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"Is banning sex-selection the best approach
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Is banning sex-selection the best approach for reducing prenatal discrimination?

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Abstract

Pressure to ban prenatal sex-selection has grown with rising sex ratios at birth in some countries. Governments feel pressured to act, and bans seem an immediate step they can take. However, such bans have been in place for some time in South Korea, China, and India and the available evidence suggests they are difficult to implement and have limited impact. This is indicated most clearly in the Chinese census data, which throw light on the mixed effects of a very intensive effort to implement the ban.

Studies show that, like abortion bans, bans on sex-selection have negative consequences for unwanted children and their mothers. By contrast, studies show that other policies — including mass messaging and measures to increase gender equity — show fairly quick impact in reducing son preference and increasing parental investment in girls. Such policies can permanently lower son preference and sex-selection, while also improving girls' life-chances.

Keywords: Son preference, abortion bans, gender, policy measures, China, India

Pressure to ban the use of modern technologies for sex-selection has grown in response to concern about rising sex ratios at birth in societies with a cultural preference for sons. Such bans have been in place for some time in countries such as China, South Korea and India, and countries in the South Caucasus and the Balkans which have high sex ratios at birth are under increasing pressure to impose such bans (Council of Europe 2011, 2014).

Governments feel the need to do something about sex-selection, and bans seem an immediate step they can take. This paper begins by summarizing the laws and sanctions accompanying the bans in China, South Korea and India. Section 2 discusses the evidence on the effects of bans on children's life-chances. This discussion draws on studies of both sex-selection bans and abortion bans, given the relatively few rigorous studies available. Section 3 discusses the available evidence on the effectiveness of these bans in reducing sex-selection, but rigorous studies are few due to lack of randomized data. The 2010 census data from China are then discussed, which throw light on the results of an intensive effort to implement the ban. The data from China show the clearest impact of such bans, while also illustrating the difficulties of implementing them. Section 4 discusses alternative measures that governments often take, such as mass messaging and legal measures. Studies show that these can have quite quick impact on lowering son preference and increasing investment in girls. Section 5 summarizes what the available evidence indicates on policy choices for reducing sex-selection.

1. Bans against sex-selection

The content of laws banning the use of technologies of sex-selection differs between countries and over time (Mohapatra 2013). They may prohibit prenatal sex-detection and/or sex-selective abortion, and may also apply to the period before conception. While most bans impose penalties on those providing sex-selection services, some also punish those who seek these services. All these types of bans seek to limit prenatal sex-selection, and will be referred to here as bans on sex-selection.

Bans on sex-selection for non-medical reasons are in place in most East Asian and South Asian countries with high child sex ratios. They are also in place in many developed countries (Darnovsky 2009). This paper discusses the bans in South Korea, India, and China, which have been in place for some decades.

In 1987, the South Korean government prohibited testing to identify the sex of a fetus, and providers could be punished by imprisonment for up to three years or a fine of up to \$10,000 (Sung 2012: 297-8). In 1990, the Ministry of Health and Social Affairs suspended the medical licenses of eight physicians convicted of performing the tests – an action that was widely reported in the media (Westley 1995). The effort to enforce the ban increased further in 1994. As South Korea is a small country with a tightly-regulated health sector, it is far easier to implement such bans than in China and India. In 2008, the Constitutional Court ruled the ban on sex-detection unconstitutional, on the ground that it infringes the rights of health providers and parents.¹

In India a 1994 Act (effective as of 1996) banned healthcare providers from providing sex determination during pregnancy except for sex linked genetic conditions.² In 2002, the law was amended to include sex-selection at the time of conception. It imposed stringent punishments for

medical practitioners as well as for clients practicing sex-selection — the woman herself being assumed to have acted under familial pressure and innocent unless proven otherwise.³ Ultrasound tests were only permitted under severely limited conditions and doctors required to maintain detailed records justifying each ultrasound test.⁴ Ultrasound equipment had to be registered. The 2002 amendment also gave the authorities extensive powers of search and seizure, and legal redress against such actions was explicitly denied if the authorities had acted “in good faith”.⁵ Implementation of these laws has been somewhat haphazard as described below, resulting perhaps in exacerbating the potential negative consequences of such bans.

In China, a ban on sex-selective abortion was passed in 1994, and further tightened periodically from 2001 onwards (Li 2007). In the mid-2000s, the Chinese government tried to vigorously implement the ban, as described in Section 3.

However, these bans can be difficult to implement in settings where abortion is legal and the technology that permits sex-detection is available legally for routine medical purposes such as antenatal care. For example, abortion is legal in China and India. In South Korea abortion is illegal under their 1973 law except in cases of rape, incest, some birth defects and medical conditions, or to save the life of the mother (United Nations 2002). The sanctions for health providers include imprisonment or fines (United Nations 2002). However, the law is clearly lightly implemented, since abortion rates are very high: in 2005, there were about 0.79 abortions per livebirth. This is derived from the number of abortions in 2005 estimated by a survey of health facilities (Ahn et al 2012), and the number of livebirths recorded for that year by the vital registration system (Korean Statistical Information Service), and may be an underestimate since abortions tend to be under-reported.⁶

2. Negative effects of bans on abortion / sex-selection on unwanted children and their mothers

Many studies show that bans on sex-selection have a negative impact on the life-chances of unwanted children and their mothers, and this is shown clearly also by studies of abortion bans. This is quite aside from the fact that such bans affect women’s reproductive rights. Bans on sex-selection have additional ramifications, in that they force women to live with their families’ displeasure at having unwanted girls.

2.1 Sex-selection bans and the treatment of unwanted children and their mothers

Having unwanted daughters can affect how a woman is treated within the home. That women may suffer maltreatment in their households if they are forced to bear unwanted female children is highlighted by Article 22 of China’s 2002 Population and Family Planning Law, which simultaneously prohibits sex-selection and the maltreatment of baby girls and their mothers (Li 2007: Appendix Table 1). Ethnographic studies from China, India, and South Korea indicate that, while son preference remains high, women may be insecure and/or maltreated if they do not have sons. An extreme example of this is the burning of a woman and her two little girls by her husband’s family in Vietnam (Phan 2014).

This effect is found in an analysis of national survey data from China which finds that women with first-born sons are significantly better-nourished and have a larger role in household decision-making than those with a first-born daughter (Li and Wu 2011). Similarly, a study in India finds that women have poorer health outcomes if their first child is a girl (Milazzo 2014).

Evidence from diverse settings indicates that the practice of prenatal sex-selection improves the life chances of those girls that are born, since more of them are actively wanted.⁷ This is reflected in lower excess female child mortality after birth, and greater investment in their health and schooling.

A rise in prenatal sex-selection was found associated with a sharp decline in excess female mortality after birth in Taiwan (Lin et al 2014), while Kalsi (2013) finds further that this was associated with improvements in girls' education. In both cases, the improvements were sharpest among higher birth order girls, the group among which unwanted girls had earlier predominated. The authors conclude that greater investments are made in children who are actively wanted.

In India, Hu and Schlosser (2012) find that an increase in prenatal sex-selective abortion is associated with improved anthropometric indicators for girls relative to boys. Anthropometric outcomes are affected not only by nutritional intake, but also by the caloric drain of fighting infections and lowered ability to process nutrients. Thus the findings on improved anthropometric indicators are consistent with the large body of evidence from East and South Asia that unwanted girls (especially those of higher birth order) are given less access to medical care when they are ill (Li et al 2004, Asfaw et al 2008).

In assessing policy choices, it needs to be remembered that access to modern technologies is not required to achieve sex-selection. This is recognized by China's 2002 law prohibiting postnatal sex-selection, which also bans abandoning, maltreating, or discriminating against baby girls (Li 2007: Appendix Table 1). Unwanted girls suffer excess mortality after birth, especially if the family already has a girl, as shown repeatedly in studies in East and South Asia.⁸ Very high child sex ratios have been reached in the past through postnatal selection (Das Gupta and Li 2007: Figure 1).

2.2 Abortion bans and women and children's socio-economic outcomes

Analogous to the findings of studies of bans on sex-selection, studies from both developed and developing countries indicate that abortion bans have negative effects on women and children.

These studies show that less investment is made in the human capital of unwanted/unplanned children, affecting their future prospects. Variation in the timing of abortion legalization across states in the United States offers "natural experiments" to test the impact on women and children's lives. Gruber et al (1999) compared a range of outcomes between cohorts born before and after abortion was legalized. They found that before abortion was legalized, the 'marginal child' would have been 40–60 percent more likely to live in a single-parent family, to live in poverty, to receive welfare, and to die as an infant. Rotz (2013) analyzed the impact of legalizing abortion in New York, the first state in the United States to do so. She found that children were born into families with greater resources after abortion was legalized, since

women had been given greater control over the timing of their births. This improved children's prospects especially among poorer households, increasing the eventual wages of black, Hispanic, and lower-wage workers.

Romania offers another "natural experiment", since a stringent ban on abortions was passed in 1966 and enforced under a strong dictatorial regime, and birth rates doubled the following year. Pop-Eleches (2013) estimates that, controlling for the socio-economic background of the mothers, children born after this ban was imposed had worse educational and labor market achievements as adults.

Turning to the developing world, Jones (2011) used data from Ghana to examine the impact of shifts in the application of the United States' policy restricting foreign aid for family planning to any organization that provides abortions. She found a 12 percent increase in pregnancies amongst rural women in Ghana during periods when the policy was more strictly implemented, with a rise in abortions and unintended births. The unintended births were concentrated among the poorest and least educated women, and those children were significantly more likely to be stunted than their siblings. These findings are consistent with other studies that indicate that greater investments are made in planned children, for example when access to contraception is expanded.

The dearth of studies reporting no effect or a positive effect of abortion bans on women and children could be either because there is no such effect, or because researchers and journals do not consider the issue to be of interest.

2.3 Bans and access to safe reproductive health services

Making abortion illegal may force people to pay more for abortions, and resort to using providers with less training and equipment, with adverse consequences for women's health. This is not easy to document rigorously given the difficulties of collecting reliable data on abortions in developing countries, let alone data that permits comparing the cost and health implications of legal versus illegal abortions.

Perhaps the best estimates of the impact of abortion bans on maternal mortality ratios are from Romania, where the Health Ministry kept high-quality data. Maternal mortality rose sharply after the ban was imposed, and fell precipitously when it was lifted (David and Wright 1971:208, Serbanescu et al 1995:84). Data from the Romanian Health Ministry indicate that abortion-related deaths accounted almost entirely for the drop in maternal mortality ratios after the ban was lifted and women no longer needed to resort to illegal abortions (Serbanescu et al 1995:84).

Reports from India indicate that efforts to implement the ban on sex-selection have caused confusion and fear amongst medical practitioners, as well as pharmacists who sell medical abortifacients. Indeed, the 2003 revision of the sex-selection ban in India gave a range of authorities sweeping powers of search and seizure with little scope for redress.⁹ The effect was reportedly exacerbated by sting operations by journalists and activists, and by police visits to clinics (without any basis of reports of illegal action). Although court convictions under the law are few (UNFPA 2010a), providers feel randomly threatened and may become increasingly

reluctant to provide soundscan and abortion services that are in fact legal, affecting women's access to safe abortion and the full range of antenatal checks. The price of abortion has reportedly risen. The chaotic situation created confusion about the law, leading the government to attempt to clarify the law by issuing a pamphlet (MOHFW 2007).

This is analogous to the findings of evaluations of bans on alcohol and drugs in the United States (reviewed in Miron and Zwiebel 1995), that the alcohol ban raised the price of alcohol and consumers' health was affected by drinking alcohol whose quality was not regulated. Studies of the ban on drugs in the United States indicate that enforcement is costly, and weaken legal protections against unreasonable searches and seizure of assets.

3. Do bans on sex-selection help normalize sex ratios at birth?

Despite all the negative effects of banning sex-selective abortion, there is a potentially strong argument for the ban if they help normalize sex ratios at birth. Sex-selection is an especially egregious manifestation of low gender equity, and also has other consequences such as a future shortage of brides.

Although postnatal sex-selection has long been practiced in parts of South and East Asia, the new technologies do make it much easier for parents to achieve their desired family composition. This is suggested by the rise in sex ratios at birth in the 1980s in China and South Korea, when the technology of prenatal sex-detection became widely available (Figure 1). It is also suggested by the rise in sex-selection when abortion was legalized in Taiwan (Lin et al 2014, Frost et al 2013).

This argument depends crucially on whether such bans are effective at achieving more balanced sex ratios at birth. On the face of it, sex ratios at birth in South Korea and China kept climbing despite the bans passed as of 1987 in South Korea, and China in 1994 (Figures 1 and 2). Estimated sex ratios at birth in India improved after the mid-2000s (UNFPA 2010b: Figure 1), but these estimates have large sampling errors (UNFPA 2010b, Kulkarni 2007) and cannot be seen as clear indication of a trend. Randomized evaluation of the bans' impact is hindered by lack of data, including on the counterfactual of what might have happened in the absence of the ban.

3.1 The available evidence on the bans' effectiveness at lowering sex ratios at birth

Rigorous evaluation of the impact of these bans is very difficult, given the lack of randomized data for evaluation. Here whatever information can be gleaned is used to assess the effectiveness of the bans. The clearest information is available from a comparison of trends in China before and after the all-out effort in the mid-2000s, to implement the ban.

Studies of the effectiveness of the ban in India can exploit the fact that the ban was introduced in the state of Maharashtra several years before the national ban, and can be compared with contiguous districts of surrounding states. Two studies conclude that the national ban helped to modestly improve the child sex ratio in the areas of neighboring states contiguous to Maharashtra, and averted further worsening of child sex ratios in India (Nandi and Deolalikar 2013, Nandi 2015). Another study concludes that the earlier ban in Maharashtra had little impact

(Bhattacharjee 2016). Several states in the United States have also put such bans in place in view of sex-selection by Asian parents, but a study suggests this has little impact (Nandi et al 2015).

For South Korea, there are no rigorous evaluations of the impact of the ban on prenatal sex-detection. It is difficult to assess its effect, as several factors were at work simultaneously to reduce sex-selection (Figure 2). Survey data indicate that the decline in sex ratios at birth in South Korea was preceded by rapid decline in reported son preference associated with the rapid transformation of the country's economy and society (Chung and Das Gupta 2007). The Family Law was radically changed in 1989, *inter alia* giving girls and boys equal rights to inheritance (Shin 2006). From the mid-1990s, a government media campaign warned of the dangers of a shortage of girls (Liisanantti and Beese 2012:26).

From 1987, health providers who broke the law on prenatal sex-detection were subject to stringent sanctions (Sung 2012: 297-8). However, the impact of this ban is difficult to detect because of other factors at work. For example, sex ratios at birth spiked in 1990 as that was the Year of the Horse, considered inauspicious for girls (Lee and Paik 2006). Despite efforts through the 1990s to implement the ban, as late as 2002 there were as many as 1.41 boys per girl born at birth order 3+,¹⁰ suggesting continued access for those remaining desperate for a son. The ban was finally lifted in 2008,¹¹ and there was no rise in the trend of the sex ratio at birth.¹²

The government of China made by far the most vigorous effort to implement the ban on sex-selective abortion, with an intense push as part of its Care for Girls program. This program has been studied by Guo et al (2016). The program was piloted from 2003 in one county in each of 24 provinces, and implemented nationally from 2006. Several government departments were given responsibilities in implementing the campaign, including those for family planning, health, education, and police, and organizations such as the Women's Federation.

For implementing the ban on sex-selective abortion, women pregnant with their second child were specially monitored during their pregnancy by local family planning workers, as most of those allowed a second child under the family planning policy were couples whose first child was a girl and would be under greater pressure to ensure that their second child was a boy. Until then, the sex ratio at birth had been close to normal for first births but had risen sharply at second birth. Focusing on second pregnancies also made the workload of the implementers tractable, since only a quarter of births in the 2000 census were second births.

Stringent sanctions were put in place for those found practicing sex-selection. Private clinics would be fined and have their equipment confiscated, and the whistle-blower rewarded. Doctors in public hospitals would lose their job. Local officials would be sanctioned for underperformance. In areas which permit a second birth, couples found to be conducting sex-selection would be denied permission to try again for a second child. A large number of cases were investigated and punished.¹³

The 2010 census of China allows a look at the effect of these intensive efforts. The "long form" data are used, since they give the breakdown of sex ratios by birth order. The overall sex ratio at birth remained essentially stable between the censuses of 2000 and 2010, indicating that access to sex-selection remained despite the ban (Figures 1 and 3). The estimated sex ratio at birth has fluctuated around 120 boys per 100 girls since the late 1990s (Figure 1), both before and after the intervention.

The effect of the intensive effort was a sharp change in the patterns of sex-selection by birth order. The 2010 census data show a completely new pattern, with a sharp decline in the sex ratio of second births, and a sharp rise in that of first births (Figure 3). Since first births constituted nearly two-thirds of all births in the 2010 census, there was no reduction in the overall sex ratio at birth. Parents were clearly seeking to have a son at the first birth, to avoid the monitoring of second pregnancies,¹⁴ and were clearly able to access sex-selection despite the stringent sanctions imposed on providers and clients of sex-selection services.

The vigorous implementation of the ban did succeed in sharply reducing sex-selection amongst the targeted women (those having their second child), but even among second births the sex ratio at birth remained as high as 130 in the 2010 census. This is a somewhat limited achievement given that the entire manpower and apparatus of the family planning program was brought to bear on monitoring these pregnancies to avert sex-selection.

Only China has the political and administrative capacity as well as grassroots manpower to even consider such intense effort to avert sex-selection. Yet even there, they focused on a quarter of births, those most likely to be subject to sex-selection. It would be enormously labor-intensive to monitor every pregnancy in China. The country is focused also on communication and other ways of changing social norms on son preference.

4. What else can governments do?

A range of other policies is available to reduce son preference, to increase the value of daughters to their parents, and thereby encourage them to invest in their daughters. The impact of some of these interventions has been evaluated, and is summarized below. Studies show that such policies can effect change within quite short periods of time.

4.1 Media advocacy

Much can be done to alter people's values and behaviors through mass messaging, and a multiplicity of studies show that careful messaging can alter norms quickly. Several of these studies use randomized data, comparing people living in areas with/without access to media or to specific media programs, thereby controlling for potential selection bias within the sample.

Survey data from India permit analysis of the impact of media exposure on son preference, and find a highly significant impact. Some studies have used randomized data on access to media, and find that exposure to television is associated with improvements in several measures of gender equity, including reduced son preference (Jensen and Oster 2009, Ting et al 2014). Many cross-sectional analyses have found that greater exposure to the media is associated with reduced son preference.¹⁵ Further, Lin and Adsera (2013) find that in India, mothers with greater media exposure allocate housework more equitably between boys and girls.

These results are consistent with other studies that find significant impact of the media on other aspects of norms and behaviors. Studies analyzing "natural experiments" have found significant impacts of radio and television messages on values and behaviors. In Brazil, women living in areas covered by the network that broadcasts *telenovelas* (soap operas) depicting small successful families have significantly lowered fertility (La Ferrara et al 2012). A radio soap

opera in Tanzania was found effective at increasing contraceptive use (Rogers et al 1999). Data from the United States indicate that the media altered voting behaviour (DellaVigna and Kaplan 2007). These findings are in line with a large number of studies based on cross-sectional data, which have found that media exposure has a large impact on a wide range of norms and behaviors.

Mass messaging to encourage people to value daughters more equally with sons is widely used in South and East Asia. This is the focus of large public awareness campaigns in China advocating for gender equity and the advantages of having daughters (Zhou et al 2012), as also in India.¹⁶ However, no studies evaluating these interventions were found.

4.2 Legal and other measures for gender equity

It is well-known that measures seeking to integrate women more fully into the economic and political mainstream help to improve gender equity, but they also help parents to see their daughters as worth investing in. All these countries have tried a range of initiatives to do this, such as laws on equal inheritance for girls and boys, and efforts to encourage both sons and daughters to care for their parents.¹⁷

What is less well-known is that such measures can effect changes quite quickly. Some of these initiatives in India have been evaluated, and find that girls can benefit within a few years. Deininger et al (2010) find that the 2005 legal amendment expanding rights to equal inheritance significantly increased daughters' educational attainment and likelihood to inherit land. Similar results on schooling were found by Roy (2011). In a follow-up study, Deininger et al (2014) find that the daughters of women who benefited from the reforms gain even more in terms of child labor, educational spending and attainment, and health status.

Other types of legal changes also alter gender roles. A number of studies find this is to be the case with a 1993 law in India requiring that one-third of local political representatives (*panchayats*) should be women. Women have become much more active in local political life following this law (Chattopadhyay and Duflo 2004), and this has weakened stereotypes about gender roles in the public and domestic spheres (Beaman et al 2009). Moreover, the new role models help raise girls' aspirations, erasing the gender gap in adolescent educational attainment (Beaman et al 2012).

Additional approaches to altering structures of patriarchy have also been tried in East Asia. In 2005, South Korea legislated that women can pass on their family name and assume family headship (Shin 2006). In 2008, Vietnam passed a similar law (UNFPA 2011:55-56). These changes imply that women can perform ancestor worship rituals, a concern that had powerfully motivated people to have sons to assure a peaceful afterlife. The impact of these efforts has yet to be evaluated.

4.3 Financial incentives

A direct approach that has been tried in India and China is to offer financial incentives to parents of daughters. Two of the programs in India has been evaluated, and found quite ineffective (Sinha and Joong 2009; Holla et al 2007, Anukriti 2015). It would be enormously expensive to begin to significantly offset the costs of raising an unwanted girl. Also, a negative message on

the value of daughters is given when the state “compensates” parents specifically for having a girl.

Countries with greater resources can also consider broader financial interventions, such as pensions and other measures for social protection and insurance. These help reduce parents’ dependence on sons, though this is not their primary objective. Such programs are being rapidly expanded in China, and an evaluation of early stages of a rural old-age pension program indicated that the program had a measurable impact on sex ratios at birth (Ebenstein and Leung (2010)).

5. Conclusions

As new prenatal sex-detection technology spread in South and East Asia, the proportions of “missing girls” rose sharply. These technologies clearly make it easier for parents to achieve their desired family composition, than through postnatal selection alone.

Sex-selection is an especially egregious manifestation of low gender equity, and also has other consequences such as a future shortage of brides. Governments have sought to address the problem is by banning access to the technology of prenatal sex-detection, usually accompanied by banning sex-selective abortion. They have also sought to use other more indirect measures to reduce sex-selection, such as media outreach and legislation for gender equity.

Bans on sex-selection are difficult to implement, as illustrated by the experience of China’s intensive campaign in the 2000s to implement such a ban, backed by strong political and administrative support. The effort had two prongs. The first was to detect and punish providers and clients using sex-selection technology. This seems to have had little impact on access to sex-selection, as the overall sex ratio at birth remained unchanged. The second prong was to have the army of grassroots family planning workers monitor women expecting their second child, as they are the most likely to sex-select. This effort reduced the sex ratio at birth at second birth from 152 to 130, but was fully offset by a rise in sex-selection at first birth as people sought to evade the monitoring. It would be enormously labour-intensive to expand the pregnancy monitoring to include the first birth — effectively requiring the monitoring of most pregnancies in China.

Other types of intervention that require fewer resources show promise in changing gender norms and reducing the demand for sex-selection. Many studies show that media exposure is effective at altering many aspects of behaviors and norms, including son preference. Other studies show that legal changes, such as those making for more equitable inheritance and political representation, can within a few years begin to change gender norms and parental willingness to invest in girls.

Unlike bans, indirect interventions to reduce sex-selection have a positive effect on women’s lives. Bans seek to force women to bear daughters who are unwanted by their families, and thus expose both mother and daughter to harsh treatment in the household. This negative impact is demonstrated in empirical studies in China and India, and also highlighted by the Chinese government simultaneously banning sex-selection and the maltreatment of baby girls and their mothers. Bans are also difficult and expensive to implement, even in settings with such unique political organization and grassroots monitoring capacity as China. In sharp contrast to this, the

more indirect approaches help reduce son preference by *enhancing* gender equity, through interventions such as media messaging and more gender-equal laws. Efforts to alter gender norms and reduce son preference would seem to offer many advantages over bans in effecting a permanent shift away from sex-selection.

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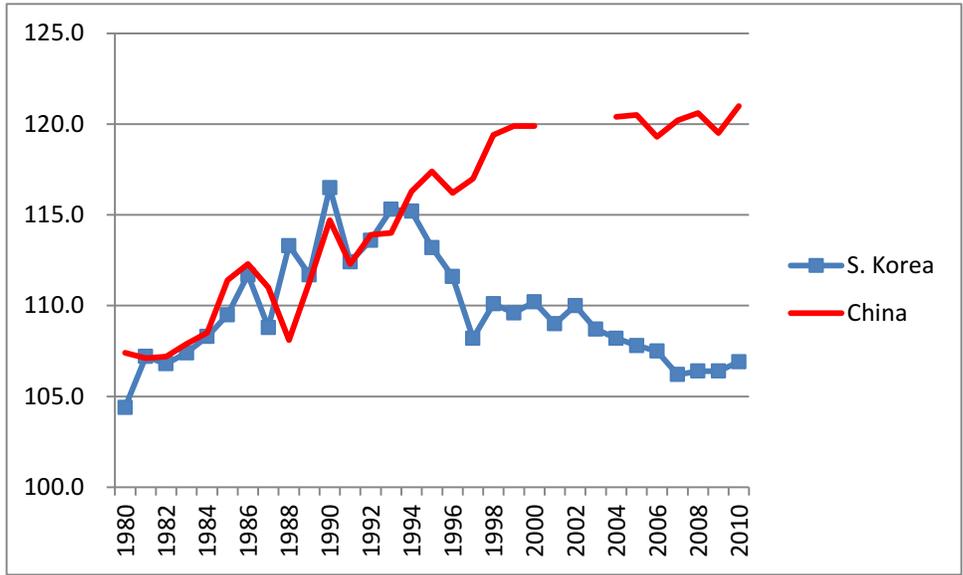
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Figure 1. Sex ratios at birth, China and South Korea, 1980-2010

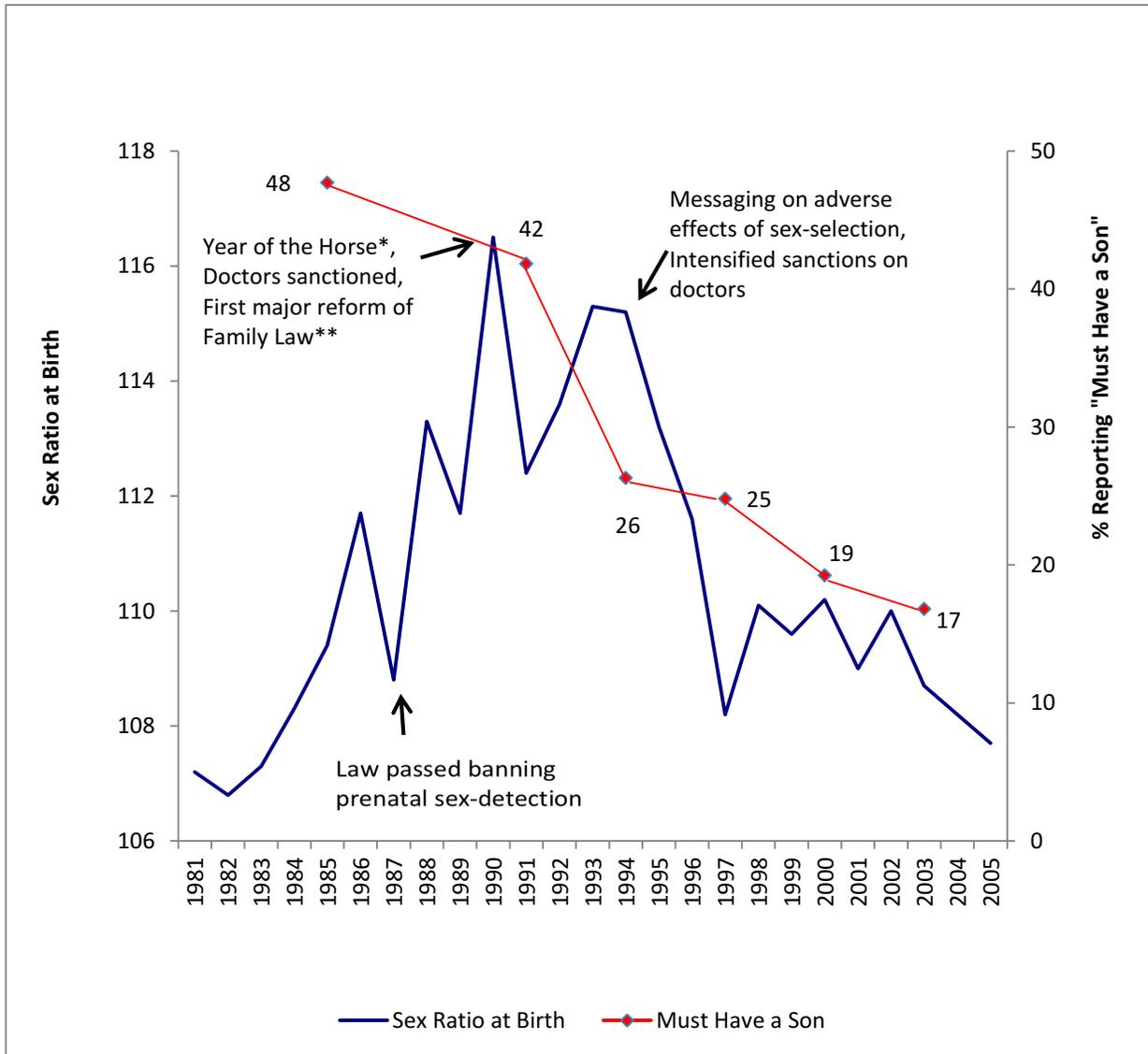


Sources:

South Korea: Korean Statistical Information Service), Statistics Korea, <http://kosis.kr>

China: 1980-2007 from Das Gupta, Chung and Li (2009: Figure1), 2008-09 from the National Bureau of Statistics of China (2009, 2010), and 2010 from the 2010 census (long form, as also for 2000 — see note for Figure 3 on the long and short forms).

Figure 2: Sex Ratios at Birth in South Korea and percentage of women reporting “must have a son”

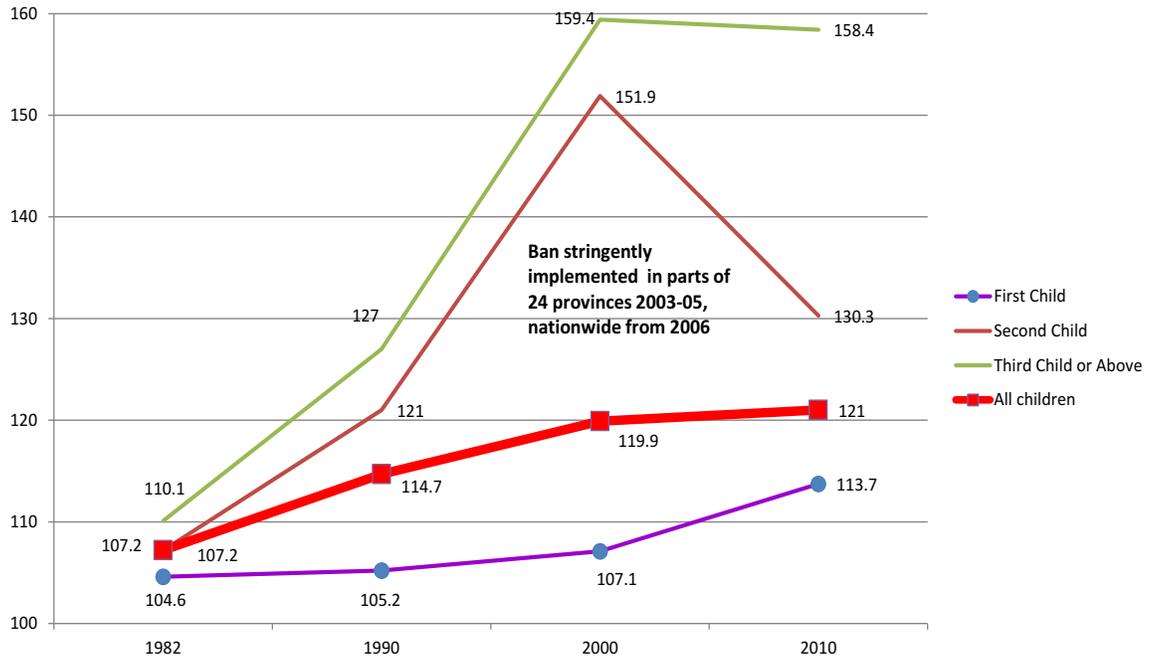


Source: Sex ratios at birth from Korean Statistical Information Service. Women reporting “must have a son” from successive Korea National Fertility and Family Health Surveys.

* The Year of the Horse is part of the 12-year animal zodiac cycle. It is considered inauspicious for girls to be born, as they are not likely to make good wives. Sex ratios at birth tend to peak in those years (Lee and Paik 2006), though the increase in 2002 was muted compared to earlier years implying a shift away from these traditional beliefs.

** This reform had several important components, including giving girls and boys equal rights to inheritance.

Figure 3: Sex Ratio at Birth by birth order, China 1982-2010



Source: Guo et al (2016), derived from the full censuses of China of 1982, 1990, 2000 and 2010.

Note: The 2000 and 2010 censuses collected data in both a “short form” and a “long form”. The data from both these forms indicate that the overall sex ratio at birth remained essentially stable, rising minimally in both cases. The data here are from the “long form”, as data on sex ratios at birth by birth order were only available from these.

ENDNOTES

- ¹ Constitutional Court of Korea, http://english.court.go.kr/home/english/decisions/rcnt_decision_view.jsp?seq=463&pg=6&sch_sel=&sch_txt=&nScale=15&sch_code=9&actype= (accessed 13 July 2014)
- ² [http://rajswasthya.nic.in/PCPNDT%2005.12.08/PCPNDT%20Act%20\(2\).pdf](http://rajswasthya.nic.in/PCPNDT%2005.12.08/PCPNDT%20Act%20(2).pdf)
- ³ Article 24 of the PCPNDT Act, http://chdlsa.gov.in/right_menu/act/pdf/PNDT.pdf, accessed 12 February 2014.
- ⁴ http://www.medindia.net/indian_health_act/pre-natal-diagnostic-techniques-amendment-act-2002-definitions.htm, and http://chdlsa.gov.in/right_menu/act/pdf/PNDT.pdf (accessed 3 October 2015).
- ⁵ Paras 30-31 of the PCPNDT Act http://chdlsa.gov.in/right_menu/act/pdf/PNDT.pdf, accessed 12 February 2014.
- ⁶ Many sources point to the high proportion of pregnancies aborted in South Korea. See for example Sung (2012).
- ⁷ Park and Cho (1995:75-77) noted that selective abortion reduces unwanted children, improving girls' life-chances.
- ⁸ See for example Choe (1987) on South Korea, Das Gupta (1987) on North India, Muhuri and Preston (1991) on Bangladesh, Li et al. (2004) on China, and Lin et al (2014) on Taiwan.
- ⁹ Paras 30-31 of the PCPNDT Act http://chdlsa.gov.in/right_menu/act/pdf/PNDT.pdf, accessed 12 February 2014.
- ¹⁰ Korean Statistical Information Service (kosis.kr/eng/, last accessed March 2015)
- ¹¹ http://go.nationalpartnership.org/site/News2?abbr=daily2_&page=NewsArticle&id=12088
- ¹² Korean Statistical Information Service (kosis.kr/eng/, last accessed March 2015).
- ¹³ 6700 cases were investigated between August 2011 and May 2012, of which 5800 cases had been concluded and about 2400 people punished (Guo et al 2016).
- ¹⁴ The rise in sex-selection amongst first births cannot be attributed to tighter implementation of the family planning policy, as the estimated Total Fertility Rate changed little during this period: 1.44 in 1999 and 1.37 in 2009 (National Bureau of Statistics of China 2000, 2010).
- ¹⁵ See for example Bhat and Zavier 2003; Pande and Astone 2007; Gaudin 2011; and Robitaille and Chatterjee 2014.
- ¹⁶ See for example the Meena campaign launched in 1998 (http://www.unicef.org/rosa/media_2479.htm), and the Beti Bachao campaign launched in 2015.
- ¹⁷ Laws on equal inheritance for girls and boys were passed in India in 1956, and strengthened in 2005 (http://www.hrln.org/admin/issue/subpdf/HSA_Amendment_2005.pdf), in China in 1985 (<http://www.fmprc.gov.cn/ce/cgny/eng/lqz/laws/t42224.htm>), South Korea in 1989 (Shin 2006).
Laws encouraging sons and daughters to care for their parents include Article 49 of China's 1982 Constitution (<http://english.people.com.cn/constitution/constitution.html>), Vietnam's 2000 law <http://chinhphu.vn/portal/page/portal/English/legaldocuments/Policies?categoryId=886&articleId=10001412>, and India in 2007 http://dc-siwan.bih.nic.in/senior_citizens_act.pdf.