever born children, and residence region before migration. Education, sex composition of ever born children, and residence region before migration are included in the analyses of both attitudes and behaviours about son preference. Gender and marital status are only included in the analysis of son preference attitude. Education is divided into elementary school and below, junior high school, and senior high school. Residence region before migration is divided into three categories: eastern, central, and western China. In the analysis of son preference attitude, sex composition of ever born children is divided into four categories: no child, only girl(s), only boy(s), and both boy and girl, while in the analysis of son preference behaviour, sex composition of ever born children is divided into two categories: only girl and only boy. Marital status is divided into two categories: never married and ever married (including first marriage, remarriage, divorced, widowed).

## 4. Son preference after migration: attitude and determinants

For the response to the question "what will you do when your first child is a girl", 37.1 percent claim to have no son preference ("stop childbearing"), 55.9 percent have weak son preference ("have a second child and stop"), and only 7 percent have strong son preference ("have more children until have a boy"). This indicates that only a minority of rural-urban migrants claim to have strong son preference. It is common to have two children in rural areas. Although rural-urban migrants have been living in urban areas, they are still regarded as part of the rural population because of the household registration (*Hukou*) system (Chan and Zhang, 1999). They are not restricted by the family planning policy in urban areas. Thus there is no bias in the responses here considering that having a second child in cities is prohibited.

Table 1 records the sex ratio of rural-urban migrants' children born after migration and shows that the sex ratio of rural-urban migrants' children born after migration is significantly higher than normal, suggesting that the migrants' childbearing behaviours exhibit strong son preference. It is interesting that the sex ratio at first birth is also significantly higher than the normal level, which is not consistent

with other studies (Chu, 2002). Whether the sex ratio at first birth is influenced by sampling, underreporting of female births or abortion (Zeng *et al.*, 1993; Gao, 1993) is not clear and would require further study to ascertain.

In sum, migrants' attitudes and behaviour towards childbearing after migration still exhibit son preference.

**Table 1 Number and sex ratio of rural-urban migrants' children born after migration in Shenzhen in 2005**

| Content | Number of children | Boys | Girls | Sex ratio | Confidence region (95%) | $\chi^2$ test |
|---|---|---|---|---|---|---|
| Total | 718 | 445 | 273 | 163.0 | 140.5~190.1 | 33.051*** |
| Birth order | | | | | | |
| First birth | 441 | 266 | 175 | 152.0 | 126.0~184.8 | 14.522*** |
| Second birth | 224 | 144 | 80 | 180.0 | 138.2~239.7 | 21.891*** |
| Third birth and above | 53 | 35 | 18 | 194.4 | 114.1~371.3 | 4.832* |

Note: *** $P<0.001$, ** $P<0.01$, * $P<0.05$, $^+P<0.1$

Data source: IDDS, 2005.

Table 2 reports determinants of son preference among rural-urban migrants after migration. There are four models in the logistic regressions. Models 1 and 3 estimate the odds ratios of son preference among rural-urban migrants, considering only the network factors, while models 2 and 4 estimate these odds ratios under the effects of network, migration, and individual factors. The results are summarized as follows:

First, model 1 computes the risk of having son preference with only network factors considered and shows that network members and weak ties in the childbearing discussion networks significantly affect migrants' attitude of son preference. The risk of having an attitude of son preference tends to decrease when the overall effect of network members is positive (without son preference). By contrast, the risk of having son preference tends to increase when the overall effect of network members is negative (with son preference), with odds ratios of about 0.23 ($e^{-1.491}$) and 4.00 ($e^{1.384}$) respectively. Having weak ties in the childbearing discussion network reduces the odds of having son preference.

**Table 2 Estimates of logistic regressions for son preference after migration in Shenzhen in 2005**

| | Cumulative logistic regression | | Binary logistic regression | |
|---|---|---|---|---|
| | Attitude of son preference (B) | | Giving birth to a boy (B) | |
| Variable | Model 1 | Model 2 | Model 3 | Model 4 |
| Social network factors | | | | |
| Overall effect of network members (no effect) | | | | |
|    Negative effect (with son preference) | -1.384*** | -1.183*** | -0.715 | -0.963 |
|    Positive effect (without son preference) | 1.491*** | 1.313*** | -1.316* | -1.354+ |
| Weak ties (no) | | | | |
|    Yes | 0.534** | 0.558** | -0.081 | 0.579 |
| Migration experience | | | | |
|    Age at first migration | | -0.018+ | | -0.105* |
|    Years of living in urban areas (<1 year) | | | | |
|     1-4 | | 0.711* | | |
|     5-7 | | 0.590* | | -0.446 |
|     8+ | | 0.304 | | -0.906+ |
|    Times back home per year (2+) | | | | |
|     1 | | 0.067 | | 0.190 |
|     0 | | 0.190 | | -0.623 |
| Individual factors | | | | |
|    Gender (female) | | | | |
|     Male | | -0.102 | | |
|    Marital status (never-marriage) | | | | |
|     Ever-marriage | | 0.151 | | |
|    Education (Elementary school and below) | | | | |
|     Junior high school | | 0.165 | | 1.086* |
|     Senior high school | | 0.525** | | 1.108 |
|    Children ever born (no child) | | | | |
|     Only boy | | -0.358 | | |
|     Only girl | | -0.631* | | 2.286*** |
|     Both boy and girl | | -0.928*** | | |
|    Resident region before migration (Eastern) | | | | |
|     Central | | 0.300* | | -0.032 |
|     Western | | 0.680*** | | -0.126 |
| -2LL | 146.119*** | 2170.167*** | 227.344 | 173.963*** |
| Sample | 1483 | | 186 | |

Notes: *** P<0.001, ** P<0.01, * P<0.05, +P<0.1. Reference categories appear in parentheses.

Data source: IDDS, 2005.

In model 2, social network, migration experiences and individual factors are all included, and we see that, besides network factors, migration and individual factors also have effects on the attitude of son preference. The older the migrants at their first migration, the

higher the likelihood of having son preference. Years of living in urban areas significantly affects migrants' attitude about son preference. The risk of having the attitude of son preference tends to decline with longer time lived in urban areas: the risk of having son preference for migrants living in urban areas from 1-7 years is only a half that for migrants living in urban areas no more than one year. The risk of having son preference among migrants educated to senior high school is significantly lower than for those educated to elementary school and below. The odds ratio of having son preference is higher for migrants whose ever born children are both a girl and a boy or only girls than for those that only have boys, with the odds ratio about 2.50 ($e^{0.928}$) and 1.90 ($e^{0.631}$) respectively. Migrants residing in central and western regions before migration are likely to have a lower risk of having son preference compared with those living in the eastern region before migration. Times returning home per year does not affect the attitude of son preference.

Model 3 records the odds ratio of having a boy at second birth with consideration of network factors after migration. Social network factors have significant effects. The odds ratio of having a boy at second birth tends to decrease when the overall effect of network members is positive (without son preference).

Model 4 analyzes the risk of having a boy after controlling for migration and individual factors. Increase in age at first migration decreases the risk of having a boy. Compared with migrants living in urban areas no more than one year, the risk of having a boy decreases among those living in urban areas for 8 years and above. Migrants with a higher educational level are more likely to have a boy at their second birth, with the odds ratio about 2.96 ($e^{1.086}$). The risk of having a boy is 9.8($e^{2.286}$) times greater for migrants whose first child is a girl than for those whose first child is a boy. Times returning home per year does not have an effect on the behaviour of son preference.

In general, social network members, age at first migration, years of living in urban areas and individual factors, especially having a daughter as the first child, have effects on son preference among rural-urban migrants.

## 5. Discussion

Our main findings are the following. First, the majority of the sampled rural migrants have son preference, but the proportion of the migrants having strong son preference is very low. The sex ratios of the migrants' ever-born children are significantly higher than normal,

and increase with birth order. Thus the childbearing behaviour of these migrants exhibits strong son preference.

Second, social network factors have significant impacts on attitudes and behaviours related to son preference among rural-urban migrants (Shye *et al.*, 1995; Bongaarts and Watkins, 1996; Friedkin, 1997; Kohler *et al.*, 2001). Weak ties in the childbearing discussion network contribute to a decrease in the risk of having an attitude of son preference after migration. This suggests that the weak ties defined by occupation or so called "social stratification", such as managers, owners of private enterprise, professional or technical person and government officers could influence these migrants' attitudes towards childbearing.

Third, migration factors have effects: the older the individual at first migration, the higher the likelihood of having son preference attitude. Thus, age cohort is an important factor in son preference (Hui *et al.*, 2001). The risk of having an attitude of son preference decreases as the number of years lived in urban areas increases, suggesting that evolution away from preference occurs during the process of migrants' adaptation to cities (Riley, 1971; Hui *et al.*, 2001; Harding and Jencks, 2003). The longer the migrants live in the urban areas, the higher the likelihood that they have similar attitudes and behaviours towards son preference to permanent urban residents (Yu *et al.*, 1996). In addition, the effect of years lived in urban areas on the son preference behaviour appears after eight years, but on son preference attitude it appears after one year. Thus the change in childbearing behaviour lags far behind the change of reported attitude. The older the migrants at first migration, the stronger the attitude of son preference and the lower risk of having a boy at second birth. Thus older age at first migration would lead to postponement of the second birth. With increasing age and years of living in urban areas, the attitude of son preference tends to become weaker, as does the behaviour of son preference. The factor "times back home per year" does not have effects on either the attitude or behaviour of son preference among migrants. These results suggest that changes in attitudes and behaviours of son preference among migrants are mainly driven by social interaction.

Finally, education and sex composition of children ever born affect attitudes and behaviours of son preference among rural-urban migrants. The higher the education level, the higher the risk of having son preference, and the higher possibility of having a boy at the second birth. This is consistent with findings of other studies (Wu *et al.*, 2005). Sex composition of children ever born has a significant effect on the attitude and behaviour of son preference (Gao, 1993). Rural-urban

migrants expect to have a boy when they do not have a boy, want to have both a boy and a girl once they have a boy, and even want to have more boys (Feng and Zhang, 2002). Migrants residing in central and western regions before migration have a lower risk of having son preference compared with those living in the eastern region before migration. But residence region before migration has no effect on the behaviour of son preference. Thus although son preference differs among regions, having a boy is universally desired in all the rural areas (Mu and Chen, 1996).

In addition, individuals' education, age at first migration, and years lived in urban areas have effects on son preference among migrants, indicating the migration is socially selective (Johnson *et al.*, 1994). This could influence migrants' abilities to adapt to urban daily life (Goldstein and Goldstein, 1982; Schnittker, 2002). Finally, individuals' attitude and behaviour of son preference would be influenced by cohort and period effects after migration.

Determinants of attitude about son preference are different from those for the behaviour of son preference. Childbearing behaviour is usually determined by social situation and and involves a family decision. After migration, the living standard of rural-urban migrants improves and their income increases. Although their attitude of son preference might be expected to be influenced by permanent urban residents, their demand for a son still exists, most likely in order to continue the family name and provide old age support. Having a boy is still the ultimate goal of childbearing among the rural population (Mu and Chen, 1996).

Our findings have some limitations. Our sample included only respondents who were married and gave birth to child(ren) after migration, which may have affected the results. We studied mainly the attitudes and behaviours of son preference among the rural-urban migrants from the perspective of social networks, without paying attention to social conditions in the city, or an individual's actual childbearing needs. Chinese people strongly prefer more children within a household, and "rearing a son for old age" is deeply rooted in the traditional culture of son preference. The sex of a child is of primary importance, and the timing of childbirth and the number of births are secondary (Feng and Zhang, 2002). Also our study took place in Shenzhen, and whether the results for this special economic zone are valid for other regions needs further studies.

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# Discrimination from Conception to Childhood:
# A Study of Girl Children in Rural Haryana, India

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## 1. Introduction

The advent of sex selection technologies in India has added a new dimension to discriminatory practices against girls. Studies indicate that a significant share of female foetuses are being aborted, creating an imbalance in child sex ratio in this country.[2] Currently, sex-selective abortion (SSA) accounts for roughly 11 percent of late-term, unsafe abortions in India (Johnston, 2002). However SSA is not the result of an unintended or unwanted pregnancy. Indeed, it is the gendered preference for a certain type of pregnancy that guides the decision to undergo sex-selective abortion (Mallik, 2002). According to the second National Family Health Survey (IIPS, 2000) conducted in 1998-99, the sex ratio at birth for the six-year period preceding the survey is of 114.9 males per 100 females, much higher than that of countries outside Asia. The gender composition of deceased children, who were born during the seven years preceding the survey, shows that there were 1.3 times more girls than boys among non surviving children. Again, a comparison of the sex ratio at birth for the period 1996-98 which stands at 122.2 compared to 110.7 for the period 1992-95, suggests that the practice of sex-selective abortion has grown after 1995 despite the implementation, in 1994, of the Pre-Natal Diagnostic Techniques (Regulation and Prevention of Misuse) Act which prohibits

[2] See for instance Unisa *et al.* (2007), Nanda (2006, Sen (2003) and Bose (2001). Child sex ratio defined here is the number of male children per 100 female children below the age of 7. See also in this volume the chapter by Arokiasamy on recent trends and regional differentials.

the use of prenatal diagnostic techniques for the purpose of antenatal sex determination.

Several studies have documented excess mortality among females in India and other South Asian countries and have investigated its association with such factors as educational differentials, parental discrimination resulting from family-building strategies and marriage patterns, and selective allocation of food and medical care.[3] Some of the studies suggest that discrimination against daughters in feeding, treatment, and care is likely to depend on the number and gender composition of the couple's living children (NFHS-2; Kishor, 2002; Mishra *et al.*, 2004). Very little is known regarding the reason and circumstances under which a woman discriminates her children. Therefore, in order to examine the root cause of gender discrimination in a setting where the child sex ratio is highly masculine, it is valuable to adopt a life-cycle approach.

We have investigated both qualitative and less explored factors that can influence child sex ratio. In this study, we make use of the ecological model of gender discrimination developed by Heise (1998). As a first dimension in gender discrimination study, we consider the individual perpetrator, i.e., the woman who has witnessed or experienced discrimination, marital violence or child abuse in her childhood (named here as 'Childhood experience'). The diversity of synergistic effects that impinge on childhood is often ignored by social scientists (Liddell, 1998). Here, we argue that our attention to a mother must start not once she has become a mother, neither when she is just about to become a mother, but when she was an infant and a child, as what happened to her during her own childhood may eventually determine the adequacy of her physical and mental state as a mother (Gopalan, 1985).

Another dimension of gender discrimination examined in this study relates to marital conflicts, wealth control and decision-making in the family. Most of the time, it is found that women's fertility is culturally produced and controlled by marital arrangement. Hence, the importance of married life in demographic analysis cannot be ignored as women spend a major part of their life in marital union and their behaviour is greatly influenced by its characteristics. Studies on marital instability in some developing countries show that the presence of a son in the family consistently decreases the likelihood of marital instability (Merrill and Casterline, 1989). In this study, we posit that the various spheres of women's autonomy may affect their reproductive

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[3] See Kishore (1993), Bhuiya and Streatfield (1991), Bourne and Walker (1991), Das Gupta (1987) and Miller (1984).

behaviour and sex preferences. Education, work participation, and exposure to mass media are some of the means by which women gains status and autonomy. It has often been argued that women's status is an indicator of the level of development of a given society. Women's autonomy is likely to have a significant impact on demographic and health seeking behaviour of couples by altering women's relative control over fertility and contraception as well as influencing their attitudes and abilities (Sen and Batliwala, 1997). In the above perspective, the present study tries to investigate sex-selective discrimination in terms of active and passive elimination of a girl child through life-cycle approach. The specific purpose of the study is to examine female child neglect leading to death (passive elimination) and selective abortion (active elimination) according to childhood experiences, autonomy status and marital instability of the mothers.

## 2. Methodology

### 2.1. Data and methods

The work presented here is based on a follow-up study of a community-based research project carried out by the International Institute for Population Sciences (IIPS), Mumbai, in the Jind district of Haryana in 2000-2002 (Unisa *et al.*, 2003). This district showed a very high child sex ratio in 1991 including many villages with sex ratio of 125 boys per 100 girls and above. From this cluster of villages with especially high child sex ratio, five localities were selected randomly. A complete enumeration of all the households was conducted: a total of 2,590 households were covered in the study and around 2,646 ever-married women in the reproductive age were interviewed. Additional information was collected on household characteristics, pregnancy histories, antenatal care use and obstetric morbidity for each pregnancy. Detailed analysis from this study shows the frequency of sex-selective abortions (Unisa *et al.*, 2007). As the objective of the study was firstly to examine the magnitude of these abortions, information on childhood experiences, marital stability and autonomy was not collected in the initial IIPS study. A follow-up study was carried out to examine the factors responsible for sex-selective abortions (Agrawal, 2004). For this purpose, we identified a subset of women who had experienced pregnancy after 1995. Overall, there were 1,329 women who had given birth after 1995 in the selected five villages. A sample of 418 women was drawn from the subset with any of the following characteristics: women whose first two births were female or women whose first child was a girl and had experienced either an abortion or female child death. It

was assumed that a woman who had a first female child or two first female children was likely to undergo sonography for subsequent pregnancies, followed by a sex-selective abortion if the foetus was female. These women may also have neglected female children in terms of nutrition, immunization or treatment, which results in increased mortality risk.

Our approach combines both qualitative and quantitative methods. Information was collected through face-to-face interviews. A semi-structured interview schedule containing both closed and open-ended questions was established. The questions included in the interview schedule aimed at obtaining information on the women's background characteristics, detailed information about their childhood experiences, various dimensions regarding female autonomy, characteristics of married life including perception of married life at different stages, occurrence of violence within the marriage, gender and family size preference, as well as active and passive elimination process of the girl child. We also conducted a few detailed case studies amongst women who had undergone an abortion.

## 2.2. Computation of indices

Given the life-cycle approach taken here, some indices related to mother's childhood experience, autonomy and marital instability have been used. A brief description of those indices is given below.[4]

The *childhood experience index* has been computed on the basis of the responses on some episodes experienced during childhood. Based on mean and standard deviation, index value has been categorized into three as good, average and bad. Childhood experience amongst women in rural Haryana shows that 47 percent have a good childhood experience, 33 percent have an average childhood experience and 20 percent women have a bad childhood experience.

Another set of situation-specific questions were asked to women in order to convert different aspects of their autonomy into autonomy indices. Based on their responses, four dimensions of autonomy were selected and indices were created for them. The four autonomy indices are: decision-making autonomy index, monetary autonomy index, fertility related autonomy index and mobility autonomy index. Three categories of autonomy indices (low, medium and high) have been computed taking into account of mean and standard deviation values. Based on the above four indices, a composite autonomy index namely *combined autonomy index* has been computed. Considering the combined

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[4] The details of the computation of all the indices are given in Agrawal (2004).

autonomy, a majority of women (57 percent) falls into medium autonomy index category whereas only about 23 percent of them fall in the high autonomy class.

Although in general, couples with children have a lower risk of divorce than do childless couples, the stabilizing effect of marriage may depend on children's gender. In the present study, marital instability among women has been examined on the basis of three questions asked during the personal interview. Based on mean and standard deviation, index value has been categorized as above (low, medium and high). It appears that in rural Haryana, 20 percent women have a high *marital instability index*, 47 percent women a low index, and another 33 percent a medium index.

## 2.3. Study Area

Haryana has emerged as a fairly well developed state in less than 40 years, with the third highest per capita income in India (Government of India, 2001). Economic indicators have improved, ever since the "neglected" parts of the composite Punjab were carved out to form Haryana in 1966. Ironically, however, while the general belief is that prosperity brings awareness and reduces gender discrimination, the cold facts reveal that, in 2001, Haryana recorded one of the highest sex ratios among children (122 males per 100 females) according to the Census results. The survey results of NFHS-2 (1998-99) for Haryana also indicate that total fertility rates, age at marriage, female education, and contraceptive prevalence rate are also lower in Haryana whereas the infant mortality rate and preference for additional children, particularly sons, are quite high when compared to the national average (IIPS, 2000; Office of the Registrar General, 2002).

Jind district (see location map in Figure 2 in the introduction) is trailing behind the state average both in male and female literacy and ranks among the districts in Haryana where the literacy rate is at its lowest. The gap in male-female literacy was of 26 percent in 2001. However, the health and demographic indicators of the district are almost similar to the state average values, except for the proportion of girls marrying before 18, which is higher than in Haryana as a whole.

All study villages have at least a primary school, a middle school and a high school in two villages. Except two, all the villages have primary health sub-centres. However, in those two villages without sub-centre, there are registered private practitioners. The sources of drinking water are mainly tap, tube well and hand pump. In three villages, a post office and telephone facilities are available and in the

other two villages these facilities are available within a range of 5 to 10 kilometres. There is a bus stop in all the villages except one and all of them are electrified, with electricity used for domestic, agricultural and other purposes. All the villages also enjoy favourable irrigation facilities.

The sex ratios in the study villages are quite high, ranging from 112.6 to 126.6, but the figures for child sex ratio are even more disturbing, extending from 107.5 to 142.5 boys per 100 girls (Table 1). Literacy rates in these five villages are also low, particularly for women whose literacy rates range from 43 to 47 percent. The wide gender disparity in literacy rates observed in all villages reflects the picture of low women's status in this area.

**Table 1 Socio-demographic characteristics of population of the five study villages in 2001, Jind district, Haryana**

| Characteristics | Village 1 | Village 2 | Village 3 | Village 4 | Village 5 | All villages |
|---|---|---|---|---|---|---|
| Total population | 2269 | 4616 | 5861 | 3202 | 1987 | 17935 |
| Sex ratio | 116.7 | 112.6 | 124.0 | 121.4 | 126.6 | 119.8 |
| Percent population in 0-6 age group | 18.1 | 16.9 | 14.8 | 15.7 | 15.6 | 16.0 |
| Sex ratio age 0-6 | 128.3 | 107.5 | 142.5 | 114.5 | 125.5 | 123.3 |
| Literacy rate | 67.5 | 60.7 | 62.6 | 59.0 | 60.1 | 61.8 |
| Gender disparity in literacy | 55.5 | 63.9 | 62.8 | 63.6 | 57.9 | 61.7 |

Notes: The gender disparity index has been computed as the ratio of female-to-male literacy multiplied by 100, which indicates male-female differential in literacy level.
Source: Primary Census Abstract, 2001, Jind district, Haryana.

## 3. Results and Discussion

At the outset, it is important to know the background characteristics of the respondents. They primarily consist of middle-aged women (33.8 years ± 7.6 SD). The mean age at betrothal is 14 years, but rises to 16 for the consummation of the marriage. The mean number of children ever born per woman is of 4.5 while that for surviving children is of 3.7. Respondents are mostly Hindus: the caste composition shows that a higher percentage of women are from high or medium-ranking caste (49 percent), with scheduled castes and other backward castes amounting each for about 25 percent of the total.

More than 70 percent of respondents are illiterate and only seven percent of respondents reported high school education. More than half of them are currently working and mostly in the agriculture. With regard to women's exposure to mass media, a very small proportion of

the respondents have such exposure. About one-third of the respondents listen to the radio at least once a week followed by only 17 percent of the respondents who watch television at least once a week. The standard of living of the respondents shows that 21 percent belongs to low, 44 percent to medium; and 36 percent to higher standard of living. Considering the living arrangement of the respondents, more than one third are cohabiting with their in laws. Socioeconomic characteristics of followed up women and households were similar to the large-scale community survey carried out by IIPS.

## 3.1. Passive Elimination Process

We discuss in this section several aspects of the passive elimination process of the girl child. We explore in particular the sex differentials in child death by different demographic parameters and other health seeking behaviour. The determinants of passive elimination–such as male children ever born, female children ever born, ideal number of children, women's childhood experience, autonomy, married life and other socioeconomic and demographic factors on the death of female child–are also examined here.

### 3.1.1. Excess of female deaths over male deaths by birth order

Mortality differentials by sex in the IIPS survey as well as in our follow-up survey are examined. Mortality pattern and differentials are found to be somewhat similar in the two surveys and do not therefore seem to be influenced by the sample used in the follow-up survey. For this reason, we will only use results from the follow-up project on child mortality (Table 2). Overall, 15.6 percent children had died, of which 16.1 percent were females and 14.7 percent males. However, a significant gender differential can be seen in the death of the children according to their birth order: the percentage of death of female children is found to be increasing with higher birth order. The percentage of male child death is also found to be significantly low in the higher birth orders. The ratio of female deaths over male deaths turns out to be lower than one for the birth orders 1 to 3. It increases to 1.8 for higher birth orders (3+). This extreme variation in child death by sex between lower and higher birth orders may be a result of neglect of female children, which eventually leads to their deaths.

Women with four or more children ever born had experienced a higher proportion of female child deaths although the difference with male deaths is not significant. However, women with two to three children ever born have experienced a relatively lower proportion of female child deaths. But, the number of male children surviving is

significantly higher than for female children among women with two to three children ever born. About 19 percent of women with no boy experienced the death of at least female child as against 9 percent of women with one or more male surviving child (Figure 1). This indirectly indicates that when women are without a male child, mortality risks prove higher for female children.

**Table 2 Percentage of child death by sex according to birth order**

| Birth order | Percentage of child death | | | Female-to-male mortality ratio |
|---|---|---|---|---|
| | Male | Female | Total | |
| Up to 3** | 21.6 | 15.5 | 16.9 | 0.7 |
| More than 3*** | 9.8 | 17.8 | 13.5 | 1.8 |
| Total | 14.7 | 16.1 | 15.6 | 1.1 |

Notes: Chi-sq test significance level: ** at 5% level; *** at 1% level.

### 3.1.2. Excess of female deaths over male deaths by male child surviving and children ever born

**Figure 1 Percentage of women having lost a female child according to the number of children ever-born and surviving boys**
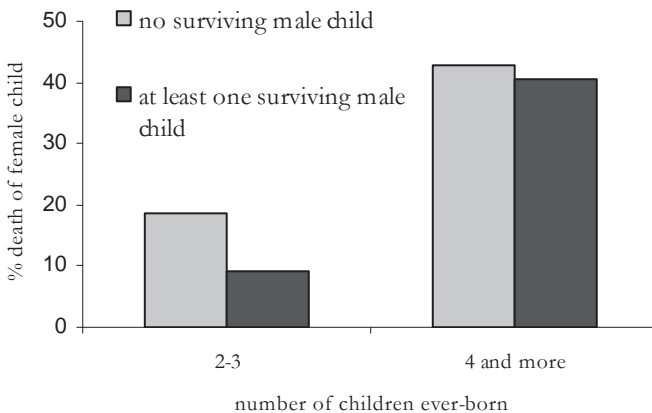


### 3.1.3. Gender differentials in the morbidity pattern, treatment seeking and immunization among non-surviving children

It is evident from the analysis that the diseases, which could be prevented by childhood vaccinations, such as tetanus and measles, were found to be higher among female children. Moreover, iron deficiency diseases such as anaemia were also more common among fe-

male children. Interestingly, none of these diseases was reported among male children. However, general diseases like diarrhoea, jaundice, fever, typhoid or pneumonia had been predominantly found among male children. Thus, it is clear from the above discussion that there exists a remarkable gender differential in the morbidity condition of the dead children. Female children were found to suffer from diseases that could have been prevented through proper care.

The analysis also shows the sex differentials in the treatment-seeking pattern for the dead children. We found a significant gender differential in the medical treatment for diseases. About 44 percent of the girls had not received any treatment compared to 18 percent of boys. In addition, when looking at the money spent on treatment, all the male children had received paid treatment whereas in the case of 12 percent of the female children, the treatment was unpaid. Considering who paid the cost of treatment for the child, again a gender differential can also be observed. In case of 18 percent dead female children, the cost of treatment has not been borne by the father against 7 percent in case of male children. This indicates that negligence is relatively more frequent on the father's side for the treatment of a daughter Thus, the discussion highlights that there exists a gender differential not only in the medical treatment of the disease but also regarding the involvement of the father in girl childcare.

The information on immunization pattern is mainly based on the mothers' report. All vaccinations were found to be lower among female children than among male children, except for the BCG vaccine. A significant gender differential has been observed in case of polio vaccination. All the male children were vaccinated, whereas 26 percent of the female children were not vaccinated even after the government's important initiative of universal polio vaccination in India. Also, in case of DPT and measles vaccine, 70 percent of the male children were immunized compared to almost half of the female children. Deaths due to tetanus and measles appear more frequent among female children because of this low immunization. These evidences clearly shows gender differential in immunization in rural Haryana. It indirectly demonstrates more disregard for female children as immunization facilities are readily available within or near the village.

### 3.1.4. Correlates of passive elimination

We can now examine the correlates of passive elimination of girl child, which is seen here in terms of death of female children. Table 3 presents the adjusted effects of selected predictors such as male children ever born, female children ever born, ideal number of children,

women's childhood experience, autonomy, married life and other socioeconomic and demographic factors of female child death.

**Table 3 Logistic regression results showing the adjusted effects (odds ratio) of selected predictors on female child death**

| Selected predictors | Female child death | |
|---|---|---|
| | Exp (β) | Sig. |
| Male children ever born | | |
| 1[R] | 1.000 | 0.942 |
| 0 | 1.517 | 0.192 |
| 2 + | 1.039 | 0.942 |
| Female children ever born | | |
| Up to 2[R] | 1.000 | |
| 3 + | 4.243*** | 0.000 |
| Ideal number of children | | |
| Up to 2 [R] | 1.000 | |
| 3 + | 1.235 | 0.491 |
| Childhood experience | | |
| Good [R] | 1.000 | |
| Average | 0.735 | 0.406 |
| Bad | 1.121 | 0.741 |
| Autonomy | | |
| Low [R] | 1.000 | |
| Medium | 1.208 | 0.624 |
| High | 0.769 | 0.584 |
| Marital instability | | |
| Low [R] | 1.000 | |
| Medium | 1.017 | 0.960 |
| High | 1.353 | 0.452 |
| Age | | |
| 20-34 | 1.000 | |
| 35-52 | 1.717* | 0.082 |
| Constant | 0.116 | |
| -2 Log likelihood | 314.976 | |
| R Square | 0.249 | |
| Number of women | 303 | |

Note: Dependent variable: Experience of female child death (0= no and 1= yes); The model also controls for education, ethnicity, women's occupation, husband's occupation, standard of living, co-residence with in-laws and exposure to any mass media, variables which are not significant; [R] Reference category ; Significance level: * $p < 0.10$; *** $p < 0.01$

Except female children ever born and age of women, none of the other factors are found to be statistically significant with the number of female child deaths. Women with three or more children ever born are found to have chance to experience female child death four times higher with reference to women with up to two female children ever born. Also, women of older ages (35-52 years) were significantly more likely (1.7 times) to experience female child death than younger women (20-34 years).

Despite being statistically insignificant, other factors such as male children ever born and marital instability do have an impact on the death of a female child. Women without a male child and having high marital instability had experienced more female child deaths than their counterparts. Thus, the result of logistic regression confirms that there is a significant impact of demographic factors such as the number of female and male children ever born in female child death. The likelihood of female child deaths is higher among women who have a larger number of female children and do not have a male child.

## 3.2. Active Elimination of the Female Foetus

In the IIPS and follow-up surveys, detailed pregnancy and abortion histories were collected from women. Women have not reported whether they had undergone sex-selective abortions or not in response to our direct questions. However, the level of spontaneous and induced abortions by order of pregnancy, the sex ratio by order of birth, the antenatal check-up and the use of ultrasound suggest that abortions certainly may have been of sex-selective nature (Unisa *et al.*, 2007; Agrawal, 2004). Hence, for this section we have included all abortions reported by women (spontaneous and induced) for further analysis.

### 3.2.1. Abortion by the gender composition of the surviving children

A clearer picture emerges when we examine the experience of abortion among women according to the sex of the surviving children. When their number of children is small, women with no male child had more often experienced abortion than women who have one or more male children. However, there is no more any significant variation in abortion frequency according to the survival status of a male child among women who have a larger number of children ever born. Similarly, the survival status of a female child also shows significant differential according to the women's experience of abortion. A significantly higher proportion of women with one female child experienced abortion compared to women with two or more surviving female children (irrespective of the number of children ever born). Thus, the children's gender, as well as the number of surviving children, seems to be a significant factor for understanding abortion among women.

### 3.2.2. Abortion by the actual and ideal gender composition of the children

A significantly higher proportion of women who desired an ideally small number of children had experienced abortion (28 percent) than those who desired a larger number of children. Also, the gender of the ideal number of children shows that a considerably higher proportion

of women who ideally did not want any daughters experienced abortion than those who reported one or more daughters as an ideal number. However, more women who reported one as the ideal number of sons were found to experience relatively higher rates of abortion than those who reported two or more sons. Thus, the findings clearly indicate that higher proportions of women undergoing abortions ideally desire a small size family with no female children. This may be the result of a strategy to retain a small family size with the desired combination of sex.

**Figure 2 Percentage of women having aborted according to the ideal number of children and surviving boys**



Ideal number of children
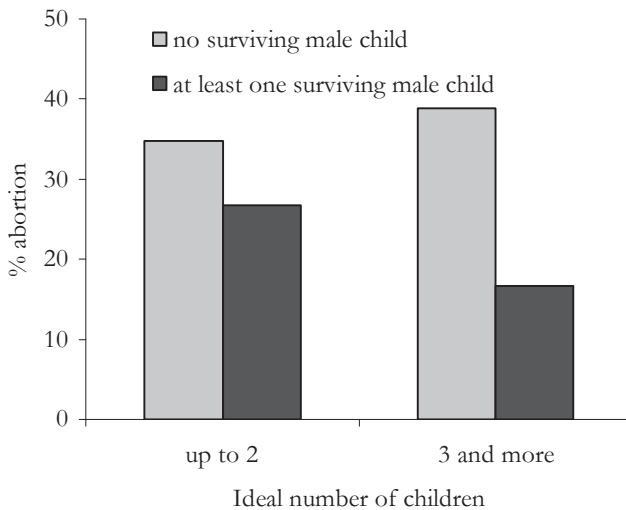
It is evident that the experience of abortion significantly varies with the presence of a male child among both the types of women (preferring small as well as large family size). A higher proportion of women, without a male child and who reported a small size family ideal were found to experience abortion (35 percent) against women having one or more male children (27 percent). A rather high proportion of women not having male child and who reported a large size family ideal was also found to undergo abortion (39 percent), a proportion higher than women having one or more male children (17 percent). This indicates that the absence of a son, as well as a desire for a small family size, is a significant factor for abortion among women in rural Haryana.

### 3.2.3. Frequency of abortion according to childhood experience, autonomy, and married life and some other characteristics

We observed a relation between the experience of abortion and women's childhood experience as their perceived status in the natal family has significant impact on abortion. A majority of women who perceived their status in the natal family as better had undergone an abortion, which was less common among those who perceived their status as average or low. A woman reported thus:[5]

> "*Khud bahut dukh saha hai bachpan main, isliye mujhe ladki nehi chahiye tha. Lekin mujhe teen beti ke baad ek beta hua hai. Agar pehele ladka hota to, ek bhi ladki nehi chahiye thi*". [I had a harsh life during my childhood. That's why I did not like to have a daughter. But only after having three daughters I had a son. If I had a son before my daughters, then I certainly would not have any daughters]–(Age 31 years, mother of one son and three daughters).

A positive relationship has been noticed between women's autonomy and their experience of abortion. About 30 percent of women with a higher autonomy index had experienced abortion compared to 23 percent with medium autonomy and 18 percent with lower autonomy. Our findings should be seen here with some caution because of the cross sectional nature of the data. It may not be due to women's autonomy *per se*, but the other way round: women's autonomy level tends to improve as they abort female foetuses and have subsequently a male birth. This is also evident from our qualitative survey in the community. A woman expressed how she felt before her son was born:

> "*Bhitar ka gham aadmi ko kabhi khusi nehi deti hai. Jab ladkian ho rahi thi, to demagi taur pe bahut kamzor ho gayi thi, sochi thi ki yeh bhi koi zindegi hai? Ek ladka hone ke baad thoda khushi hui. Jis maa ka ek bhi ladka nehi hai, usko to pati pitega hi. Jaith bhi pitt te the. Unke bachche bhi. Shaadi shuda jiban main ek hi khusi hai, baalak ka janam hona. Dukh to sare hai*". [If you are sad from the core of your heart then you will never feel happy in any situation. When I was giving birth only to daughters, I mentally became very weak. My husband used to beat me even my brother-in-law and his children. If a mother does not have a son, then her husband will beat her. After the birth of my son, I felt somewhat happy. In my married life the only happiness I got was at the birth of my son. Oth-

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[5] Excerpts given in this chapter are in the local Hindi variant.

erwise life is full of sadness]–(Age 31 years, mother of three daughters and one son).

A noticeable differential has been found with the women's perceived married life and experience of abortion. A higher percentage of women perceiving their married life as very happy have been found to experience abortion than women perceiving their married life as sad. Again, it is difficult to decide whether marital happiness is the result of abortion rather than the cause. Marital instability may be a key factor affecting the decision to terminate pregnancies (Wadhera and Millar, 1997). However, in the present study, the frequency of abortion was not found to be related with women's marital instability.

> *"Shaadi shuda zindagi main koi khusi nehi hai, kyonki, teen choori hai. Choora honda to khushi hondi"* [I do not have any happiness in my married life because I have three daughters. If I had a son, I would have been happy] - (Age 24, mother of three daughters).

> *"Shaadi ke baad bahut dukh uthane pare. Pati sharab peekar pit ta tha. Sasur bhi mar deta tha. Beta hoke mar gaya tha to sasur kehta tha ki tera to beta nehi hoga. Pati chor dene ki bhi dhamki dete the. Bara kast dete the. Lekin aab to sab thik ho gaya hai. Bhagwan ne do do balak bhi diye hai"*. [After marriage I had to go through a hard life. My husband was a drunkard and used to beat me often. Even my father-in-law used to beat me sometimes. In the first pregnancy my son died. Father-in-law used to tell me that I would not have any more sons. My husband also used to threaten that he would throw me out of the house. Everybody had given me lots of grief. But now everything has become normal after God has blessed me with two sons]–(Age 27 mother of four children, two sons and two daughters).

Co-residence with in-laws has been found to play a significant role in women's experience of abortion. A significantly higher proportion of women (28 percent) residing with their in-laws had experienced abortion compared to the rest of our sample (20 percent). This may be due to the in-laws' insistence for a male birth and a subsequently higher frequency of sex-selective abortion. Co-residence with in-laws indirectly shows the control over women's decision-making power by the in-laws. On the other hand, exposure to mass media tends to some extent to lower the frequency of abortion, although the result is not significant. Media exposure may also enhance the value of girl children and diminish the propensity to abort female foetuses.

The above discussion brings out the fact that childhood experience, autonomy, media exposure and co-residence with in-laws have in some way an impact on the frequency of abortion among village women.

**Table 4 Logistic regression results showing the adjusted effects (odds ratio) of selected predictors on abortion among women**

|  | Abortion | |
| --- | --- | --- |
| Selected predictors | Exp (β) | Sig. |
| Male children ever born | | |
| 1 R | 1.000 | |
| 0 | 3.060** | 0.030 |
| 2 + | 0.917 | 0.812 |
| Female children ever born | | |
| Up to 1 R | 1.000 | |
| 2 | 0.214*** | 0.002 |
| 3 + | 0.333*** | 0.022 |
| Ideal number of children | | |
| Up to 2 R | 1.000 | |
| 3 + | 0.744 | 0.360 |
| Has done sonography | | |
| No | 1.000 | |
| Yes | 1.784 | 0.231 |
| Childhood experience | | |
| Good R | 1.000 | |
| Average | 0.909 | 0.797 |
| Bad | 1.267 | 0.565 |
| Autonomy | | |
| Low R | 1.000 | |
| Medium | 1.866 | 0.175 |
| High | 3.788** | 0.015 |
| Marital instability | | |
| Low R | 1.000 | |
| Medium | 0.540* | 0.089 |
| High | 1.281 | 0.563 |
| Constant | 0.652 | |
| -2 Log likelihood | 293.2 | |
| R Square | 0.191 | |
| Number of women | 303 | |

Note: Dependent variable: Abortion 0=No and 1=Yes ; The model also controls for age, education, ethnicity, women's occupation, husband's occupation, standard of living index, co-residence with in-laws and exposure to any mass media, variables which are not significant; R Reference category ; Significance level: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

### 3.2.4. Correlates of abortion

Table 4 presents the adjusted effects of various factors on abortion: male and female children ever born, ideal number of children, childhood experience, autonomy and marital instability and other

socioeconomic and demographic variables. Women without any male child are almost three times more likely to experience abortion than women having one male child. On the other hand, women with more female children were significantly less likely to experience abortion than women having one female child. It is interesting to note that women having higher autonomy were four times more likely to experience abortion with reference to women with a lower autonomy. As mentioned earlier, our result may be seen with caution because of the cross sectional nature of our data and the difficulty to identify the cause from the consequence.

Besides the gender of the children ever born and women's autonomy level, all other background factors were found to be less significant with reference to abortion. However, women with a bad childhood experience or higher level of marital instability were found to experience abortion more often than other women in our sample. Women who wanted to limit their family size were also more likely to report abortion. The results of our logistic regression confirm therefore that the presence of male children ever born is an important factor affecting the frequency of abortion.

### 3.3. Case Studies

In this section, we present as illustration two case studies of women who admitted having undergone a sex-selective abortion in order to give a better understanding of this complex phenomenon in the rural setting of Haryana.

The first case is a married 30-year old illiterate woman who does not work. She was married at the age of 16 years, but started living with her husband a year later. Her husband does agricultural work. She has six daughters but no son. All her daughters are below the age of 12, the youngest being 11 months at the time of interview. She had a long series of pregnancies resulting in the birth of five daughters, but she had an induced abortion in the sixth pregnancy. The ultrasound test detected the presence of a female foetus and the decision to go for an abortion was reportedly her mother-in-law's. The gestational stage at abortion was four months. The curettage was done in a private clinic at the cost of Rs. 3500 (about 70 euros). Her mother-in-law accompanied her to the clinic and also underwrote the costs of the ultrasound test and of the curettage. She felt severe guilt after the abortion and had this to say about her experience:

> "*Lagatar sat-sat betiyon ke paida hone par bahut pareshaani hoto hai. Chhati bar safai bhi karwai thi lekin bhagwan ne satwi bar*

*phir se beti de di. Isliye aisa mahsus hota hai ki bhagwan se mujhe safai karwane ka phal mil gaya, dusri beti phir de di.*" [Continuous birth of seven daughters has made my life miserable. I did abort my 6th pregnancy but God again gave me a girl child in the 7th pregnancy. Now I feel that because I aborted a female foetus, God has punished me by giving me a daughter again in the 7th pregnancy].

Another example relates to a currently married woman aged 33. She studied up to class X and does not work. Her husband is a small businessman. They have had three children, one son and two daughters. In the first two pregnancies, she had two daughters and in the third pregnancy she had a son. She aborted her fourth pregnancy. The reason for this abortion is that she had enough children and had completed her family size. She also reported that after the birth of her second daughter, she was very much unhappy, as she wanted only one son and one daughter. In fact, according to her she felt that she shouldn't have had a second daughter:

"*Maine safai isliye karwai thi ki mera parivaar mein jitna bachcha main chahati thi, utna pura ho liya tha. Balki ek ladki jyada hi thi*". [I underwent abortion because I had already completed my family size. In fact I have one extra daughter]

She and her husband had jointly decided in favour of the abortion. At first, she visited the auxiliary nurse cum midwife (ANM) in the village and asked her where to go for the abortion. The ANM advised her to go to a government hospital in the nearby town. The cost incurred was around Rs. 500 (about 10 euros) and the gestational stage of abortion was two months. She admitted that she had not undergone sonography before the abortion. In the hospital she underwent curettage. Twenty days after the abortion she underwent sterilization. She reported that she received full support and care from her husband and also from the in-laws both during and after the abortion. On the question of abortion she stated that:

"*Garv girane ko sahi tab manti hoon, jab bachche pure ho liye hai. Main chote parivaar main biswas karti hoon*". [I believe abortion is right when one has enough children and has completed the desired family size. I believe in the small family norm].

## 4. Summary and Conclusion

The present study examined the process of sex selection though active elimination of female foetus or passive behaviour leading to

higher death rates among girls by exploring the role of various charac-
teristics of women such as their childhood experience, autonomy level,
and quality of married life. The study shows that there exist significant
sex-selective discriminatory mechanisms against the girl child after
conception and during her childhood. The study has demonstrated the
extent of gender discrimination in child immunization. Extreme dis-
crimination by women sometimes results in sex-selective abortions.
Women who had adverse childhood experiences (in terms of discrimi-
nation in all spheres including childhood status, food, education, mo-
bility etc.) and presently suffer from high marital instability or dissatis-
faction are more prone to discriminating against girl children from
conception through childhood. The case studies also illustrate the guilt
some women may feel about their discriminatory behaviour.

The imbalance in the sex ratio reflects the spread of modern
medical technology, particularly ultrasound examination that allows
Indian couples to indulge in a cultural preference for sons by using
abortions to avoid the birth of girls. Property rights, patrilineal descent,
and patrilocal marriage are the main sources of gender discrimination.
Some feel that deep-seated change is necessary to alter parents' views
about the value of sons. Others view the issue of dowry as the key to
this problem.[6] In India, social workers and scholars are debating the
ethical issue of sex selection and the urgent need to eliminate this
practice. Son-preference should be addressed at the grass-root level by
including culturally sound solutions. These include raising women's
status in society and discouraging couples from aborting female foe-
tuses. Changing the mindsets of people towards a son preference is the
real solution.

The health sector also has to play more positive role in Haryana.
More efforts are required to immunize the female child. It has been
found that women exposed to mass media are experiencing signifi-
cantly less abortion. So, exposure to mass media should be made more
effective in rural Haryana by incorporating the health consequences
related to late and frequent abortion on the part of women in addition
to its legalization. This will help the women to become aware of the
hazards of abortion. The negative effects of sex-detection technologies
and abortion after the first trimester should be vigorously publicized in
rural Haryana. Stronger messages are required to state that women
should not be blamed for the birth of a female child, as husbands are

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[6] Giving and taking dowry has become a major status symbol in Haryana as the
economic status of households improves. Social marriages or group marriages as
arranged by NGOs may help to some extent to overcome the consequences of the
dowry inflation.

biologically responsible for the birth of the child of either sex. National and regional working groups may be established to formulate and promote action strategies to reduce gender preference and its negative impacts. Again, policy measures must not focus primarily on restricting the technologies used to female's detriment, but also analyze the root causes for the devaluation of women.

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# Is Son Preference Emerging among the Nayars of Kerala in South India?

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## 1. Introduction

Son preference, parents' systematic preference for male children, has attracted substantial research and policy attention from demographers, social scientists, activists, and policy groups in diverse nations where this phenomenon has persisted. Societies in East and South Asia, such as India, Pakistan, China, Taiwan, and South Korea, with differing levels of development and philosophies, all exhibit son preference, visible through their masculine population sex ratios and child survival ratios, or very masculine sex ratios at birth. By contrast, in societies without such marked son preference, population sex ratios are female dominant, child survival sex ratios reflect female mortality advantage, and sex ratios at birth reflect a small male preponderance (approximately 104 to 106 males per 100 females).

Research concludes that son preference often leads parents to deter the birth and survival of unwanted daughters. While the underlying reasons for preferring sons persist, new socioeconomic developments provide additional methods for eliminating daughters, supplementing the age-old post-natal methods (neglect, infanticide, or abandonment) with new reproductive technologies (NRTs, *e.g.* contraception or prenatal tests followed by sex-selective abortion) enabling the removal of girls prior to birth. Regions of India show a preference for either the older or newer methods, or sometimes both posing a 'double jeopardy' for girls (Das Gupta and Bhat, 1997; Sudha and Rajan, 1999). Son preference has thus been linked to millions of 'missing women' (Sen, 1990), and the 2001 Indian census showed that

the already abnormally masculine population sex ratio rose to 106.7 males per 100 females.

Son preference reflects gender inequality at the family level. In India, gender inequality has persisted despite socioeconomic development, as seen in the contrast between its 2002 *UN Human Development Index* score of 0.57 (the HDI is calculated on the basis of life expectancy, education, and income; the nearer the score is to 1.0 the better the level of development), and its *Gender Development Index* score of 0.54 (which adjusts the HDI for gender disparity and a score nearer 1.0 indicating greater gender equality) (UNDP, 2004). That is, Indian women have benefited only about half as much as men have from development, despite the spread of education, work opportunities, and other factors expected to better women's societal position. This gender gap arises within the family from parents' strategies regarding which child to invest in for education, occupation, and life chances, based on the child's gender and perceived role in family and society (Sudha and Rajan, 2003). How the child's gender relates to perceived role in family and society is influenced by cultural factors (especially kinship systems) and socioeconomic factors (Kishor, 1993).

Regarding kinship systems, lower and more gender-unequal female education, paid work, and life chances appear in regions (*e.g.* northern India) characterized by patrilineal and village-exogamous kinship. In these systems, daughters are seen as temporary sojourners in their parents' houses who carry resources (*e.g.* dowries) away to their marital homes and contribute work there, while sons bring assets into the family and perpetuate the family name. Girls' curtailed life chances reflect parents' assessment of their role as contributors to marital families, not as productive members and status-enhancers of natal families, a role fulfilled by sons fulfil (Khanna, 2001). In the more bilateral Southern Indian kinship regimes, the separation of daughters from natal families is less marked and the institution of dowry more recent. In these systems, girls' school, work and life chances are higher and more gender-egalitarian. However, Southern Indian kinship systems have undergone substantial transformation in recent decades, shifting toward similarities with those of the North. Such transformations have been less studied for their impact on son preference, and examination of these changes and their association with gender equity is needed (Rahman and Rao, 2004).

Socioeconomic influences on son preference include women's and men's education and paid work, and urbanization. Women's paid work reduces son preference, as it raises women's economic worth and

female agency. However, the role of female education is mixed. Overall it appears to increase female agency and lower son preference, which seems obvious. But small regional studies suggest that in contexts of limited female economic opportunity and patrilineal kinship, women with some schooling may discriminate more efficiently against daughters (Das Gupta, 1987; Clark and Shreeniwas, 1995). Male education and employment and urbanization do not improve, and might even worsen, daughters' position. Further research on the role of women's and men's education and work is needed from a context experiencing kinship change and socioeconomic development, to clarify their links with changing attitudes toward daughters versus sons and the emergence of son preference.

Kerala state in southern India is such a context, with a paradoxical status regarding development and gender. On the one hand, Kerala is lauded for high social achievements (near 100 percent literacy for both sexes and long life expectancy similar to more developed areas) despite low per capita income (Drèze and Sen, 1996). These achievements are largely attributed to successful state government interventions (including provision of education and public health). Kerala also has excellent outcomes for women in terms of near-complete female literacy, and 'normal' population, birth, and death sex ratios in contrast to the rest of India. The singulate mean age at marriage is also higher for women in Kerala, at approximately 22 years in 1991, compared to other regions (which range from seventeen years to twenty years) (Das and Dey, 1998). These outcomes have been ascribed to high women's status stemming from the matrilineal and matrilocal kinship previously practiced by major groups (historically comprising about 40 percent of the population) including the Nayar caste.

However, social changes in Kerala show retrograde developments in women's situation. These include gender and caste disparities in poverty and access to resources (Deshpande, 2000; Omvedt, 1998; Saradamoni, 1994), high unemployment for men and women (Pandey, 1999; Gumber, 2000), and low women's political participation (Erwer, 1999; Jeffrey, 1992). Violence against women and escalating dowry payments are widespread (Eapen and Kodoth, 2003). Matriliny was legally abolished in Kerala by the early 20th century, but little research examines how this change influences women's status (Renjini, 2000; Saradamoni, 1999). Thus, socioeconomic and cultural preconditions for son preference now exist in Kerala but the emergence of son preference here has rarely been considered, as the literature assumes that son preference elsewhere in India will diminish. Rajan *et al.* (2000) suggest that son preference is emerging in Kerala. Despite the female-predominant population sex ratio in the state, there was nonetheless a

decline in survivorship patterns of female vs. male children between the 1981 and 1991 censuses in all but two districts of Kerala (Thrissur district, where our study is set, is among those which have experienced the decline). Rajan *et al.* (2000) also estimate sex ratios at birth in each district from 1991 census data, and suggest that two districts of Kerala may now show abnormally masculine sex ratios at birth (respectively 109 and 111 male births per 1000 births in Kasaragod and in Kottayam) while several others (including Thrissur) show an increase in masculinity over the intercensal period. These authors stress that almost no research exists on this topic, a critical gap we address in this chapter.

## 2. Ethnohistory of Nayar Families

We use the term "ethnohistory" as in Khanna (2001) to describe the cultural history of the Nayars, specifically highlighting aspects of kinship and family organization and women's position in the family and wider society in the past. This description forms the basis for comparison with our research findings among contemporary Nayars to delineate social change. Nayars, comprising several subcastes that coalesced into the larger caste entity in the late 19th century, were the 'dominant caste' of Kerala in economic, social and political power. They were a mostly landowning and military group, who practiced matrilineal descent and inheritance and matrilocal residence (Jeffery, 1976). That is, although variations existed, the *tharavadu* (the traditional household) in the 19th century usually comprised women, daughters, granddaughters, maternal uncles, brothers, and sons. Married (sometimes polyandrous) women continued to reside in their natal home while husbands visited from their own homes. While Nayar women were often wedded to *Namboodiri* (upper caste Brahmin) men, their children would be included in her caste and lineage. Male kin performed funeral ceremonies. Property belonged to the women as a group and was bequeathed to female descendants, and the family name descended in the female line. While father-child bonds were acknowledged, property, residence, and family name were rarely derived from fathers. Household administrative power increasingly came to be vested in the eldest male over the 19th century, but senior women often also had great authority (Arunima, 2003).

Though women under matriliny may not have had high personal autonomy (due to the control vested in senior males and females) they had comparatively high status vs. under patriliny (Saradamoni, 1999; Renjini, 2000). Women's inalienable rights in their tharavadu ensured

lifelong security and shelter. They had considerable rights to terminate unsatisfactory marital relationships and divorcees and widows could remarry. Female seclusion was rare, enabling girls' easier access to schooling. Dowry was absent. Descent and inheritance along the female line defined daughters as key members of the family. The birth of a girl was a welcomed event. There was no structural basis to view daughters as liabilities. According to Eapen and Kodoth (2003), positive attitudes toward daughters emerged from matriliny.

This is further seen in the absence of any historical record of female infanticide or abandonment in Kerala, in contrast to British observers' accounts of such practices in North-West India. There is also an absence of rituals, customs, or proverbs reflecting greater value of a male versus a female child (again in contrast to regions with son preference). Instances to the contrary are found, as in a traditional Theyyam (folk theatre) song, where a mother of ten sons yearns for a daughter who will inherit the vast family wealth and provide her spiritual liberation (Kodoth, 1998). The historical picture thus indicates that son preference did not exist in late 19th-early 20th century Kerala.

Wider society in 19th century Kerala reflected patriarchy as most formal power structures were vested in males (though there were instances of female royalty or heads of landed households). Though lack of female seclusion facilitated girls' access to formal education, their professional work participation was not wide. Women's societal position in Kerala was differentiated by caste and class. Poorer women worked as labourers, while more prosperous women focused on the household. Higher caste Namboodiri (Brahmin) women in patrilineal families practiced strict seclusion, while women and men in the lowest castes were in slave-like arrangements with upper caste landowner groups.

One of the most fundamental changes in Kerala was the legal abolition of matriliny in the late 19th and early 20th centuries, arising from a joint impetus from British administrators and Nayar men. The former aimed to standardize legal and administrative procedures across India, and also viewed matrilineal arrangements as irregular. The latter perceived advantages to gaining direct control over property and inheritance through stronger father-son and conjugal bonds, as traditional military occupations declined and modern political and social conditions emerged. Reducing the conjugal ties of Nayar women and Namboodiri men also appeared relevant for the emerging Nayar caste identity. Matriliny seemed to them out of step with these modernizing realities. While some Nayar women supported continuing matriliny, most remained silent on this issue in the public arena

(Arunima 2003; Kodoth, 2001).

Further socioeconomic change occurred after Independence in 1947, as successive state government policies focused on redistributive justice (*e.g.* land redistribution), workers' rights (supporting strong workers' unions) and providing basic health and education. In the course of these developments, Nayars from more prosperous families transitioned into the higher ranks of educated professional classes. Those who began from a disadvantaged position formed a less-educated, poorer subgroup. Proportions in these strata are not known as official statistics are not collected on the basis of specific castes. Gender issues were not a focus in the planning process due to the assumption that female education would be a panacea, and gender inequities are only now being highlighted (Eapen and Kodoth, 2002). While demographic patterns in Kerala had been favourable to women (*e.g.* Kerala has been the only state in India with a female-dominant population sex ratio), district-level data from the 1990s onward suggest emerging female disadvantage in child mortality and child sex ratios (Rajan *et al.*, 2000).

## 3. Theoretical Perspective and Research Question

Theories suggesting why gender inequality may widen during socioeconomic development, and the role of kinship organization in this process, include the 'gender and development' approach (review in Razavi and Miller, 1995). This approach argues that conventional socioeconomic development worsens pre-existing inequalities unless they are deliberately addressed during the planning process. In particular, gender inequality in the family and household emerges as an unintended consequence. Specifically, Blumberg (2004) has argued that women's position in agrarian societies diminishes when social organization separates the spheres of women and men; socioeconomic change enhances productive roles of men but not women, and kinship organization is male-centric. Critical variables influencing gender equality include women's control over resources and involvement in the production process, contextualized within kinship systems determining whether women can inherit and how near female natal kin they reside. Our research therefore examines whether socioeconomic changes that enhance the productive roles of men more than women, and the rise of male-centred kinship and systems and dowry custom where matrilineal and matrilocal systems used to exist, will be associated with the emergence of son preference among the Nayars of Kerala.

## 4. Method

### *4.1. Research strategy and qualitative method*

We examine qualitative data gathered from three generations of Nayar individuals in 2002-2003, to examine current patterns in kinship and family organization, current socioeconomic roles of men and women, and whether preference for sons over daughters now exists. In order to explore how these features differed in the past, we summarize historical evidence on kinship organization, socioeconomic roles of men and women, and son preference among Nayars in Kerala in the 19th century, and also contrast views across older *vs.* younger age groups of participants.

We gathered qualitative data during 2002-2003 in and around Thrissur, a city of about 2.9 million inhabitants in 2001 (see location map in Figure 1 in the introduction) and an important commercial and religious centre of Kerala with significant Nayar representation. We used ethnographic rapid assessment methods (Scrimshaw and Gleason, 1992), suited for interdisciplinary enquiries involving a combination of larger-scale health-related information and in-depth understanding of the cultural meanings ascribed to behaviours, as in the case of our research topic which addresses the interface of demographic behaviour and its cultural and socioeconomic underpinnings. This method enables in-depth interviews of larger numbers of participants as compared to conventional ethnographic methods.

The rapid assessment method differs from conventional ethnographic methods as it involves a team of trained investigators rather than a solo researcher. Our research team comprised two of the four authors of this chapter (one female and one male), and six interview staff (three men and three women to facilitate gender matching of interviewer and participant). The staff and the male author were natives and/or long-term residents of Kerala, with spoken and written fluency in *Malayalam* (the local language) and English.

We first used a structured household survey to ascertain basic demographic, household, and socioeconomic information from the participants. The information included the participant's age, sex, numbers and sex of children if any, household residents, parents, children or siblings elsewhere, marital status, education and occupation of all, household asset ownership (including home or property ownership and major consumer goods, used to ascertain household socioeconomic status). Women's reproductive histories (numbers of

pregnancies and births, dates of children's births, use of health care during pregnancy and delivery) were ascertained. This was followed by an in-depth qualitative interview shaped by a topic guide to explore the following areas:

- Marriage practices including expenses and payments

- Inheritance issues by gender

- Men's and women's economic and household activities and related ideologies

- Male and female education and gender role attitudes

- Ideal family size and sex composition

- Knowledge, attitudes, and use of NRTs.

The length of interviews was determined by interview dynamics and emerging information, and averaged about one and a half hours. Data were reviewed weekly by the senior investigators, emergent themes highlighted, and interview guides revised accordingly. The research team held weekly meetings to monitor interview experiences and emergent themes, and enable all team members to participate in the research process. This also promoted inter-interviewer consistency and reliability.

Interview documents were drafted in English and translated into Malayalam. Appropriate translations for specific terminologies were discussed for conceptual accuracy and intelligibility to respondents. Interviews were conducted in Malayalam or English depending on the participant's preference, and were transcribed and translated into English by the research staff who stayed close to the spirit of the original language(s); thus the transcripts and the excerpts quoted here are often in 'Indian English'.

## 4.2. Participants

Nayar participants were recruited via personal introductions compiled by the research staff (initially among acquaintances), augmented by snowball techniques. We included men and women (interviewed separately by male and female interviewers respectively) in three researcher-constructed age groups (older: age 60+, midlife: 40 to 59, and younger adults: 18 to 39). We recruited from three broad socioeconomic strata (higher, middle, and lower) with added efforts to find additional members of groups whose numbers appeared low by seeking introductions in specific neighbourhoods. In each household we interviewed the first adult available. In some households more than

one adult was present and interviewed. There were no cases of refusal as most respondents seemed eager to participate. We ultimately interviewed 215 individuals in 179 households.

We also interviewed 14 key informants, including four Nayar community leaders, two researchers familiar with this community, and eight medical practitioners (obstetricians-gynaecologists, radiologists, lab technicians, and traditional and folk medicine practitioners) to probe issues of sex selection from the provider's perspective. Current laws forbid informing parents about the foetus' sex during prenatal examinations. Despite this, research has documented that unethical practitioners still provide these services in many parts of India. Thus our research team was investigating very sensitive, private, and illegal practices, and used great care to avoid offence and yet elicit candid answers.

## 4.3. Data analysis strategies

Data analyses, conducted in a group with the interview team, began as interviews were completed to identify emerging issues and additional information needs. Our strategy was based on an "adaptive theory" approach, an adaptation of grounded theory that accommodated research issues identified from the existing literature and those emerging from the data (Layder, 1998). For example, based on the literature, our initial interviews explored dowry payments in the context of marriage arrangements. Emerging information suggested that exploring female inheritance in addition to dowry was important as it appeared to increase daughters' claim on parental assets conveyed to marital homes. Data were also subsequently analyzed with the *NuDist* software program (QSR International, 2003). The computerized data were initially coded in accordance with themes identified to date, and coding was modified after discussion with the research team. The program enabled efficient summation and comparison of the numerous interview transcripts, and assessment of the frequency of attitudes or patterns.

## 5. Results: Nayar Families in the Present

## 5.1. Household and participants' profiles

We now explore the current situation among Nayars as illustrated by the interviews. We present our findings in a 'numbers and narrative' format, including information from household surveys along with participants' interviews. Tabulations from our surveys are presented

solely to provide information on the participants, not to draw inferences to generalize to a wider population. Table 1 details the number, sex, and age group of the 215 individual participants in our data (not including key informants). They belong to 179 households which are classified into three socioeconomic strata (Table 2). A "standard of living index" was created similar to that in the National Family Health Survey 1998-99 for Kerala (IIPS, 2001). Household assets (land, consumer goods, other assets etc.) were cumulated and households were assigned strata based on levels of asset ownership.

**Table 1 Age and sex distribution of individual participants**

| Age group | Sex | | Total |
|-----------|-----|-----|-------|
|           | Male | Female | |
| 18–39 | 36 | 43 | 79 |
| 40–59 | 26 | 51 | 77 |
| Above 60 | 30 | 29 | 59 |
| Total | 92 | 123 | 215 |

Source: survey data.

**Table 2 Standard of living classification of households (SLI)**

| Standard of living index | Frequency | Percent |
|--------------------------|-----------|---------|
| Low SLI (0-14) | 47 | 26.3 |
| Medium SLI (15-20) | 70 | 39.1 |
| High SLI (21+) | 62 | 34.6 |
| Total households | 179 | 100.0 |

Source: survey data.

In line with what is already known about Kerala's socioeconomic profile, very few persons (less than 2.5 percent) reported having no schooling, with few sex differences in percent attaining different levels. This illustrates the importance historically placed on education in this society and that, unlike many other regions of India, female access to education was not limited. Regarding work patterns, greater male than female employment is seen; 45 percent of women report being a housewife, more among older women. Another 21 percent are students. Only about 16 percent are employed full time for pay, another 2 percent work part time, and 5 percent are retired. In contrast, 51 percent of the men are employed full-time, 4 percent part-time, 12 percent retired and 23 percent students. Among the women who reported not working, several with college education engaged in home-based income generating activities such as tutoring. Those with less education did not report such activities. Most employed women were

in "female" occupations such as teachers, college lecturers, librarians, white-collar workers, and nurses, with a few manual labourers or domestic servants. Men had a wider range of occupations including graduate professions (lawyer, engineer, government officer), skilled trades (goldsmith, mechanic), white collar (clerk) or manual (office peon, driver, construction and manual labourers), and retirees. This again illustrates recent patterns in Kerala economy, where female employment opportunities have diminished, relative to those of men's, as labour-intensive agrarian and industrial opportunities have declined and high out-migration of labour is common.

Table 3 shows child birth, and use of modern contraception and prenatal care (*i.e.* use of NRTs), by socioeconomic group and by age group. These births occurred approximately from the 1930s (oldest women) to the early 2000s (the youngest women). By contrasting children born among older and younger age groups, we see Kerala's well known dramatic fertility decline. Kerala's fertility decline has been widely discussed in the literature because it has been achieved at comparatively low levels of economic development, and has been attributed to factors including high female education, substantial poverty, health program factors, and broad socioeconomic changes brought about by modernization including the high cost of living, schooling and health care, dowry payments, and to prevent fragmentation of property holdings (Basu, 1986; Srinivasan, 1995; Sushama, 1996). The middle socioeconomic group had the highest fertility, but the differences across groups were not great. As typical for India, contraceptive methods other than sterilization were rarely mentioned and thus not reported. Receiving prenatal care does not differ much by class (due to the high availability of medical facilities and high literacy). More younger women had prenatal care, and those in the middle age groups were more likely to be sterilized compared to older women (among whom family planning was less common) and younger ones (who may not have completed childbearing).

Prenatal care includes weight and blood tests, inoculations, vitamin and iron tablets. About 50 percent of women who received prenatal care underwent a routine ultrasound scan to check foetal development and position, which can also reveal the sex of the foetus. About 1 percent reported undergoing amniocentesis, permitted only when specific risk factors for birth defects exist. By law, practitioners are barred from revealing the foetus' sex (Prenatal Diagnostic Techniques Act, 1994). Some respondents wanted to know the sex for reasons not related to sex selection (*e.g.* curiosity), despite the law. One respondent said "if the doctor knows you well, he will tell you".

**Table 3 Children born, contraceptive use and prenatal care by individual's standard of living (SLI) and age group**

|  | Average children ever born | % sterilized | % received prenatal care |
|---|---|---|---|
| Low SLI | 2.04 | 60 | 74 |
| Medium SLI | 2.16 | 45 | 68 |
| High SLI | 2.0 | 21 | 73 |
| Age 18-39 | 1.72 | 29 | 85 |
| Age 40-59 | 2.56 | 53 | 77 |
| Age 60+ | 6.17 | 52 | 60 |

Source: survey data.

## 5.2. Changes in descent, family and marriage organization

We examined emerging family forms among Kerala Nayars after the abolition of matriliny by the 1930s. Residence patterns in our data showed mostly nuclear families as common in Kerala. About 79 percent of the 179 households comprised married couples with unmarried children or siblings of the husband. About two percent included one or both of the husband's parents, and those of the wife, about one percent. Seven cases included married brothers and their families co-residing, but there were no instances of currently married sisters living together.

Our in-depth interview findings corroborate that "matrilineal kinship occupies merely a shadowy part of the Malayali collective memory" (Arunima, 2003: 191). Some older participants recalled matriliny, but young adults had no personal experience of it or sometimes had never heard of it. The memories varied by gender. A 55-year-old woman of middle socioeconomic status, living with her husband, parents in law, and unmarried daughter, and whose elder daughters had gone to their husbands' houses after marriage, said that she and her husband had both grown up in matrilineal households:

> "Now, […] in the nuclear system, we will not get any support from our families. We have to find our own food and shelter. But in the *Tharavadu*, we were staying with sisters, cousins etc., and they will help us very much [...] the joint family was very nice [...] You know, lot of persons will be there for looking after family matters and also in the kitchen to help us. Food was not at all a problem there."

In contrast, an older man said, "In the old system, women were dominant. That was not good, things are better now". According to a

middle-aged man, "At that time there was not much bond or connection between fathers and children. Now it is more natural that children live with both father and mother and the parents take care of their children". The stress on the 'naturalness' of the father-child bond echoes the late 19th century social debates surrounding the legislative abolition of matriliny (Arunima, 2003).

Changes in naming practices also reflect the increasing centrality of males, where daughters had previously carried on the lineage. Earlier, the matrilineal naming rule usually comprised the *tharavadu* (matrilineal household) name, followed by the person's given name. With modernization however, the father's name has gained prominence. A 52-year-old woman of prosperous family said:

> "We value daughters because they carry on our lineage and name. But nowadays, we all have to fill out forms for everything, such as school certificates, passport, etc. and we have to write according to the modern system: first our own name, and then father's name."

After marriage, women's names change to include the husband's name, which historically had never been the case. Male kin still perform funeral rites.

Another reason for son preference across Asia has been that sons provide old age support for parents. While previously older Nayar persons would reside lifelong in their natal *tharavadu*, our participants mostly expressed a wish to continue living in independent, nuclear families as long as health permitted. When this was no longer possible, many suggested that they would prefer to live with married sons, even though some said they felt daughters would provide better care.

Among the most striking changes has been the shift in marriage customs away from former simplicity toward lavish expenditure mostly borne by the bride's family. A 98-year-old woman from an upper socioeconomic group, living with her married son and daughter-in-law, said:

> "In those days [...] a few people only would come from that side, only the groom and one or two people [...] It would be considered shameful if a lot of people came from their side to eat at the bride's house. The actual wedding was very simple. A brass lamp was placed in the centre of the hall, and a small ceremony conducted with the family elders present. Even their clothes were quite simple. Then there would be just a small feast."

Contrast this with the account by a 45-year-old woman of middle socioeconomic status:

> "Wedding expenses are borne by the girls' family. Main categories of expenses are: marriage celebration, banquet, marriage hall, ornaments for the bride, etc. For a 'decent' marriage we invite a lot of people [...] Otherwise people will say 'oh that marriage took place without anybody'. Minimum two *payasam* [a type of sweet dish] should be there [...] people are giving 24 types of curries."

This view was widely echoed among the participants, including young unmarried persons. As Eapen and Kodoth (2003:14) argue, "gender-based inequality in the context of marriage practices emerges [...] by norming specific kinds of consumption [...] By generating expectations on a wide scale through lavish marriages [...] women are objectified in dangerous ways." Thus, the emergence of costly wedding celebrations paid for by the bride's family indicates another way in which the position of daughters is becoming vulnerable in the modern Nayar family.

## 5.3. *Dowry and women's inheritance*

Our data revealed the penetration of the custom of dowry into the Nayar community, and a distinction between dowry and women's inheritance. In India, dowry interpreted as groom-price (*dahej* or *varadakshina*; gifts given to the groom and family at marriage, barred by law) can be distinguished from bridewealth (*streedhan*; gifts given to the bride at marriage, that remain her property, permissible under law). In practice it is difficult to distinguish between these two. In patrilineal India, dowry is seen as pre-mortem inheritance that the bride receives at marriage, often in lieu of her share of immovable property, though today several laws guarantee daughters their share of property, their enforcement is difficult. Dowry had been customary among patrilineal groups in Kerala, such as Christians or *Namboodiri* Brahmins, but has spread to all other groups as a more 'market' approach to marriage is replacing customary practices (Eapen and Kodoth, 2003). With Kerala land reforms and dismantling of matrilineal *tharavadus,* ancestral property was divided equally among Nayar sons and daughters, an inheritance practice that still continues. However, daughters are now also given substantial dowries at marriage, comprising jewellery, cash, household goods, etc., which usually pass to the control of the in-laws. Dowries are seen as distinct from, and in addition to, female inheritance.

Most respondents spoke disapprovingly of dowry (reflecting connotations of its illegality), and were divided in reports of the extent to which it was demanded by the groom's side or pressure exerted on the bride's family to pay. While fixing a match for a daughter, parents would seek a groom of comparable socioeconomic status to keep dowry issues in check. If pressures rose, they would not proceed with the match. On the other hand, the groom's family would also investigate the bride's family's ability to pay, and if not satisfied, would drop the alliance. Dowry assets typically pass to the control of in-laws, and in some cases to the conjugal pair. That is, it is almost never seen as women's individual property, but is treated as a family asset.

When discussing payments relating to their own or their children's marriages, many participants said they did not ask or pay "dowry", but voluntarily gave "gifts" to the bride instead. The distinction between "dowry" and "gift", however, was blurred in practice. A middle-aged man, employed in clerical work, said "Dowry has an important role in our community [...] even if it is not demanded we should give something to our daughters. Nobody calls it 'dowry'." These gifts represent a very widespread practice as, according to a retired police officer, who had a daughter, a son, and grandchildren; "no marriage can take place without gold" (a saying echoed by several participants). A 71-year-old woman of the middle socioeconomic group said she didn't know when Nayars started asking for dowry:

> "But dowry is now very common. People may not ask directly but they say the groom's brother got so much gold and cash etc. My neighbour got fifty sovereigns of gold [about $ 18,000] and Rs. 50,000 in cash [about $ 1100] [...] we should give some gold to our daughter according to our financial status [...] Inheritance share is separate from dowry."

She did not ask dowry for her sons nor gave any to her daughters, "only gold". As her example indicates, the amount and value of gold given at marriage represents a substantial transfer of wealth even for families who gave nothing else. Evidence indicated that dowry was paid in addition to inheritance. The majority of participants stated that women would get an equal share of their family property as inheritance, in addition to dowry. While Eapen and Kodoth (2003) placed a positive interpretation on the fact of dowry not exhausting women's inheritance claims, our study suggests that the practice may increase the 'expensiveness' of daughters.

Husbands establish familial socioeconomic identity, and wives function as auxiliaries. This was underscored by the mixed views on

whether dowry "discounts" were given to working and educated women. While most respondents felt that working women would not be expected to provide dowry, about 25 percent asserted that employed women would be expected to pay dowry. Regarding education, a young unmarried man of lower economic status said, "Highly educated women will select highly qualified men. Then high dowry has to be given." A 58-year-old working woman of high socioeconomic status echoed: "she may have to give more. Because if she is highly educated, then she can only marry an educated man [...] and she has to pay high dowry." Unemployed or handicapped men also reportedly asked dowry so that they could start a small business.

We explored the possibility of individual agency as avenues out of marital constraints. Participants underscored the strict role of marriage and kinship rules in linking and shaping family and personal life. Marriages are typically arranged by parents or family elders, considering hypergamy, socioeconomic and astrological compatibility in education, age, *etc*. Even in "love marriages", the couple usually negotiates family approval, and choice tends to fall within broad bounds of religion, class, and caste. Love marriages, though more common than the past, are still infrequent. Almost every respondent considered the idea of a woman marrying a man younger than herself (to widen her choices) as unthinkable. Remaining single for either sex was seen as very undesirable. In India, marriage is considered almost compulsory for men and women (except for those who have renounced the world) as a Hindu *Samskara* (life cycle event) and as a marker of social adulthood (e.g. unmarried men and women are usually referred to as "boy" and "girl"). Unmarried persons, especially women, are typically viewed with suspicion.

Respondents cautioned about the dangers of marrying out of caste to evade dowry. A 33-year-old man of lower socioeconomic status with two daughters said, "Nayars will not encourage girls to marry from another community [caste] under any circumstances [...] They will not allow that girl back in the house. They may think of her as dead" *i.e.*, ties would be severed with her; she would not be invited to family functions, provided support in case of marital disruption, etc. A young, unmarried, middle socioeconomic group woman said, "I have no objection to finding a husband from another community but [...] Inter-caste marriage will create problems. The Nayar girl would be isolated from her family. One of my friends is facing [this]." A 42-year-old woman of high socioeconomic status who had married a man of different caste said "If anything happens I will be completely alone. I will not get any support from my family". As part of the modern

Nayar caste identity, the prior inter-caste and hypergamic marital ties with *Namboodiris* were rejected (Arunima, 2003). Even in the younger age group, there appeared to be very little flexibility in marriage choices. A key informant said "Most marriages are arranged by the family because youngsters are not ready to take risks."

## 5.4. *Male and female roles in education, occupation, and family*

To examine changing contributions of men and women to the family, we also explored changes in education and work participation, and views of work and family roles, among Nayar men and women. In line with attitudes documented in Kerala historically (Jeffery, 1992), participants encouraged high education for both sons and daughters because the value of schooling has long been recognized among all socioeconomic strata. Male and female respondents had equally high aspirations for sons' as for daughters' schooling. Finances were the main limiting factor. A middle-aged labourer woman reported stopping her daughter's education after high school due to money constraints. Some lower socioeconomic group participants thought that, in such a situation, sons' schooling may get priority over daughters'. However most stated that all children should be educated as much as their desire and ability allowed. This is in marked contrast to most other areas of India where boys' education is explicitly prioritized over girls', due to the need for girls' early marriage and boys' occupational advancement.

Regarding work, participants indicated that some occupations were more suited for men than for women. These views diverged by class. Among upper socioeconomic groups, all valued high status professional occupations for both sexes although women would be expected to withdraw from paid work if family needs arose. Among all economic strata, the notion of a gendered division of labour within the home was common. Though it was acceptable for men to help in housework, most echoed the view of a 62 year old married man, from the middle socioeconomic group, with one son that "men should focus on the financial aspect in bringing up children, and women should focus on all other things".

Lower down the socioeconomic scale, domestic work jobs were seen as more suited to women. Men and women manual labourers felt that their work was physically harder for women, and not a desirable choice for either sex, only taken up if nothing else was available. Occupations such as driver, mechanic, and factory workers who operated machinery were seen as less physically safe for women (due to hours, work conditions, etc.) and more appropriate for men. However, less mechanized factory work related to food production, fish

processing, coir, etc. were seen as suitable for women.

The theme of safety re-emerged to explain further occupational restrictions for women, particularly in night shift work or work-related migration. Respondents of all socioeconomic groups said that women should be free to take up such jobs as paid work was of great value for all. However, they also cited physical safety and family responsibilities as reasons for women to avoid such work situations. In Kerala as elsewhere in India, crime rates are high, including offences against women. However, the theme of safety also reflects a broader concern about preserving younger, unmarried women's reputation of chastity. A young, unmarried, middle socioeconomic group woman said that education and work are encouraged among Nayar men and women both, "but men are allowed to take up night shifts and to move to a far away place to take up jobs [...] my parents won't allow me to move to a far away place to take up a job, because [...] we have to mingle with other people". A middle socioeconomic group midlife man said he encouraged his daughter to become a teacher as in an office job she would have to "mingle with others."

Regarding household work, 55 percent of participants felt that men could "help" in housework if women were busy. But housework was primarily seen as women's sphere, and earning activities as men's sphere, and it was not men's duty to share housework even if wives worked outside the home. A retired college lecturer (male) said, "While men can share all household activities, women are the primary home makers, as she is the one who can manage household activities efficiently." This view recurred among men and women of different age and class groups. A young man of lower socioeconomic status with two daughters and home-maker wife said he would not allow his wife to work outside because looking after children was most important. An older middle socioeconomic group woman said that nowadays women needed to work because families required more than one income. If one person needed to stay home, it had better be the wife because "it is shameful for a husband to live on his wife's earnings", another widely held view.

Working class families preferred to withdraw women from the paid work force when finances permitted, in line with their views of male and female household roles, as vividly illustrated by a middle-aged labourer woman. She approved in general of women working for pay outside the house, but would not want her daughter-in-law to do so, as "the girl that we brought to our house must stay at home. The reason is that if men don't work for a day, they have to live with their wife's high attitude." She perceived that in the past both men and women

participated in agricultural work, but "now men work in other jobs and women concentrate on housework". In short, in a patrilocal joint family, the daughter in law should focus on the household domain, to maintain the appropriate gender balance of roles and relationships.

In sum, as Nayar society has moved away from matriliny, there has emerged a model of family and household where men establish the family socioeconomic status and identity and function as providers. Women focus on home-making responsibilities even if educated and working. Women's work roles are curtailed to reflect family priorities. These findings echo Renjini's (2000) research showing that increasing 'housewifization' of Nayar women accompanied the shift to patrilineal nuclear family forms that emerged after the abolition of matriliny. Though education is highly valued for both men and women of all socioeconomic strata, this alone does not ensure male and female equity.

## 5.5. Preference for male children

We now examine whether son preference has arisen in this community due to the social changes described above which enhanced the productive roles of men more than women and changes in family and marriage systems that emphasized centrality of males. Most participants across sex, age, and class groups preferred balanced families: a son and a daughter. However, further interviewing revealed a substantial preference for having sons only, *vs.* daughters only, due to the expenses of bringing up a daughter and to the fact that daughters would one day leave their natal home. 74 percent of respondents felt it was more difficult to bring up girls than boys, due to worry about daughters' safety, marriage expenditures, and that sons could earn and contribute to the household more than daughters did. These views were mostly among the middle or lower socioeconomic groups. Upper socioeconomic groups appeared comparatively free of son preference.

An older woman of the middle socioeconomic group said, "Most families I know prefer to have a son. My daughter-in-law's mother is sad because [the couple] do not have a son." A middle-aged woman of middle socioeconomic status was blunt, "Most Nayar families prefer sons. If they have two sons they are happy. But if it is two daughters, they are sad." Another woman of similar age and background said: "Nayar people also prefer sons, because now daughters have to stay at their husband's home." A lower socioeconomic group woman aged 52 said she preferred sons and grandsons. She loved her daughter and granddaughter, but was praying for a boy, as a second granddaughter would be difficult to bring up because her son (the baby's father) did

not have a steady job. A middle-aged housewife from the lower stratum said, "Now, you know, we can't accept more females. That will be more expensive. So, first two girls everybody will accept [...] there might be a chance to abort the third delivery if they know the sex." A key informant highlighted the changed situation of daughters: "In every community now including Nayars, there is preference for sons. Frankly the parents say to their young daughters that they have to go to another house and they have to be given dowry."

However, few Kerala families have more than two children nowadays, as there is wide use of modern contraception to limit family size, to meet the challenges and expenses of raising children in modern society. Published statistics indicate little relation of uptake of family planning to son-preference in Kerala (reviewed in IIPS, 2001). Thus, we examine respondents' knowledge and attitudes regarding NRTs aimed at prenatal sex selection. Almost all respondents had heard of "prenatal scans" (mainly ultrasound, a few were aware of amniocentesis). Most strongly disapproved of finding out the sex of the baby prior to birth, and condemned sex-selective abortion. Many said that they had heard of other groups (*e.g.* in the states of Tamil Nadu or Punjab) taking up these practices, but not Nayars.

Despite this, nuances emerged upon further conversation. A middle-aged woman of lower socioeconomic status condemned female foeticide but nonetheless said, "It is better not to come to know the sex of the baby during pregnancy, as if it is a girl, the mother will face trouble from the in-laws." A 23-year-old upper socioeconomic status man said:

> "My relative's neighbour underwent abortion as soon as they found out that the baby is a girl. It was their second pregnancy. First baby was a girl. They could not afford a second girl. They belong to low-income group. They did it in *Thrissur Medical College* [...] Though abortion charge is high, people would do it fearing dowry."

A male computer science student aged 19 said, "I have heard female foeticide is practiced here. But I don't know any individual case. If people want to abort [...] I support it."

## 5.6. *Providers' perspectives*

Abortion has been legal in India since 1972. However, abortion for the purpose of sex selection is strictly forbidden by the Prenatal Diagnostic Technique (Regulation and Prevention of Misuse) Act, 1996 (PNDT Act). Practitioners are barred from revealing the sex of

the foetus ascertained during prenatal scans. The Indian Medical Association has strongly opposed female foeticide. All medical practitioners interviewed for this study were proud of the wide adherence to medical rules in Kerala, in contrast to other regions where practices contravening these laws are widespread. Despite this, most practitioners revealed an increasing demand from parents for sex selection. A gynaecologist in a major local hospital said: "I have no direct experience of female foeticide [...] But there is always a preference for boys. Some women are disappointed when they deliver a girl [...] even if that is her first delivery." A gynaecologist in an infertility clinic reported:

> "Many people come to find the sex of the baby [...] If they have two or three girls they definitely come for scanning and terminate that pregnancy if it also a girl. Some doctors are ready to do this and these practices are increasing in number. Now parents are unhappy when they come to know their second child is also a girl [...] I am also directing some people to some doctors. They do these things for money. Both private and government doctors…but I can't reveal the name of the hospitals."

A retired health supervisor reported:

> "As I was a health supervisor I know female foeticide is practiced here. In every community, including Nayars, some people having one daughter scan the next pregnancy and if they find out if it is a female surely get depressed. But many won't go for foeticide because they believe it is a sin. Female foeticide is practiced in every hospital including government hospitals."

Ayurvedic (traditional Indian medicine) and folk medical practitioners were also interviewed. An Ayurvedic doctor mentioned medicines that could be prescribed prior to conception to ensure a male foetus. A folk practitioner stated that while some families may be curious about the foetus' sex, he was not aware of any prejudice against girl children or sex-selection practices in his area. During the study, the research team observed several new maternity clinics, radiology facilities etc. in the Thrissur area. These indicate the spread of the privatized modern medical sector in Kerala (as in most of urban India) and suggest that motivated families seeking a sex selection facility may be able to find one.

## 6. Discussion and Conclusion

Our findings indicate that amongst the Nayars in Kerala, kinship and family systems that prioritize the interests and needs of men over those of women have emerged after the abolition of matriliny. Such systems are similar to those described as "patrifocal" by Mukhopadhyay and Seymour (1994). Descent now emphasizes the male line and women move after marriage to reside with husbands. This and the penetration of dowry shows that Nayar women's relations to family and property have radically transformed compared to the past. Participants' emphasized the value of education for all, yet also supported curtailing women's economic participation in line with views on female chastity and household roles, in an overall climate of high female unemployment. While gender role specialization previously existed in Nayar society, it has interacted with the newer forms of family and economy emerging during modernization to widen gender inequity. Specifically, our findings indicate the rise of substantial verbal son preference and limited indications of the use of NRTs for prenatal sex selection to actualize son preference. This is a very notable shift in a society where historically the birth of daughters was welcomed and celebrated (Jeffrey, 1992).

The significance of our findings includes first, the documentation of emerging son preference in a culture assumed to be immune to such retrograde developments. Nayar society had previously been studied to examine how changes in kinship systems lowered the status of adult women (Saradamoni, 1994; Renjini, 2000), but did not examine son preference. Our study makes this unique contribution to the literature on son preference, particularly highlighting the role of male-focused kinship systems and limited female economic participation. Prior studies on son preference have analyzed the issues in groups where this is an entrenched practice, and had not documented its rise, in the context of social change, in a group where it was previously unknown.

Second, our study contributes to the discussion of the multidimensional nature of women's societal position, whose different aspects do not necessarily go hand in hand (Kabeer, 1999). We demonstrate how the education of women, a widely advocated policy prescription to address a variety of social dilemmas, is necessary but not sufficient to overcome the societal disadvantage faced by women in a patriarchal setting where educated women pay higher dowries, employment opportunities are limited, and "housewifization" is common. To overcome these barriers, female employment is important along with re-assessment of familial gender roles. Though employed

women may be seen as auxiliary contributors in families, research shows how women's economic participation in South Asia, even at low wages, radically transforms women's value in the household, reduces familial gender inequality, and challenges patriarchy(Ahmed and Bould, 2004).

Third, our research supports the "gender and development" perspective, further demonstrating that while development may improve a region's overall socioeconomic profile, unless gender inequities are addressed, they will emerge at the family or household level. Our analyses included examining the roles of kinship change and of socioeconomic change that showed the limited paid work roles of women but not of men. Our findings support Bloomberg's (2004) contention on the importance of women's productive role contextualized within a female-centred kinship system, for modernizing agrarian societies. From a historical perspective, the abolition of matriliny was part of a community strategy spearheaded by Nayar men to advance within a modernizing wider society,–"the pity was that it hinged on a rejection of the woman centred 'otherness' of their matrilineal past" (Arunima, 2003: 195). The historical division of male and female spheres continued during modernization and combined with the shift to patriliny so that males (fathers and sons) acquired the roles of provider and status enhancers of family status, and women (mothers and daughters) the role of homemaker and auxiliaries. Though contributions of adult women may be valued, daughters are devalued as expensive outsiders whether or not dowry is paid (Das Gupta *et al.*, 2003).

No single component of this process can be singled out as the root of son preference, *e.g.*, it is not the shift to dowry alone that makes daughters expensive for parents. The entire set of transformations in kinship, economy and gender roles interlink to create the perception that daughters are expensive and are no longer core members of the natal family. Modernization in India has not stemmed reliance on kinship networks for economic survival and status attainment. In fact, use of kinship networks has remained a very effective strategy to advance in modernizing India. Male-focused kinship networks, operating in a patriarchal setting, make male dominance of the occupational sphere and female specialization in the domestic arena almost inevitable, making daughters expensive for parents and auxiliaries for in-laws. "In the Indian patriarchal ideology, women are regarded more as a highly flexible resource of the household rather than fully-fledged members of it" (Banerjee, 1998: 261). Dowry is a symptom of this situation rather than a cause. Similar analyses have been advanced for the extreme levels of son preference

among other groups of India, *e.g.* the *Jats* in peri-urban Delhi, (Khanna, 1997). Our interviews revealed that many Nayars perceived it was difficult to find jobs and establish themselves because as a "forward caste" they were not beneficiaries of any affirmative action programs, and did not feel that community organizations (*e.g.* the Nayar Service Society, or NSS) were fully effective in advocating for them. Thus, their reliance on familial strategies was intensified. Thus, in this instance, we suggest that modernization in India is associated with greater son preference for some sections of the population who are in specific socioeconomic circumstances where reliance on kin networks and male children has become intensified, and female work opportunities remain limited.

In this regard our findings extend those of Srinivasan and Lee (2004), who found a mixed effect of modernization on Bihar women's attitudes to dowry, especially that younger women were not more disapproving. We also found that the younger generation's attitudes were not more progressive or flexible than those of their seniors. We argue that gender-blind modernization in India cannot be expected to produce gender equity, and that dowry forms part of gendered familial strategies to advance in this society. Thus, the relationship between modernization, women's status, and dowry needs to be revisited in this light, and younger or more educated people cannot automatically be expected to be more progressive under these circumstances.

At present, among Kerala Nayars, there appears to be a gap between ideas and practices. That is, some sections of this community (those of lower socioeconomic status) appear to express preference for sons. However, our data do not indicate open, large-scale use of NRTs for sex selection as in other areas of India, many respondents and medical practitioners did suggest that covert practices may be occurring and growing in scope. As technology further develops, methods of pre-conception sex selection (viewed as ethically less problematic) may be adopted. Currently, such methods were not widely known or available in Kerala. Awareness of this possibility overall in India have led to sustained efforts by activists, which resulted in the amendment of the PNDT 1994 act to prohibit pre-conception sex selection methods (PCPNDT Act of 2004). However, as patterns over India indicate, legal action is not sufficient to stem sex selection if the underlying reasons for son preference strengthen during modernization. Will son preference strengthen or diminish in Kerala? Memories of matriliny, Nayar pride in their history, and a legally compliant cadre of medical practitioners have (so far) prevented the wide use of NRTs for prenatal sex selection in Kerala. These factors

may change. On the other hand, more prosperous Nayars did not indicate son preference. Thus, expansion of economic opportunities may couple with high education to raise female worth. Complacency on the grounds of high female education and prior good socio-demographic achievements in Kerala cannot be afforded. Recognizing and discussing the potential for son preference will promote a sociocultural climate protecting daughters. Efforts of activists and the media can play a major role.

The limitations of our study include the challenges of addressing this extremely sensitive topic and the very private nature of decision making on this point. Strenuous efforts were made to meet these challenges as specific rapport-building interview techniques were developed. Second, our research focused mostly on community members. Greater inclusion of medical practitioners would provide additional documentation of the supply side factors of NRTs for prenatal sex selection. Third, our research focused on one point in time for people's actions and aspirations. We did not follow respondents periodically to observe their choices and strategies while faced with life situations for sons, daughters, and themselves. Our study was the first effort in this area, and future studies on this topic can follow such strategies. However, despite these limitations, our study is a unique contribution toward documenting son preference and examining processes contributing to its growth among a culture usually lauded for high women's status.

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# Vulnerable Daughters in a Modernizing Society: From 'Son Preference' to 'Daughter Discrimination' in Rural South India[1]

T.V. SEKHER, Neelambar HATTI

*"Having a daughter is like watering a flower in the neighbour's garden"*
*(Tamil proverb)*

## 1. Introduction and conceptual framework

The high masculine sex ratios of the Indian population have been a matter of concern for some time. Considerable attention has been paid to different dimensions of female deficit in India and persisting regional variations (Sen, 1990; Agnihotri, 2000; Miller, 1981 and 1989; Bhat, 2002; Croll, 2002), since the numerical imbalances between the male and female sexes were pointed out in the 1970s (Visaria, 1971; Natarajan, 1972). The results of 2001 Census have set off further debate on the issue and have narrowed down the focus to the changes in juvenile or child sex ratio.[2] Changes in the sex ratio of children, aged 0-6 years, are better indicators of the status of the girl child in India, known to be more hostile to females in their early age. It also reflects the intra-household gender relations. Why millions of girls do not appear to be surviving in contemporary India, despite an overall improvement in development and many governmental measures to enhance the status of women? Why are female children still at risk and why is daughter discrimination on the increase despite progress in female literacy and participation of women in economic and political activities? Is there any significant shift from 'son preference' to 'daughter discrimination' at the household level? There is an urgent

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[1] An earlier version of this paper was presented at the XXV International Population Conference of IUSSP at Tours, France, July 2005.
[2] Defining the sex ratio by covering children in age group 0-6 may seem arbitrary, but we follow here the statistics provided by Census of India.

need to focus attention on increasing daughter-discrimination and aspects related to children differentiated by their gendered value.

Human population exhibits definitive characteristics in terms of its sex composition. In most parts of the globe fewer females are born than boys; yet females typically survive longer than males and tend often to predominate in the population. However, this demographic attribute eludes India where males decisively out-number females and where women constitute less than half of the total population. Sex ratio is a direct indicator of women's status and welfare. The sex ratio changes are usually analyzed in a framework that underlies (relatively) greater deprivation and discrimination of females as opposed to males. The major determinants of numerical imbalances revolve around factors such as under enumeration of women, fertility, mortality and migration. Closely linked to the lower status of women, relative female under-enumeration may also be a cause for the sex composition from census data to appear more masculine. The census data should be interpreted with caution because improving the quality of age data on children can produce a spurious trend of falling sex ratios at certain childhood ages (Bhat, 2002).Though such enumeration bias is relatively greater at certain ages, it does not depict the grim reality and warrants interventions that can generate better awareness about the need for accurate age reporting as well as recording.

While the 2001 Indian census shows that the overall sex ratio has marginally improved from 108 men per 100 women to 107 during the last decade, the number of boys to girls in the youngest age group increased from 106 to 108 per 100. The regional disparities also appear to have increased: the northern states generally exhibit a worsening trend in sex ratio as compared to the southern states. The Census evidence suggests a clear cultural preference for male children, particularly in some North Indian states. The sharpest rise for the age group 0-6 years is observed in the northern states, particularly in Punjab (126) and in Haryana (122). The census lists 'sex-selective female abortions', 'female infanticide', and 'female neglect'–typically through giving girls less food and medical care than boys - as "important reasons commonly put forward" for this shocking anomaly. The new figures point out the use of new technologies to determine gender composition. Furthermore, as social norms are changing towards smaller families, the availability of and access to new technologies provide an easy way for parents to achieve such goals. Amartya Sen has called it a 'technological revolution of a reactionary kind' (Sen, 1990).

## 2. Fertility trends and son preference in contemporary Asia

One of the most remarkable changes in the last century has been the shift from high to low fertility. Indeed, this has been described as "the greatest single demographic change in the second half of the century" (Caldwell, 1993: 300). Recently, India has experienced a new fertility decline during the 1990s at the national level. The 2001 census indicates that, after a large spell of unprecedented population growth, the country has experienced a gradual decline in fertility levels. However, there is also evidence that there is growing disparity between the North and the South, with the southern states having been more successful in controlling population growth.[3] In a vast country like India with considerable demographic diversity and heterogeneity and varying levels of socioeconomic development among states, the levels and phases of fertility decline vary significantly from one state to another (Bhat, 1994; Guilmoto and Rajan, 2002; Sekher *et al.,* 2001).

Several studies suggest that cultural factors have played an important role in determining fertility trends (Basu, 1992; Jeffery and Jeffery, 1997; Das Gupta, 1987). While attention has been drawn to the importance of cultural factors in studying demographic behaviour; few studies have examined in detail the relations between cultural and economic aspects. One important cultural (and economic) feature is the value attached to sons. It is important to further analyze the nexus of economic, social and cultural factors that underlie daughter discrimination, thus shifting the focus from son preference to daughter discrimination.

During the last two decades, considerable debate has taken place, particularly in India, on the imbalance in sex ratio and the question of 'missing women'. In a significant article titled as "More than 100 million women are missing", Amartya Sen (1990) brought to focus the increasing gender discrimination by analyzing the male-female ratio. He argued rather convincingly that the problem of missing women is clearly one of the momentous and neglected problems facing the world today. Miller (1981) in her anthropological study of 'neglect of female children in North India' illustrated the strong relationship between culture and mortality. It is the cultural bias against females in North India, which brings into play neglect and mistreatment of an unknown numbers of children. According to her, the solution to this

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[3] For a detailed review of fertility transition in South India, see Guilmoto and Rajan (2005). Quantitative and qualitative analysis of fertility changes in four southern states has been made available under the South India Fertility Project: (www.demographie.net/sifp).

problematic future lies "in giving high priority to achieving gender equality in economic entitlement and increased awareness of the social importance of equal health and survival of males and females" (Miller, 1981: 214).

There have been a number of studies that have attempted to illustrate how the decline in fertility will affect gender bias and increase imbalance in juvenile sex ratios (Clark, 2000; Das Gupta and Bhat, 1997; Croll, 2002; Bhat and Zavier, 2003; Vella, 2005). A substantial decline in fertility presupposes a desire for fewer children and the means to limit the family size. Both these conditions can be achieved with the increase of social and economic development. It is generally accepted that the pace of demographic transition is closely associated with the levels of socioeconomic development. However, there are evidences to show that, even in the poorer regions, substantial decline in fertility has occurred through political interventions, in the form of family planning programme. But the social and economic development and governmental interventions do not ensure any substantial change in the cultural ethos of the society.

One important factor (both cultural and economical) that determines the level of fertility transition is son preference. In South Asian societies, it is believed that a major barrier for the decline in fertility was the prevalence of strong son preference, irrespective of socioeconomic development. It is also argued that with the increase in welfare and economic development, the influence of son preference would decline gradually. These assumptions are being questioned by some studies indicating that there has been an increase in son preference during the years of fertility decline. This occurs not only in poorer communities but also in populations where women have invested education and employment and thereby have achieved considerable social status. Das Gupta (1987) found that excess female mortality for second and subsequent parity daughters was 32 percent higher than their siblings for uneducated mothers and 136 percent higher if the mothers were educated. Basu has made similar observations "although her capacity to increase the chances of survival of her children seems to increase with education, the typical Uttar Pradesh women's ability to treat her male and female offspring equally actually decreases" (Basu, 1992: 196). The existence of strong son preference has resulted in the desire to prevent the birth of daughters by carefully balancing the desired family size and desired sex composition of the children. In other words, the decline in fertility partly explains the raising masculinity of many populations (Das Gupta and Bhat, 1997; Croll, 2000). Considering this dimension, there is a

need to examine the influence of the mirror image of son preference, namely, daughter discrimination. Does a strong son preference ultimately result in deliberate discrimination against daughters? Miller has stated that "the problem is that son preference is so strong in some areas of India and amongst some classes that daughters must logically suffer in order for family's personal and culturally mandated needs to be fulfilled" (Miller, 1981:25). Logically, this would mean that strong son preference should be associated with intense daughter discrimination.

Rather than going through repeated pregnancies, bearing daughters in an attempt to produce male progeny, small family and reduced fertility seems to imply that unborn daughters are the first to be 'sacrificed'. Generally, both infanticide and fatal neglect of female children seem to have been supplemented by sex identification and sex-selective abortion, to achieve the desired family size and gender composition. Better opportunities for women's education, increasing labour force participation and an enhanced exposure and freedom, do not guarantee an equal status for daughters as that of sons. In many Indian communities, daughters are associated with a double loss. Firstly, a daughter leaves the natal family after her marriage and the benefits from investments made on her upbringing accrue to her in-laws, constituting a loss to her natal family. This is further compounded by the burden of expenses for her marriage, particularly dowry.[4] Sons, on the other hand, are considered assets worthy of short and long-term investment. In India, the birth of a boy is thus a time for celebration while a birth of a girl, especially second or subsequent one, is often viewed as time of crisis (Bumiller, 1991). Apart from these economic considerations, there are cultural factors that support son preference. All these factors put together contribute to the assumption and firm belief that daughters cannot substitute sons. A common explanation for the existence of son preference and daughter discrimination is that sons can provide old age support. In India, a majority of the old parents live with their married children, who, for an overwhelming majority, are sons. In the Indian context, characterized by high levels of uncertainty and where no institutional alternative to the family as a source of social insurance has emerged, parental

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[4] Dowry is a considerable burden for the bride's family. In the era of globalization and increase in consumerism, dowry payment is more a rule than an exception. Many communities, where the practice of dowry was totally absent have started making huge payments in recent decades at the time of marriage. In many families, even after the payment of dowry, there is continuing uni-directional flow of resources from a women's parental household to her in-laws for specific yearly festivals and life-passage rituals.

decisions are likely to be powerfully motivated by their concerns about their own security in the old age. The existence of such an understanding and commitment between parents and sons, called inter-generational contract, is one of the factors that appears to have remained unchanged through overall socioeconomic changes. Sons are also important because they alone are entitled to perform the funeral rituals of the parents. Added to this, most women have limited or no possibility to contribute towards their parents' welfare. This creates an apparent dichotomy between the value of a girl to her parents and that of a woman to her in-laws. It has also become more costly to raise children as education has become both more important and a necessity, irrespective of the sex of the child. The increasing cost of education and marriage of girls is a major drain on the household resources, which acts as a strong disincentive to have daughters.

The underlying workings of female discrimination are undoubtedly highly complex. However, a number of broad factors have been identified which together create a situation where sons are preferred and daughters are neglected. The patterns of inheritance are typically patrilineal in India with property passing from father to son (Miller, 1981; Das Gupta, 1987; Kabeer, 1996; Croll, 2000). Upon marriage, the bride leaves her natal home to live with the family of her husband. In this exogamous lineage system women are left out. They become dispensable essentially because they count for very little as individuals.

In recent years, a major factor which directly influenced the imbalance in child sex ratio is the widespread use of sex determination technologies and sex-selective abortion. Parents use these methods to achieve the desired sex composition of the children within the desired family size.

Misuse of sex determination tests has been a subject of media attention for many years. Health activists and women's organizations voiced their concern forcing the government to act. In 1994, the Government of India banned the tests at national level, with the Pre-natal Diagnostic Techniques (Regulation and Prevention of Misuse) Act. As per this new legislation, only government-registered clinics and laboratories may employ prenatal diagnostic procedures that could be used to assess the sex of the foetus. The new Act also specifies that no prenatal diagnostic procedures may be used unless there is a heightened possibility that the foetus suffers from a harmful condition or genetic disease. It also states, "No person conducting prenatal diagnostic procedures shall communicate to the pregnant women concerned or her relatives the sex of the foetus by words, signs, or in

any other manner". This Act was again amended in the light of the newer techniques of pre-conception tests and the amended rule came into effect in February, 2003. Now the Act has been renamed the Pre-conception and Pre-natal Diagnostic Techniques (Prohibition of Sex-selection) Act, 1994.

Female foetuses are liable to victimization on the basis of their sex alone even before they are born. Only far reaching social changes that aim at increasing female autonomy, female economic power and the value of the girl child are likely to make a significant impact on the demand for sex-selective abortion. Interestingly, there is no reliable statistics available on sex-selective abortion at the state or national level in India. An indirect estimate using the data from two rounds of National Family Health Survey (NFHS) indicates more than 100,000 sex-selective abortions in India every year (Arnold *et al.*, 2002). The evidence of substantial sex-selective abortion in states such as Punjab, Haryana, Delhi and Maharashtra is consistent with the high rates of use of ultrasound and amniocentesis (Retherford and Roy, 2003).

Using the NFHS data again, it was observed that at the national level, the sex ratio at birth for mothers who had either ultrasound or amniocentesis was 107 male births per 100 female births. These lower sex ratios for births to mothers who had either of these tests can be attributed to sex-selective abortions. The NFHS survey demonstrated that ultrasound and amniocentesis are often used for sex determination and sex-selective abortions of female foetuses have been rampant in many states of India, particularly in Punjab, Haryana and Gujarat. Though ultrasound and amniocentesis tests on pregnant women are legal in India, the divulgence of the sex of the child to the parents has been illegal since 1996. However, the legislation has been a miserable failure in preventing couples from seeking sex determination and the medical practitioners performing them. Enforcement of legal procedures alone will not reduce these incidences unless there are significant changes in behaviour and social life.

## 3. Two village studies in South India

At the national and state levels, we have a reasonably good idea of the levels of fertility decline, the extent of son preference and the relationship between the two, based on analysis of large scale data from demographic and health surveys. But how does this really manifests itself at the village level, particularly in the context of widespread sex selection techniques easily available? By studying two villages in the low-fertility regions of South India, we attempt to

understand how these factors interplay at the micro-level, with changing socioeconomic scenario.

The main objective of these village studies was to examine the precarious situation of female children before birth (their chances of being born at all), at birth and during the first six years of childhood. In order to gain an understanding of these discriminatory dynamics, it is essential to look into household and individual behaviour. Here, the main concern is how reproduction strategies and specific gender discrimination practices vary among households belonging to different socioeconomic groups. It is important to understand how the desire for sons, whether strong or weak, is directly related to daughter discrimination and neglect. The focus group discussions (FGDs) and in-depth interviews concentrated on a small group were done to elicit information about the value of boys and girls, reproductive preferences and strategies. The qualitative research methods employed in the two study villages provided very useful insights. A focus group, generally consisting of 8-10 persons with similar socioeconomic and demographic background, encouraged lively discussions on specific issues, moderated and facilitated by the researcher. The entire discussion was tape recorded facilitating the preparation of detailed transcripts. FGDs provided insight not only regarding experiences and opinions of the participants but also their perceptions on various issues. The information gathered through FGDs was supplemented with individual interviews. All this qualitative information was pooled together and synthesized to arrive at conclusions.[5] The average time taken for a FGD was 90 minutes. FGDs were conducted in the Panchayat office, temples, and *Anganwadi* centres[6] and in some cases, at the residence of some members. Retaining all the participants till the end of the FGD was a challenging task. In general, villagers were very forthcoming in expressing their views and revealing their perceptions.

### 3.1. *Mandya district in a low fertility region of Karnataka state*

Mandya district is located in the central belt of south Karnataka, which has been physiographically classified as southern *Maidan* (plains) region of the state (see location map in Figure 1 in the introduction). The district is compact with high population and village densities. More than 60 percent of the total population of the district belongs to a single peasant community, the *Vokkaligas* (*Gowdas*). The local paucity

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[5] Quotations given below are translated from local Kannada and Tamil languages.
[6] The Anganwadi centres are nursery schools for children aged 3-6 years, which provides nutritious food under the Integrated Child Development Scheme (ICDS) of the Government.

of land for further expansion of area under cultivation, the long history of irrigation expansion, and the Vokkaligas' love for land and cultivation have long been documented by social scientists (Epstein, 1962, 1973; Srinivas, 1976). Today, there are few land transactions and land value has increased considerably. Predominant small holding is the characteristic feature of this district. Landholdings of less than two hectares form nearly 85 percent of all holdings. The large holdings with more than ten hectares account for 0.33 percent of the total holdings and about 4.54 percent of the total land held. Thus, marginal and small farmers are predominant in the district. The fortune of a man generally depends upon the size of the landed property of his father and the number of siblings with whom he will have to share the property.

Canal irrigation is a characteristic feature of Mandya district. The major irrigation work, the Krishnarajasagar dam across the Kaveri River was partly completed by 1921 and water was made available to the farmers of the district. Agricultural land, with assured canal irrigation, is the backbone of the district economy. The major crops are paddy, sugarcane, ragi and coconut. Sericulture and handloom weaving are the two other important economic activities, which provide work for thousands of families. The district recorded a population density of 355 per sq. km in 2001. The male literacy rate has 72 percent and female literacy 52 percent.

*Observations from the Study Village M*

Village M is a Kannada-speaking village, located eight kilometres away from the town of Mandya (district headquarter). Coconut gardens and fields of sugarcane and paddy, along with canals and streams, surround the village. As per the 2001 Census, there were 637 households in this village with an average household size of five. The literacy rate is about 60 percent. The general sex ratio was of 108 men par 100 women, but the child sex ratio (0-6) is of 137 in 2001, a considerable rise from 121 as recorded in 1991.

With assured irrigation and the Visvesvaraya Canal passing through this village, many important changes have taken place in the agriculture of this village. The advent of irrigation brought overall changes in the pattern of cultivation and consequently, improved the economic condition of land owning families. Ownership of land implies regular food availability and income for the families. Therefore, land is the most important economic resource for the villagers. Most farmers use high yielding varieties of seeds and apply fertilizers. The introduction of irrigation pumpsets, tractors and power tillers has

contributed to a gradual reduction in the demand for agriculture labour. The availability of credit and marketing facilities also helped farmers. The easy access to the vibrant Mandya town with commercial and industrial establishments also encouraged many villagers to take up employment in the town.

The population of the village has increased considerably during the last decades, rising from only 761 inhabitants in 1951 to 2921 in 2001. Nearly 70 percent of households were Vokkaligas, the dominant community in the village as well as in the district. Vokkaliga in the local language means 'cultivator', and they were traditional agriculturists. They are the Gangadikar Vokkaligas enjoying higher rank within the Vokkaligas. Undoubtedly, Vokkaligas control the bulk of the cultivable land. According to 2001 census, 36 percent of the total workers are cultivators and 24 percent were agricultural labourers in this village. Twenty-one percent of the households belonged to scheduled castes.

We observed that dowry, the wealth flow from bride's family to groom's family, has become a common practice in all castes and communities. The communities that did not practice dowry in the past have now taken this up in a big way. This has put a heavy burden on the family in arranging for the dowry demanded by the boy's family and also meeting the increasing marriage expenses. Having more children is a financial burden on the family in terms of sending them to school and in performing their marriages. Epstein, who studied two Mandya villages, documents the emergence of dowry practice in this area- "in Wangala, it was Beregowda, one of the most enterprising peasants, who initiated change to dowry payments. He explained that three considerations had motivated him to take this step: first, he was keen to get an educated husband for his daughter. Second, his daughter had not been trained to work in the fields and far from being an economic asset she would be a liability as a wife; finally, he said, Brahmins had always given their daughters dowries" (Epstein, 1973:197). In another study in a South Karnataka village, Caldwell *et al.*, describe the changes in dowry practices - "The major change was the coming of dowry. In the early 1950s, the first dowries in Bangalore were paid by some Brahmin families. Not until the beginning of the 1960s did the first Brahmin landlord family in the study area provide a dowry and not until 1965 was this done by the first Vokkaliga (the major peasant caste) family. It is still not paid by Harijans (Scheduled castes), although in the largest village they ceased paying the *Tera* five years ago, and the payment is still small among some of the backward castes. Nevertheless, they all anticipate its arrival. In all castes, the bride's family now bears the major portion of the wedding costs, and it

is they who seek loans and sell land" (Caldwell *et al.*, 1982: 707).

Rich Gowda families are ready to pay up to Rs.5-6 lakhs[7] as dowry, apart from gold, vehicles etc. The girl's family meets the entire marriage expenses. The dowry depends upon the qualification and employment position of the boy and land owning status of the family (see Appendix 1). During our fieldwork we came across Vokkaliga families having only one child, mostly male, and deciding to accept family planning. According to them, if they had more than one child it would be extremely difficult to provide good education and meet the cost of upbringing. As narrated in our focus group discussions, since land was limited, it was difficult to maintain the standard of living.

> "It was better before. Rainfall was sufficient and the crop yield was good. We used to get sufficient water from the Krishnarajasagar dam and there was not much problem for our agriculture. We were getting good crops and, we were happy."

> "At present, due to insufficient rainfall canal water from the dam for our agriculture is becoming difficult. The entire village including its surroundings is having the same kind of problem in agriculture".

> "Because of the financial constraint, everybody has been limiting the family size. Fragmentation of land has taken place due to the partition of families, and everybody having only small holdings. So, parents don't want to have more children and again don't want to divide their family and land."

> "In our colony, Kamali has two, sons. Her elder daughter-in-law has not brought anything, but the second daughter-in-law has brought a huge dowry. Therefore the younger one receives more respect than the elder one."

> "The husband and the in-laws threaten the elder one for not bringing any dowry. We have seen this with our own eyes, so many times".

> "I have seen them beating her also. Any time, she will be sent back home".

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[7] Rs 5 lakhs (500,000 rupees) amount approximately to 9.300 euros (2007 exchange rate).

"Boy's parents consider it their right to collect dowry. They never think about the economic position of the girl's parents".

"They never realize it can happen to their daughter also".

"Even poor people give dowry. Even if the boy is an agricultural worker, he gets lot of gold and cash".

"Some parents are forced to give their land as dowry".

"The village is improving, but the people's attitude is the same, everyone wants dowry".

"No marriage in this village has taken place without giving gold and cash to the boy's family"

"Nowadays, boys demand motorcycle or car".

"One man told me that he did not want daughters. Even if we spend Rs. 5000 for abortion, it will be better than spending Rs.5 Lakhs on dowry."

"People who are wealthy started giving money to maintain prestige and others also started following these people. A proverb is there: "ondu meke hallake bitthu antha yella meke hallake biduvathe" (when in a bunch of sheep one fell into the well, the others also started jumping into it, without assessing the situation).

"Dowry is high in our community, including marriage expenditure; it will be around 5 lakhs".

"Parent of the bride borrow money from others, sometimes they sell their land to cover the marriage expenses".

"In our village, girls are educated, and even then there is more dowry".

"After paying so much dowry, they continue to demand more. If she fails to bring it, the husband and the in-laws start punishing her. That is why many people don't want daughters".

Generally, most of the Vokkaliga families are nuclear. After marriage, women have no right over the parental property including land. The sons inherit all family assets. During our interviews and FGDs, we found that there was a strong preference for small families, and interestingly, most of the couples had already accepted family planning. It was the Vokkaligas who, by accepting birth control

measures, paved the way for other communities towards the acceptance in this village. A majority felt that it was responsibility and sometimes a burden to have more children, particularly girls. The type of fertility transition experienced in this village, and in other parts of the district, has been unique, and one can see a strong relationship between population pressure on land and rapid fertility decline (Sekher and Raju, 2004). Dependence on agriculture in Mandya district is far greater than anywhere else in the state. The paucity of cultivable land and availability of irrigation have resulted in increasing land values. The landowning Vokkaligas prefer to have only one or two sons to avoid further fragmentation of land. As mentioned by Epstein *et al.* (1998) "They now appreciate that large numbers of children create economic problems of future generations. But most of them still have a strong son preference. They continue procreating until they have at least one son. For example, Shangowda had one son after his wife had given birth to two daughters. He and his wife then decided that three children are enough for them. A large proportion of villages pursue the same strategy. In this too, old beliefs and customs persist in a changed setting" (Epstein *et al.*, 1998: 196). Vokkaligas consider land as the source of old age security, along with the son. Beals, while studying social change in a Mysore village 50 years ago, states that "Namhalli's landowning group, while not threatened with starvation, has been faced, in recent years, with the problem of dividing a limited quantity of land among an ever increasing population. Within the village many solutions to this problem, ranging from abortion to the adoption of iron ploughs, have been tried. In almost every family in Namhalli, at least one child has been groomed for urban employment" (Beals, 1955: 98).

The focus group discussions clearly illustrate the strong desire to limit the number of children.

> "People had problems when they had more female children earlier, because of the dowry problem. Now, people have more problems than earlier while having two and more sons. Because of the partition of the family property, now, people like to have only two children."

> "Women themselves prefer mostly male children."

> "After having two children, my mother-in-law told me not to go for sterilization. Then I thought, if I continue like this, it will be very difficult for me, and I may die. Then I went to a doctor and decided to have operation."

"My husband wanted more children; he was very much against sterilization. But I went and had it. Now, he tells me that I did the correct thing."

"I got operated immediately after the birth of my second child. My husband gave me full support in this decision."

"I have a daughter; my husband wanted at least one boy. My mother in law cried when I gave birth to a girl child".

"Earlier in this village, scheduled castes never used to give dowry. After seeing the Gowdas, they also started. Some people believe that paying more dowry is an issue of prestige for the family. They sell their land, or borrow money and give dowry.

"Educated girls should insist that they are against dowry. I read in newspapers that, in cities, a few girls refuse to marry when boy's family demands dowry. Our village girls do not have the courage to do like that".

"But some people send their son to convent schools and daughter to government school (poor quality education). Why is this discrimination?"

"Why to spend on a daughter? A son gets good education and will earn money for the parents. A daughter, one day or another has to leave the house".

"When I became pregnant, my in-laws used to neglect me because my mother gave birth to all girl children and they believed that I will give birth to a girl child. Everyday I used to cry and pray to God for a baby boy. When I delivered a baby boy, I became a respectable person in the house. My husband was also very happy. That day they distributed sweets to all our relatives and neighbours. "

Swathi, young new bride, suddenly stops her and asks-

"What is the guaranty that your son will take care of you? Am I not taking care of my parents?"

During our fieldwork, we observed that a majority of the young couples underwent a sex determination test, either in a private clinic or a nursing home. People from village M, go to nearby Mandya town where two nursing homes are known for conducting abortions. During the focus group discussion among Vokkaliga and Scheduled Caste women, we found that almost all were aware of the facilities available

to find out the sex of the foetus. We also came across cases where some health workers, particularly the auxiliary nurses-midwives (ANMs), providing information and advising village women 'on getting rid of unwanted daughters". Some of them openly admitted that both the test and the abortions were done in Mandya city. In a few cases, people went to places like Bangalore. This was expensive for the family, but rich Gowdas were ready to spend more money for a 'good purpose'. For conducting ultrasound test and disclosing the sex of the foetus, the private nursing homes in Mandya charge between Rs. 1,000 and 2,000, and if a woman prefers an abortion, she has to pay an additional Rs. 5,000. During the discussions many women justified persuading their daughters or daughters-in-law to have an abortion telling them that it is better to spend Rs. 1,000 now than spending Rs. 10 lakhs (one million) later. One woman belonging to the Vokkaliga community said that had this facility (ultrasound) been available 20 years ago, she would have preferred it to reduce the number of daughters. She said "*Hecchu edi kere haal maadtu; Hecchu henninda mane haalaatu*" (more crabs spoil the lake and in the same way more daughters spoil the house). In an attempt to have a son 20 years ago, she gave birth to three daughters.

> "In the neighbours' house they have done an abortion secretly. Now, in our community, a new thing has started. If a woman becomes pregnant, they won't say that she is pregnant. Secretly she goes to Mandya to check the sex of the baby. When she finds out that it is a girl, she will get an abortion done immediately. Everything is done in a secretive manner."

> "When I went to the hospital last time, I saw Mahadeva and his wife, he has 3 girls and his wife is pregnant again. If it is a girl, he wants her to abort".

> "Rame Gowda's wife of the next village died during the abortion. Poor woman, she has left behind two daughters."

> "Presently, one woman is in the hospital. She is a victim of abortion. She had one daughter. For her second pregnancy she went to have an abortion. Since then she has not been well".

> "When I took my sister to the hospital for delivery, next to her bed, there were three abortion cases which had been admitted. I came to know that they came for abortion".

"Girls are given less food than boys. Even rich families do this. Then why blame the poor?"

"If we stop dowry, then I am sure, sex-selective abortion will disappear".

"A son is essential because he will continue the family name. When the parents die, he will do all the kriyas (rituals in the Hindu family)"

"A son is called a putra, who liberates his father from hell. A son-less father won't get moksha (Salvation) after death".

"Some daughters may be interested in taking care of their parents, but their husbands have to allow them".

"Husband and mother-in-law try to avoid a girl child. They will try to find out the sex of the baby."

"Some women are scared of husband and in-laws, and they agree to scanning and abortion."

"For my daughter-in-law, we did a scan to find out the sex of the baby. After taking 1000 Rupees, they did not reveal the sex of the baby. After that, we went to another doctor and terminated that foetus."

Another old woman explained the necessity of having a son. In her own words, *"maga manege; magalu pararige"* (a son is for our family and a daughter is for another family). When asked about whether they depend on their sons for protection during old age, most men and women said 'yes'. Some of them strongly felt the necessity to have at least two sons. Krishne Gowda, quoting a local saying, substantiated his argument *"ondu kannu kannalla ; obba maga maganalla"* (one eye is not enough to see, one son is not enough for the family).

It is clearly evident that dowry rates have gone up considerably in all the communities. The girl's family is forced to meet a series of payments for the marriage, beginning with the engagement and concluding with the bride actually going to reside in the groom's house. In many communities, dowry practice was totally absent about thirty years ago. Now it has become an essential feature of the marriage. The dowry payment includes cash, gold, silver and expensive consumer items like a TV and refrigerator, and in many cases a vehicle, preferably a car or motorbike. A portion of the land and property is also transferred from the girl's family to the boy's family. Apart from all this, it is a well-established norm among all communities that all expenditu-

res for conducting the marriage have to be borne by the girl's family. Considering all these expenses and practically no return, many feel that having a daughter is a 'real burden' for the family. As a village woman appropriately summarizes the situation: "*Yavaga Honnina bele Eruthade, avaga Hennina bele iliyuthade*" (Whenever the value of gold goes up, the value of the girl comes down).

**Table 1 Perception of participants from village M**

**A. Ideal family size according to the respondents**

| | Communities (%) | |
|---|---|---|
| Ideal family size | Vokkaligas | Scheduled caste |
| 1 son | 30.3 | 17.4 |
| 2 sons | 46.9 | 47.8 |
| 1 daughter | 4.6 | 4.3 |
| 1 son and 1daughter | 18.2 | 30.4 |
| 2 daughters | - | - |
| Total | 100.0 | 100.0 |

**B. Assessment of children by parents**

| | Communities (%) | |
|---|---|---|
| | Vokkaligas | Scheduled caste |
| Sons are more expensive to bring up than daughters | 21 | 24 |
| Daughters are more expensive to bring up than sons | 87 | 72 |
| Will you face difficulty in arranging marriage of your son | 18 | 42 |
| Will you face difficulty in marrying off your daughter | 71 | 89 |
| Son will take care of me when I am old | 63 | 74 |
| Daughter will take care of me when I am old | 9 | 12 |

**C. Parental expectations about the future of children**

| | | Vokkaliga (%) | |
|---|---|---|---|
| | | Men | Women |
| How do you think life will be for your daughter(s)? | Better | na | 11 |
| | Worse | na | 49 |
| | Like your own | na | 40 |
| How do you think life will be for your son(s)? | Better | 39 | na |
| | Worse | 12 | na |
| | Like your own | 49 | na |
| Total | | 100 | 100 |

Sources: Focus Group Discussions carried out in Village M by the study team in 2004-05.

The findings from the household survey carried out in village M clearly indicate the changing attitude towards the perceived value of sons and that of daughters. The tables presented below are based on a

survey of 96 young male or female members (those having at least one child in the age group 0-6). Out of 96, 66 belong to Vokkaligas and the remaining participants were from Scheduled Castes.

The son preference is strong among Vokkaligas; nearly 77 percent of them want either one son or two sons (and no daughter). Only 18 percent of them consider that their ideal family comprised one son and one daughter. More than four-fifth of them felt that daughters were more expensive to bring up than sons and 71 percent were apprehensive of the problems or difficulties associated with suitably marrying off their daughters.

## 3.2. Salem district of Tamil Nadu

Salem district (see location map in Figure 1 in the introduction) recorded the lowest child sex ratio in South India in 2001. This district attracted considerable attention in 1990s for the prevalence of female infanticide (George *et al.*, 1992). Certain taluks in the district reported shocking anomalies in juvenile sex ratio in 2001. A study carried out based on available PHC (primary health centre) records confirms the incidence of female infanticide in the districts of Salem, Dharmapuri and Madurai (Chunkath and Athreya, 1997). The 2001 census corroborates that the rampant practice of female infanticide in parts of Tamil Nadu still exists, despite overall socioeconomic development.

In Salem district, the average household size is of 4.0, with a literacy rate of 65 percent in 2001. The two major communities are *Vanniyars* and *Kongu Vellala Gounders*. The Vanniyars originally formed a fighting force of the Pallavas kings and hence came to be called as *padayachi* (soldier). Their community cohesiveness is remarkable. Some of them practice agriculture as their main occupation. The traditional occupation of Vanniyar is oil pressing and oil selling. The nuclear family is the most common form among households. Sons inherit property and the eldest son gets a greater share. Daughters do not have any right to the property unless they have no brothers. Vanniyars are locally categorized as most backward caste (MBC) and the state government has a reservation policy for them. The Kongu Vellalars are mainly located in the Kongu region in western Tamil Nadu. Agriculture is the traditional occupation of this community. The other economic activities are animal husbandry, trade, industrial labour etc. They are hardworking agriculturists and specialized in garden cultivation.

*Observations from the study village K in Mettur taluk*

This village counts 1341 households as per 2001 census with a total population of 4983 (2676 males 2307 females). The average household size is 4.0. The literacy rate is 47 percent. The overall sex ratio is 116 men per 100 women, but the child sex ratio is 162 in 2001, a steep rise from 149 as recorded in 1991. Three major communities in this village are the Vanniyars, the Kongu Vellala Gounders and the Scheduled Castes. They all speak Tamil.

During our fieldwork, we came across incidences of female infanticide in this village. Though some families, including women, were hesitant to talk about it, there were a few who openly justified the practice. Though the practice is more prominent among Vanniyars, other communities also occasionally indulge in this crime (appendix 2). On many occasions, though the mother of the child is not directly involved, the elder members ensure the elimination of female infant within a week after birth. The methods used for this purpose include feeding poison to the infant, loosening the knot of umbilical cord, suffocating the baby to death, feeding it with paddy husk, and letting it starve to death. The more "modern" method recently observed is to use pesticides or sleeping pills. Some elders use the prediction of local astrologers ('fortune tellers') as a strong justification to get rid of the daughter who will 'cause destruction to the family'. As one old women, narrating the plight of her family said "it is better they die than live like me". *Pen sisu kolai*, as female infanticide is called in the local language, is justified by various reasons by different individuals. Though many families tolerate the first girl, the subsequent daughters are really at high risk. The general observation is that female infanticide is confined to certain backward communities like the Kallars (and more broadly speaking all Tevars) proved wrong. It has spread to communities like the Gounders, Vanniyars and Pallars. Our discussions with villagers indicated that it is not only the poor who indulge in this, but the rich and powerful in the village also practice the *pen sisu kolai*. There are few police cases registered against parents for committing infanticide. But the arrival of sex determination tests, even in villages, has given a new method for those who can afford to pay. Many economically better off families admitted that they avoided the birth of another girl "with the help of a doctor". However, poor women from the scheduled caste colony said during FGDs: "we cannot pay for test and abortion. So we still do infanticide, which is mush cheaper" (appendix 2). Our study in this village of Salem district clearly shows that the practice of female infanticide is being substituted by female foeticide to a large extent, particularly among the Gounder community. The efforts of the

government, NGOs and a few Panchayat leaders had some impact in reducing the incidences of female infanticide. Pregnant women already having a girl child were classified into the high-risk category and were monitored closely by local NGOs. The girl child protection scheme of the state government is being used to motivate parents to care for female infants. Surprisingly, a similar effort is absent in combating female foeticide.

Among the Kongu Vellala Gounders, dowry was reported as the major reason to avoid having daughters. A few observations are cited below:

> "Parents of the bride borrow money from others; sometimes they sell their land to cover the marriage expenses."

> "After paying so much dowry, they continue to demand more. If she fails to bring dowry, the husband and in-laws start harassing her. That is why many people don't want daughters."

> "I have one daughter and one son. My in-laws wanted one more son but my husband was very particular about sterilization. One day he took me on his scooter to Mettur for the operation without informing anybody at home. First, my in-laws were very angry with us. But now, they appreciate my husband's decision".

There was a phenomenal increase in the amount of dowry transacted from the girl's family to the boy's family. The land owning Gounder had to pay at least 80 sovereigns of gold, Rs. 2 lakh cash and a car, as well as to meet all the lavish expenditure to conduct marriage. The manifold increase in dowry among all communities repeatedly came up for discussions in the FGDs. The landowning Vanniyars are not far behind, the rates ranging from 40 to 60 sovereigns of gold, a car or motorbike and marriage expenses. Even the landless Dalits (the poorest in the village who depend on agricultural work for their livelihood) are forced to pay gold (5 to 10 sovereigns) and meet the marriage costs, which can easily exceed 25,000 rupees. Borrowing money to meet these 'unavoidable' expenses has pushed many families into the trap of indebtedness on the one hand and social obligations on the other. According to one Dalit women, "having a daughter is a punishment for the sins committed in a previous life". In most of the marriage negotiations, the first criterion was how much dowry would be given. "Modernization ushered in the importance of material status, driving the need to be extravagant and to show off as a way of asserting one's social standing. For well-off Gounders performing *seeru*

(dowry) and the conduct of marriages of daughters became an important forum to display new found prosperity and to assert their status within their community (caste group)" (Srinivasan, 2005: 602). This factor clearly shows why many daughters are unwelcome, resulting in a deliberate intensification of non-preference of daughters and consequent son preference. Even the affluent families who can 'afford' daughters and can provide them with good education are sceptical because, as a local leader put it, "the higher the education of the girls, the higher the dowry". It is also true that "an increase in the prevalence of dowry, which has raised the costs of bringing up children, and created a situation of financial distress, have also contributed to the fertility decline in some segments of population"(Krishnamoorthy *et al.*, 2005: 245). Marrying off a daughter without giving a decent dowry can have serious consequences for the natal family as well as for the daughter. One respondent expressed this as follows:

> "The in-laws may humiliate our daughter, demand more dowry, ill treat her and finally she may be forced to return to our home in shame. How can we allow this to happen to our daughter?"

Apart from the demand at the time of marriage, the demand after marriage for more dowry, resulting in the fear of ill treatment of their daughter if the demands are not met, is a perennial worry for many parents. The inability to pay the amount of dowry demanded could also lead to a delay in the marriage itself and an unmarried daughter would pose many a problem for the parents.

## 4. Conclusion

In the eyes of parents, both village studies indicated the fact that, even after improvement in girls' education and employment, daughters are rarely able to substitute sons. The will to limit the family size is quite evident across communities, but the "smartest couples" are able to achieve both desired family size and sex composition. The new reproductive strategies to attain the desired number of sons were employed by parents across communities, not withstanding the extent of use, is also an indication of the easy access and affordability of sonography and abortion facilities. As narrated by a literate woman in Village M -"had these clinics been available 30 years ago, many of us would never have seen this world!" According to the NGO activist in our Tamil Nadu village-"the real culprits for all this are the medical doctors who misused the technology to increase their profits". Though

the "technological effect" is mainly responsible for the elimination of unborn girls, what about the powerlessness of village women in our patriarchal societies? Personal interviews with a few young women in our study areas reveal that many times, they were forced to undergo sonography and abortion, much against their wishes.

The FGDs in both the study areas clearly illustrate the people's tendency to identify having a daughter with dowry payments. The continuing trend of increasing dowry demands, in cash and in kind, across communities, both as a crucial factor in marriage negotiations as well as a 'status enhancer' within the community, has had significant impact on how the parents value the worth of boys and girls.

Interestingly, the two peasant communities (Vokkaligas and Kongu Vellala Gounders) in the study villages have become increasingly affluent as major beneficiaries of the access to irrigation and other inputs of modern agriculture. This affluence has meant a continuing rise in living standards, aspirations and consumption. Besides acquisition of various trappings of modern life, another way of demonstrating their economic affluence, according to the FGDs, was to catch a 'well-qualified son-in-law' since this would enhance their status and standing within the community and the village. This desire offcourse would gradually inflate the dowry demands of the boy's family and also increase the wedding expenditure of the girl's family. Hence, over time the increasing costs of education and marriage and a conviction that dowry rates can only move upwards, compel the parents to seriously consider the investment in and return from a daughter as against the benefits that can accrue to the parents from investing in a son. Both the landed and the landless communities in our FGDs cite this as the most important reason for preferring sons at the expense of daughters. Since both study areas have completed the fertility transition and a small family is the accepted norm, parents seem to make the deliberate choice between a son and a daughter since a son would mean inflow of wealth while a daughter implies a drain. The affluent communities, which not too long ago considered payment of large dowries as a symbol of their capability and status, now realise that such payments constitute a threat to their affluence, lifestyles and aspirations and, consequently prefer not to have a daughter.

As a result of the growing affluence of the landowning communities, the cash flow among the landless agricultural labourers has also increased due to higher wages, most of which is now being paid in cash than in kind. This fact coupled with the desire to imitate the customs of the higher castes in the village, a kind of *sanskritization* process, has meant that the practice of dowry payment has permeated

to the landless lower castes, thus increasing the expenses of marriages. Consequently, these communities also exhibit similar preferences albeit to a lesser extent.

The analysis and field level observations from the two low-fertility regions of South India clearly indicate a strong preference for sons, particularly among the peasant communities. However, with the drastic decline in fertility, the preference for sons has manifested a deliberate discrimination towards daughters. The widespread use of sex selection techniques has provided an opportunity for couples to choose a son rather than a daughter. Along with this, the increasing pressure on limited land on the one hand and the spiralling cost of bringing up children, particularly girls, due to huge amount of dowry to be paid, parents prefer to avoid having daughters. The medical technology has come in handy for many couples for balancing the desired sex composition and the desired small family size. The rapid fertility decline, not accompanied by changes in the cultural values and gender inequality, is in a way responsible for the intensification of gender bias and the deliberate attempt to 'get rid of girls'.

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## Appendix 1

### A Dowry range in a village in Mandya District (1970)

| Community/ Caste | Occupation/education of the son-in-law | Dowry (cost) in 2004 | |
|---|---|---|---|
| | | Cash (Rs) | Items |
| Rich Vokkaliga | Educated has job in the city | 3,000-4,000 | 1-2 acre irrigated land, jewellery (for Rs. 6,000) Clothes (for Rs. 3,000) |
| Middle Class Vokkaliga | Educated | 1,000-2,000 | Jewellery, clothes, (for Rs. 3, 000) |
| Poor Vokkaliga | ____ | Up to 1,000 | Clothes and jewellery (for Rs. 1500) |

Source: Epstein, 1973.

### B Dowry range in village M (2005)

| Community/ Caste | Occupation/education of the son-in-law | Dowry (cost) in 2004 | |
|---|---|---|---|
| | | Cash (Rs) | Items |
| Rich (Vokkaligas) | a) Groom is employed in government/private job and settled in the City | 3-5 lakhs* | Land, car, 100-130 grams of gold, clothes. And all other costs for marriage |
| | b) Groom is employed in government /private job and settled in the village. | 2-3 lakhs | Scooter, 80-100g of gold, clothes and all other expenses towards marriage |
| Middle class (Vokkaligas & other castes) | a) Groom is in govern-ment/private job and settled in the City | 1-2 lakhs | Land, scooter, 60-70g of gold, clothes and all other expenses towards marriage |
| | b) Groom is in govern-ment/private job and settled in the village. | Less than One lakh | Land, scooter, 60-70g of gold, clothes and all other costs for marriage |
| | c) Groom is an agricul-turist, settled in the village. | 50,000 | 60-70g of gold, clothes and all the costs for marriage |
| Poor labourers (SCs & other castes) | Landless Agricultural labour (groom) | 10-20 thousands | 10-20g of gold, and clothes and all other expenses towards marriage |
| Vodda** households | Landless labour (groom) | 5-10 thousands | 10-20g of gold and all the expenses towards marriage. 101 articles like vessels etc. |

Notes: * One lakh is 100,000 Indian rupees; ** Vodda is a Scheduled Caste community from Tamil Nadu whose members settled in the village in the 1960s.

Source: Focus Group Discussions carried out in Village M by the study team during 2004-05.

# Appendix 2

## A Similarities found among three communities in Tamil Nadu village

1. Male child preference is common among all the communities. In the Gounder community, they prefer only one child, and only a boy child. In other communities like the Vanniyars and the Dalits, they prefer a boy child though they have a girl child.

2. Economic and agricultural conditions have improved among Vanniyars and Gounders. In housing, the dalit community has improved by availing group housing from the government.

3. Education of girls has become important in all the communities. A minimum education of 10th class is provided to the girl children irrespective of caste.

4. Celebration of birthdays of both boy and girl children has become common in all the castes. The only difference is that, depending on the family's economic background, birthday is celebrated differently.

5. Nuclear family is the most prevailing system in all castes.

6. In marriage practices, dowry is quite common. Though the amount of dowry may differ, the practice exists.

7. Irrespective of caste and economic background, people are aware of sex determination test and they are availing this facility.

8. Female infanticide exists among all the castes. But it is more prevalent among Vanniyars, followed by Dalits and Gounders.

9. After the death of parents, the property of the family is distributed only to the sons But, in the Gounder community some part of the property is given to the daughters.

10. In their old age, parents need their sons to be with them. Staying with a daughter is considered most undesirable among all communities

11. Foeticide is practiced by all communities. It is more frequent among Gounders, followed by Vanniyars and Dalits.

12. In all the castes, girl children are considered a burden and a liability irrespective of economic background and educational levels.

**B Differences found among three communities in Tamil Nadu village**

| Characteristics | Vanniyars | Gounders | Dalits |
|---|---|---|---|
| 1. Joint / Nuclear family | Both joint and nuclear families exist among them. | They prefer the nuclear family. | Since the housing facility is not sufficient they (parents and married couples) live under the same roof, but cook separately. |
| 2. Dowry | Depending on economic status dowry differs. | Starting from the minimum level of 15-20 sovereign gold and Rs.25-50 thousand cash. Maximum level depends on the education of the bridegroom, job prospects and regular earnings. | Demanding dowry is not compulsory here. Therefore finding a bride is not so difficult compared to other communities. |
| 3. Preference of size of the family | Prefer to have more than one child; irrespective of economic status at least one male child. | Prefer to have only one child, that too a male child. | Maximum preferences of children are three and expect at least one to be male child. |
| 4. Practice of family planning | Women go for family planning without the consent of men. | Women consult men and accept family planning with one child. | Both men and women discuss and undergo family planning. |
| 5. Preference for choosing bride groom | Employment is the only consideration, but in the past they gave importance to property. | Land holding and property is given more importance at the time of marriage | Employment is the only consideration. |
| 6. Practice of foeticide | Quite often | Very rampant | Not so high |
| 7. Practice of infanticide | Very rampant | Not so high | Quite often |
| 8. Land holding | They have land holdings but less than Gounders | They have more land holding | No land holdings |
| 9. Condition of women | Empowered through self-help groups (SHGs) | Not much freedom within the family | Empowered through SHGs |

*(Table continues on the following page)*

**B Differences found among three communities in Tamil Nadu village** *(continued)*

| Characteristics | Vanniyars | Gounders | Dalits |
|---|---|---|---|
| 10. Finding match | It is possible to find a bride-groom suiting their economic status. But due to infanticide, they may find it difficult to get a bride in ten years | Finding a bride is very difficult. Due to the impact of infanticide in the past | The present trend of infanticide may lead to a lack of girl children in future. |
| 11. Property sharing | Till marriage, a girl child can enjoy the property. After marriage no share is given. | Share of property to the girl child is common. It is done after the death of parents | No share is given to girl child |
| 12. Abortion | Abortion is common | Fortune tellers also play a major role in facilitating the abortion of female foetus | Traditional practice of abortion still exists |

*Part IV*


*POLICY RESPONSE AND IMPACT*

# Interventions to Balance Sex Ratio at Birth in Rural China

ZHENG Zhenzhen

## 1. Background

A great number of researches have been published over the last fifteen years to discuss and analyze the rising sex ratio at birth (SRB) observed in China since the late 1980s in a context of strong traditional son preference. Although there is a lack of solid evidence, it is believed that foetus sex identification services have become easily accessible and more affordable to individuals over the past decade, while family planning regulations have been strongly enforced by the government and the number of children desired by couples has been reduced under the impact of social and economic development. The misreporting or underreporting of girls, which was assumed to be the main reason of imbalanced SRB in the late 1980s (Zeng *et al.*, 1993), is no longer the dominant reason, and sex-selective abortions are now considered as the main cause (Banister, 2004). Although the state and local government have taken specific measures such as education and prohibition of sex-selective abortion, the SRB is becoming more and more imbalanced in some areas.

Although son preference is the first reason to be blamed, the issue is not that simple. Son preference and discrimination against girls has a long tradition in China, related to traditional family roles of boys and girls. However, son preference is also a conscious choice of parents (Table 1), and such a tradition changes very slowly in spite of recent social and economic development. Women's rights and interests are protected by various laws and regulations, but they are often violated and neglected in practice. Women are often found in a disadvantaged position in education, employment, marriage, family responsibility, land distribution and inheritance systems which negatively impact women's status and development. The parents are well aware of the inequity between men and women. Hence they expect that a son would have a

better future, for example, to be better educated, to find a good job, to make parents proud of him, and to provide in return better old age support to parents. Furthermore, the traditional responsibility of old age care is still borne by sons and daughters-in-law in most part of China, especially in rural area, where family is almost the sole support for the elderly. Therefore, the imbalanced SRB is the consequence of combined social problems and is caused by multiple factors. Consequently, it needs to be solved in a comprehensive way combining efforts from all sectors.

**Table 1 Sex ratio of current child by gender of previous children, China, in 2000**

| No. of previous children | Sex composition | Sex ratio of the current child |
|---|---|---|
| None | | 105.5 |
| One | 1 boy | 107.3 |
| | 1 girl | 190.0 |
| Two | 2 boys | 76.5 |
| | 1 boy and 1 girl | 122.1 |
| | 2 girls | 380.6 |
| Three or more | girl>boy | 231.3 |
| | girl=boy | 160.0 |
| | girl<boy | 74.1 |

Source: Yu (2003).

There are currently mainly two strategies enforced by the Chinese government to balance the sex ratio at birth. The first one consists in prohibiting strictly identification of foetal sex for non-medical purposes and sex-selective abortions, and the second one in implementing a nationwide campaign entitled "Care for Girls". But the imbalanced sex ratio at birth is a complicated social issue that cannot be solved only by administrative measures. To tend towards a social and economic environment more favourable to girls and women, changes in people's mind and practice must occur simultaneously. Hence there is a great and urgent need to review and assess existing intervention measures in order to study and develop more specific, more comprehensive, and more effective intervention strategies.

## 2. Determinants of son preference

Literature discussing imbalanced sex ratio at birth and son preference in China is innumerable since the late 1980s (Banister, 2004; Lei and Shi, 2004; Li and Zhu, 2001; Xie, 2002). However, only few publications discuss the reasons of son preference in details. The literature reviewed in this chapter focuses more on social, economic

and cultural determinants rather than on the direct cause of imbalanced sex ratio at birth, such as how foetus sex identification and sex-selective abortion are practiced in different parts of China.

According to the available literature, the main causes of a high sex ratio at birth in China are: (1) son preference, which is affected by various factors, such as local traditions, social and economic status, and related policies; (2) easily accessible methods for foetus sex identification; and (3) medical or family planning service capable of last trimester induced abortions. Consequently, the determinants of imbalanced sex ratio at birth can be divided into six sets of factors: social environment, economic development, family needs, individual opinion, administrative management, and technical capability (Figure 1), which not only play independent roles on sex ratio at birth, but also interconnect with each other. As the social environment, economic development, family needs and individual opinion more in favour of men, where women are under-valued in both community and family, son preference would be stronger. However, the motivation is usually not strong enough to break the local regulation (that is, to have one more baby than the regulation allows). Couples would balance between the pressures (to have a son), the individual desire and preference, and the cost. If the cost is too high, there will be preference but no action. If it is easy to practice foetus sex identification and selection, that is, where the administrative measures are not strictly enforced and the technical service is easy to access, couples will be more likely to take the risk to reach the goal of desired number and sex of children. The role of each factor will be discussed in more detail later.
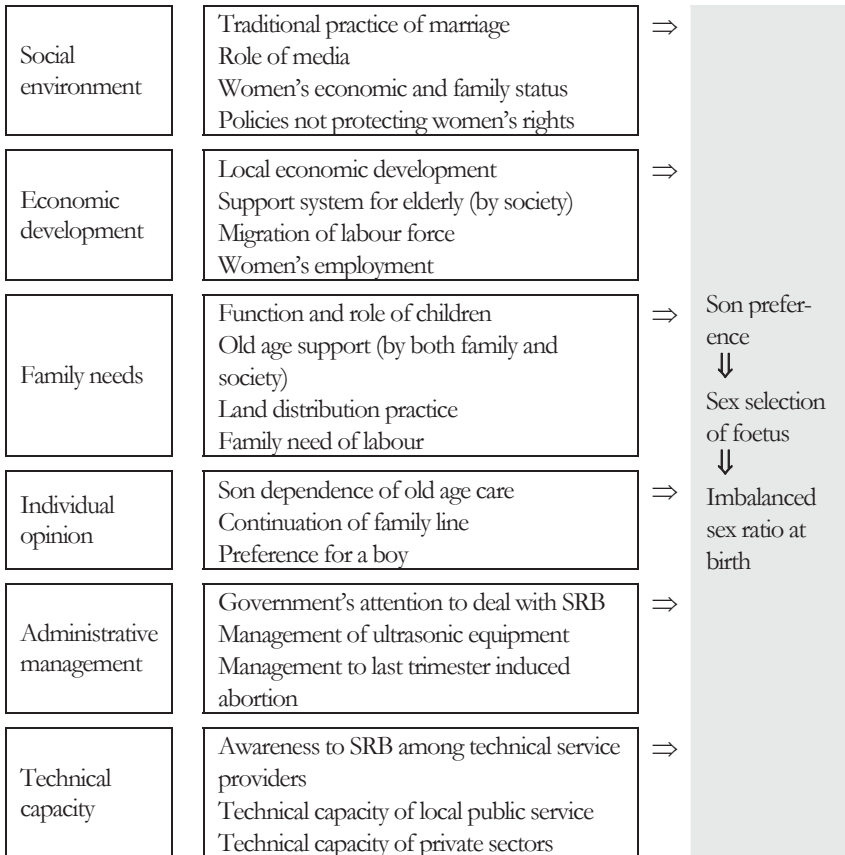
Most of the findings presented in this chapter arise from an application research project funded by UNFPA China and conducted in 2005. They are based on several methods: (1) literature and document review and unobtrusive data analysis; (2) fieldwork in a county of Hebei Province with high sex ratio at birth at second parity,[1] including focus group discussion, observation, home visits and interviews; and (3) analysis of related policies implementation and impact.

The research team reviewed and analyzed relevant local statistics and documents, organized focus group discussions with government cadres at county and township levels, local civil society organizations, family planning workers, health service providers and local people, to

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[1] It is a national phenomenon that sex ratio at birth is normal among babies of first parity, abnormally higher in second parity, and extremely high in third and higher parity. However, the number of third parity newborns is very small. There have been very few cases of third parity in the county we visited.

understand the local situation and opinions from different aspects. Opinions and suggestions on intervention approaches to balance the sex ratio at birth were collected from focus group discussions (or, in an approach of nominal group[2] if appropriate and individual interviews. Interviews with village leaders and authorities, village family planning workers, as well as local people were also a part of data collection.

**Figure 1 An analytic framework of the determinants of sex ratio at birth in China**

| Social environment | Traditional practice of marriage <br> Role of media <br> Women's economic and family status <br> Policies not protecting women's rights | ⇒ | |
| Economic development | Local economic development <br> Support system for elderly (by society) <br> Migration of labour force <br> Women's employment | ⇒ | Son prefer-ence <br> ⇓ <br> Sex selection of foetus <br> ⇓ <br> Imbalanced sex ratio at birth |
| Family needs | Function and role of children <br> Old age support (by both family and society) <br> Land distribution practice <br> Family need of labour | ⇒ | |
| Individual opinion | Son dependence of old age care <br> Continuation of family line <br> Preference for a boy | ⇒ | |
| Administrative management | Government's attention to deal with SRB <br> Management of ultrasonic equipment <br> Management to last trimester induced abortion | ⇒ | |
| Technical capacity | Awareness to SRB among technical service providers <br> Technical capacity of local public service <br> Technical capacity of private sectors | ⇒ | |

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[2] Nominal Group Technique is a form of brainstorming with a small group for problem diagnosing, decision making, or problem solving. The process involves generating, recording, discussing, and voting ideas. The purpose of using nominal group approach for this specific study is to identify major factors in the framework of Figure 1 with family planning workers and service providers.

## *2.1. Social and cultural environment*

Imbalanced sex ratio at birth in China is partially a result of the social environment (in terms of opportunities of education and employment, etc.) which usually favours males in the family and society. Women's rights and interests are all well-defined in related national laws and policies, such as the law on Protection of Women's Rights and Interests, as well as that on Maternal and Infant Health Care, Marriage Law, and Labour Law. However, the enforcement of those laws and policies still need to be monitored.

Although educational achievement for women has been improved in the last several decades, women's average length of education is still less than that of men, it was 7.0 years for women and 8.3 for men in 2000 (NBS, 2004), gender disparity in education is observed at all ages and both in rural and urban settings (Figure 2) (Zheng and Lian, 2004), which is one of the reasons for lower economic status and lower political participation of women.

**Figure 2 Gender parity index[3] in education, urban and rural China, 2000**
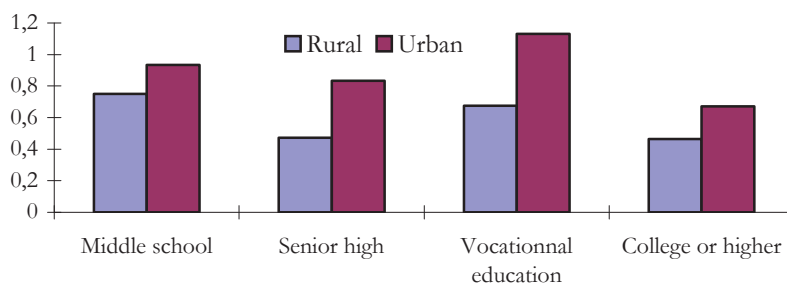


Source: the census data of 2000.

It is also found that there is a wage difference between female and male workers, for example, according to the Survey on Women's Status conducted in 2000 (WSST, 2001), the median salary of women who work in the formal sectors was 85% of that of men, and the percentage is even lower with informal employment, where women's median salary was only 69.4% of men's (Jiang, 2006). The wage gap due to the difference in sector occupation is small; most of the wage difference between females and males is caused by discrimination,

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[3] Gender parity index was introduced by UNESCO to measure gender education: it is measured as the ratio of female to male proportions in various education levels–the closer the index value to one the better balance achieved.

especially among less prestigious occupations (Zhang, 2004). Empirical research also found that the threshold for women to enter the labour market is higher than that of men, some recruitment posters stated that only males are eligible for the job, some companies set a higher standard for women than men when recruiting, while women exit formal employment earlier than men, both due to the younger age of retirement and a higher percentage of firing during the economic reform (Cai, 2002).

The traditional role of women in family and marriage customs also put women in a disadvantaged position. In most places in rural China, the wife lives with her husband's family and largely devotes herself to household works within the family. This traditional practice does not encourage parents to invest much on a girl's education since she is going to be married out, and women are less likely to participate in village public affairs. In some counties of Hubei Province where son preference is not strong, there is a tradition of husbands living with wife's family and of a daughter's responsibility of the elderly (Li *et al.* 2002; Jin *et al.*, 2004; Li and Zhang, 2001). It is found that the sex ratio at birth has always been normal in these areas. However, rural areas with such traditions represent a small minority. Although the state is advocating a new norm of marriage and living arrangement for the newly wed, the tradition is very difficult to change in a short period.

The tradition of marriage practice puts women in a disadvantaged position, especially rural women. Since the woman is the one moving after marriage, she will be more likely to loose her right to have her own land or to have a share of the inheritance. The law on the Contracting of Rural Land (*nongcun tudi chengbao fa*) enacted in 2002 defines clearly that men and women have equal rights to contract land, however, it has been found that the implementation of this law is different. In some rural areas, women did not get their land both after but also before leaving the family house to get married; it would be even more difficult for a divorced woman to claim her ownership to a piece of land, especially when there is a shortage of arable land. The change of living place due to marriage makes a woman more vulnerable in protect her rights. Although no deliberate discrimination towards women was found in most places, women's right has often been violated in practice (Zhang *et al.*, 2006).

The public image of women is also often stereotyped by the media and in textbooks. Women are often portrayed as a good wife, or in a vulnerable position to be protected. The way that the media addresses the problem of imbalanced sex ratio is to assume the shortage of women or shortage of potential wives for men. Such

comments and assumptions are somehow misleading the public (Bu, 2004). A website search in 2005 found that among 1,930,000 papers and reports about sex ratio issues, only 14.8% mentioned "gender equity" and 4.1% mentioned "women's rights and interests," revealing a lack of gender perspective on SRB issues in China (Ci, 2006).

## 2.2. Economic Development

Research has shown that the relationship between sex ratio at birth and economic development are mixed and complicated. Economic development in a region is supposed to improve the ability of old-age support by the elderly themselves and by family members in general, and to balance the roles and functions of sons and daughters within a family and, consequently, to improve the status of women. The need for sons' labour and economic support may also decline with socioeconomic development. However, analysis at a provincial level in 1990 and in 2000, found that the imbalanced SRB is not correlated to any economic factors (Guilmoto, 2005; Wang *et al.*, 2005).

It is commonly agreed that economic development does not automatically solve the problem of imbalanced SRB, but may play an indirect positive or negative role in different period of time. Economic development may affect son preference in different ways:

- A community with better economic development is able to setup old age security and support system and local people do not expect to depend only on sons for old-age care;

- A developed local economy increases employment in the region; some labour intensive enterprises prefer to recruit young women workers, since they work faster then men in some assembly line, such as electrical products and garment, which increase the proportion of rural women working for a salary, and may lead to an improvement of women's status inside and outside the family, so that women no longer need to prove their value by giving a son to the family;

- Families with higher income could afford foetus sex-identification service which may lead to more frequent sex-selective abortions;

- Where private business is booming, a rich family desperately needs a son to take over and carry on the family business under the tradition that males inherit family properties.

Labour force migration is another social/demographic change that could have a positive effect on the level of sex ratio at birth. Migration

from rural to urban areas may change the opinion of rural couples and assimilate rural people, especial youth, with urban life styles, including the fertility desire (You and Zheng, 2002), and therefore weaken son preference. Migration also creates an opportunity for rural women to work and earn a salary, which in turn would redefine the role of women in the family. A survey among migrants in Shanghai found that son preference is weaker among migrants in comparison to that of their rural counterparts (China News, 2004). But migration is sometimes also a way to have a (or another) boy, since administrative management in cities is not as strong as in rural areas.

## 2.3. Family needs and individual opinions

As mentioned earlier, the need for a son is often a conscious decision of couples, after balancing the cost and benefit of children in their life. Since the role of children in a family is often clearly defined, preference for male children is quite understandable for those who still depend on son(s) to provide support in old age, to work in farm or in family business, to deal with family affairs, and carry on the family name (Xie, 2002). Although agricultural modernization is on the way, in some rural areas a (or several) son(s) is still needed for heavy labour, for example, in less developed mountainous areas.

Numerous journal articles and discussions emphasize the importance of a son for a family: male child(ren) as the key for old age support, as the head of the family, as an honour for the family, and as a kind of goods that every family should has. Son preference is also related to family status and it is found that couples are more in a desperate need of a son when the family has a low social status in the village. An anthropological study conducted in a village in Zhejiang shows that family needs often override individual needs among rural residents (Li and Chen, 1993). As the management of controlling sex-selective abortions is targeting pregnant women, women are under a double pressure: on one hand, they are subject to the administrative control of sex-selective abortions and, on the other hand, to the desire to give birth to a male. In some rural areas, a woman would be divorced if she could not give birth to a son.

Some of the needs for sons could be simply blamed as a deeply rooted tradition, but some are quite practical and reasonable. Unless the society and the government solve the problem of old age support and reform the agriculture structure, the needs for sons will remain in spite of the campaigns and IEC activities.

There is a saying in China that to have a son is showing filial piety,

and such an opinion is still rooted in some rural areas. Several surveys on people's fertility desire show that most couples believe that a son and a daughter constitute the ideal number and structure of children. But couples are more likely to accept the fact of having only a son with no daughter, given the limited choice; but the bottom line is "at least a son." The desire to have a son may be stronger among some couples, for example, if the husband is the only son in his family, or if all the siblings of the husband have only daughters, as explained by a village woman in her late thirties:

> "My husband has three brothers and all of them have only daughters. When I learnt that my second baby was another girl, I felt little sorry. I would have a third one if it were allowed. The government should let me… Now I sometimes still have an uneasy feeling when I see my neighbours' big boy helping them to unload a cart of brick, I cannot ask my daughters to help me for that kind of work… Once we sat together and my husband told me, "everything of you is good, except that you did not give me a son."

When we asked about possible reason for a family wanting at least a boy in the field, answers were:

- Old age support: the elderly need a son (and a daughter-in-law as well) to provide financial support and daily care;

- For labour: "a boy is important when there is a need for heavy labour," "(boys) can help chopping fire woods" and

- An honour to his parents: parents often talk about their sons in a proud and perky style, "My son …."

By reviewing all the surveys on fertility desire, one of the conclusions is that the desired number of children has changed during the last two decades, but the preference for the sex of children has not changed very much (Feng and Zhang, 2002).

However, a recent survey found out that young rural couples are less aware of the function of carrying on the family line, and their attitude toward traditional roles of husband and wife have also changed. Compared to middle aged couples, young couples agreed less often with the traditional family role of men and women (Lei and Shi, 2004). The sex preference of children might not be as strong among the younger generation.

## 3. Interventions to balance sex ratio at birth

Gender inequality in social and economic activities is currently the main cause of son preference in childbearing, with imbalanced SRB as a consequence. But gender inequality also hampers the development of girls and women, and such inequality will make both the whole society and each individual pay for this. Gender inequality would result in resource distribution inequity and increase poverty by a lack of security, opportunity, and rights. A study in lesser developed parts of rural China found that advocacy to improve gender equity and women empowerment favours poverty alleviation for the whole of society.

The most popular method for foetus sex identification is the use of an ultrasonic device. Such a device is widely available in public and private clinics in every county in China, and both urban and rural couples can easily afford it. For example, some media reported that the cost for foetus sex identification is only 50 yuan (around 6 US$) in Guangdong rural areas. According to the family planning technical service protocol in China, only hospitals or family planning service stations at the county level, or higher, are certified for last trimester pregnancy termination and this for medical reasons. However, the implementation of the protocol and the management of pregnancy termination for non-medical reasons are relatively poor in some areas, which make sex-selective abortions possible. Although the government has a strong desire to control the practice of foetus sex identification and sex-selective induced abortion, a couple's desire to have a son is even stronger in some areas. Son preference is affected by other factors combined together, such as local traditions, social-economic status and related policies.

The serious imbalanced sex ratio at birth has raised the concern of the Chinese government. The national leader Hu Jintao emphasized the importance of a balanced SRB and suggested a goal to stop the rising SRB in the next three to five years.[4] The issue is also included in the "Suggestions to Develop 11th Five Year Plan for Economic and Social Development" by the Central Committee of CCP (The 5th Meeting of 16th CCP, 2005), which identifies bringing SRB back to normal as one of the major tasks over the next five years.

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[4] A speech by Hu Jintao in National Meeting of Population, Resource, and Environment, March 10, 2004, accessible on the website www.cpirc.org.cn

## 3.1. Legal intervention

In fact, the issue of imbalanced sex ratio at birth has raised the attention of the government since the late 1980s. The Ministry of Health and State Family Planning Commission jointly distributed in 1986 a regulation by the Beijing Family Planning Commission and Bureau of Health on "prohibition of foetus sex identification for non-medical purposes" (*guanyu bude renyi jinxing taier xingbie yuce de tongzhi*). The Ministry of Health distributed an urgent notice in 1989 on a "strict prohibition of medical practice on foetus sex identification and misuse of techniques of artificial insemination" (*guanyu yanjin yong yiliao jishu jianbie tai'er xingbie he lanyong rengong shoujing jishu de jinji tongzhi*). Another joint notice issued by the Ministry of Health and the State Family Planning Commission was distributed in 1993 regarding "the restatement of the prohibition of foetus sex identification practice." (*guanyu chongshen yanjin jinxing taier xingbie yuce de tongzhi*). The Supreme Court and the Supreme Procurator issued a notice on "punishment according to the Law on crimes against family planning." (*guanyu yifa yancheng pohuai jihuashengyu fanzui huodong de tongzhi*). The law of Maternal and Infant Health (*muying baojian fa*) implemented in 1994 was the first to state that foetus sex identification is strictly prohibited.

Article 22 in the Law of Population and Family Planning (*renkou yu jihua shengyu fa*) enacted in September 2002, states that "Discrimination against and maltreatment of women who give births to baby girls or who suffer from infertility are prohibited. Discrimination against, maltreatment of, and abandonment of baby girls are prohibited." Article 35 states that the "Use of ultrasonic or other techniques to identify the sex of the foetus for non-medical purposes is strictly prohibited. Sex-selective pregnancy termination for non-medical purposes is strictly prohibited."

In 2002, the National Population and Family Planning Commission, Ministry of Health, and State Food and Drug Administration jointly issued a "Regulation of Prohibition of Foetus Sex Identification and Sex-selective Pregnancy Termination for Non-Medical Reasons" (*guanyu jinzhi feiyixue xuyao de taier xingbie jianding he xuanze xingbie de rengong zhongzhi renshen de guiding*). [5]

In 1998 and 2002, the National Population and Family Planning Commission issued documents to intervene comprehensively on the imbalanced SRB jointly with other 11 ministries, which are: the IEC Department of Chinese Communist Party, the State Family Planning

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[5] This regulation will be referred to as the Prohibition Regulation later in this chapter.

Commission (SFPC), the Ministry of Education, the Ministry of Public Security, the Ministry of Civil Affairs, the Ministry of Labour and Social Welfare, the Ministry of Agriculture, the Ministry of Health, the State Bureau of Statistics and the State Administration of Drugs and All China Women's Federation. The documents defined the responsibilities of each ministry and sectors to keep the SRB at a normal level. The main contents of the 2002 document, "Suggestions on Comprehensive Intervention to the Rising of Sex Ratio at Birth," (*guanyu zonghe zhili chusheng renkou xingbiebi shenggao wenti de yijian*) are:

- To clearly define responsibilities, enhance coordination and co-operation, implement comprehensive intervention;

- Strengthen IEC activity, advocate scientific, civilized, and modern concept of marriage and childbearing;

- Strengthen family planning and mother and child health (MCH) management at grassroots levels, carry out family planning and quality care service;

- Implement measures to improve women's status, establish rural social security system, improve incentive mechanism of family planning benefit;

- Define and modify laws and regulations, to crack down on illegal foetus sex identification and sex-selective induced abortion rigorously;

- Develop a plan to organize intervention to balance sex ratio at birth.

There are five main legal ways (according to the review of the research team) to stop foetus sex identification and sex-selective induced abortion.

1) Definition of legal foetus sex identification practice: as defined by the laws (Maternal and Child Health Law, Population and Family Planning Law), foetus sex identification and sex-selective induced abortion for non-medical purposes are illegal, and any violation of the law is subject to criminal sanction and confiscation of the license to practice medicine.

2) Prohibition of sex-selective abortion: the punishments for non-medical purpose of sex-selective pregnancy termination are: confiscating earnings from the sex selection services, fine, medical practice license cancellation, and even criminal sanction.

3) Control the distribution of abortion pills: abortion pills should be only available at certified health and family planning institutions and

should not be sold in any retail drugstore or by any individual.

4) Infant death report system: medical institutions should provide death certificate for newborn deaths in the institution, and inform local family planning department about the event. Parents should report a newborn's death within 48 hours to the local government and family planning department, if the death happens outside medical institution. Any practice of forging death certificates should be considered a crime.

5) Enforcing gender equity in related areas by law and regulation could also have an impact on balancing sex ratio at birth in the long run. Changing the national laws and regulations take an even longer time, but some laws and regulations in the process of initiation and modification have considered gender equity issues, such as the draft of Labour and Employment Law (*laodong hetong fa*, 2006) which states that sex discrimination in employment is illegal.

## 3.2. The "Care for Girls" campaign and other related initiatives

The National Population and Family Planning Commission (NPFPC) started a pilot intervention project entitled "Care for Girls" (*guan ai nu hai*) in March 2003. The short-term goal of the project is to create a favourable environment nationwide for girls' development and reverse the trend of increasing sex ratio at birth through integrated measures in the next three to five years (which implies the year 2008, but officially it was not so clearly stated). The long-term goals are: (1) to create an incentive mechanism nationwide for girls' development and for families who practice birth control and have only female child(ren); (2) to change people's fertility ideology regarding son preference; and (3) to balance the sex ratio at birth by 2010 (NPFPC, 2005). The project has first been implemented in 11 provinces with high SRB, and one county with high SRB was selected as a pilot county in each province. The national "Care for Girls" campaign also has addressed the issue of imbalanced SRB by widely promoting gender equity in the media, and emphasizing the right for survival and development of girls. The project activities also include measures to help girls to continue schooling and complete nine-years of education, help poor families with only daughters, and encourage newly married couples to reverse the tradition of patrilocality. The project also emphasizes administrative measures to crack down on foetal sex identification practices and sex-selective abortions, and to eliminate female infanticide or girl baby abandonment.

Some other governmental activities are likely to play a role in

balancing the SRB, though not initiated for that purpose.

The Publicity Department of Chinese Communist Party and NPFPC initiated a campaign in early 1999 called "New culture of marriage and childbearing into ten thousand families" (*hunyun xinfeng jin wanjia*) and the campaign will continue until 2010. This campaign aims at changing the traditional customs of marriage and childbearing through various slogans such as "men and women should be equal," "sons and daughters are both blessings to the family", "a daughter should also carry on the family name", "the husband should be responsible for family planning." Gradually the campaign is integrated with "Care for Girls" IEC activities.

The "Project of Happiness" (*xingfu gongcheng*) is especially set up to help impoverished mothers to improve the quality of their life. Not only does it lend them money but it also paves the way towards self-support. This program was launched in 1994 in Beijing by the following non-profit organizations: the China Population Welfare Foundation, the China Family Planning Association and the China Population Daily, the latter program having funded about 150,000 impoverished mothers with an accumulative 310 million yuan in 389 counties throughout the country by October of 2005. As a result, 695,844 people have benefited from the program.[6]

A major pilot program launched in 2004 in some mid-western rural areas to support single child or two-daughters families by an allowance of 600 yuan annually to each parent from the age of 60 and for the rest of their life. It is called "The System of Social Support for Some Rural Families Practicing Family Planning" (*jiangli fuzhu zhengce*). This program rewards those who practiced family planning according to the local regulations. Although the amount of money is not very important, it is still useful for the elderly in less developed rural areas. It also serves as a message of governmental support, especially to couples who do not have a son. At the same time, the central government encouraged the eastern provinces to initiate local pilot programs of social support with their own funds. In the state-designated and locally initiated pilot sites and, until the end of 2005, this system has benefited 310,000 and 500,000 rural residents respectively, involving a total of 1.8 million people (Pan, 2005). According to the Xinhua News, The Government of China will extend the system nationwide next year.[7]

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[6] Chronicle of "Program of Happiness", 1994-2005. December 31, 2005. Source: www.cpirc.org.cn
[7] Xinhua News, Oct. 16, 2006. Source: www.cpirc.org.cn

Concerning administrative management, all provinces, autonomous regions and municipalities have defined an administrative review and approval procedure to make induced abortion beyond 14-16 weeks of pregnancy more difficult. Local family planning regulations were modified according to the Population and Family Planning Law (2002) and now state that prenatal sex identification and sex-selective abortions are illegal. Some provincial regulations have detailed definition and punishment for each violation. For example, the Family Planning regulations in Hebei Province state that couples who undergo induced abortion beyond 14 weeks of the pregnancy without prior authorization from the county family planning department will not be given official approval for another pregnancy.

All these regulations also describe the protocol for using ultrasound scan machines. For example, it is required that two technicians should be present when using ultra-sound machines for maternal check-up, to prevent any possible sex-identification practice by individuals.

## 4. Discussion: intervention based on combined effort and with a clear target

The ongoing interventions, if well designed and implemented, will have some short term and long term effects. The prohibition of prenatal sex identification would stall the practice temporarily, but the effectiveness in the long run is questionable if the causes of girl discrimination are not eliminated. Some local regulations limit the practice of induced abortion during the last trimester only for medical needs, which may force such a practice to go underground and make it more harmful to women. Meanwhile, formulated socioeconomic policies and social security systems improving girls' environment and helping families with only female children would be more effective in the long run, but the implementation process needs time. Any expectation of immediate impact is not realistic. If the main efforts were put on the short-term effect intervention, the impact would be very limited, while more opportunity and more time will be lost taking care of more difficult but long-term issues.

Not all couples in childbearing age have the intension to select the sex of foetus; the practice is quite limited and has some clear local patterns.[8] Therefore, the target group needs to be identified. The pilot

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[8] A simulation with a size of 10,000 shows that if ten percent of pregnant women go through prenatal sex screenings at their second pregnancy, and if they abort female

program "Care for Girls" has been carried out in 11 county/cities where the SRB in 2000 was the highest, this could be seen as a way of targeting the groups. On the other hand, the opinion and need of target groups should also be identified to design specific interventions. Up to date, no publication mentioned the needs assessment in a standard way. None of the pilot programs has been assessed on the impact yet.

The interventions, activities and programs that were not initiated for the purpose of balancing the sex ratio at birth but likely to have a significant contribution, can be classified into three categories: incentives, advocacy, and legal/administrative management (Table 2).

Advocacy is necessary and somewhat effective but the target population needs to be redefined and enlarged. Legal and administrative management intervention may have an immediate effect but needs to be reviewed and assessed from different perspectives. Incentive programs and regulations should be strongly recommended for achieving a long-term effect, and the implementation of social security system is one of the important keys to solve the problem.

According to our field research, the imbalanced sex ratio at birth is mainly a concern of the government, especially the central government, the various actions to balance the abnormal SRB being directed from top to bottom. There is a lack of participation of local residents as well as non-governmental organizations. Any further successful programs and activities targeting the high SRB need an active involvement and full participation of local residents since they are themselves the actors and agents who can bring the ratio back to normal.

To develop an effective, feasible, and sustainable intervention strategy, several key questions need to be considered carefully: (1) Is the intervention targeted on the original cause of the problem or just the appearance of it? (2) Is the approach feasible and sustainable? (3) Is the target group well defined and focused? (4) Is the intervention designed to achieve a long-term goal or just to change the situation temporarily? (5) Who will be the coordinator as well as implementer, monitor, and evaluator of the intervention?

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foetuses, the sex ratio at birth could reach 118.4 (Kim, 2005), so the target group is rather small.

**Table 2 A summary of current interventions on imbalanced sex ratio at birth in rural China**

| Activity/program | Target population | Observable effect | Comments |
|---|---|---|---|
| Social support system | Rural parents above the age of 60 with 1 child or 2 daughters | Local people applaud the policy, but are afraid that it would not last by the time they reach the old age. It is too early to foretell the impact. | Need to convince people that it is not a temporary policy; a support system needs to be established |
| Family planning incentive regulation or activities | One-child or two-daughter families and the children | Encouraging | Affordability is a concern of some local government (most incentives depend on local finance) |
| Advocacy campaign/IEC | Couples of childbearing age and all people | Awareness has been raised among ordinary people, family planning workers, service providers and leaders, but limited effect on government leaders of other departments (a common misunderstanding: FP is responsible for the higher sex ratio at birth) | Should develop advocacy strategy targeting leaders and other relevant groups that have received less attention |
| Management of foetus sex identification | Couples who are eager or curious to know the sex of foetus | All service providers are well informed and highly aware of the prohibition of foetus sex identification practice. However, the practice seems to be still going on and it is very difficult to identify a violation if the couple does not go forward with an induced abortion | Need awareness and fully cooperation of public and private sectors as well as effective strategies |
| Management of sex-selective induced abortion | Couples with strong desire to have a son | ? | Difficult to have full control; may lead to some ethical problems |

The following recommendations can be formulated:

- The strategy of comprehensive intervention should focus on the cause of the problem of son preference and the high sex ratio at birth, and a long term impact should be prioritized;

- The administrative control and management should target a smaller group to improve the effectiveness of interventions;

- Incentive measures should be persistent and improved, a system should be established in the long run, necessary and widely spread publicity is needed;

- Advocacy to government leaders and decision makers should be strengthened, to raise the awareness on the complicated nature and causes of SRB issue, and to promote a multi-sector cooperation on intervention measures;

- Introduce the contents of balancing sex ratio at birth and related issues into the population education of primary and middle school curriculum, the education also should carry out among medical school students;

- Mobilizing social participation against girls and female foetus discrimination. The media have an important role in advocating, and NGOs could play a role in intervention, monitoring, and evaluation;

- Operational research and evaluation research could benefit the intervention implementation, impact evaluation, and cost-effective evaluation of intervention measures and approaches, as well as enabling a timely justification of the intervention strategy.

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# Son Preference and the Marriage Squeeze in China: An Integrated Analysis of First Marriage and the Remarriage Market[1]

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## 1. About marriage and the marriage squeeze

Marriage is the legal union of males and females. On reaching a marriageable age, a person, subconsciously or consciously, enters the spousal supply and demand system in which comparison, selection and marriage successively occur. The overall mate-selecting relationship of males and females eligible to marry is called the "marriage market". It is not a strictly defined market, but the product of the introduction of an economic approach to the analysis of social behaviour. Since marriage includes not only first marriage but also remarriage, the marriage market can also be divided into a first marriage market and a remarriage market, with the latter consisting of divorced and widowed people. Obviously for each individual, the process of marriage is affected by social, economic, cultural and ethnic considerations, as well as by that individual's characteristics.

But for the population as a whole, the most basic factors are the numbers of marriageable males and females (Guo and Deng, 1998; Chen, 2004). If the numbers of marriageable males and females diverge substantially and if this imbalance makes it difficult for some people to find a spouse according to the currently prevailing criteria, then there is a "marriage squeeze". If the supply of males exceeds that of females, there is a "male marriage squeeze", and if females outnumber males, there is a "female marriage squeeze". In this chapter, we analyze the marriage market and the marriage squeeze from the perspective of the supply and demand of males and females without

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taking into account the possible contribution of socioeconomic and cultural conditions and individual characteristics. From this point of view, the marriage squeeze, in essence, is a population age-sex structure problem (Chen, 2004).

In the absence of large-scale international migration, there are four main factors that contribute to imbalance in a marriage market: sex ratio at birth (SRB), gender differentials in mortality, changes in birth cohort size over time, and age gaps between spouses (Beiles, 1994). The sex ratio at birth represents the relative numbers of males and females in the first stage of life, while gender differentials in mortality affect the relative numbers that survive to marriageable age. If marriages always take place between people of the same age, then the above two factors determine the extent of the marriage squeeze in terms of excess numbers of one or other sex who have difficulty in finding suitable spouses. But, in reality, ages at marriage and age gaps between spouses vary, so changes in cohort size and the distribution of age gaps between spouses also affect the relative balance between males and females. Generally speaking, males are older than their spouse, and this is often considered as an indicator of an innate mating preference; that is, a biologically based, sex-specific characteristic in human mating patterns (Davis, 1998). Older males marrying younger females were shown to be the norm in a study of 29 developing countries (Casterline *et al.*, 1986). With older males marrying younger females, an increase in the number of births may lead to a scenario where the size of a male cohort will be smaller than subsequent female birth cohorts. On the other hand, when the number of births decreases, male birth cohorts will be larger than subsequent female cohorts (Cabré, 2004).

During the 20th century, the shortage of females and the resulting excess of males have produced a marriage squeeze in China. At the 1990 census, for instance, there were 19 million unmarried people between the ages of 25 and 44, and of these 86% were men. The sex ratio of the marriageable-age population (aged 15 and over) was 144 males per 100 females in 1990 and 145 in 2000 (PCO, 1993, 2002). This imbalance may be due to the excess female mortality in childhood and at reproductive ages observed over the past decades in cohorts born between the 1940s and the late 1970s. Nevertheless, the proportion of never married men remains quite low. In 1990, only 3.2% of those aged 50 and over were never married. In the future, China will be confronted with a severe lack of females, which will entail that million of young males will not be able to find a spouse (Coale and Banister, 1994; Tuljapurkar *et al.*, 1995; Das Gupta and Li, 1999; Jiang *et al.*, 2005; Poston and Glover, 2005).

Compared with its large total population, the number of Chinese international migrants is small and its impact on China's total population size and structure is negligible. As a result, the current principal factors that influence China's marriage squeeze include: abnormally high sex ratio at birth and excess female child mortality, shrinking birth cohort size and the traditional male-older-than-female mating pattern, as well as rapidly increasing divorce and remarriage levels. Strong son preference and low social status of females in China give rise to discriminatory practices against girls, and eventually lead to high sex ratios at birth and excess female child mortality (Attané, 2004) with the result that males significantly outnumber females when they enter the marriage market. The general age gap between spouse remains 2 to 3 years with males senior to their spouse (Das Gupta and Li, 1999). The decrease of subsequent cohort sizes caused by family planning policies leaves fewer females than males of the same age and places males in a marriage squeeze.

In recent years, following economic reforms and socioeconomic development, Chinese divorce and remarriage levels have also risen. In 2002, 7.79 million couples registered for marriage, among whom 14.40 million people were first married and the other 1.17 million people, or 7.52 percent, were remarried (NSB, 2005). When males are marriage-squeezed, the chance for female divorcees and widows to remarry increases, whereas widowers and male divorcees encounter much more difficulty in remarrying, especially when they seek to marry young unmarried females. The remarriage of divorcees and widows affects the marriage market. When males are marriage-squeezed, an increase in the union of remarried males and first married females tightens the squeeze in the first marriage market, and that of first married males and remarried females alleviates the male squeeze at first marriage (Deng, 1999).

At the outset we need a measure of the extent of the squeeze. Previous literature has focused mainly on various sex ratios as indices (Akers, 1967; Chen, 2004; Goldman *et al.*, 1984; Guo and Deng, 1998; Veerers, 1988). However, these indices failed to depict the general supply and demand in the marriage market by focusing only on the sex ratio and by limiting the marriageable ages to a very small interval. From another perspective, Schoen (1983) employed single and double sex marriage life tables to construct two indices: Marriage Squeeze Index and the Proportion of Marriages lost to the Marriage Squeeze, but he pointed out that these two indices were not sensitive to the marriage market and could not reflect the squeeze accurately. Tuljapurkar *et al.* (1995) applied the sex ratio of potential first-marriage partners to measure the difference in relative numbers, but

underestimated the squeeze extent because of assumptions on the indices employed that we describe below.

When applying the afore-mentioned indices to measuring China's marriage squeeze, most studies have focused on the excess numbers of males over females, but few have investigated future marriage markets or explored the effect of rising remarriage levels on the marriage market. In this chapter, we adjust the index used by Tuljapurkar *et al.* (1995) to include the effect of remarriage on marriage squeeze, and analyze China's potential marriage squeeze from 2001 to 2050. The chapter is divided into three sections. First, we introduce, evaluate and adjust the index used by Tuljapurkar *et al.* (1995), develop new ones to take remarriage into account, and introduce the data to be used. Second, we measure China's marriage squeeze with these adjusted and newly developed indices, and investigate the impact of son preference and remarriage on China's first marriage market. We conclude with a discussion of likely social consequences brought about by the male marriage squeeze.

## 2. Methods and data

### 2.1. Methods

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

Take the year 2000 as the baseline year, and suppose that the numbers of males and females aged $x$ in the baseline year are $P_{2000}^{m,x}$ and $P_{2000}^{f,x}$ with first married males and females $P_{2000}^{m,x,1}$ and $P_{2000}^{f,x,1}$ respectively.

Among remarriages, the number of male remarriages to first married females is $P_{2000}^{m,x,2}$, and first married females married to remarried males is $P_{2000}^{f,x,2}$. First marriage frequencies for males and females are $F_{2000}^{m,x,1}$ and $F_{2000}^{f,x,1}$ respectively. In a future year $i$, the numbers of males and females aged $x$ are $P_i^{m,x}$ and $P_i^{f,x}$. Then,

$$F_{2000}^{mx,1} = \frac{P_{2000}^{m,x,1}}{P_{2000}^{m,x}} , \quad F_{2000}^{f,x,1} = \frac{P_{2000}^{f,x,1}}{P_{2000}^{f,x}}$$

The potential first marriage sex ratio is $R_f$. There is no maximum legal age for marriage, and commonly those who are not married and over 50 years old are regarded as life-long unmarried (United Nations, 1990). Tuljapurkar et al. (1995) fixed the age upper bound at 50. And in the 2000 census data, the smallest age for first marriage is 14. According-ing to the definition of $R_f$ by Tuljapurkar et al. (1995), for the 2000 census data, we obtain

$$R_f = \frac{\sum_{x=14}^{50} P_i^{m,x} \times F_{2000}^{m,x,1}}{\sum_{x=14}^{50} P_i^{f,x} \times F_{2000}^{f,x,1}}$$

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

In this chapter, we adjust the index used by Tuljapurkar et al. (1995) by taking into account the age-specific sex ratios in the baseline

year. Let $SR_{2000}^x$ denote the sex ratio of males to females aged $x$ in 2000. That is,

$$SR_{2000}^x = \frac{P_{2000}^{m,x}}{P_{2000}^{f,x}}$$

Since we consider remarriage in this chapter, we set the upper age limit at 60 years old. Incorporating these age-specific sex ratios into $R_f$ we obtain the adjusted potential first marriage sex ratio $R$, defined as

$$R = \frac{\sum\limits_{x=14}^{60} P_i^{m,x} \times SR_{2000}^x \times F_{2000}^{m,x,1}}{\sum\limits_{x=14}^{60} P_i^{f,x} \times F_{2000}^{f,x,1}} \qquad (1)$$

The effect of remarriage on the first marriage market includes the effects of both male and female remarriage. In the 2000 census data, let $F_{2000}^{m,x}$ denote the marriage frequency for males age $x$ who are either first married or remarried to a first married spouse, and $F_{2000}^{f,x}$ denote the marriage frequency for females aged $x$ who are either first married or remarried to a first married spouse, then we obtain:

$$F_{2000}^{m,x} = \frac{P_{2000}^{m,x,1} + P_{2000}^{m,x,2}}{P_{2000}^{m,x}} \, , \; F_{2000}^{f,x} = \frac{P_{2000}^{f,x,1} + P_{2000}^{f,x,2}}{P_{2000}^{f,x}}$$

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

$$R^{f1} = \frac{\sum\limits_{x=14}^{60} P_i^{m,x} \times SR_{2000}^x \times F_{2000}^{m,x}}{\sum\limits_{x=14}^{60} P_i^{f,x} \times F_{2000}^{f,x,1}} \qquad (2)$$

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

$$R^{ml} = \frac{\sum\limits_{x=14}^{60} P_i^{m,x} \times SR_{2000}^x \times F_{2000}^{m,x,1}}{\sum\limits_{x=14}^{60} P_i^{f,x} \times F_{2000}^{f,x}} \qquad (3)$$

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

$$M = \sum_{x=14}^{60} P_i^{m,x} \times SR_{2000}^x \times F_{2000}^{m,x,1} - \sum_{x=14}^{60} P_i^{f,x} \times F_{2000}^{f,x,1} \quad (4)$$

$$M^{f1} = \sum_{x=14}^{60} P_i^{m,x} \times SR_{2000}^x \times F_{2000}^{m,x} - \sum_{x=14}^{60} P_i^{f,x} \times F_{2000}^{f,x,1} \quad (5)$$

$$M^{ml} = \sum_{x=14}^{60} P_i^{m,x} \times SR_{2000}^x \times F_{2000}^{m,x,1} - \sum_{x=14}^{60} P_i^{f,x} \times F_{2000}^{f,x} \quad (6)$$

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

$$P = \frac{\sum_{x=14}^{60} P_i^{m,x} \times SR_{2000}^x \times F_{2000}^{m,x,1} - \sum_{x=14}^{60} P_i^{f,x} \times F_{2000}^{f,x,1}}{\sum_{x=14}^{60} P_i^{m,x} \times SR_{2000}^x \times F_{2000}^{m,x,1}} = \frac{R-1}{R} \quad (7)$$

$$P^{f1} = \frac{\sum_{x=14}^{60} P_i^{m,x} \times SR_{2000}^x \times F_{2000}^{m,x} - \sum_{x=14}^{60} P_i^{f,x} \times F_{2000}^{f,x,1}}{\sum_{x=14}^{60} P_i^{m,x} \times SR_{2000}^x \times F_{2000}^{m,x}} = \frac{R^{f1}-1}{R^{f1}} \quad (8)$$

$$P^{ml} = \frac{\sum_{x=14}^{60} P_i^{m,x} \times SR_{2000}^x \times F_{2000}^{m,x,1} - \sum_{x=14}^{60} P_i^{f,x} \times F_{2000}^{f,x}}{\sum_{x=14}^{60} P_i^{m,x} \times SR_{2000}^x \times F_{2000}^{m,x,1}} = \frac{R^{ml}-1}{R^{ml}} \quad (9)$$

## 2.2. Data

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

## 2.2.1. First marriage frequencies

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

The age-sex-specific first marriage frequencies are shown in Figure 1.

**Figure 1 Age-sex-specific first marriage frequencies, China, 2000**
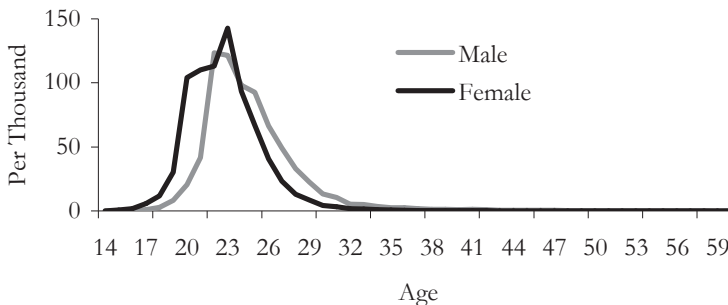


Source: Calculated from 10 percent of the 2000 census long forms (PCO, 2002).

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

## 2.2.2. Remarriage

The census data do not directly include remarriage information for the year prior to the standard reference time of the census. But according to the first marriage information, individual marital status and relations of household members to the household head on the long form, we can derive the numbers of remarriages to first marriage

spouses during the year before the reference time. These calculations give that remarried males who are married to first marriage females amount to 1.94% of the sum of first married males and remarried males who are married to first marriage females, and remarried females amount to 2.38% of the sum of first married females and remarried females who are married to first marriage males. But the age-specific proportions vary, and roughly increase with increasing ages, as suggested in Figure 2.

**Figure 2 Age-sex-specific proportions of remarriages (to first married spouse) to all marriages (first marriages and those married to first married spouse), China, 2000**
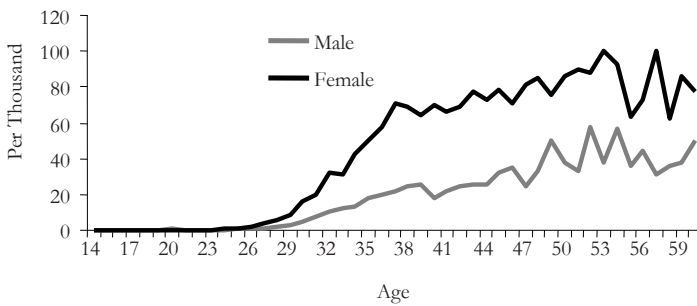


Source: Calculated from 10 percent of the 2000 census long forms (PCO, 2002).

## 2.2.3. Projected future population

The population projection involves data from the baseline year and fertility and mortality data in the future. The underreporting rate for the fifth census of 2000 is 1.81% (PCO, 2002). According to international standards, this rate is reasonable (Walfish, 2001), but there is severe underreporting and over-reporting for cohorts of different ages (Lavely, 2001). In order to clarify the population size and structure, Li *et al.* (2006b) analyze and adjust the census data. We take these adjusted data as the baseline.

The sex ratio at birth deviates far from the norm in 2000, although the Chinese government has taken economic and policy measures in an attempt to eliminate the context for strong son preference in order for the SRB to become more normal (Li *et al.*, 2006a). In order to investigate the effect of strong son preference, in the form of high SRB and excess female child mortality, on the future marriage market, we examine three scenarios. Scenario A assumes parity-specific SRBs have returned to normal at 106 in 2000, and remain stable until the end

of the projection period. Scenario B assumes that a series of step-by-step measures by the government take effect so that parity-specific SRBs decline linearly and gradually from 107.1, 151.9 and 159.4 for first, second, third and over births respectively, which are the levels observed at the 2000 census, to normal at 106 in 2030 after which they remain normal. This is the scenario that may be closest to reality in the future. We take it as the principal scenario and mainly discuss the numerical results for this scenario. Scenario C assumes the parity-specific SRBs remain constant at the high levels of 2000 until 2050. Since we investigate the impact of son preference on marriage squeeze, we eliminate the likely effect of different fertility levels on the marriage squeeze and keep the total fertility rate at 1.85 during the whole period in all three scenarios, with 0.99 for first birth, 0.85 for second birth and 0.01 for third birth. In respect to mortality level and pattern, the life expectancies at birth in 2000 are fixed at 70.0 and 73.0 for males and females respectively, and at 79.0 and 83.5 respectively in 2100, with the assumption of a linear change (Li and Jiang, 2005). The population size projected for the future is 1,436 billion according to scenario A, 1,414 billion according to scenario B and 1,401 billion according to scenario C (Figure 3), the difference being 35,2 million between A and C, 22,7 million between A and B and 12,5 million between B and C.

**Figure 3 Projected populations, China, 2001-2050 (In billions)**
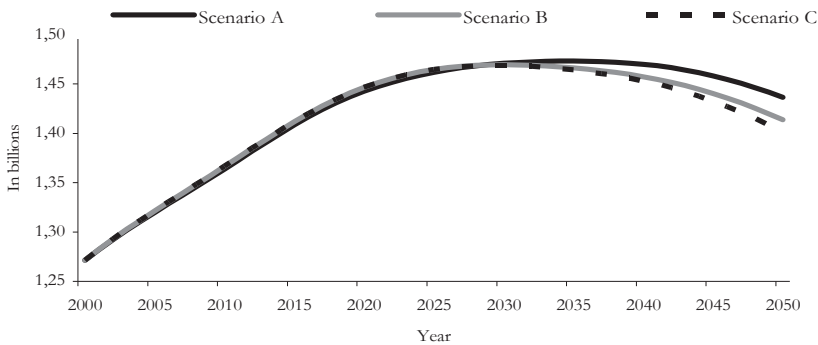


## 3. Marriage squeeze in the future

Figures 4 to 6 represent the potential sex ratios (R), the proportions (P) and numbers (M) of excess males, respectively, in the marriage market from 2001 to 2050, with A, B, and C denoting respectively scenarios A, B, and C of the population projections. Since

scenario B is the most probable scenario for future population, we discuss the male squeeze in the marriage market mainly in terms of BR (that is the potential sex ratio in the B scenario), BP (the proportion of excess males in the B scenario) and BM (the number of excess males in scenario B).

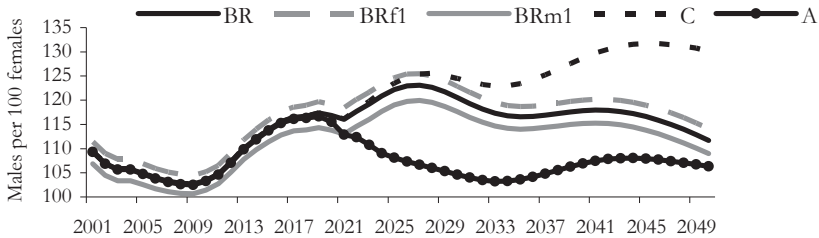**Figure 4 Potential sex ratios in the future marriage market, China, 2001-2050 (Number of males per 100 females)**



**Figure 5 Proportions of excess males in the future marriage market, China, 2001-2050 (In percent)**
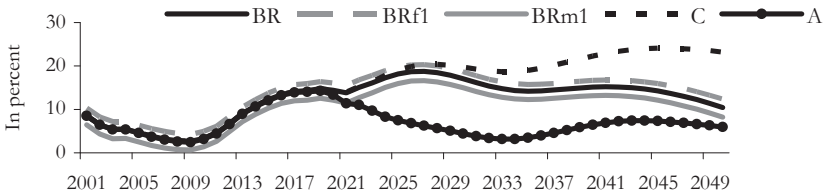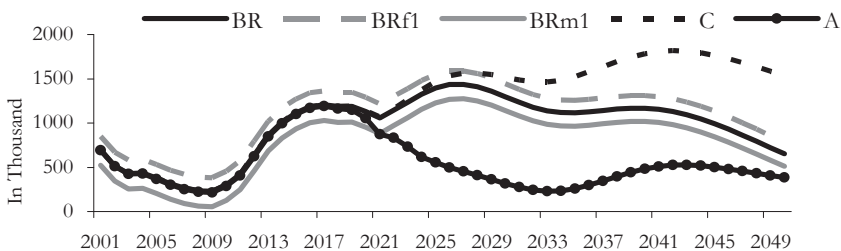


**Figure 6 Numbers of excess males in the future marriage market, China, 2001-2050 (In thousand)**

### 3.1. Squeeze in the future marriage market

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

Tuljapurkar *el al.* (1995) attributed the local peak around 2000 to declining fertility. Subsequently, since fertility has declined to a relatively lower level and remained there, the driving force of falling fertility which causes BR to rise ceases, leading to the decline of BR during this period. In fact, the national crude birth rates (CBRs) and total fertility rates (TFRs) fluctuated, and fluctuated upward in 1981-1982 and 1986-1987. TFRs increased from 2.24 in 1980 to 2.86 in 1982, and declined to 2.20 in 1985, then up to 2.59 in 1987 and back to 2.35 in 1989. Due to the mating pattern of males-older-than-females, the rising TFRs, to a certain extent, bring down the BR. Furthermore, both the indices $R_f$ used by Tuljapurkar *et al.* (1995) and the adjusted index $R$ used here are affected by first marriage frequencies in the baseline year and by other birth cohorts, since the age range includes those under 50 in Tuljapurkar *et al.* (1995) and under 60 in this chapter. So the decline before 2009 is due to the confluence of many factors. After 2009, the large-scale increase in BR is primarily affected by high SRB.

During the first decade of the 21st century, according to scenario B, the adjusted potential first marriage sex ratio of males to females is under 1.1, not very large. In the following decade, it goes up and fluctuates around 1.15 for most of the time, indicating that there are around 115 males for every 100 females. The ratio peaks in the late 2020s, with about 125 first married males to 100 first married females. Subsequently the ratio declines and remains stable from the early 2030s to the mid-2040s. After 2013, the proportion of excess males who cannot find appropriate first marriage partners among all males who are to be first married will not fall below 10% (scenario A excepted) and will be above 15% between 2015 to 2045. Excess males in the first marriage market will reach at least one million annually from 2015 and may exceed 1.2 million annually between 2017 and 2040.

### 3.2. The effect of son preference

The strict patrilineality, patriarchy and patrilocality, which have been prevalent throughout Chinese history entail that men are dominant in property inheritance, living arrangements, family lineage,

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

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

has the largest $R$, $P$, and $M$. During the 2030s, the proportion of excess males to potential marriageable males is around 20% and peaks at 25% in the 2040s with the annual excess males numbering around 1.6 million.

## 3.3. *The influence of remarriage*

At the end of 2000, the crude divorce rate in China (CDR) reached 1.8 per 1000, among the highest in Asia. Even though this is not as high as those observed in western countries, the absolute number of divorces ranks highest in the world due to the huge population size (Ye and Lin, 1998). Meanwhile, the high divorce rates are shifting from old-aged groups to middle-aged groups. In 1990 the age group with the highest proportion of divorcees relative to the total numbers of the group was the 55-59 age group at 10.3 per 1000. But in 2000 the proportions for the age groups 30 to 34, 35 to 39, 40 to 44 and 45 to 49 were 12.4, 15.4, 15.3, and 11.9 per 1000 respectively (PCO, 2002). Divorce is not usually an action taken against marriage itself, but is a confluence of personal, sociocultural, and economic factors, since most divorcees choose to remarry (Ye and Lin, 1998).

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

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

## 4. Conclusion

The extent of male squeeze in China's marriage market in the next five decades will depend on the future trend in sex ratio at birth and on

the possibility for men to marry divorced or widowed spouses.

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

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

Third, the sex ratios of the cohorts born after 2000 will exert a significant influence on the future marriage market. It must therefore be a priority to curb son preference, and to improve the living environment for girls.

Fourth, of the total marriage market, remarriage (to never married spouse) constitutes only a small proportion of the total first marriage market, but it exerts a great impact on the numbers and proportions of excess males.

When there is a marriage squeeze in a marriage market, ages at first marriage for males and females may change to adjust for the squeeze, leading to an increasing age gap between spouses at marriage. But these changes themselves cannot solve the marriage squeeze problem in China, nor can large-scale international migration (Chen, 2004). One possibility is for the excess males to remain life-long bachelors. But a large number of forced bachelors may cause serious social disruption, and bring about new social and political challenges (Attané, 2005; Chen, 2004; Das Gupta and Li, 1999; Poston and Glover, 2005). Moreover, as already observed in some remote areas in China, the lack of marriageable women may encourage their trafficking for a marriage purpose. Female shortage, reflected by the male marriage squeeze, indicates deprivation of basic human rights of birth and survival for females. The significant social consequences of son preference as reflected in the marriage squeeze should be a high priority area for social and economic research.

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# Marriage Migration between Vietnam and Taiwan: A View from Vietnam

Graeme HUGO, NGUYEN THI Hong Xoan

## 1. Introduction

The last two decades have seen a massive increase in the scale and complexity of international migration in Asia (Hugo, 2003). Among the most striking features is the fact that in many important flows, women outnumber men. Research into female mobility has focused strongly on that associated with labour migration (Lim and Oishi, 1996; Huang *et al.*, 2005). A smaller but none the less significant flow has involved the migration of Asian women in order to marry men resident in other countries and this has received somewhat less attention from researchers.[1] Usually this movement involves commercial transactions in which intermediaries play an important role (Wang and Chang, 2002) and it often results in women moving from a less developed, to a more developed, country within or outside the Asian region.

Marriage migration between nations has a long history. For example, throughout the history of European settlement in Australia there have been periods when males have significantly outnumbered females and as a result there have been programs to bring in women (Hugo, 1995). Historically, however, they have tended to be women from the same or similar origins and language group as the males they emigrated to marry. Contemporary international marriage migration of Asian women, however, is different in a number of ways. Firstly, it usually involves women moving to a country where their husband is from a quite different ethno-linguistic origin. Secondly, the countries of destination do not always experience a significant imbalance between the numbers of males and females of marriageable age, as was the case on

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[1] It should be mentioned, however, that the distinction between labour and marriage migration in Asia is by no means complete and there is a considerable overlap (Piper and Roces, 2003).

frontier areas in the past. Although in a few cases, the women may move to regions within those countries where there is an imbalance such as mining or agricultural areas as is the case with the Filipino women moving to Australia (Hugo, 1995) and increasingly movement to China  and India where male preference has resulted in larger numbers of young adult males than females.

The increase in marriage migration of women in Asia has raised a number of important issues. In particular some evidence of exploitation of the women involved has been of concern. In addition, it has considerable consequences for the make up of population in both origin and destination areas. Similarly, the migration develops networks between origin and destination along which flow remittances, information and other forms of migration.

The present chapter focuses on one of the fastest growing streams of marriage migration in Asia–that of women from Vietnam moving to marry Taiwanese men (Wang and Chang, 2002; Tsay, 2004). The perspective adopted is largely from the origin and draws on primary research conducted in southern Vietnam. The chapter begins by outlining the main levels of, and trends, in marriage migration to Taiwan and explores some of the structural factors shaping that migration. It then draws upon a field study to examine the process of migration and some of the impacts of the movement on the families and communities of origin. It concludes by examining some of the policy implications of the findings.

## 2. The national and regional context

Vietnam is one of the larger nations of South-East Asia with a population of 84 million in 2005 growing at an annual rate of 1.3 percent (UNESCAP, 2005). Although its economy is growing rapidly–+8.4 percent in 2005 (ADB, 2006), per capita GNI remains low (US$480 in 2003) and the incidence of poverty is high, 28.9 percent in 2002 and even higher in rural areas (35.6 percent) (ADB, 2005). Vietnam gained full independence in 1975 after many years of war which left devastation and economic crisis. In response Vietnam began the transition from a centrally planned to a multi-sector economy and instituted a policy of *Doi Moi*.[2] This has had a profound impact on social and economic development of the nation. There was a substantial rise in foreign investment, living standards increased and Vietnam

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[2] In 1986, Vietnam adopted renovation policies associated with market liberalization. *Doi Moi* is the transition from a centrally planned protected economy to a multi-sector open economy.

was opened to a wide array of outside influences. However the gap between rich and poor and between rural and urban areas widened and as a result there was an acceleration of rural and urban migration and contract labour migration overseas. Another dimension of the increase in population mobility has been an increase in the incidence of international marriage migration since the mid 1990s.

The massive increase in mobility in Asia (Hugo, 2005) has provided ample opportunity for international marriage with millions of young single Asians moving as students, tourists, unskilled labour migrants, business people and skilled migrants between nations (Cottrell, 1990). However migration for the express purpose of marriage has also increased massively in the region. Notwithstanding that, Piper (2003) has persuasively argued that international migration for work and international migration for marriage are strongly inter-related and cannot be regarded as discrete categories. It is possible to identify a specific type of marriage migration involving the selection of international brides through agencies (Piper and Roces, 2003). Hence, in 2004 the number of South Korean men who married foreign women hit 25,594, more than twice the figure for 2002 of 11,017 (*Asian Migration News*, 15-31 January 2006), the majority being arranged marriages. The number of foreigners moving to Korea increased by 36 percent from 44,416 in December 2003 to 60,214 in February 2005 (*Asian Migration News*, 15-31 March 2005). In 2003 one in twelve marriages in South Korea was international with most brides coming from other Asian countries (Chinese, Japanese, Vietnamese, Filipinos, Thais and Mongolians).[3] One in four Korean men in rural areas marrying in 2004 took a foreign bride–of the total of 1,814–879 from China, 560 from Vietnam, 195 from the Philippines and the others from Mongolia, Thailand and Uzbekistan.[4] On the other hand, in 2003 some 6,444 Korean women married foreign men including 2,613 Japanese, 1,237 Americans and 1,199 Chinese.[5] There also has been significant marriage migration to Japan (Piper, 1999). The numbers of foreign spouses and children of Japanese in 2004 was 257,292 (Iguchi, 2006).

## 2.1. Marriage migration to Taiwan

While marriage migration is becoming more significant in several Asian nations, no country has been more influenced by the phenomenon than Taiwan. Table 1 draws together data from several sources

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[3] *Asian Migration News*, 16-30 September 2004.
[4] *Asian Migration News*, 16-30 June 2005.
[5] *Asian Migration News*, 15-31 January 2005.

and shows the number of marriages to foreigners in Taiwan over the 1994-2003 period.

**Table 1 Marriages to foreign spouses, Taiwan, 1994-2003**

| Year | China | South-East Asia | Vietnam | Total | Marriages to foreign spouses (as % of all marriages) |
|------|-------|-----------------|---------|-------|------------------------------------------------------|
| 1994 | 7,885  | 4,899  | 530    | 12,784 | na   |
| 1995 | 9,180  | 6,574  | 1,969  | 16,754 | na   |
| 1996 | 9,349  | 11,212 | 4,113  | 20,561 | na   |
| 1997 | 8,951  | 16,009 | 9,060  | 24,960 | na   |
| 1998 | 12,451 | 10,454 | 5,035  | 22,905 | 15.7 |
| 1999 | 17,589 | 14,674 | 8,482  | 32,263 | 18.6 |
| 2000 | 23,628 | 21,338 | 13,863 | 44,966 | 24.8 |
| 2001 | 26,797 | 19,405 | 12,417 | 46,202 | 27.1 |
| 2002 | 28,906 | 20,107 | na     | 49,013 | 28.4 |
| 2003 | 35,473 | 19,643 | na     | 55,116 | 32.2 |

Notes: 1994-7 inclusive data are for visas granted to foreign spouses. 1998-2003 data are for registered marriages.

Sources: Wang and Chang, 2002; Tsay, 2004; Do *et al.*, 2003.

The large scale of international marriage is indicated by the fact that in 2003 one third of all marriages in Taiwan involved a foreign spouse. This compares with substantially less than 5 percent a decade earlier. It is apparent that the bulk of these marriages are of Taiwanese men to foreign brides (Wang and Chang, 2002). Of all foreign marriages up to 2003, 91.4 percent were of this type but 96 percent of those to South-East Asians and 99.8 percent of those to Vietnamese involved foreign females (Tsay, 2004). Table 1 indicates that the main source of foreign spouses were from China where the cultural and ethno-linguistic linkage is obviously important. It is true too that some of the marriage migration from South-East Asia also involves spouses of Chinese ancestry. Nevertheless it is apparent that the majority of the South-East Asians are of different ethno-linguistic background to their Taiwanese partner. In the Vietnamese case, Tsay (2004: 185) says that there…

> "… is the strong feeling among Taiwanese of the similarity between Vietnam and Taiwan in terms of the people, culture, religion and way of life. It is often mentioned that the appearance and complexion of Vietnamese are close to Taiwanese. They also have similar religious beliefs and ways of ancestor worship. Most critically, Taiwanese have the deep impression that Vietnamese women were bought up in patriarchal families and were socialized well in forming their attitudes toward the family, children, parents and husband"

Statistics on the marriage of Vietnamese women to Taiwanese men, at the Vietnam end of the process, are maintained by the Taipei Economic and Cultural Offices (TECO) in Hanoi and Ho Chi Minh City. Unfortunately data are only currently available from the latter although it is true that the bulk of women involved are recruited from the southern part of the country and the numbers registering at the Hanoi office are likely to be small. Between 1995 and September 2002, there were 58,279 such visas issued from the TECO in Ho Chi Minh City (Do *et al.*, 2003, 38) and in May 2004 officers reported that the running total was in the vicinity of 70,000.[6] In addition, it is believed there are about 5,000 visas issued at the Hanoi TECO (Do *et al.*, 2003, 38). The bulk of all these visas have been issued in the last five years with the numbers reaching a peak of 12,417 in 2001.

As is true of most migration in Asia, the marriage migrants are drawn from particular communities. The brides are not recruited from all areas around Vietnam but are overwhelmingly from rural areas in the Mekong Delta region, which has some of the poorest communities in Vietnam (Figure 1).

**Figure 1 Province of origin of Vietnamese marriage migrants to Taiwan, 1994-2002 (number of women)**
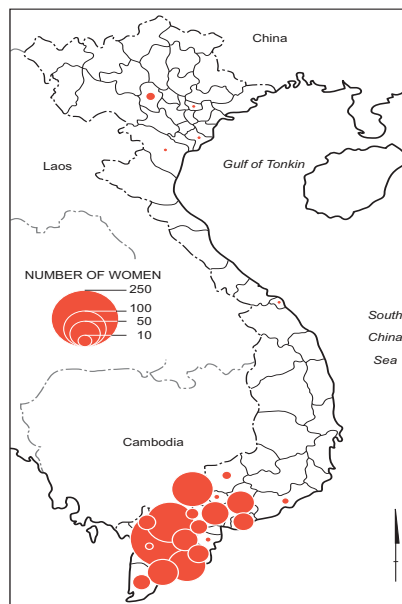


Source: Based on data in Do *et al.*, 2002.

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[6] Unpublished data from Ho Chi Minh City TECO, May 2004.

Only 5 percent of the women come from Ho Chi Minh City itself (Do *et al.*, 2003). More than half of the women (56 percent) are drawn from just three rural provinces in the Mekong Delta–Can Tho (30 percent), Dong Thap (15 percent) and Tay Ninh (11 percent). This reflects the operation of two elements: The activities of recruiters are concentrated in particular poor communities where it is believed poverty would make women more ready to engage in marriage migration; and there are also strong network effects whereby when some women from a community are recruited they act as leaders to others.

These two effects are common in all labour migration recruiting across South-East Asia and means that the impacts of labour migration in origin countries is quite spatially concentrated (Hugo, 1995)

In contrast, Figure 2 indicates that the men who the Vietnamese brides join are more widely distributed throughout Taiwan.

**Figure 2 Province of origin of Taiwanese husbands of Vietnamese marriage migrants, 1994-2002 (number of men)**
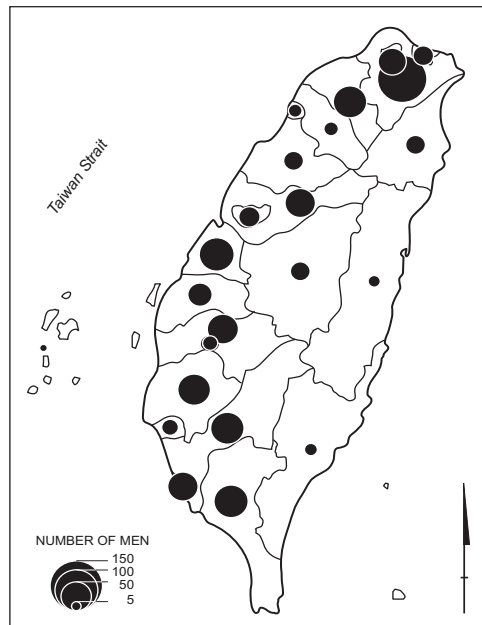


Source: Do *et al.*, 2002.

Tsay (2004) contrasts the regions of origin of husbands of Chinese brides and those of South-East Asian brides. He shows that the former are concentrated mainly in major cities while the latter are generally in rural areas and more widespread throughout the country. He maintains that this reflects a substantial difference in socioeconomic status of the

two groups of husbands. While all men taking foreign brides are drawn disproportionately from the less educated and disadvantaged, this is especially the case for those marrying women from South-East Asia.

One of the significant impacts of the marriage migration phenomenon in Taiwan is that an increasing proportion of births in Taiwan are born to mixed marriage couples. In 2002, 12 percent of all births in Taiwan were in this category (Eyton, 2003) but by 2003 this had already increased to 13.4 percent (Tsay, 2004). It would be interesting to establish the extent to which there is higher fertility in mixed marriage couples in Taiwan given the very low levels of fertility that prevail in that country.[7] The proportion of births to mixed marriage couples doubled from 7.6 percent in 2000 (Tsay, 2004).

While Taiwan is the major destination of Vietnamese female marriage migrants there are also significant flows to other Asian countries. It was shown earlier that Vietnamese women are part of the substantial flow of foreign brides into South Korea. It has been reported that between 1991 and 2001, 10,400 Vietnamese women were "sold to men in China as mail order brides".[8] The bulk of these brides are drawn from the northern part of Vietnam (Dang *et al.*, 2003). Singapore has recently become a destination of Vietnamese female marriage migrants. Dang (2006) estimates that the numbers of Vietnamese women who have moved as marriage migrants to Taiwan is 110,000, South Korea 6,000 and Singapore 3,000. He suggested that there are differences in the types of women going to each destination but that they are drawn from less educated, poorer women.

Before examining the process of marriage migration from the perspective of sending communities we will examine some of the structural elements underlying the process.

## 2.2. Demographic social and economic underpinnings of migration

Historically, marriage migration of women has been strongly influenced by an imbalance between the numbers of men and women in the marriageable ages–a so-called "marriage squeeze". Reactions to a marriage squeeze can be for the age gap between husband and wife to increase as those in the larger group are forced to seek partners in younger and younger age groups. However, they also can seek potential partners in other countries as was the case in the traditional migration countries of Australia, the United States and Canada where males

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[7] The TFR reached 1.2 in 2005 (PRB, 2005).
[8] *Straits Times* (Singapore), 15 May 2001.

dominated in most migrations up to the early post-war years. Hence, a marriage squeeze can operate as a "pull" factor to marriage migrants. However, also an excess of one gender can also provide potential for a "push" of emigration as well. To what extent are such imbalances evident in Taiwan and Vietnam?

Goodkind (1997) has demonstrated that the Vietnamese are experiencing a "double marriage squeeze". On the one hand, Vietnam females, due to impacts of war and male dominated emigration, outnumber males. On the other, the Viet Khu[9] based overseas are dominated by males and have a shortage of females. Of relevance here is the shortage of males in Vietnam evident in the age-sex pyramid (Figure 3)

**Figure 3 Age-sex structure, Vietnam, 2000**
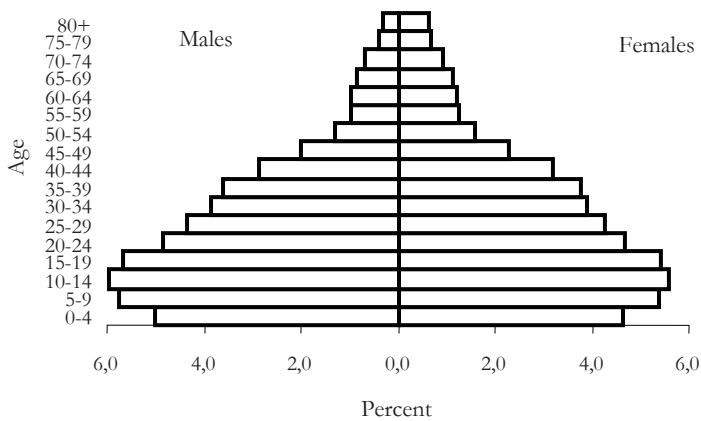


Source: International Data Base, International Programs Center, U.S. Bureau of the Census.

Females outnumber males in all ages over 30. In the ages 30-49, the sex ratio is 93.5 while overall sex ratio is 97.5. It is apparent, however, that this factor is of less significance than in the past since in all ages under 30 in Vietnam, males now outnumber females. On the other hand, in Taiwan there is a larger number of males than females in all age groups under 55 (Figure 4). Hence, there are some marriage squeeze effects in Taiwan which would be of relevance to helping to understand why Taiwanese males would seek brides internationally.

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[9] Overseas Vietnamese.

**Figure 4 Age-sex structure, Taiwan population, 2000**
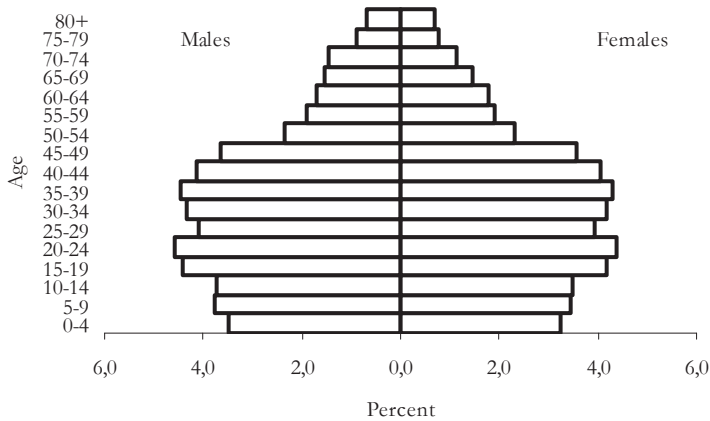


Source: International Data Base, International Programs Center, U.S. Bureau of the Census.

While demographic "marriage squeeze" factors are an element in the marriage migration between Vietnam and Taiwan, there are several underlying forces which are influencing the rapid expansion of the phenomenon some of which can be briefly referred to here. One such element is that the marriage migration has partly resulted from the strong transnational linkages established by Taiwan with other East and South-East Asian countries through expanded investment in those areas and a strong pattern of interchange of people, goods, finance and ideas developed.

At the Vietnam end there is no doubt that the high incidence of poverty in the South-western Region has been a factor in explaining the marriage migration. Although the region is one of the most fertile parts of the country, it experiences frequent natural disasters such as flooding during the raining season and severe drought during the dry season. Levels of education are very low in comparison with the Red River Delta with enrolment rates being only a third of those in the Red River Delta (GSO, 2003). According to the National Living Standard Survey (LSS) in 2002, in Mekong Delta region, 23.4 percent of households were under the poverty line and 17.8 percent had no property (Tran, 2004). In the five provinces which are the main origins of marriage migrants, the poverty rate is high–nearly 50 percent in An Giang Province (Table 2). Also, provision of health education and other essential services is very low. There are nearly 3,000 people in this area per doctor compared with less than 2,000 in the Red River Delta (GSO, 2003). Moreover, the proportion of women who are house-

wives and not in the workforce is the highest (33.6 percent and 30.2 percent respectively) in the country (GSO, 2005).

**Table 2 Poverty rate in the five studied Vietnamese provinces, 2002 (In percent of the total population)**

| N | Province | Poverty rate (%) |
|---|----------|------------------|
| 1 | Tien Giang | 30 |
| 2 | Vinh Long | 36 |
| 3 | Can Tho | 40 |
| 4 | Dong Thap | 42 |
| 5 | An Giang | 46 |

Note: Income threshold is 1,789,871 VND (120 USD) per person per year.

Source: Tran 2004.

To escape poverty and avoid the impact of natural disasters, many people (particularly the young generation) move out of their villages to more prosperous regions. Some migrate to cities such as Ho Chi Minh and others become involved in international migration. The out-migration rate in the Mekong Delta region was the sixth highest in the country (GSO, 2005) and it has the highest level of international marriage migration in Vietnam.

Another factor may be that the Mekong Delta region has multicultural characteristics. Besides Vietnamese culture, this region also has been influenced by Khmer, Chinese and Indian cultures and in the second half of 20th century, French and American influences were added (Tran, 2004). These diverse cultural influences have resulted in the people of the region being able to adjust to changes and integrate into new environments. People in this area have more freedom in decision making and experience less social pressure compared with those in the North and in Central Vietnam. Consequently, interethnic marriage has a long history in the area.

Another factor influencing marriage migration may be that Vietnam and Taiwan share common Confucianism which assigns different roles and responsibilities to men and women in the family. Males always have more power than females both in the family and in the society and when a woman gets married she is forced to obey and serve her family-in-law (Do *et al.*, 2003). Although this tradition has changed over time, it has been maintained by the Vietnamese especially in rural areas and among people with low levels of education. Hence, there is a perception of similarity in terms of culture among the Taiwanese (Tsay, 2004).

Another element has been the substantial transnational linkages which have developed between Taiwan and Vietnam. Taiwan is one of

the biggest investors in Vietnam. In 1993 Vietnam accounted for 36.5 percent of Taiwan's investment in South-East Asia (Table 3).

**Table 3 Taiwan investment in Vietnam, 1993-1998**

| Year | Amount (million USD) | Investment from Taiwan as % of total from South-East Asia |
|------|----------------------|------------------------------------------------------------|
| 1993 | 1583.96 | 36.5 |
| 1994 | 1083.78 | 27.2 |
| 1995 | 1081.46 | 33.1 |
| 1996 | 1004.76 | 17.1 |
| 1997 | 854.14 | 13.3 |
| 1998 | 1000.78 | 21.4 |

Source: Phan, 2005.

In 2000 there were around 2,000 Taiwanese companies working in Vietnam (Phan, 2005) and the number of Taiwanese people going to Vietnam for business and holidays has increased over time. In the last half of 1998 around 27,500 Taiwanese came to Vietnam. There are linkages between marriage migration and the strengthening economic relationship between the two countries.

In addition to changes within Taiwan, changes in the role and attitudes of women have been influential. It is apparent that contemporary young Taiwanese women are less willing than their mothers were, to enter into marriages whereby they are constrained by traditional patriarchal structures to remain at home, have children, look after aged parents-in-law and to give up many of the freedoms they enjoyed as educated young single women. This is particularly true in rural communities and is exacerbated by heavy out-migration of young women to cities. Dowry prices have also risen sharply in Taiwan. As a result, Eyton (2003) points out…

> "… rural poorly educated males in lacklustre jobs, possibly with unsociable hours and conservative views on what marriage should be … are looking to Mainland China and South-East Asia for their prospective spouses."

## 3. The National University of Ho Chi Minh City study

In 2004, the Department of Sociology in the School of Social Sciences and Humanities at the National University of Ho Chi Minh City initiated a study of Vietnamese marriage migration to Taiwan (This is raw, unpublished data obtained from the department and does not need to be included in the references) with the following objectives: (1) To provide an overview of marriage migration from Vietnam to Tai-

wan; (2) To analyze the determinants of that movement; (3) To analyze opinions regarding that migration; (4) To analyze the process of migration; and (5) To establish the impact of the migration on the women involved, the families and communities of origin.

The study was focused in the six provinces in Mekong Delta region shown in Figure 5, which are the main areas of origin of Vietnamese marriage migrants to Taiwan. Some other provinces in the South of Vietnam outside this region such as Tay Ninh which have a high rate of marriage migration were not included in the study.

The study had a number of components. The centrepiece was a questionnaire survey of 635 households with one or more daughters who had been married to Taiwanese men. The parents or guardians of the women were interviewed. The questionnaire contained 67 questions both structured and open. The questions addressed household composition, the migration process, the links maintained with the marriage migrant and the impacts that the migration has had on the household and on the marriage migrant herself. In addition, there were 460 short interviews with local youth aged between 13 and 25 in order to establish their attitudes toward the marriage migration to Taiwan. There were also a series of in-depth discussions carried out with key groups. Some 40 were with potential brides who had found Taiwan partners and were waiting to get married. Another 34 were with women who had returned from Taiwan to visit their families in Vietnam. There were eight in-depth discussions with women who had divorced their Taiwanese husbands and returned to Vietnam. In addition, there were 28 consultations with community leaders and local authorities in the region. Finally 23 focus groups were held with key groups to probe aspects of the marriage migration process, its impacts and attitudes toward it. Almost all of the Vietnam-Taiwan marriages are legal because without marriage certificates they cannot get a visa to go to Taiwan. The brides in this research all are legally married to Taiwanese men. It is apparent that there are also some marriage migrants who have moved as undocumented migrants but they are not included in this study.

**Figure 5 Location of surveyed provinces**



## 3.1. *The marriage migration process*

Wang and Chang (2002) have explained how the process of marriage migration between Vietnam and Taiwan has become commoditized. The Taiwanese men seeking a Vietnamese wife pay the marriage migration agent a fee of between US$7,000 and $10,000. They then visit Vietnam where they are "shown" and introduced to a number of potential brides. They then select a bride and if it can be arranged, they marry and the bride moves to Taiwan. A key element in the process is the substantial involvement of intermediaries. Usually there is a local small-scale sub-agent who is approached in Taiwan by the potential husband. The sub-agent usually works through a larger agency, which in turn links to a counterpart Taiwanese agency in Vietnam. At the Vietnam end a similar process operates with local sub-agents and matchmakers being connected with large Vietnamese agencies which in turn link to the Vietnam-based Taiwanese agencies. In addition to these intermediaries there is an array of other stakeholders involved– travel agents, brokers, travel providers, officials, interpreters, etc. who are involved in the process at the Vietnam end. The TECO in Ho Chi

Minh City reported in 1999 that they deal with around 250 matchmaking agencies (Tran, 1999).

This process of a complex web of brokers and intermediaries is typical of labour migration in Asian origin countries (Hugo, 2005). The "industry" involved in the labour and marriage migration processes in the region is of key significance in initiating, facilitating and sustaining migration within the region. It is an important element, which is resulting in the embedding of migration into the economy and society of the Asian region. The migration industry remains an understudied part of the Asian migration scene but it occupies a key position in the process of migration, not only in marriage migration.

There is much discussion in the literature about the issue of trafficking of women in the Asian region. There is no doubt that it is of significance but there is a tendency to incorrectly dichotomize moves into totally volitional moves and those where the mover is kidnapped and forced to move totally against their will. The reality in fact is more of a continuum between totally voluntary movements on the one hand and forced migration on the other. Many migrants who are not kidnapped in the conventional version of trafficking are by no means fully voluntary movers. Many are not given accurate information about their lot at the destination (Hugo, 2003). Others move purely at the instigation of their parents or other relatives, others are deceived and still others are kidnapped after their arrival in the destination. All of these scenarios have been observed in the marriage migration of Vietnamese women to Taiwan and elsewhere (Wang and Chang, 2002). There is considerable discussion in the media on the link between "mail order brides" and prostitution (Watkin, 1999).

In the survey of origin, parents of marriage migrants were asked for the reasons why their daughters had married Taiwanese men (Table 4). It will be noted that in two thirds of cases the reasons given were "to help the family" or "to make parents happy". This points to the strong patriarchal structure in the origin communities and the culture of children subordinating their own preferences to those of their parents. Indeed this is one of the characteristics which is prized by the Taiwanese men seeking to marry Vietnamese women (Tsay, 2004).

There is also some evidence from the results of the operation of social networks and cumulative causation (Massey *et al.*, 1993) whereby young women are persuaded to engage in marriage migration because relatives and friends have previously married Taiwanese men. Respondents were also asked who made the decision regarding the marriage migration.

**Table 4 Reasons for marrying Taiwanese men, 2004**

| Reason | Percent |
|---|---|
| To help the family | 61.6 |
| For a better life | 10.8 |
| To make parents happy | 6.3 |
| Don't like local men | 4.6 |
| Influence of friends | 3.7 |
| Other | 12.9 |
| Total | 100.0 |

Note: (n=630).

Source: Study of Vietnamese Marriage Migration to Taiwan, Department of Sociology, School of Social Sciences and Humanities, National University of Ho Chi Minh City, unpublished data, 2004.

As Table 5 indicates, the bride alone made the decision in 40.5 percent of cases but in a context where there is a strong cultural imperative to accede to parents' wishes this can be interpreted as many young women deciding to move in order to satisfy their family's rather than their own wishes. Nevertheless, there is strong parental involvement in the migration decision-making process with them making the formal decision in a third of the cases and being involved with their daughter's decision in another quarter. This isn't to say that many young brides don't see marriage migration to Taiwan as a way to improve their lives. Indeed several indicated this was the case. However, the reality is that the families, especially parents, are heavily involved in the process of marriage migration out of Vietnam. In the survey no cases were reported where parents have sold their daughters to traffickers against their will as was reported by Singhanetra-Renard (1992) in Thailand. Nevertheless, the Vietnamese parents generally receive US$1,000 to $2,000 at the time of the transaction from the Taiwanese husband as well as later remittances from Taiwan.

**Table 5 Marriage decision-maker, 2004**

| Decision Maker | Percent |
|---|---|
| The Bride | 40.5 |
| Parents | 33.7 |
| Parents and Bride | 23.9 |
| Other | 1.9 |
| Total | 100.0 |

Note: (n=630).

Source: Study of Vietnamese Marriage Migration to Taiwan, Department of Sociology, School of Social Sciences and Humanities, National University of Ho Chi Minh City, unpublished data, 2004.

Who moves? As Table 6 indicates, the marriage migrants were almost all aged under 30 at the time of marriage. Indeed over 70 percent

were aged less than 22. This contrasts with some other marriage migration streams such as that of Filipino women to marry Australian men where the women are often older and have frequently been married previously and have children by that early marriage (Jackson, 1988; 1989; Jackson and Flores, 1989).

**Table 6 Women age at marriage for those who married Taiwanese men, 2004 (in percent)**

| Age | Percent |
|-----|---------|
| 15-17 | 0.3 |
| 18-22 | 70.5 |
| 23-29 | 26.0 |
| 30+ | 3.2 |
| Total | 100.0 |

Note: (n=630).

Source: Study of Vietnamese Marriage Migration to Taiwan, Department of Sociology, School of Social Sciences and Humanities, National University of Ho Chi Minh City, unpublished data, 2004.

This is not the case for the Vietnamese women moving to Taiwan, almost all of who had never been married before. The average age difference between the brides and their husbands was 13 years (Study of Vietnamese Marriage Migration to Taiwan, Department of Sociology, School of Social Sciences and Humanities, National University of Ho Chi Minh City, unpublished data, 2004). Indeed some 82.2 percent of the Taiwanese husbands were aged 30 years or over. Tsay (2004) notes that Taiwanese marriage data for 2003 shows that while half of the brides from China were aged over 30, around 90 percent of those from South-East Asia were less than 30 years old. The mean age of South-East Asian brides was 23.6 years while that of their husbands was 37.9.

The women were on average more educated than the average for rural communities in southern Vietnam. Table 7 shows that over 60 percent had gone beyond primary school. They are also clearly more educated than their parents. The brides tend to have lower levels of education than their Taiwanese husbands, but the latter tend to have lower levels of education than the average in Taiwan. Tsay (2004) maintains that the Taiwanese husbands of South-East Asians, among which Vietnamese dominate, have lower education levels not only than those men marrying Taiwanese women but also than those men marrying women from China.

**Table 7 Educational level of brides who married Taiwanese men and their parents, 2004 (in percent)**

| Educational level | Parents | Bride |
|---|---|---|
| No schooling | 9.4 | 0.9 |
| Primary | 59.0 | 35.1 |
| Secondary | 21.8 | 50.3 |
| High School | 9.7 | 12.8 |
| Tertiary | 0.1 | 0.9 |
| Total | 100.0 | 100.0 |

Source: Study of Vietnamese Marriage Migration to Taiwan, Department of Sociology, School of Social Sciences and Humanities, National University of Ho Chi Minh City, unpublished data, 2004.

More than a half of the women were employed outside the home in Vietnam before they became marriage migrants. In Table 8, 29.6 percent were in the "other" category in occupation prior to moving and a significant number of these were students. Most striking in the table is that the proportion of women involved in "housework" at the destination was three times higher than the proportion thus engaged before they migrated. This reflects the imperative among many of the Taiwanese men seeking a Vietnamese bride that their wife fulfils the traditional role of women in Taiwan of being based in the home, caring for her husband, children and often the elderly relatives of her husband. Huang (2006) reports a respondent, Taiwanese potential husband of a Vietnamese bride not being sure about whether they should hire a migrant worker as a domestic or the marry a migrant spouse. Moreover one of the complaints received from some of the women after their arrival in Taiwan was that they felt they are excessively tied to the home and their wishes to improve their lives by migration were not being fulfilled. It will be noticed that while 15.3 percent of the women worked in farming in Vietnam only 1.6 percent did so in Taiwan. There were some women who found that the work expected from them by their husbands both outside and inside the home was excessive. Indeed there were several complaints of women being seen as house servants, caregivers and "baby making machines" rather than individuals. One respondent, Phuong, found that her life was as hard in Taiwan as it had been in Vietnam:

> "My husband turned out to be a farmer. I was doing the same work I did in Vietnam. We started at five in the morning and stopped at two. I didn't speak the language. I missed home and was very lonely."

**Table 8 Occupation of women who married Taiwanese men before and after marriage, 2004 (in percent)**

| Occupation | Before marriage | After marriage |
|---|---|---|
| Housework | 16.7 | 52.4 |
| Factory worker | 16.4 | 17.9 |
| Farming | 15.3 | 1.6 |
| Selling | 9.1 | 7.3 |
| Services | 12.9 | 2.4 |
| Other | 29.6 | 18.2 |
| Total | 100.0 | 100.0 |

Source: NUH, 2004.

The occupations of the Taiwanese husbands are presented in Table 9 and it is apparent that while there are a small number of professionals, the distribution is dominated by unskilled workers. This is reiterated at the Taiwan end where Tsay's (2004) analysis shows that the Taiwanese men marrying South-East Asian women were drawn disproportionately from lower socioeconomic groups.

**Table 9 Occupations of grooms who married Vietnamese women, 2004**

| Occupation | n | Percent |
|---|---|---|
| Servicer and seller in market | 77 | 12.9 |
| Worker | 244 | 40.9 |
| Business | 49 | 8.2 |
| Farmer | 39 | 6.5 |
| Driver | 67 | 11.2 |
| Owner of a firm | 8 | 1.3 |
| Professional worker | 53 | 8.9 |
| Officer | 30 | 5.0 |
| Director | 2 | 0.3 |
| Teacher | 4 | 0.7 |
| Unemployed | 5 | 0.8 |
| Engineer | 19 | 3.2 |
| Total | 597 | 100.0 |

Source: Study of Vietnamese Marriage Migration to Taiwan, Department of Sociology, School of Social Sciences and Humanities, National University of Ho Chi Minh City, unpublished data, 2004.

## 3.2. The impact on families of origin

The *raison d'être* of much of the marriage migration from Taiwan is the support of their Vietnam-based parents. In the survey 88.3 percent of respondents reported receiving money from their daughters in Taiwan. Most of those not receiving remittances were cases where their daughter had left relatively recently. Households were asked about the economic situation of their household before and after the migration and asked to classify it into very poor, poor, average, above average,

well off categories. It is apparent that in most cases, economic conditions in households improved after migration. Some 72.4 percent of households reported that they moved up at least one category as a result of the migration while 25.7 percent remained in the same category. Figure 6 shows that 45.7 percent of households were lifted from poor to average economic status and a third (32.6 percent) were lifted from poor or average to above average status.

**Figure 6 Living standards of households before and after their daughters' marriage, 2004**
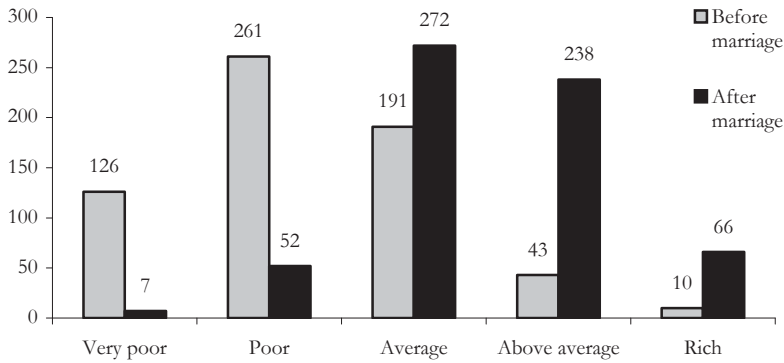


Source: NUH, 2004.

The survey also showed that before the marriage 126 households were very poor and 261 were poor; however, only 7 households were very poor and 52 were poor after migration. This change is clearly visible to the people in the community. Indeed in focus group discussions all agreed that the families having Taiwanese sons-in-law had become better off and many of them "had become rich".

> "We see that the families, having daughters getting married to Taiwan males, all have built two, three story houses. They are very happy and enjoy life, they do not have to do hard work because their daughters send money to them very often. Even some of them help poor neighbours and poorer people in the communities" (a discussion in An Giang province).

One parent of a bride said:

> "Before my daughter's marriage, all members of our family were forced to work very hard, we did a day labour with very low pay so we used to be short of money. But now our lives have changed because my daughter often sends back money. With

this assistance we have enough money to send our younger children to vocational school so that they will be able to find a good job later. We are much happier now" (a father in An Giang province).

It is clear that Vietnamese brides in Taiwan play an important role in improving their families' economy. From this point of view, the marriages are seen as successful and this has a "demonstration effect" in inciting other families in the area to encourage their daughters to consider marriage migration. From an economic perspective then these marriages have had positive impacts on communities in Vietnam. These have certainly had an impact on younger girls in the communities considering having foreign partners when they grow up and this is supported by their parents. Indeed in focus group discussions some local people expressed a concern with a local shortage of females at the marriageable age. A commune, Tan Loc in Thot Not district, Can Tho province is referred to as "Taiwan Island" because one out of every ten households have daughters married to Taiwanese men. In Thoai Son district, An Giang province, it was reported that 50 percent of all marriages were Vietnam-Taiwan marriages. Young men in these communities worry about having no chance to find partners and said they were:

> "very sad, all of the girls move out, so we may stay single our whole life, we are poor and have no money to marry".

It was said that some girls had strong relationships with local men before marriage, but left their boyfriends behind to marry Taiwanese men.

### 3.3. The experience in Taiwan

While the study did not directly interview many Vietnamese marriage migrants since it was carried out in the origin area, a great deal of information was collected about their experience in Taiwan from their families. Most families kept in regular contact with their daughters, especially through telephone calls and there was some return movement of the women to visit their families.[10] From interviews with 51 brides coming back to visit their families in Vietnam we found that while there are several success stories there are also problems being experienced by many marriage migrants in Taiwan. It is apparent that one overriding problem relates to language. In most cases the brides cannot communicate effectively with their husbands at least in the early

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[10] One common complaint heard during fieldwork was the great difficulty for Vietnamese families to get visas to visit their daughters in Taiwan.

stages of their marriage because they don't speak Mandarin and their husbands don't speak Vietnamese. Mandarin language classes are available in Taiwan but some women report that their husbands won't allow them to attend. As Eyton (2003) points out:

> "Surveys show that most of them are quite willing to learn Mandarin, the problem is their husbands are often unwilling to pay for them to go to school to do so, and often the language their husbands prefer to use is the far more difficult to learn Minnan, spoken only in Taiwan and China's Fujian province."

Language barriers not only hamper the bride's relationship with her husband and his family but make it difficult to deal with bureaucracy and to access services. This reinforces their isolation especially during the early years and is a contributor to the loneliness that many brides report. According to TECO in Ho Chi Minh city since almost all of the Vietnamese brides have low levels of education this also can be a barrier to them joining language training courses.

Several respondents reported that their daughters experience prejudice in Taiwan. Again as Eyton (2003) explains:

> "Taiwan is a pretty homogenous society, its main antagonisms being historical and political among different groups of Han Chinese Settlers. Taiwan is not a multicultural society by any means."

One third of the brides interviewed reported that they do not get respect from their spouse's family. Therefore, some feel offended and ashamed although their lives are economically better in destination. The question also arises as to the experience of the mixed blood children produced by the marriages. Will they experience prejudice? Will they be allowed to maintain their part Vietnamese heritage? Many of the same types of "homogeneity issues" that are part of the public discourse on immigration in Japan (Sassen, 1993) are also found in Taiwan.

As alluded to earlier, there are also problems associated with what is often referred to in Vietnam as "Taiwan Disillusionment".[11] They are promised, or believe, that life in Taiwan will be different to that at home and that they will be better off. However, some find that their inferior position in the family, and the long hours of hard work expected from them, exacerbated by language barriers and by loneliness, and they are very unhappy. So unhappy in fact that some of them return to their homes in Vietnam and obtain a divorce. In 1990-2000,

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[11] *Lao Duong* (A Vietnamese newspaper), 5th February 2001.

there were over 170 divorce cases involving the foreign factor in Can Tho province along.[12] From 2001 to 2002, according to the Women's Union in Can Tho, 253 cases were reported in this province. In-depth interviews with eight such returnees in the present study indicated that this return phenomenon is becoming more widespread as marriage migration increases. The main reasons given by the women for getting divorced were that their expectations from the marriage had not been met. Some of them felt lonely because their husbands paid little or no attention to them while others had fights with their partners and their relatives. There also was dissatisfaction that they had not been able to find a job when they went to Taiwan. Due to language problems and low levels of education few obtained a good job. Most of them remained at home while a few had low-paid work. Some women who had to stay at home to look after children and the husband's relatives felt unhappy with their marriage because they did not earn their own money to assist their families in Vietnam.

> "I want to work outside to earn money because my relatives in Vietnam need my financial assistance. My child is 6 years old, but my husband does not send him to school because he doesn't want to spend money for his school. Therefore he wants me to stay at home and take care of the child, while he doesn't make any effort to help my family." (A girl from Vinh Long Province)

Some brides reported being deceived by their husbands:

> "When I met him in Vietnam, he said that he had three children and his wife had died, so he was looking for a wife to share housework with him and to look after his children. He did not tell me that two of his children are very sick. When I went to Taiwan, in the evening he brought me to his house and introduced me to his children I was shocked because they were severely disabled. They stay in bed and need a lot of care. It was very hard work, I stayed there 2 years and then decided to go home." (a women from Can Tho province).

Some of the girls cried when they talked about their experience in Taiwan because they have many troubles such as arguments with parents-in-law and their husbands. The clashes between the brides and their husbands were also evident in interviews carried out with some of the grooms. One fifty-year-old respondent explained as follows:

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[12] *Lao Duong*, *op. cit*.

> "Most of the brides cannot get a good job in Taiwan. Not all of the families they go to are rich so they have to work, but because they have no skill, no education and even no language how can they get work? If they get work their employers complain. There are also problems in their work in the home. Some husbands give their wives money to send home to their families."

One officer from TECO in Ho Chi Minh City said:

> "It is my understanding that the main reason for conflict between Vietnamese brides and their families-in-law is that the ways of life in Vietnam and Taiwan are completely different. The women thought that they would have a better life straight away after they came to Taiwan but Taiwanese families expect a great deal from their daughters-in-law such as earning money to support the family, doing housework and taking care of children and aged family members. When these women are unable to do all of these tasks then conflicts emerge."

However, there are success stories among the marriage migrants. From the 51 brides interviewed, 89 percent were satisfied with their marriage because they found life in Taiwan better than in Vietnam and because they were able to send money to help their families in Vietnam. Some 14 percent of the women said they were completely happy with their husbands and his relatives. The cause of their happiness was that they were treated with respect from both their partners and parents-in-law and felt that because the family cared for them they should try their best to make them happy as well. The husbands of these brides discussed nearly everything related to the family with them. Some said they were involved in family decision-making.

> "When he wants to do something important for the family, he always discusses it with me and he respects my opinion. Related to money, we have only one bank account and he put his income in the account and we spend it together." (A bride from Thoai Son, An Giang).

However these brides were often women who were more educated and came from urban areas in Vietnam. Consequently, they were more able to gain the trust of their husbands and parents-in-law than those with less education.

Some brides reported that they gained love from their husbands and respect from their parents-in-law because they gave birth to boys. A bride from Thoai Son, An Giang province, said:

> " My father in-law was very happy when my boy was born and
> he loves him a lot. My husband told me to take care of our son
> and to do only easy housework. If I do something wrong my fa-
> ther-in-law never complains, he only gently shows me how to
> do it properly. I am very happy with my married life so far. "

But when the brides have female children there is no guarantee of
them being treated so favourably.

## 4. Conclusion

While the flow of marriage migrants to Taiwan is attracting a great
deal of attention in Vietnam, there is an increasing number of reports
of an upswing in marriage migration into southern China. Some of this
movement involves women being attracted by the promise of a better
life and is arranged through intermediaries although the trafficking
component is also significant.[13] However, with the increasing imbal-
ance between males and females in China as a result of the combina-
tion of the longstanding preference for male babies and the one child
policy, the pressures for marriage migration from Vietnam's massive
northern neighbour will undoubtedly increase. The commoditization of
marriage migration has created a significant transnational industry
linking Vietnam, Taiwan and increasingly China as well as South Korea
and Singapore, in which large profits are made by many people, in a
complex network of interlocking relationships. The presence of this
industry will ensure the continuation of marriage migration in Vietnam.
The drivers within Taiwan are also unlikely to lessen in the foreseeable
future given the excess of younger males and the changing roles and
attitudes of Taiwanese women. Together with poverty in rural Vietnam
these forces will ensure the continuation and expansion of marriage
migration flows.

The whole process currently involves little intervention by gov-
ernment both at the Vietnamese and Taiwanese ends. But non-
governmental organizations are increasingly involved in both origin
and destination areas to provide more balanced information to poten-
tial migrants, protect them from exploitation, help them integrate
Taiwanese society and assist them if they wish to return to Vietnam. It
is clear that these flows will continue so it is imperative to implement
polices and programs both in Vietnam and Taiwan, which will regulate
the activities of the intermediaries to combat exploitation; Provide
accurate information to potential brides and their families to help them

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[13] See Ta (2002) and the chapter by Le Bach *et al.* in this volume.

make more informed decisions about migrating; Provide appropriate support systems to the women in Taiwan; Facilitate communication and travel between the women and their families of origin; Assist their adjustment to Taiwanese society; Provide protection for them in Taiwan.

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# Transnational Migration, Marriage and Trafficking at the China-Vietnam Border

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## 1. Introduction

The end of the Cold war has marked a radical change in the history of international migration processes (Castles, 2000). After several decades of controlled and limited international mobility, citizens of the former or reformed communist States began to have new opportunities to cross borders for tourism, visits, temporary or permanent migration for work and other socioeconomic needs. At the same time, the opening of borders of these nation-states has led to important in-flows of nationals from other countries. The increase in internal and international migrations within and between China and Vietnam are part of this important migration transition. Changing migration patterns in these two reformed economies (from planned to market) are generally linked to the far-reaching economic changes of the past two decades, accompanied by necessary 'more' open-border policies that facilitate the circulation of goods, capital, and people (Dang and Le, 2001; Dang, 2003).

While in the 1970s and 1980s, the vast majority of Asian migrant workers migrated to the rich-oil countries of the Middle-East, this trend now has changed in favour of intra-Asia migration (IOM, 2005). Citizens of many developing countries of Asia now consider migration, for the most part temporary work migration, in the realm of possibilities to better their lives (Hugo, 2004). Most male migrants work in manufacturing and fisheries, and most female migrants labour as nannies, domestic workers or in the entertainment and sex industry (Piper, 2004). Due to the disengagement of governments of sending countries in the recruitment and training process of workers, a private and semi-private migration industry that recruits, trains and transports workers across borders and waters has rapidly developed. Not all recruitment is legal, fair and ethical, however, and potential workers can easily be

lured by illegal agents and agencies disguised as official ones. Trafficking and smuggling are important problems of the deregulated and privatized Asian labour migration industry (Piper, 1999).

In addition to the increases in work migration in Asia, marriage migration is on the rise with men from richer nations looking for wives in poorer ones (Piper and Roces, 2003; Constable, 2005). Vietnam is known for having supplied nearly 100,000 brides to Taiwanese men since the mid 1990s, and unknown numbers have married to men from South Korea, Singapore, Japan, Hong Kong and China.[1] Agencies specializing in the recruitment of "cheap" brides facilitate the trade because these agencies take charge of the whole process on behalf of the men and their families. Foreign brides are advertised on national televisions networks, national newspapers and on the Internet. While some of these agencies operate openly and respect their commitments, others function more as trafficking networks using deception and abuse in the process of finding or offering a wife to a client. The link between marriage migration and trafficking is therefore important in this context with globalization having changed the characteristics of migration (Skolnik and Boontinand, 1999).

Besides politics, policies and uneven socioeconomic development, the demographic landscape also contributed to the increasing demand for workers and wives within Asia. First, in richer nations, population aging and labour force shortages in the care (elderly and children) and industrial sectors partly explain the need for foreign workers. Second, the demise of marriage by women in their thirties and forties in many South-East and East Asian countries has created a demand for foreign brides–who are perceived to be suitable for housework and motherhood, in contrast to local women who prefer to work and, perhaps, not to have children (Jones and Ramdas, 2004). Third, the female deficit in some regions of Asia also prompted a need for female workers and spouses, thus leading to a demand in female migrants from other regions or countries. The female deficit, brought about by two decades of sex-selective abortions and female discrimination (Attané and Véron, 2005), is an acute problem on the Chinese side of the Vietnam-China border, which creates a high demand for female workers and for wives (Attané, 2005).

It is in this complex demographic, socioeconomic and political context that we examine migration of and trafficking in women from Vietnam to China at the eastern Vietnam-China border region. In this chapter, we analyze the situation of increasing female migration and

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[1] See Wang and Chang (2002) and Hugo and Nguyen Thi (this volume).

trafficking from Vietnam to China as influenced by many factors. First, uneven socioeconomic development between China and Vietnam make Vietnamese seek new opportunities through cross-border economic activities or migration. However, China and Vietnam do not have an official bilateral agreement for the export-import of workers. Labour migration from Vietnam to China is thus relatively small in scale and largely prompted by individual initiatives, although some private agents actively recruit potential workers. Because it is unofficial, this recruitment is not submitted to any official regulations or policies. Second, the bordering province of Guangxi has among the highest sex ratios in all of China resulting in a shortage of women (Banister, 2004).[2] Numerous media reports feature cases of female kidnapping and studies concerned with trafficking in Vietnam have focused on this area among other ones. Third, recent policies have opened the border to the extent that Chinese and Vietnamese nationals do not need a passport to cross the border. Some engage in intense commercial and petty trade that take place over the border on a daily basis, while others seek opportunities to live and work 'on the other side'. The train line between China and Vietnam has been reopened in the 1990s, increasing the possibilities of travel and migration between the two socialist nations. Among the people that cross the border, Vietnamese women figure predominantly: they enter China as voluntary (illegal) migrants or as trafficked persons.

In this chapter, we argue that the conceptual separation of migration and trafficking as two independent and different phenomena hampers our understanding of cross-border movements between China and Vietnam. Evidence from this chapter is drawn from survey data collected in 2005 with 213 women and from interviews with a sub sample of 30 of them. The survey was conducted under a project named "*Counter Trafficking Project in Quang Ninh Province, Vietnam*" between the International Organization of Migration (IOM) and the Quang Ninh Women's Union. All women had migrated to China (voluntarily migration or forced migration or trafficking) and had returned to Vietnam at the time of the study. These data offer insightful information on the complexity of these women's experiences and on the relationship between voluntary and forced migration. Data analysis points to the wide ranges of moves, from forced, involuntary, to voluntary ones. The degrees of voluntary or involuntary in their experiences are not always easy to capture. Some women voluntarily left despite difficulties in reaching their destination. A number of

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[2] In contrast, the Yunnan province, bordering Vietnam on the West side, has a sex ratio below average and the province has traditionally been a bride exporting province in China.

women felt victims of deception, but later found themselves in acceptable situations. In many cases, part of their trajectory was voluntary, but throughout the migration process, they were deceived, abused and trafficked. Many wanted to go to China and once they had expressed this desire in their households or publicly, it put them at risk of being trafficked. Some were literally kidnapped and sold on the Chinese side of the border. A second argument of this chapter is that, among women who initiated the migration process, the desire to marry is a strong motivation for crossing the border. While economic motivations and the desire to improve one's material life are important themes emerging from the data, marital and reproductive desires figured predominantly in many of the stories and trajectories. The high demand for wives and female workers on the Chinese side, partly an outcome of the Chinese female deficit, is echoed on the Vietnamese side by an awareness of this demand and the realization that perhaps, one's future as wife, mother and worker lies North of the nation's border.

## 2. Cross-border migration, marriage and trafficking in persons from Vietnam

The rapid increases in work and marriage related migration flows within Asia has been accompanied by a flourishing trafficking market, particularly in women and children destined to be in forced marriages or forced labour, often in the entertainment and sex industry (Kelly and Le, 1999; Le, 2000; Vu and Nguyen, 2002). The situation is particularly exacerbated at bordering regions where crossing the border does not require a passport or a plane ticket. With problems of deficient border control and corruption, crossing a border might be relatively easy, albeit costly. At the regional level, it is estimated that over the past few decades, 30 million women and children have been trafficked in Asia (Flamm, 2003). This number only include those trafficked for sexual exploitation and does not take into account trafficking for marriage, begging, forced labour such as domestic, agricultural and factory work.

Starting from the early 1990s, Vietnam has been a source, transit and, to a lesser extent, destination country for trafficked persons. While the actual scope of the phenomenon is hardly known (due to the illicit nature of trafficking and the problems with defining what consists in trafficking), official estimates indicate that dozens of thousands of women and girls have been trafficked to Cambodia, China, Hong Kong, Macau, Taiwan and other places in Australia, Europe and North

America. Estimates suggest increases in trafficking over the past decade. Three major flows have been identified–trafficking of Vietnamese women to China and to Taiwan for marriage, and trafficking of both women and girls to Cambodia for prostitution. Little is known, however, about the magnitude of trafficking in men and boys, although there are known cases of this type of trafficking. For example, trafficking for forced labour of men has been reported. Also, child adoption is also recognized as one potential form of human trafficking in Vietnam (Kelly and Le, 1999).

Initially, trafficking only took place from a few provinces adjacent to the international borders between China and Cambodia. Due to improvement of roads, means of transportation, open border policies, and especially rapid increase of cross-border trade and tourism, it has now occurred in all provinces, and the major flows are from the deltas of the Red and Mekong rivers. Overall, reports on prevalence of women and children being trafficked are primarily speculative and inconsistent.

## 2.1. Theoretical framework

Migration theory aiming at 'bringing gender in' is the first theoretical body of literature framing this research. Since the 1990s, migration theory has been criticized for largely ignoring female migrants and the gendered nature of migration flows and outcomes. Research pointing to the large numbers of female migrants not corresponding to the stereotype of the 'trailing wife' prompted the development of migration and gender specific research uncovering important phenomena. In this project, we particularly draw from Piper's contributions to gender and migration theory (Piper, 1999; Piper, 2003; Piper and Roces, 2003). Piper argues that women have been left out of migration theory because of the definition of labour that ignores two of the most widely occupied jobs by female migrants: sex work and domestic work. Moreover, Piper situates the gendered nature of migration within a gendered political economy and a global patriarchal system. This feminist reading of migration allows for the inclusion of gender as a central aspect and determinant of migration flows, labour patterns, trajectories and experiences. Finally, through her empirical work on female Asian migrants in Japan, Piper shows that boundaries are blurred between marriage migration, labour migration and trafficking and puts forward a new theoretical framework which calls for the integration of these three phenomena. This conceptualization of these three types of migration is particularly important for the development of comprehensive migration policies. This chapter contributes to this theoretical discus-

sion by offering evidence from a case study of two developing nations, while most research involves migration between a developed and a developing nation.

Second, this chapter treats trafficking as part of migration as opposed to trafficking as an independent type of human mobility. In fact, it is our objective to provide more evidence about the need to conceptualize migration and trafficking as related phenomena as opposed to distinct ones. In the case of the region studied in this chapter, studying either migration or trafficking alone would not account for the nature of human movements and activities across the China-Vietnam border. In general, migration theories do not pay much attention to trafficking in humans. Trafficking is generally studied by different researchers and from other perspectives. In this chapter, by considering the two phenomena as intertwined, we wish to highlight women's agency in the process of going to China, even if they are victims of traffickers at some point in the trajectory. Rare are those that would portray themselves as having been victims from the beginning to the end of their trajectories. In contrast, according to the definition of trafficking of international organizations,[3] many of the women surveyed and interviewed in this study would be classified as victims of traffic.

The third theoretical line of inquiry we wish to contribute to is demographic theory. This chapter is concerned with the long term consequences of a female deficit in one population at a border region. The female deficit is not an issue in the Vietnamese border regions. The link between demographic structure and migration is a recurrent theme in demographic literature. However, the particular case of how a prolonged deficit of women may prompt certain migration and trafficking patterns has received scant attention. Due to the particular border context of China and Vietnam, the issue of demographic imbalance as one of the factors prompting migration needs to be theoretically considered. For instance, the female deficit in one region is often conceptualized as having the potential to increase the control over

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[3] The international community is sharply divided in its approach to the definition of trafficking in women. The 2001 United Nations Protocol to Prevent, Suppress, and Punish Trafficking in Person reflects a compromise of the contesting definitions. It defines that "trafficking in persons" shall mean the recruitment, transportation, transfer, harboring or receipt of persons, by means of the threat or use of force or other forms of coercion, of abduction, of fraud, of deception, of the abuse of power or of a position of vulnerability or of the giving or receiving of payments or benefits to achieve the consent of a person having control over another person, for the purpose of exploitation. Exploitation shall include, at a minimum, the exploitation of the prostitution of others or other forms of sexual exploitation, forced labour or services, slavery or practices similar to slavery, servitude or the removal of organs.

women, namely through trafficking and forced marriage or forced labour. Some argue that the surplus of young men also represents a threat to national and international security and stability (Hudson and Den Boer). Changing demographic sex and age structure are therefore powerful elements of social change and can potentially also bring about new social problems.

## 2.2. Migration and trafficking at the China-Vietnam border region

Because of its proximity to China with convenient transportation and cross-border trade, the Quang Ninh and Lao Cai Vietnamese provinces have been important source and transit provinces for international migration to China in the past few years. The opening of the border since the late 1990s, while facilitating economic exchange, have also exposed populations from both sides to new problems, including risks of trafficking. The Vietnamese border town of Mong Cai, for example, has developed quickly into a busy commercial centre between Vietnam and China. In 2001 alone, the total volume of cross-border trade at Mong Cai amounted to USD 598 million (Vu and Nguyen, 2002).

Together with the flows of goods and capital are the cross-border movements of people. Figures released by Mong Cai People's Committee in the same year shows that there were 105,000 "within-a-day" person-trips and 194,000 longer-term person-trips to other inland localities in Vietnam by the Chinese. From the opposite direction, 32,000 "within-a-day" person-trips to China were made by the Vietnamese through the border official gates. To cross the border, all that is needed is an ID card with a photo, a hand-written request, and VND 25,000.00 (about US$ 2.00) fee paid to Chinese border guards. There are, however, numerous illegal trips through informal routes.

Most of the moves are for trade of cheap consumption goods produced in southern Chinese provinces to Vietnam and of agricultural products from Vietnam to China. Large markets are established along the border, particularly on the Chinese side, as focal points for the trade. The vibrant economic activities at these markets have fuelled the formation of a cross-border labour market of "*cuu van*", a Vietnamese term referring to goods transporters. Many of these transporters are Vietnamese women. It is at these markets that, according to many observers, many Vietnamese women are "trafficked". The reasons for their movement are varied. Some go for business or employment purposes–to trade goods across the border or sell goods at the transit markets; to be recruited as "*cuu van*"; to run service establishments for

tourists and local people, such as restaurants, karaoke bars, hotels, and hair and beauty saloons; or to serve at these establishments as employees. It is reported in Vietnamese newspapers that many of these service establishments are in fact disguised brothels.

The trafficking in women from Vietnam is mostly for forced marriage to Chinese men and for forced labour in the sex industry. While trafficking for the purpose of sex work is widely known and explored in previous studies, little is known about trafficking for the purpose of marriage. Two key factors come to explain the demand for wives from Vietnam. As mentioned above, the first factor is demographic, reflected in the important female deficit of the Chinese southern province of Guangxi. The second factor is economic, since the inflation of the bride price on the Chinese side, makes the marriage to a Vietnamese woman a lot cheaper. For some poor Chinese families, it is the only way to find a spouse for their son. Demand creates supply, and trafficking in women, including in young girls, is responsive to this wives' market. According to a study conducted in two districts of the province of Quang Ninh (Hai Ha and Dong Trieu) by the International Labour Organization, by the end of 2000, up to 1,188 women had left for China. Most of them are believed to have been trafficked for the purpose of marriage (Vu and Nguyen, 2002). A small percentage of them have returned home so far, but most still stay in China (legally and illegally), and little is known about them.

Strong traditional gender roles and expectations (more important in rural areas) also have a role to play in this marriage market: Vietnamese adult daughters are not expected to live with parents all their lives; they need to get married and follow their husbands (to live in the husband's house). At the same time, they are expected to contribute financially and emotionally to their family of origin in exchange for their parents' efforts and work towards their education and upbringing (Croll, 2000). This context leads some families to send their daughters away for marriage in exchange of a sum of money. Without fully realizing what they are doing, some parents participate in the trafficking and selling of their daughter. The international markets of Taiwan and China take advantage of parental expectations towards daughters and of daughters' very strong desire to help their parents. Marriage abroad is constructed as one possible way of honouring the intergenerational contract.

In Vietnamese society, contradictory constructions of women marrying to Chinese or Taiwanese men abound. On the one hand, there is a negative opinion about this type of marriage and migration because it departs from social norms and local ideals. Women marrying

a non-Vietnamese and away from home are often almost considered sex workers selling their bodies to remote individuals. On the other hand, these women are pitied and somewhat respected for their courage to fulfil their female responsibilities by making a very difficult choice. These responsibilities include getting married; having children and helping one's natal family through remittances. In spite of the negative image of women marrying Taiwanese and Chinese men, Asian international marriages are increasing in number. Agencies and traffickers are skilled at putting forward the numerous advantages that such marriages *might* offer to both women and their families, often deceiving them about the very high risks involved in these arrangements. This situation puts women at risk of being deceived, abused and trafficked. Apparently honest agents are often disguised traffickers only interested in making a profit. Rural families have limited understanding of the phenomenon and often trust these agents, therefore sometimes involuntarily selling their daughters.

Migration and trafficking tied to the sex work industry is better known in the region. Newspapers and reports in Vietnam have reported on establishments located in Chinese border towns adjacent to Quang Ninh and Lao Cai provinces where Vietnamese sex workers are working. Respondents approached in this and other studies reported that there are hundreds of Vietnamese women and girls at these establishments run by Vietnamese and sometimes Chinese entrepreneurs. Clients of these disguised brothels are both Vietnamese and Chinese. With the tourist industry booming in the Chinese southern provinces, many Vietnamese now travel across the border without a visa or a passport. Many Vietnamese men find sex services in these establishments very appealing. While being in China, they have a choice of sex workers coming from different provinces of Vietnam, with some as far as from the Mekong River delta. Chinese sex workers can also be found in these establishments. This development of a commercial sex market in the context of opened borders has led to the migration and trafficking of Vietnamese women and girls to these Chinese provinces, sometimes not only limited to border towns but also to regions far into Chinese territory, for example to the city of Guangzhou (Canton) and beyond.

## 2.3. Method and data

Data for this article is drawn from a study conducted by the International Organization of Migration. The study was carried out in three localities: Ha Long city, Mong Cai town, and Yen Hung district of Quang Ninh province. These sites are documented as important source

and choke (transit) points of trafficking in women and girls, not only from Quang Ninh provinces but from all other provinces in Vietnam as well. A short description of the research sites follows (see location map in Figure 2 in the introduction).

*Ha Long city:* Shooting site of the famous movie 'Indochina', Ha Long is the first tourist attraction in Vietnam. Important flows of European, North American, Asian and Vietnamese tourists converge to this small town where demand for entertainment services is booming, including demand for sex workers. Vietnamese nationals from all over the country migrate to Ha Long in the hope of finding unskilled and low-skilled jobs. Ha Long is considered to be a destination for domestic trafficking and a transit point before being further trafficked to China.

*Mong Cai town:* The town has a border gate with China. It is an important trading point between the two countries, and there is a high mobility of people across the border to serve trading activities. Like Ha Long city, the town is believed to be a transit point of cross-border trafficking.

*Yen Hung district*: Yen Hung district is an agricultural area, which is located in the middle of the national high way connecting Hai Phong and Ha Long (both cities are located on the north-eastern coast of Vietnam). Since farming does not create sufficient work for the local population throughout the year, the district has a relative large number of female out migrants, who work far from home in the two nearby economic developed centres–Ha Long and Hai Phong. Without being equipped with relevant information and knowledge, the female migrants become vulnerable to both domestic and cross-border trafficking.

The data analyzed in this chapter were collected through a questionnaire with 213 women who were trafficked, and/or had migrated to China, had lived in China for some time and had returned to their Vietnamese community of origin by the time of the study. The objective of the survey was to describe the population of migrants and victims of trafficking and to understand the process by which women had been trafficked. Questions were asked to the study participants about the process of migrating or being trafficked to China, their life in China and their return to Vietnam.

Through the support of the local authorities (District People Committees) and of the Vietnamese Women's Union (a national mass organization), a number of women who were reported to have been victims of traffic were identified and approached. Interviews were

undertaken with those women. Afterwards, each woman was asked to approach three other women they knew who had been trafficked. The initial set of respondents was then trained to serve as interviewers for the second set of women. This method facilitated the identification of cases and put women more at ease during the interview process. This respondent-driven sampling method allowed the identification of a total of 213 women who were locally defined as having been trafficked to China at some point in their lives. The local authorities' definition encompassed any migration process within which there was deception or abuse in the destination and reason for migration. Sometimes, however, women were identified as such more based on gossips than on knowledge of the women's experiences. Some women, therefore, disagreed with this label in describing their trajectory.

In addition to the survey, semi-structured in-depth interviews and focus group discussions (FGD) were also conducted. The study involved a total of 30 semi-structured interviews and eight focus group discussions. The interviewees and informants comprised of trafficking victims, families of victims and other local people as well as cadres of the local authorities and of mass organizations. The semi-structured in-depth interviews and FGD aimed to discover individual, community, and policy factors that make people vulnerable to trafficking. It also provided rich information on migration or traffic as an experience and a process. The study participants' characteristics are described below:

*Age*: The mean and median ages of the 213 trafficked women (at the time of their being trafficked) are 25.3 and 24.0 respectively; with the age distribution skewed towards group age 30 or less (accounting for 78.1 percent of the total). Contrary to the common belief that trafficked women are of young ages, the data collected for this study (n=213) show that they can be of old ages as well: the range of their ages by the time of their departure is from as young as 12 to as old as 50, and the time span of the trafficking from as early as 1984 and as late as 2004, a few months before the study (March 2005). Another important finding is that there is a relatively high number of women who were trafficked when they were younger than 18, accounting for 11.2 percent of the sample. If we also include those aged 18 as children, as is done in most of the literature on this issue, then the figure jumps up to 20.4 percent. Indeed, the largest age group consists of women who are between 18 and 24 years old, accounting for 40.3 percent.

*Ethnicity and religion*: Almost all of the studied women (96.2 percent) are Viet (Kinh), the dominant ethnic group in Vietnam. Only eight women are of other ethnic groups (3.7 percent). Research sug-

gests that ethnicity is an important dimension of trafficking, viewing women of ethnic minorities living in mountainous communities as particularly likely to be trafficked to China because they are poorer and have little education. They are believed to be more easily tricked. This view is not supported by the data collected in this study, despite the fact that the actual population of trafficked women is unknown. One possible explanation is that women of ethnic minorities have clung more tightly to their traditional cultures because of their isolation and group migratory practices, and have not been influenced by other cultures such as the rural Vietnamese have (Kelly and Le, 1999). In terms of religious belief, most of the studied women (89.2 percent) do not follow any world religion. A total of 8.45 percent follow Buddhism (the major religion in Vietnam) and 2.35 percent follow Catholicism.

*Marital status*: There is a very high rate of divorce, which account for about one fourth (26.8 percent) of the total study group. This is largely due to the fact that many had gone to China for marriage, voluntarily or forced, and then returned or escaped to Vietnam. About half of them (51.4 percent) are currently married, some with a husband (Chinese) living in China at the time of the survey or the interview. Single women account for 18.4 percent of the sample and widows accounted for 7.5 percent.

*Educational attainment*: The educational levels of the respondents are relatively low. However, most of them have some education. Only 4.2 percent are illiterate. The majority (42 percent) have attained primary education and lower secondary education (46.2 percent). The proportion of women with upper secondary education is low (7.5 percent).

*Occupations and income*: At the time of the study, 68.8 percent of the women were unemployed. One of the reasons is that many of them cannot easily reintegrate into the community and lack access to land. Unemployment is always a key dimension of vulnerability regarding poverty and risk of trafficking. Stories told by the respondents themselves show that the need to find a job and earn an income is one of their reasons for migrating. After leaving, many of them became victims of traffic at place of destination. Regarding occupational structure, a high percentage of them work in agriculture (56.3 percent). The second largest number of women is working in low-income petty trade and small business, accounting for 20.8 percent. Most of them work in Ha Long and Mong Cai town. There are also many women who worked as hired labourers (15.1 percent).

A closer examination of the nature of these hired work reveals their low-paid and sporadic characteristics: construction assistant (*phu*

*ho*), baby sitting (upon request), cooking and dish washing at food-stalls in the market, coal-pieces pickering (to sell), goods transporters (to markets, including markets in China), house or food-stall cleaning, porter, ploughing (for hire), soil digging, etc. There are 2.6 percent of the returnees that work as garbage collectors. Finally, a number of the studied women work in fishing, simply catching sea and freshwater creatures like crabs, snails, fishes from the shore.

Being trapped at that bottom of the local labour market, women who took part in this study have to struggle to maintain a sufficient income for themselves and their family. In responding to the question about whether or not their family income was sufficient, 90.6 percent answered that it was not, among which 64 percent considered it to be largely insufficient. Only 9.4 percent of the entire sample estimated their income to be sufficient. The majority of women (79.8 percent) had to support an average of two family members, usually their own children, old parents, brothers, or sisters.

## 2.4. Limitations of the study

There are a number of limitations in this study. First, the sample is not representative of the trafficked and migrant population from Vietnam to China. Given the illegality of these flows, the base population is unknown and it would be impossible to draw a representative sample. Second, the difference between voluntary and forced migration is at times difficult to establish. As such, we do not have an exact figure from the survey data of the proportion of women who were not deceived or trafficked through their journey and life in China. Rather, data from the interviews and from local leaders and border authorities strongly suggest that the two processes are intertwined for a majority of women (n=30). The conceptually blurred line between migration and traffic allows us to consider the dynamic and relationship between the two processes. The third limitation is the reliance on the experiences of returnees. In many cases, returnees have been forced to go back, or they have escaped from situations of forced labour or forced or difficult marriages. As such, we do not have a sample which is representative of the trafficked as no information is known of those who stay. Fourth, the fact that migrants and victims of traffic themselves acted as interviewers for a portion of the sample may have diminished the quality of the data collection. This choice was made due to the difficulty of contacting and interviewing women who have returned from China, due to the stigma attached to them and their typical reluctance to share their story with a stranger (interviewer). Fifth, the study does not provide any direct evidence of the factors of

the demand for Vietnamese women on the Chinese side. We cannot state that the reason for the female border crossing flow is due to the female deficit. Rather, we infer this relationship based on other studies and on the assessment of local observers. Sixth, our data is entirely collected on the Vietnamese side and we know little about the situation on the Chinese side.

## 3. Crossing the border

An important finding of this study is that although the women surveyed were labelled as past victims of traffic into China, the vast majority wanted to go to China initially. It was through their attempts to find ways to migrate and live in China that they fell into the hands of traffickers. For the study participants, the two most important motivations for leaving were economic and family related. On the one hand, women perceived China as a land offering more job opportunities than Vietnam and hoped to find a cash earning activity there. On the other hand, many women wished to find a husband and have a child and, after having failed to do so at home, imagined that China will give them a better chance to achieve this desire. In many cases, the desire to marry and work overlaps and they equally prompt women to consider and initiate migration.

### 3.1. Marriage

Women in Vietnam, especially in the rural areas, are under strong social pressure to get married and have children, particularly son(s). The pressure comes not only from their own family, especially their parents, but also from the community. Women of 24-25 years of age are considered to be already "old" or "impossible" to get married (Bélanger and Khuat, 2002). Their parents consider them as "burdens" and as "delayed-action bombs" (i.e. a threat to the family economic and social well-being). Older single women are shameful and potentially harmful to their family's reputation. Single women considered too old to marry are often the victims of gossips and stigma (Bélanger and Khuat, 2002). The social pressure for marriage is particularly strong for women who are beyond the socially-defined appropriate age for marriage (18 to 24 or 25 years old), or those having some "problems" like being considered "ugly" or not very resourceful or stupid. "Those women who are ugly go there (China) to get married" (FGD with local authorities in Hai Dong commune). For women who have a hard time getting married, China looks like a land of opportunities. Thus, they are highly at risk of being trafficked.

> "Vietnamese being trafficked there [in China] include also those who are old, deaf, or widow.... I followed her [trafficker]..... Some people said something to her that I could not understand, but when I asked her later, she told me that they wanted to buy me".

Older women in their 40s reported having been "sold" as wives for men in their sixties and seventies. The desire to get married explained the departure of many women of the study sample (close to 30 percent), some of them were trafficked:

> "I did not think that life there was better than here. She [the trafficker] said that if I went there [China] my life will be good because Chinese husbands will do everything to support a wife and children and I will not have to do anything. But I told myself that it is impossible that a husband would do everything and I myself should also work. I just though I should go for my own life... as a woman I need a husband and children" (returnee).

In addition to the desire to get married or find a good husband, there is a strong need for women to have children. Married women are expected to have children and at least one son in order to continue the husbands' family line. At the individual level, the need to have children is commonly felt for both emotional and economic reasons. Economically, women themselves find that having a child is an important asset, because they can be supported by their children when they reach old age. Emotionally, the importance of children is even more pressing. Such needs are particularly acute for women in their thirties and older. One returnee stated:

> "I do not think that I was trafficked. For my own life, I wanted to have a child, so I went. I was already old when I left [32 years old]. As I am getting old, I want to have a child. Many people left for the same reason, not only me, so I went".

In addition to the social pressure of meeting social norms with respect to marriage and childbearing, some women also desire to marry for economic reasons. The idea of having a husband as an economic asset underlines the decision to migrate for many women surveyed and interviewed.

> "Many women are like me, abandoned by husbands, very poor. So we thought just go to get a husband to rely on him". (Returnee).

Many women in the sample left their home villages and crossed the border with the expectation of a better life with a Chinese husband. Most of them, however, had been deceived either involuntarily by well-intentioned relatives and friends who were poorly informed themselves, or by traffickers who lured women into wishing for something that rarely exists.

> "We live here and often travelled to China to sell goods. We know some Chinese words, enough for simple communication. Because we were abandoned by our husbands, when someone came and asked if we wanted to get married with a Chinese, the offer sounded very interesting. They were saying getting married with a Chinese is very good, because of this and of that, he will take care you very well, you do not have to work hard, do not have to sell goods in market, poor you to be abandoned by your husband etc. Even women friends said 'we should not work this hard. We should get married to the Chinese to have plenty of yuan (the Chinese currency) to spend.'"

As such, social pressure for marriage and to have children, have produced vulnerabilities for women. Getting married was thus widely reported by most of respondents in the present study as the main factor attracting adult single or divorced women (or women with unhappy family situations) to go to China.

While some women voluntarily go to China, a relatively high percentage (29.1 percent, or close to one third) reported having been sold to Chinese men as "wives". It is reported in government reports and other research that many Vietnamese women are forced to marry old and disabled men. Another study on trafficking reported the cases of women who were married to more than one men (one case in a family of four brothers and one case to four different men) (Vu and Nguyen, 2002). The present study also includes similar cases.

> "She [daughter] was sold to get married with an old [Chinese] man aged like her grandfather for 5,000 yuan (625 US$). She [the trafficker] told my daughter that she gave me 2,000 yuan but I in fact received less than 500,000 dong (31 US$). She [daughter] has a child with the old man. Then he got blind and forced her to marry his younger brother. Then she ran away... See, he gets blind then transfers his wife to his brother... just to keep their family line [to have children with the younger brother] (Mother of a trafficked woman)."

Son preference in China, like in Vietnam, remains strong. Previous studies have documented cases where trafficked women were abandoned by their Chinese husbands because they could not give birth to sons (Attané, 2005).

## 3.2. Labour

Poverty has been considered in the literature to be one of the major causes of trafficking, or trafficking risk. In the present study, poverty and economic difficulties are recurrent themes heard in all the interviews with the returnees. Statistics of the study also show that all the returnees are from very poor families. Nevertheless, it is important to note that the link between poverty and trafficking is by no means direct. Migration creates expectation of poverty reduction, making migrants vulnerable to tricks of traffickers who can easily lure these women who are desperate to improve their precarious economic and social status. Thus, poverty should be regarded as the indirect cause of trafficking. Literature on migration repeatedly calls for careful consideration in linking poverty directly to migration, as studies across the world have shown that the poorest areas are by no means the only places of origin of migratory flows, including trafficking in humans.

Another risk factor at the individual level that is highly correlated with low economic status is vulnerable employment status, including unemployment, underemployment, and unstable employment. For the study sample of women, a large number of them were working in agriculture (close to 60 percent). About one fifth of the women were working in petty trade, and slightly smaller number of women were working as hired labourers. These jobs provide very low, unstable and precarious incomes, barely enough for daily survival. Low education, lack of marketable skills to work in non-agricultural sectors, and their very low position in the labour market are all factors explaining their income insufficiency which eventually influenced their decision to migrate. When approached by traffickers, and given their low awareness and understanding of trafficking, they easily fell into traffickers' deception.

> "I was selling rice rolls in the market when a young woman whose face was wrapped beneath a scarf approached and asked 'Do you want to have a job. Why are you selling these things? It's not enough to buy rice to eat. If you want, I will introduce you to jobs that can give you hundreds of thousand [dong]. I left my rice rolls baskets to follow her immediately. She took me to Dong Hung [in China]. We stayed two days, and then travelled two more

days to Guangzhou. I later escaped with five other Viet-
namese women."

"I made about 20,000 dong a day [about US$1.3] but my
job was not regular, I would work once in a while every
four or five days. I worked only a few days a month.....
Some months I made 400,000 dong [about US$25], but
other months I made no money. How could I not try to
go?"

The problem of unemployment is particular acute among the
youth. In Mong Cai town, for example, "up to 20 percent of the youth
is unemployed" (Women's Union leader). Meanwhile, in this town
"there are only a few small enterprises with low employment demand".
Indeed, the lack of skills needed by local business enterprises is another
cause of youth's unemployment. It is even harder for them to develop
their own business, due to the poor local business opportunities, their
low capability in terms of skills, and, last but not least, their lack of
capital. Therefore, income possibilities across the border are appealing
to most of them. As aforementioned, at the border town of Mong Cai,
cross-border trade has led to the formation of a cross-border labour
market where both men and women are actively participating, mainly
as cuu van or traders.

"If you stay at the border, you will see how large the num-
ber [of women crossing the border to work] is.... Not only
in my community, but in all Mong Cai, two thirds [of
women] are working in China."

Then what may happen is trafficking situations in which many of
the women under this study fell into:

"She said I should go to her home to carry oranges to
Vietnam to sell. I came and saw she did have oranges in
her home. She said I should wait for her and we would go
back [to Vietnam] together. I waited for a long time, then
wanted to leave but she then stopped me, forcing me to
get married with a Chinese man" (FD, Hai Dong).

### 3.3. Sex work

Although an important factor of trafficking in Vietnamese women
to China is for marriage, there are also reports of trafficking for pur-
pose of commercial sex work. Another study reported that from Oc-
tober 15, 2000 to October 15, 2001, there were 32 cases of illegal exit

to China to work as sex workers (Vu and Nguyen, 2002). It quoted a border guard saying:

> "For young women, they are cheated to China to work as sex workers in bars and restaurants. In this case, the traffickers may receive 300-500 yuan (37-62 US$)). When they no longer fit for the job, the owner may sell them again [for those Chinese men who want to marry Vietnamese women] for higher prices. There are many Vietnamese women who work as *cave* (prostitute) in China. They are the majority in nearly all brothels." (Vu and Nguyen, 2002: 43).

In the present study, 15 out of 213 returnees (7 percent) were trafficked to work as sex workers. This number, however, does not tell us the actual scope of commercial sex work in Chinese towns. According to the in-depth information provided by one returnee, in her establishment (a hotel) there were a few dozen Vietnamese sex workers. Her establishment is just one among many others, where Vietnamese girls and women are serving clients, both Vietnamese and Chinese. Sex workers might be underrepresented in our sample since it might be particularly difficult for sex workers to escape. Working as illegal workers, their employers confine them so they do not run away.

## 3.4. Traffickers

The Vietnamese supply of wives and commercial sex workers into China is brought about by traffickers. While no interview was made in this study with traffickers, and no police report or court case statistics are available to have a sketch of the traffickers' profile, interviews with the returnees and their relatives provide some information of whom the traffickers are and what tricks they use to lure women and girls.

Traffickers that approached the surveyed women are from different backgrounds. They are mostly women, although occasionally there are men involved, as in the case of one respondent who was approached by a Vietnamese man who offered the woman to marry a middle-aged Chinese man. Traffickers can be relatives, friends, or people from the same community.

> "Sometimes, they can be our neighbours. They convinced us to follow them to get a job with good income. There are cases when they [traffickers] are even cousins. I know a case when a sister-in-law cheated her husband's younger sister. The parents [of the victim] thought she [the victim]

went to China to work with her sister-in-law." (GD, Hai Dong).

Being in such a close relationship, traffickers can easily gain the trust of their potential targets. As admitted by one returnee, she followed a cousin to China simply because "I did not think that relatives could harm me" (Young female, 24 years old). Another respondent was persuaded by a girlfriend to travel to China as a tourist and then ended up being sold.

Traffickers can also be an acquaintance or a stranger who befriends a woman or a girl and persuades her that there is a good job with high income and an easy life for her if she accompanies her. Many women in the study sample were lured by the traffickers to follow them to carry goods from Chinese markets across the border to Vietnam:

"She told me to carry pairs of jeans, for the price of 50,000 dong (around 3 US$) a bag." (Victim, 19 years old, Ha Coi).

In any event, travelling abroad sounded appealing to them, particularly the young ones. Many did not know where they [the traffickers] took them to, simply thought that they would do some trading. Participants in one group discussion mentioned that for most women, if someone offers them to go abroad, they would certainly be eager to go.

Upon arriving in Chinese land, what often happened is that the traffickers immediately contacted other traffickers to close the "deal".

"There [in China], it was about 6:00PM. I asked why we were still here. She said just wait for a little longer then she would take me back. She said that the merchandise should come soon [for the victim to carry back to Vietnam]. They talked over the phone about 'goods', and how much the 'goods' cost. Latter I found out that the 'goods' or 'merchandise' was me".

While open kidnapping of women and girls are rarely documented in both government reports and other researches, we have a few cases in our sample. One returnee, for example, told the interviewers of the situation in which she was offered a coffee by a trafficker. She drank and slept. When she awoke, she was in China. Another story was told by the mother of one trafficked young woman:

"She [the trafficker] came to my home twice, telling me that I am so poor that she will give me money to help me

but that I must let her take my daughter in exchange. I said that I would never sell my daughter, so please leave us alone. Then on September 9th, 1998, she came again and took my daughter away [in secret]" (Relative of a trafficked victim).

She explained that her daughter was watching television then. When she returned home, the woman had taken her away. The trafficker later told the mother that it was her fault of "not letting her daughter to go with her", so that she was kidnapped "by someone". By 2002, the mother received a letter from her daughter and realized that it was precisely that woman who did the kidnapping.

Indeed, trafficking is a profitable business. Information from a group discussion in Ha Long show that the price of a trafficked woman varies from 5 to 7 million Vietnamese dong (US$ 700 to US$ 900), but can be much higher if the trafficked is young and beautiful. Another study reported that to marry to a "beautiful" Vietnamese woman, the cost is only about 7,000 to 8,000 Chinese yuan (US$ 880-1,000). If the woman is considered not to be beautiful, the cost is about 3,000 to 4,000 yuan (Vu and Nguyen, 2002).

## 4. Life and work in China

### 4.1. Women trafficked for the purpose of marriage

Women married to Chinese men were both wives and domestic workers for the family they lived with. Moreover, nearly one half cultivated the household land plot. For most of them, life was very hard. As admitted by a returnee:

"You know that agricultural work is very hard. I am their daughter-in-law, so I should work" (Returnee). "No one asked me. I left by myself. It turned out that life there was so hard. I could not stay. I returned home after a few months".

Despite their hard work, only 12.1 percent of the returnees had some savings–which was about 10 percent of what they had made. Very few (3.8 percent) were able to send remittances home which had no significant influence on their family income. In Vu and Nguyen's study, none of the study participants had been able to send remittances to their families of origin (Vu and Nguyen, 2002).

In some cases, trafficked women experienced physical abuse from their husbands and husbands' family members. For example, in a group discussion at Ha Long city, participants mentioned that:

> "In Mong Cai, there are two or three women. I do not know if they escaped or were kicked out by their husbands. They were beaten up so severely that they became stupid" (GD, Ha Long).

The mother of a returnee reported the following:

> "They [the Chinese husband's family] did not allow my daughter to sleep on a bed when she was sick. They put her on a wooden board... This time, for some reason she got a swollen leg, thus could not work, could not eat. When we received the telegram, my husband and I sold our pigs for 2 million to go visit her. We then asked her [husband's] family to take her to the hospital, not to let her lying on the ground and give her some medicine. I stayed with her for a week, asking them to let her go back with me but they refused. So I had to leave" (Mother of a returnee).

In another case, a woman was sterilized without her consent:

> "Yes, probably they [Chinese doctors] know that she already has one child, so after she delivered the second child, they sterilized her" (Relative of a trafficked woman).

Nevertheless, there are cases reported in which some women find their marriage satisfactory. As witnessed by the mother of one woman who got married with a Chinese man:

> "When I visited my daughter [in China], I found her family pretty good... He [Chinese husband] is nice with my daughter. He likes me too. I think that he is pretty kind" (Mother of a trafficked women)"

or admitted by a returnee:

> "My Chinese husband is very good. I had a daughter with him" (Returnee).

In most cases, the women surveyed and interviewed found that their expectation before departure was very far from the reality they encountered on the other side of the border.

> "No one persuaded me. I went there myself, thinking of finding a husband who would have money to help me raise

my children. I was shocked to discover that life there was even worse than here. I could not live. I stayed for a few months only" (Trafficked woman).

Economic hardship, in combination with cultural differences, made their experience bitter:

"It's really hard. I left my home village but there I also lived in a poor rural commune, in the mountainous area. The weather is different. I do not know their language. I became very home sick. So I left" (Returnee).

The respondent admitted that her Chinese husband was very nice to her. She had a daughter with him, but as her economic expectation could not be fulfilled, she took her daughter back to Vietnam.

## 4.2. Women trafficked to work in prostitution

Quantitative data of the survey shows that of the total 213 women, 23 (10.8 percent) worked in prostitution in China. They served at least two clients a day while working in various establishments in Chinese towns. The number of clients they served, however, can be much higher. For example, 87.5 percent of them had to serve at least 5 clients a day and even 25 percent of them had to serve 10-15 clients a day.

A returnee reported:

"The sisters [other sex worker] when they just arrived often served up to 20 clients a day. Now they serve less, but at least 3 or 4 clients a day".

Few women in the study sample voluntarily worked in the sex sector in China, as most of them were forced to work (86 percent). Sometimes, enforcement is as harsh as the following experience reported by one of the women:

"She is from Gia Lam, Ha Noi. She is now about 28, 29 years old. She loved a man when she was 15... She got pregnant... She was cheated by her friend and sold to China. She was eighth-month pregnant but they [employers] steamed her child out so that she can work. It was a boy."

Once being held to work as sex workers, it was very difficult for women to escape.

"We work without knowing when we can escape, when we can return home, day after day, month after month" (Trafficked woman).

Sometimes they were sold from establishment to establishment by their employers, a common practice found in the sex industry. A woman explained that she was sold to China from one brothel to another. She was kept locked, under close guard and when she went out to the market, someone followed her:

"Yes, they locked us in the house and forced us to serve clients" (Trafficked woman)

While Chinese police can be a source of rescue, for most women in this study, it represented a source of fear and harassment. Women feared being arrested and abused due to their illegal status:

"We came to the hotel by the backdoor [to serve clients] and got back also by the back door.... It is very dangerous if the [Chinese] police come. Sometimes when we were with clients upstairs, we heard the siren of police cars and were so afraid that some jumped out of the windows, or ran from roof to roofs. If arrested, they will abuse us. If the employer pays for us to be released, then we have to work more to pay that debt" (Trafficked woman).

Physical punishments were used to repress the women if they acted against employers' orders, or when they attempted to escape:

"There was a sister who was afraid of working, so she hid herself in the wardrobe. She was found and beaten up unconsciously with electric wires. They poured water over her so she woke up and was forced to work. So other sisters convinced me that I should work to avoid being beaten and that when the opportunity comes, I can escape."

## 5. Escape, rescue and return

The length of stay in China varied. Half of women of the sample (50.7 percent) stayed less than one year before making their way back to Vietnam. Failure to realize their expectations is the major reason for returning, while a few who were trafficked without any intention to go to China always wished to return and eventually succeeded. Another 27.5 percent stayed one to two years. Less than ten percent stayed two years to five years, while 7.7 percent stayed more than five years to less

than ten years. Just a few of them, about 4.3 percent, stayed for more than ten years (the maximum years of stay is 16).

Regarding their return, more than a half of the women (55 percent) escaped by themselves. The escape is often extremely difficult and very dangerous.

> "Some could not return because they were taken too far [into Chinese land]. Recently, we met some and they said they had just escaped. They said many could not return because they do not know how to" (GD of local government officials, Hai Dong).

A relatively large number, 21.1 percent, returned with the help of other people, or Vietnamese citizens whom they met by accident:

> "I myself helped two women to escape. I went to Dong Hung to collect potato leaves for pig raising. They had been kidnapped to serve a Chinese family as wives and domestic servants. They cooked daily for them. I saw them standing by the window, crying. I helped them to break the window. I gave them my shirts and we three carried potato leaves back to Vietnam…. One stayed there for one year and was 24 years old. She took her one-month old baby with her" (FGD, Hai Dong).

Of these 21.1 percent, 7.2 percent escaped with the help of the traffickers who sold them earlier. In general, the family contacted the trafficker, paid a lump sum in exchange for the trafficker to bring their daughter back. This clearly shows that some traffickers are known by the local population, but that the legal system is still ineffective in dealing with them. Another 9.6 percent (trafficked women who worked as sex workers) escaped with the help of clients who were sympathetic and wanted to help. Sometimes, these women were supported by the local Chinese people (4.3 percent).

Direct help from relatives in their rescue was also effective, accounting for 9.1 percent of cases. Interviews with family members of those who were trafficked show that they themselves can rely on their social network to find their lost relatives, and some are successful in doing so. One story is about a woman who found the Chinese men who sold her daughter (to work as sex workers). The negotiation ended up quite positively: "The Chinese guy said 'if she [the victim] is your relative, you can take her home" (GD, Hai Dong). Other stories told of family members asking "resource" people to go to China in search of their loved ones. But the cost can be high, and the search can be clueless. In some cases, families spent millions of dong and never

found their daughter. For example, a woman searched two years for her daughter by asking everybody she met and never found her. She explained:

> "I heard that we can ask someone to go to China to find our relatives [the trafficked]. But it will cost millions. I am poor so I cannot do so. So I simply asked people if they saw my daughter. I am also waiting for her letter" (Mother of a trafficked woman).

The situation was better when the trafficked women found ways to send letters home, which provided clues for their relatives to find them.

For women who migrated to China voluntarily to get married, returning home is sometimes a matter of choice. The study data show that about 9.6 percent of them simply visited their homes in Vietnam and then decided to stay, leaving their Chinese husband behind. They often took their children with them. A few returned to Vietnam after the death of their Chinese husbands. Some even returned home with their husband's consent.

The above information ultimately highlights the effectiveness of informal network and individual efforts made by the trafficked women and their relatives. It shows the ineffectiveness of state intervention in rescuing efforts, and the lack of cross-border cooperation between China and Vietnam. Of all the returnees, only 5.3 percent returned with the help from police. A story told by one respondent shows how difficult the situation may be:

> "Yes, I still remember the first day Chinese police arrested me.... Other sisters who were arrested several times said: Don't be afraid. They [the police] will release you after three days. Our employers will come, pay some money, and get us out."

In one case, a woman returned to Vietnam due to (Chinese) state enforcement on abortion. She had two children with her Chinese husband. Because when she was pregnant with her third child, local authorities wanted to force her to have an abortion:

> "My husbands already agreed with the abortion but I did not agree. I was pregnant so I wanted to give birth and to raise my child. But the police forced me to go for abortion. Because I refused, the police was going to arrest me. So I escaped through hills and mountains, leaving everything behind" (Returnee).

## 6. Reintegration or leaving again?

Statistics collected from the returnees show that, in their opinions, most find no change (74.6 percent) in the attitudes of their family and community when returning to Quang Ninh. Some of them (16.4 percent) even find sympathy and support from the community. In the opinion of a resource person:

> "We think that it's not serious. Some even support them [the returnees]. Initially people keep some distance from them but after we had propaganda activities here [awareness raising on trafficking], we understand and support them."

Nevertheless, this does not mean that reintegration is an easy process. About 10 percent reported facing degrading rumours, stigma and discrimination from the community people. "Having been to China" is a phrase that can immediately bring negative meanings such as prostitution, "money loving" (which is culturally negative), and marriage to an "outsider" (also culturally negative). In a group discussion in Hai Dong, for example, same participants openly expressed their views about the returnees:

> "Here we have many returnees. We know that they returned from China so we do not want to meet or associate with them. Some even disdain them… They are often asked 'You've returned from China, haven't you?'… Generally speaking, they must feel shamed to death" (FGD, Hai Dong).

One major difficulty faced by the returnees in the study is to get their civil and household registration back upon returning to Quang Ninh. The first one relates to cultivation land:

> "The biggest difficulty for them is that they have no land. They can stay with their parents or other sisters and brothers, but they do need their own land to make a living" (Head of Women's Union).

This problem arises when local authorities learn that someone has migrated to China and decide to remove this person from the list of residents. Following this removal, the person also looses all entitlements, including entitlement to agricultural land. For example, one informant notes that:

> "She has lost her household registration since then [when she left for China]…[As a result] she has to rent land to cultivate" (Relative of a returnee).

In addition to land, household registration is linked with access to all social services and entitlements.

> "Without it [household registration] it is very difficult to support them [the returnees]. It relates to the education of their children [children cannot enrol in schools without household registration in the local neighbourhood]. We hope that local authority will allow them to register. If not, they will find themselves marginalized, and may go [to China] again" (FGD in Ha Long).

The problem is correctly pointed out by a resource person:

> "Our legal system has not been updated to deal with the current situation. Some changes have occurred and are not been covered by the current laws" (FGD in Ha Long).

In fact, realizing the problems, community authority in Mong Cai have already reported the situation to the municipal police, but it will take time to reach the central government level and even longer time for any policy change. One local cadre said:

> "In real life, a lot of things happen. So it is important for the local authorities to inform the central government timely. But they cannot act as long as they do not receive feed-back instructions from the government. Since central government offices only deal with macro issues, they do not fully realize how things can be at the ground level".

The cadre suggested that one way to raise the awareness of the government and national attention to the issue is to ask the Vietnamese television to broadcast a special report on trafficked women who return to their communities. A documentary film would also be very useful.

Children of returnees born in China also have difficulties in getting household registration. The children are considered Vietnamese-Chinese by the local authorities who do not know how to deal with them. An interview with a respondent tells us how the situation is:

> "I have a certificate from the hospital where I delivered my child. I also have a household registration. But his father is in China [she married him but has returned home]. So they [the local authorities] said my child is Chinese and did not

give him a birth certificate here. In ten years, I have not been able to obtain a birth certificate for my son so he went to school only with his hospital birth certificate… Finally, cadres of Vietnamese Women's Union told me to report that I had my son with a Vietnamese man without marriage license to have the official certificate… But it was not easy. It actually costs me some money to do it" (Returnee).

In any event, without instructions from the higher level, local police simply refuse to register the returnees and their children as local residents. This obviously creates discontent from the community:

"As far as I know, even foreigners can apply for Vietnamese citizenship. So why can't they? They are Vietnamese. They are simply women who were cheated and now return. But they are not allowed to have household registration. The police should have instructions of how to register them. They cannot simply say no. It's irresponsible… We cannot abandon our citizens like this" (FGD, Ha Long).

Without household registration, some cannot even stay in their home:

"When she [the returnee] knew that there was an unused kindergarten nearby, she wrote a request letter to the sub-district People's Committee seeking permission to stay there. It took a very long time to get the approval, but she cannot stay there for free. She pays 150,000 dong (about 9.4 US$) a month" (Relative of a returnee).

Lacking household registration, their civil rights as citizens are denied and they can fall victims of the local police misconduct. For example, a trafficked woman went back to her community, but

"Whenever she 'sneaked' back, police often came and threatened her. She was even taken to the police station once and abused. This made her decide to go back [to China]" (Relative of a trafficked woman).

The returnees generally admit to have committed illegal acts since they crossed the border without legal permission. Often, they are even denied repatriation from the Vietnamese side because they are wrongly considered as criminals. Others reported that trafficked women from Vietnam were sometimes rounded up by Chinese authorities and sent back to Vietnam (at different illegal entry points along the border) or

officially repatriated to Vietnam through the international border gate in Mong Cai. However, as most of them crossed the border illegally, with no passport or identification, they lacked the necessary conditions for Vietnamese border-guard officers to accept them through official repatriation (Vu and Nguyen, 2002).

Regarding the role of local authority in the reintegration of the returnees, a number of activities have been undertaken. The key actor at the community level is the Women's Union which is responsible for raising awareness of the community of the need to "sympathize" and support the returnees so that they can reintegrate into the community "smoothly". Members of the Women's Union also approach the returnees themselves, doing counselling and helping them to form "peer club" for mutual support among them. The local Women's Union also runs saving and credit programs aiming at the target group of the returnees, so that they can get loans to improve their living standards. However, due to budget limitation, the returnees can get only small loans (about 1 million dong, or US$150.00). Therefore, the effectiveness of these programs is not high.

In the study, all the women were asked about their plan for future migration. Astonishingly but understandably, 84.6 percent have considered migrating again. Obviously, migration remains the major solution for these women encountering economic hardship and social stigma. Among them, 20.6 percent considered going abroad, more likely to China.

The fact that there are up to 50 percent of the women in the study who do not know what job they may find at place of destination, who their employers will be, and how much they will earn shows the potential vulnerabilities they are facing.

## 7. Conclusion

This chapter has examined the factors leading to migration and traffic of Vietnamese women to China at the north-eastern Chinese-Vietnamese border. Our first argument was that it is impossible to examine voluntary and forced migration without considering how intertwined they may be. In the case of the women studied here, nearly all of them intended to go to China or accepted the idea after it was proposed to them. That is to say, they were migrants before they became victims of traffic. Moreover, some women voluntarily followed people they were uncertain about, in the hope that they would be lucky and achieve their objectives. The women studied here are far from being victims only; they actively contributed to their departure, and

once abused and deceived, actively worked towards their return and rescue. While the drama lived by some women victims of trafficking needs to be told, it is equally important to acknowledge that the desire to have a better life is often a pre-condition for ending up being trafficked by traffickers. While the continuum and alliance between migration and traffic seem logical conceptually, studies in most developing countries fail to consider them in tandem. The separation of migration and trafficking can only lead to unsuccessful policies and interventions.

Secondly, our objective was to document the reasons motivating women to go to China. An important proportion of women aimed at getting a husband and having a child. This finding shifts the focus from purely economic reasons for migration to more complex sets of reasons including family, marriage, work and poverty.

The deficit of women on the Chinese side of the China-Vietnam border is apparently creating a market for Vietnamese women. However, the context of the migration of Vietnamese women to China is more complex. Given the Chinese's men desire to marry down, it is legitimate to ask whether the opening of the border without a female deficit might have produced the same result. We feel that given the general preference for marrying a woman or a man of one's own country in Vietnam and in China, the female deficit is putting additional pressure by contributing to the phenomenon. These cross-border marriages are the last resort for both Chinese men and Vietnamese women.

Regardless of the underlying factors, the respective governments should be honest about the situation and deal with these migratory and trafficking flows as soon as possible. Currently, migrants and trafficked persons have no rights in China and loose their rights upon their return to Vietnam. The fact that most of these migrants and trafficked persons are poor women who illegally crossed the border in the hope of a better life or as victims of traffic, speaks to the gendered nature of the whole issue. On the one side of the border, female are missing due to discrimination. On the other side, some women try to take advantage of this need for Chinese women by migrating to China, but, in the end, Vietnamese women are also discriminated against. This unacceptable situation calls for further research, including on the Chinese side of the border.

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## List of other papers presented at the Singapore conference in December 2005

Pradeep Kumar BHARGAVA and G.M HIREMATH (Population Research Centre, Dharwad, India) - *Proximate determinants of sex ratio and its regional variations in India*

CHEN Wei (People's University of China) - *Sex ratios at birth in China*

Vo Anh DUNG, Phuong THI THU HUONG (Vietnam Commission for Population, Family and Children Information, Vietnam) and NGUYEN Ngoc Huyen, Le THANH SON (Ha Tay Province's Commission for Population, Family and Children Information, Vietnam) - *Sex ratios at birth in Vietnam and some localities: Current situation and comments*

Christophe Z GUILMOTO (LPED-IRD, France) - *Spatial regression and determinants of juvenile sex ratio in India*

Matthias LARSEN (Göteborg University, Sweden), Pernille GOOCH and Neelambar HATTI (Lund University, Sweden) - *Uncertainty and discrimination: Vulnerable daughters in a modernizing society (India)*

William LAVELY (University of Washington, U.S.A.) - *Sex selective abortion, hidden girls, or infanticide? Explaining the female deficit in a chinese county*

Tiodora Hadumaon SIAGIAN (Central Board of Statistics, Indonesia) and Dasvarma GOURANGA (Flinders University) - *The masculinization of the sex ratio in Indonesia*

Ena SINGH (UNFPA, Delhi) - *Sex selection: Advocacy and communication challenges*

Sayeed UNISA, Sucharita PUJARI and R. USHA (International Institute for Population Sciences, India) - *Measuring sex selectiveabortion in India: Evidence from Haryana*

Leela VISARIA (Gujarat Institute of Development Research) - *Female deficit in India: Role of prevention of sex selective abortion Act*

YANG Wen Shan (Institute of Sociology, Academia Sinica, Taiwan) and LIU Ying-ying Tiffany (Research Center for Social Sciences and Humanities, Taiwan) - *Gender imbalances and the twisted marriage market in Taiwan*

YUAN Xin (Nankai University, China) and Edward Jow-Ching TU (Hong Kong University) - *High sex ratio at birth and female deficit in China*

ZHOU Yun (Peking University, China) and ZHENG Zhenzhen (China Academy of Social Sciences, China) - *Sex ratio of reported birth between 1910 and 1969 in China.*

Is bringing up a daughter like "watering the neighbour's garden" as is often said in Asia? The growing masculinization observed in several Asian countries' populations over the last two decades confirms that discrimination towards girls are on the rise, combining both sex-selective abortions and excess female child mortality. With China and India accounting for a large share of the world's population, their changing sex composition has already increased significantly the proportion of men on the planet. There is, however, a real ignorance about the potential impact of the current demographic trends, leading observers to draw all kinds of conclusions ranging from rather optimistic views of future self-regulatory mechanisms to more doomsday scenarios of women shortage.

Essays in this volume proceed from an international conference on female deficit in Asia held in Singapore that brought together demographers and other social scientists from America, Asia and Europe. They cover a wide array of territories and topics and should help to map the priority issues for future research and intervention on masculinization processes in Asia. While hampered by the lack of adequate data, demographers have nevertheless been able to piece together most of the demographic puzzle behind the rising sex ratios observed among the child population in Asia. What emerges is the joint impact of both prenatal and postnatal discriminations towards girls. Moreover, sizeable variations in sex ratios across regions, socioeconomic classes, religions or ethnic groups within countries suggest that several factors are at play in determining discriminatory behaviour. Studies included in this book provide also a sample of field-based investigations conducted in local communities. Going beyond measurement issues, the ethnographic approach sheds a new light on the distinctive discrimination nexus in rural contexts in Asian countries and its relationship to traditional institutions, family arrangements, economic change and fertility decline.

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