

Fewer births, but a boy at all costs: selective female abortion in Asia

Gilles Pison *

Population & Societies has not so far turned its attention to the rising proportion of male births in Asia today. And yet it will have far-reaching social and demographic consequences, not just in the countries affected, but for all humankind: it bears remembering that China and India alone hold nearly 40% of the world population. Gilles Pison reflects here on the origin, scale and mechanisms of the phenomenon.

Ordinarily, 105 males are born for every 100 females in human populations, and this is a typically unchanging biological norm. But the share of new-born males has been rising since the 1980s in a number of East Asian countries, especially China and South Korea (figure 1). There is a marked preference for sons in these countries. But it is near-immemorial, so why has it not previously produced a rise in the proportion of male births? Will this imbalance deepen and spread to other countries or regions of the world? And might it radically change gender relations in the long run?

◆ Couples want at least one son

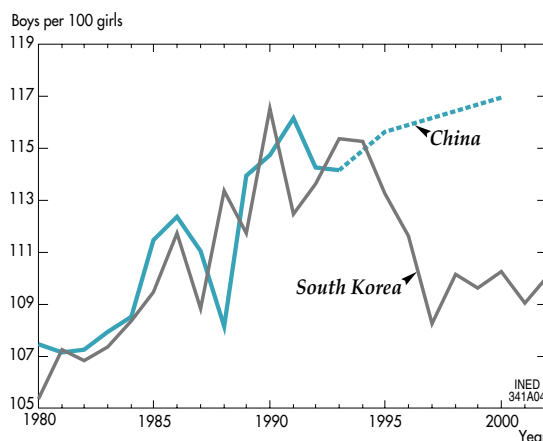
The roughly simultaneous rise in the proportion of newborn boys in China and South Korea stems from two characteristics shared by these countries. First, they are highly patrilineal societies—property and rights were still passed down from father to son until recently—where women are accorded low value, such that families are keen to have at least one male heir to carry on the male line. That child's duty will be to care for his parents through old age, and after their death,

* Institut national d'études démographiques.

perform the ancestor worship rites.

There has also been a sharp drop in average fertility from almost six children per woman going into the 1960s to under two today: 1.9 in China and 1.3 in South Korea in 2001. It has totally rewritten the male birth probability. In high fertility periods, few families lacked a son. A six-child family has a very low probability of having no son (less than 2%), and in more than

Figure 1 - Sex ratio at birth
in China and South Korea since 1980



Sources: [1], [3], Korea National Statistical Office.

98% of cases, will have at least one; with two children, by contrast, the probability of having no son is close to a quarter (1). The frequency of this eventuality has therefore risen inversely to the fertility decline. In their aim to reduce family size, but have at least one son, couples have sought to eliminate the element of randomness in prenatal sex determination.

◆ Abortion rather than infanticide

Prenatal sex determination is an age-old dream. But the technology is still not there for preconception sex selection, or for significantly increasing the probability of having a boy or a girl. The method used in rising male birth ratio countries is to determine foetal sex prenatally, and abort if it is the “wrong” one. This does not fully deliver the aim: it avoids daughters, but does not ensure sons. There may, therefore, be multiple pregnancies and abortions before a son is achieved, as some couples still do not succeed even after repeated attempts. The underlying assumption of this method is that foetal sex can be accurately detected.

This only became possible in 1972, by taking a sample of foetal cells by amniocentesis for karyotyping. But it is a difficult and costly procedure, and still available only in wealthy countries or to the affluent few in poor countries. Advances in ultrasound methods in the 1970s and their wide availability since the 1980s through the development of smaller, cheaper equipment maximized the accessibility of prenatal sex detection. It is a comparatively accurate method of sex determination from the 3rd to 4th month of pregnancy.

Another factor in the abnormally high sex ratio at birth in China and Korea may be female infanticide. This is a practice long-reported in China and other Asian countries, and often goes together with non-registration of the disposed-of child's birth, adding to the visible girl deficit in the statistics. But the near-normal sex ratio at birth of the 1970s suggested that female infanticide had declined or was less widespread than

(1) There is an even chance of having a girl at each birth. In a two-child family, because the second pregnancy outcome is independent of that of the first—a first birth-order girl does not increase the likelihood of the second child being a girl—the probability that both children will be girls is the product of both probabilities: that of having a female firstborn and a female secondborn, i.e., a half times a half, or a quarter. A quarter of two-child families have only girls, a quarter have only boys, and half have one boy and one girl.

Extrapolating the argument for two-child families to six-child families, the probability of all six children being girls is a half to the power of six ($0.5 \times 0.5 \times 0.5 \times 0.5 \times 0.5 \times 0.5$), i.e., 1.6%. Recalculating this not with an equal proportion of boys and girls at birth, but with a slight surplus of boys, as in reality—105 boys for 100 girls—the probability of all six children being girls is somewhat lower still (1.3%).

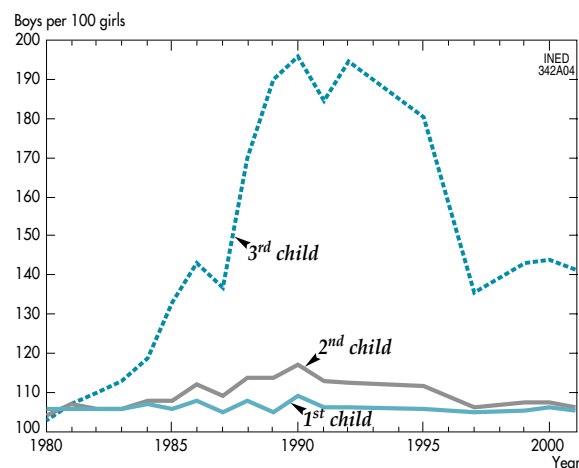
thought. The scope for selective female abortion over the past twenty years not only makes it possible to avoid infanticide but must also be a factor in reducing its frequency. Non-registration of female births offers no better explanation of the two-decade rise in the sex ratio at birth: while vital registration of some female births may be omitted, few girls escape the subsequent population census, given the care taken over enumeration.

The coercive one-child policy is also sometimes claimed as a main contributor to the increased share of boys in China. Certainly, families were reluctant to have an only daughter, but the official policy also reflected their smaller family aspirations. Also, a similar sex imbalance to that of China emerged simultaneously in South Korea and Taiwan, which did not have a one-child policy, as well as in Hong Kong before its return to China. In fact, the increase in sex ratio at birth since the 1980s is due to a combination of three things: a reduction in family sizes, the desire for a son at any cost, and the spread of ultrasound methods.

◆ Sex of first-born still left to fate

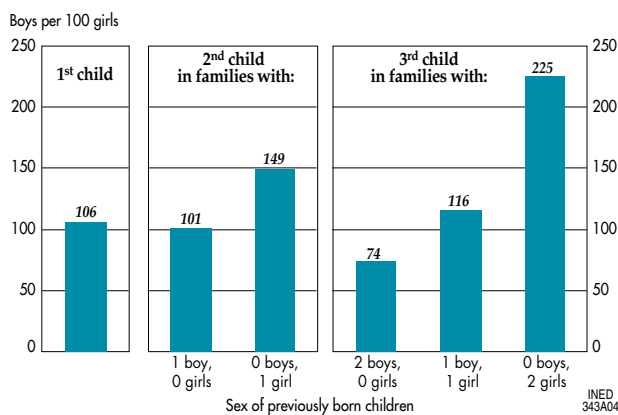
The sex ratio at birth has remained normal for first-borns in all these countries. The excess of males is seen only from birth order two, and the rise is parity-specific. In South Korea, for example, the share of boys in second-order births increased to 117 boys for 100 girls in 1990, slipping back to near-normal values after 1995 (figure 2). The rise among third-order births was even sharper: nearly two in three were males in the early 1990s. The proportion also fell thereafter, but remains unduly high: over 140 boys for 100 girls in 2000.

Figure 2 - Sex ratio at birth in South Korea since 1980, by birth order



Sources: [1], Korea National Statistical Office

Figure 3 - Sex ratio at birth in China in 1989-1990 (1), by number and sex of previously born children



(1): children born between 1 January 1989 and 30 June 1990 surviving at time of 1990 census.

Interpretation: in a one-child family which has a second child (central section), the sex ratio for that second birth is 101 boys for 100 girls if the first child is a boy compared to 149 per 100 if it is a girl; in a two-child family which has a third child (right-hand section), the sex ratio of that third birth is 225 boys for 100 girls if the first two births are girls, etc.

Source: [3]

Most couples, therefore, still trust to fate for the sex of their first-born. It may be that in banking on a son, they forego an ultrasound scan and abortion to increase the probability of a male birth. By the second birth, by contrast, they aim to remove the random element in the probability of a male birth if the first child is female, or a daughter if the first is a son. In China, the frequency of couples whose second child is female where the first was male is slightly higher than might be expected (101 boys for 100 girls) (figure 3). At birth order three, after two boys, the excess of females—or male deficit—is more marked still: 74 boys for 100 girls. If Chinese couples want a son at all costs, they also want daughters and are ready to terminate male foetuses to achieve that.

The desire for sex balance in children is very widespread in the world. France is a case in point: parents with two sons or two daughters more frequently have a third child than those with one boy and one girl: 34% against 29%, based on the proportion of parents having a third child within five years of the second birth (data for the 1970s) [2]. Among the two-son families, 32% have a third child compared to 36% of two-daughter families. Over and above the desire for one child of each sex, there is a slight son preference, even in France. The difference compared to China is that couples seek to achieve that through an additional birth rather than selective abortion.

Chinese couples welcome the birth of a daughter

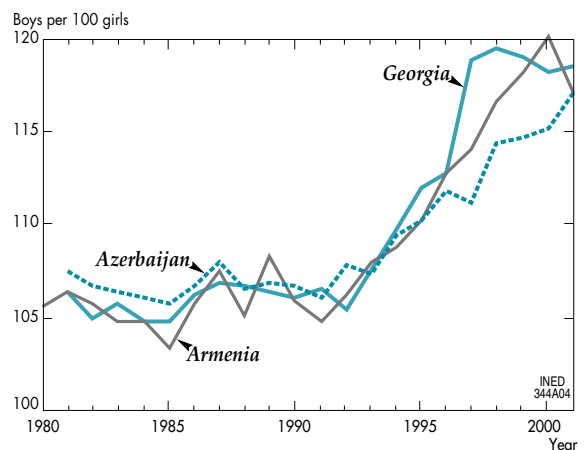
following that of a son. But a male child remains the primary preference. In more than two-thirds of cases, two-daughter families who have a third child will have a son (225 boys for 100 girls), whereas in the symmetrical situation mentioned above—two sons, no daughter—the ratio is 74 boys for 100 girls (figure 3). And with one boy and one girl, the third is also more frequently a boy (116 boys for 100 girls).

◆ Selection also practised in India and the Caucasus

The sex ratio at birth has also increased recently in India, but still falls short of Chinese levels: the Indian census of 2001 counted 108 boys for 100 girls among under-7s, compared to 106 in 1991 and 104 in 1981. At present, the sex imbalance mainly affects states in Northwest India, especially Punjab and Haryana, where the census reported almost 125 boys for 100 girls among the under-7s [4].

Though geographically far-removed from China and India, the three Caucasus countries (Georgia, Armenia and Azerbaijan) experienced the same increase in the sex ratio at birth in the 1990s, rising to nearly 118 boys for 100 girls in 2001 (figure 4) [5]. As in East and South Asia, this is attributable to selective female feticide, and is likewise connected to the combination of a marked son preference, fertility decline and the spread of ultrasound methods. The son preference is clear from an analysis of the proportion of couples with one child who go on to have another one. Where the first-born is a girl, a slightly higher proportion has a second child than where the first-born is a boy (figure 5). But the difference is much more pronounced in the case of the third child. More than 40% of couples

Figure 4 - Sex ratio at birth trends in the Caucasus



Source: [5]

with two girls in Georgia have a third child, compared to only just under 20% of those with two boys, or one of each sex. The gap is equally wide in Armenia: nearly 60% of the former have a third child, against nearly 35% of the latter.

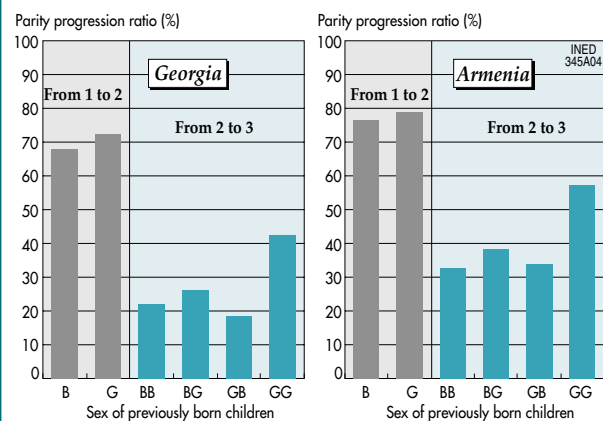
Is the imbalance set to worsen? Not all Indian Union states or Chinese provinces have yet been affected by the phenomenon: the high-fertility ones in particular have remained untouched; there is, therefore, still scope for it to spread in these countries, and for the sex imbalance to worsen, especially in India. But it could also recede, as in South Korea (figure 1). Having taken the measure of the problem of sex imbalance, the Korean authorities have followed other countries by prohibiting foetal sex determination examinations and selective abortion; severe penalties exist and have been imposed on offending doctors [6]. Punishment has been accompanied by campaigns to bring about changes in attitudes and improve women's status. These measures taken in the early 1990s seem to have had an effect, since the sex ratio stopped rising, and even decreased from 115 boys for 100 girls at the start of the 1990s to no more than 110 (figure 1). But the decline has halted and the—albeit reduced—imbalance remains.

◆ Female generation replacement more difficult

Whether the phenomenon is likely to extend worldwide cannot be said for sure: several East and South Asian countries which have seen a recent sharp fertility decline (Indonesia, Vietnam, Singapore) still have a normal sex ratio. Nor have any signs yet been seen in the countries neighbouring the Caucasus (Russia, Iran, Turkey) or in Central Asia. Likewise Bangladesh and Pakistan; but fertility in these countries, although declining, remains quite high, and they could be affected when the pace of decline quickens. In the rest of the world (Latin America, Africa, North America, Europe) the sex ratio has so far retained normal values. However, the phenomenon—which will arguably remain confined to a handful of countries—has a world dimension by reason of the demographic load of two of them: China and India together account for 38% of the world's population and one-third of world births.

Whether the sex imbalance at birth increases or decreases in the future, there is already male over-representation in existing cohorts of children, the effects of which will pursue them through their life course, particularly at the age of union formation: girls, being outnumbered, will easily find a partner, while some boys

Figure 5 - Parity progression ratios in Georgia and Armenia by sex of previously born children



Interpretation: in Georgia, the probability of a one-child family having a second child (left-hand section) is 73% where the first-born is a girl, compared to 68% where it is a boy. The probability of a two-child family having a third child (right section) is 44% if the first two are girls compared to 19% if the first is a girl and the second a boy, etc.

Source: [5]

will remain unpartnered. Population forecasts will need to be revised: when these cohorts reach reproductive age, the total number of children produced by this small female population will be sub-replacement level—105 boys for 100 girls will require an average 2.1 children per woman to ensure replacement, but with 120 boys for 100 girls, that will rise to 2.25. Population growth in the countries concerned could slow down more quickly than expected, and the pace of demographic ageing quicken. The total world population would level off earlier than predicted and at a lower level.

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