Economic Incentives and the Fertility-Sex Ratio Trade-off

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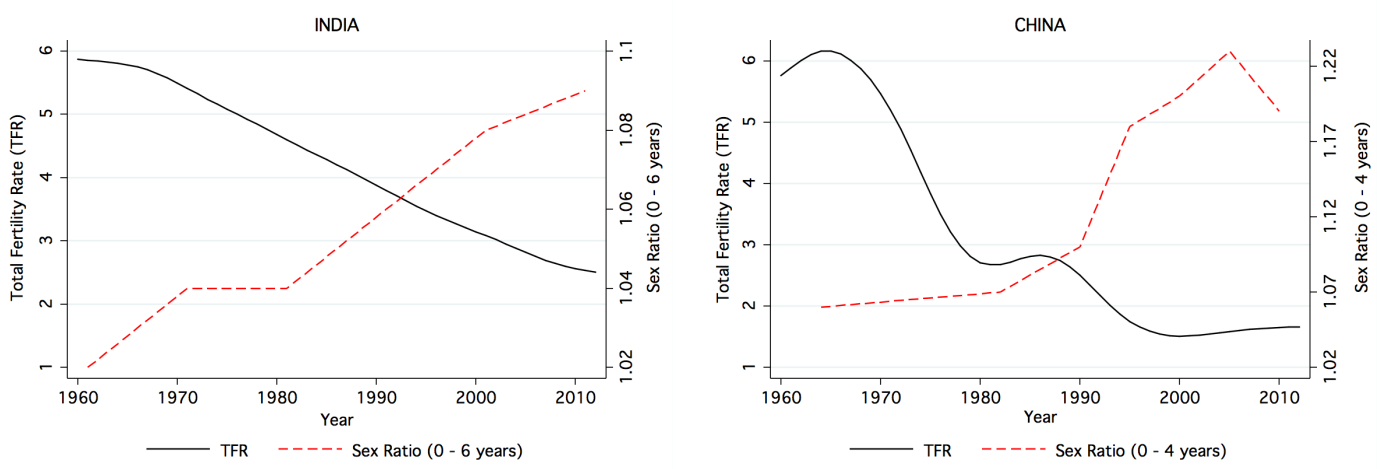
1. Introduction

Demographic change in several Asian countries has displayed two key trends in the recent decades: fertility decline and an increase in the male-female sex ratio at birth. Figure 1 plots these trends for India and China, the two most populous countries in the world. While their total fertility rates have decreased from close to 6 births per woman in 1960 to 2.6 and 1.6 births in 2011, the sex ratios at birth in India (2006-08) and China (2010) have risen to 1.11 and 1.18, respectively. Relative to the "natural" sex ratio at birth (≈ 1.05), these numbers reflect a substantial demographic imbalance.

Figure 1: Trends in Total Fertility Rate and Child Sex Ratio in India and China



NOTES: The annual TFR data is from the World Bank Indicators for 1960-2012. The child sex ratio data is from the decennial Census of India (1961-2011) and the Census of China (1964, 1982, 1990, 1995, 2000, 2005, 2010).

Although access to technology for prenatal sex-determination has been instrumental in facilitating selective abortion of girls in these countries (Bhalotra and Cochrane (2010)), it has been conjectured that fertility decline is also a causal factor behind the rising sex ratio at birth.[1] Policies that promote smaller families by improving contraceptive prevalence or through explicit restrictions, like the One Child Policy (OCP), put an upward pressure on the sex ratio if the underlying preference for sons

[1]For example, Das Gupta and Bhat (1997), Bhat and Zavier (2003), and Park and Cho (1995).

does not weaken concurrently. Survey evidence shows that, conditional on son preference, the desired sex ratio in north India sharply increases as respondents are presented with lower fertility scenarios (Jayachandran (2014)).

Since abortion and ultrasound can be legally used for other reasons, selective enforcement of bans on their use for sex-selection has been largely ineffective. Instead, policymakers have turned to financial incentive schemes to encourage more female births. However, if parents desire a minimum number of sons or if boys and girls are imperfect substitutes, parents may respond to these schemes by having more daughters without decreasing the number of sons equally, thereby increasing fertility. Thus, lower fertility and a gender-balanced population appear to be conflicting demographic objectives in societies with a strong preference for sons.

In Section 2, I show that the fertility-sex ratio trade-off can also result from macroeconomic policy changes, specifically, the removal of international trade barriers. Changes in the relative economic value of females, caused by trade liberalization in India, are accompanied by changes in the demand for and the well-being of daughters relative to sons. Women in high socioeconomic status groups experience a decrease in their relative (to men) labor market returns, their sex ratio at birth becomes more male-biased, and relative female child mortality increases. On the other hand, for low socioeconomic status women, the relative labor market returns increase and are accompanied by a decrease in the sex ratio at birth and relative female child mortality. Consistent with the trade-off, fertility declines (rises) for women whose sex ratio at birth increases (decreases).

In Section 3, I examine if financial incentives can resolve the fertility-sex ratio trade-off. To do so, I evaluate a conditional cash transfer scheme, *Devirupak*, that was implemented in a north Indian state, Haryana, in 2002. The scheme provides substantial monetary benefits to couples who have fewer children and a larger fraction of girls. Although Devirupak decrease fertility, I find that it unintentionally worsens the sex ratio of first and second births. This unintended effect on sex ratios is driven by high son preference couples who are more likely to encounter the fertility-sex ratio trade-off to begin with. Faced with a choice between a son and only daughters, these couples choose a son despite the higher monetary benefits for a girl relative to a boy. A subsidy worth 10 months of household per capita consumption expenditure is insufficient in inducing parents to give up sons entirely and have only one daughter. The response of low son preference couples, on the other hand,

is as intended by the policy. Along with fertility, their sex ratio also decreases and they are more likely to have one girl (and no sons).

These two sets of results imply that parents alter investments in male and female children in response to relative changes in economic returns by gender and are not entirely driven by subjective discrimination against girls. However, when son preference is strong enough, daughters are imperfect substitutes for male children and parents want at least a minimum number of sons. Consequently, improvements in the economic opportunities for women reduce parental discrimination against girls and lower the sex ratio, but they are also accompanied by higher fertility as parents do not perfectly substitute away from sons. My results imply that the demand for sons is less price elastic than the demand for daughters. Unless son preference weakens, even substantial economic incentives may only play a limited role in the resolution of the fertility-sex ratio trade-off.

2. Trade Liberalization

One of the most significant macroeconomic changes in recent history has been the removal of international trade barriers. Previous research has shown that exposure to tariff cuts adversely affected poverty reduction (Topalova (2010)) and improvements in children's educational attainment (Edmonds et al. (2010)) in India. The most severely affected groups have been the poorest households and female children. In joint work with Todd Kumler (Anukriti and Kumler (2014)), I explore the implications of trade liberalization for fertility, sex ratios, and relative female child mortality in India to further understand the microeconomic response of households to macroeconomic changes.

India began a dramatic liberalization of its trade policy after facing a balance of payments crisis in August 1991. The unilateral reduction in tariff and non-tariff barriers was externally imposed by the International Monetary Fund as condition of a bailout package. The maximum tariff fell immediately from 400% to 150%, with later revisions bringing it down to about 45% by 1997 (Hasan et al. (2006-07)). The average tariff fell from 80% in 1990 to 37% in 1996 (Topalova (2010)). The proportion of goods subject to quantitative restrictions also declined from 87% in 1987 to 45% by 1994. The period after the IMF bailout, therefore, marks a sharp break in India's trade policy.

To derive causal estimates, our empirical strategy is to compare fertility and child health outcomes for women and births in districts differentially exposed to these unexpected tariff cuts. We exploit

heterogeneity in the pre-reform industrial composition of Indian districts, combined with differences in tariff cuts by industry, to identify districts that were more or less exposed to the reform. Specifically, we interact the national nominal ad-valorem tariff faced by industry i in year t, $tariff_{it}$, with the share of employment in industry i and district d in 1991, $empshare_{id}^{1991}$, to construct a measure of tariff for district d in year t:

$$tariff_{dt} = \sum_{i} empshare_{id}^{1991} \times tariff_{it} \tag{1}$$

Since the employment shares are based on a district's industrial composition *before* the initiation of trade liberalization, our tariff measure is free of any endogenous changes in employment composition that take place due to the removal of tariff barriers.[2] Our regression framework controls for district-specific linear time trends, individual covariates (e.g., a woman's age and the number of previous births), time-invariant differences across districts, and any India-wide shocks that may influence fertility, sex ratios, and child mortality.

Due to potentially simultaneous reforms and pre-existing trends in urban areas, our analysis focuses only on rural districts. We use data from the 2002-04 round of the District-Level Household Survey (DLHS) to construct a retrospective woman-year panel; a woman enters the panel in her year of marriage and exits in the year of survey. The sample period is restricted to 1987-1997 because (a) 1987 is the earliest year for which we have data on tariffs, and (b) tariff changes after 1997 were correlated with industrial productivity during that period, thus creating endogeneity concerns.

We examine heterogeneity in effects along three dimensions of an individual's or a household's socioeconomic status: (i) caste, (ii) educational attainment, and (iii) wealth. Lower-caste households are those that belong to scheduled castes (SCs), scheduled tribes (STs), and other backward classes (OBCs). SCs, STs, and OBCs have been recognized as socially and educationally disadvantaged by

[2]For non-traded industries, where only the government was allowed to be an importer, $tariff_{dt}$ is zero for the entire time period. Thus, districts with higher levels of employment in the non-traded sector in 1991 will mechanically have lower $tariff_{dt}$. Since a large share of non-traded employment is in the cereal and oilseeds sectors, and workers in these industries tend to be poor rural farmers, this introduces a negative correlation between poverty and $tariff_{dt}$ that can bias our results. To address this concern, we follow prior literature (e.g., Hasan et al. (2006-07)) and create a second measure of tariffs by excluding employment in non-traded industries while constructing weights for industry-level tariffs. This measure is, therefore, independent of the share of workers in the non-traded sector and is uncorrelated with initial poverty levels within a district. In addition to ordinary least squares regressions, our empirical framework also uses this traded tariff measure as an instrument for the measure in (1).

the Indian Constitution and are beneficiaries of caste-based affirmative action. According to the 2005-06 National Sample Survey of India, the population shares of SCs, STs, and OBCs were 20%, 9.2%, and 40.2%. The remaining households are referred to as upper-caste families. To measure wealth, DLHS combines information on ownership of durables, type of toilet facility, cooking fuel, housing, source of lighting, and drinking water to calculate a standard of living score for each household. Based on these scores, households are divided into three categories: low-, medium-, and high-wealth households. Educational attainment refers to the completed years of schooling of a woman or a mother.

We find that tariff cuts have heterogeneous effects across gender and socioeconomic strata. For children born to uneducated, low-wealth, and lower-caste mothers, greater exposure to tariff cuts results in a less male-biased sex ratio at birth and a decline in relative female child mortality. On the other hand, educated, wealthier, and upper-caste women are less likely to have a daughter and exhibit an increase in relative female child mortality when exposed to larger tariff reductions. These results suggest that the relative outcomes for female children have improved (worsened) in low- (high-) status families due to tariff cuts. However, consistent with the fertility-sex ratio trade-off mentioned earlier, fertility has increased (decreased) for women whose sex ratio at birth has decreased (increased).

We attempt to distinguish between three potential channels that might underlie these relationships between tariff cuts, fertility, and child mortality outcomes: 1) poverty, 2) intra-household bargaining power of women, and 3) relative returns (to parents) from daughters.

If income decreases due to tariff cuts, couples may be less able to afford modern birth control methods and sex-selective abortions, causing an increase in births, especially female births. Infant mortality may increase if investments in health are cut due to a decrease in household income. Lower child survival rates, in turn, may increase fertility if couples want to ensure that a certain number of children reach adulthood.

Trade reform may also improve women's intra-household bargaining power (as shown by Aguayo-Tellez et al. (2010) in the context of Mexico) if it benefits relatively female-intensive industries more, or if firms respond to the policy change by investing in technology that makes male-intensive skills (e.g., physical labor) less important. Any resulting increase in women's employment or relative

wages may decrease fertility due to higher opportunity cost of childbearing (Chiappori et al. (2002), Rosenzweig and Wolpin (1980)), and may lower child mortality due to higher relative income of mothers. For a given degree of son preference, lower fertility may cause greater sex-selection and, thus, result in higher sex ratios at birth. Women in the labor force may also have a lower search cost of accessing prenatal sex-determination and abortion. But, if women have a weaker son preference than men, an improvement in their bargaining power may lower the sex ratio.

Lastly, if parents forecast children's future earnings with current sex-specific adult earnings, an increase in the relative income of females may increase the expected returns from daughters. Even if liberalization improves income opportunities equally for men and women, we may see larger improvements in girls' outcomes if parents continue to channel sons into more traditional occupations in order to not lose the gains from pre-existing and predominantly male networks (Munshi and Rosenzweig (2006)) or jobs (Jensen and Miller (2011)). If daughters are more "wanted" due to an increase in the relative returns to parents from girls, the likelihood of female birth may increase and relative female infant mortality may decrease. The impact on fertility depends on the extent to which parents substitute between sons and daughters in the short- and the long-run.

The increase in fertility and the decrease in the sex ratio at birth we observe for low-status women are consistent with both higher poverty and larger relative returns to daughters. However, an increase in poverty would not explain the decrease in relative female infant mortality we observe for these mothers. To further explore the expected returns channel, we directly examine the effects of tariff changes on male and female employment (defined as the number of days worked in the last year) using data from the NSS. We find that greater exposure to tariff cuts increased employment for upper-caste men and lower-caste women, without any significant effects on employment of upper-caste women and lower-caste men. This suggests that relative returns to females and total household income increased among lower-caste families but decreased among upper-caste families. If parents forecast children's future earnings using current adult earnings, this would imply an increase in the expected relative returns from daughters (sons) among low-status (high-status) households. The improvements in the sex ratio and relative female child mortality among low-status families are consistent with this channel. Moreover, the results of Edmonds et al. (2010) exhibit substantial heterogeneity by caste: in districts more exposed to tariff cuts, the decrease in schooling they find is

driven by upper-caste children; children from SC households are, in fact, more likely to be in school and less likely to work, in line with our findings.

The effects of macroeconomic policy changes are, thus, not always gender-neutral and can play a significant role in exacerbating or combating pre-existing gender disparities through microeconomic channels. Our finding that girls fare better (worse) in terms of sex ratios and mortality precisely in groups where the relative earning potential of women has improved (worsened) is consistent with the findings of Qian (2008) in the context of China, and emphasizes that discrimination against girls may partially be explained by economic incentives. However, our fertility results also underscore the strength of son preference. While economic incentives decrease discrimination against girls among low-status families, son preference is strong enough to prevent perfect substitution of daughters for sons resulting in higher fertility when the sex ratio at birth decreases.

3. Devirupak Scheme

In this section, I examine the effects of a scheme that attempts to resolve the fertility-sex ratio trade-off through financial incentives. The Devirupak scheme was implemented by the north Indian state of Haryana in 2002. Haryana has historically been a high son preference region and its sex ratio at birth has become increasingly male-biased in recent years. Moreover, its marital fertility rate, though declining, remains above replacement level. In light of these trends, Devirupak's objectives are to promote a one-child norm and balance the sex ratio at birth. It provides monthly benefits for a period of 20 years to couples who give birth to: (i) only one girl, or (ii) only one boy, or (iii) only two girls. The highest reward is offered to couples whose only child is a girl (Rs. 500[3] per month), followed by Rs. 200 per month for couples whose only child is a boy or whose only two children are girls. The monetary benefits offered by *Devirupak* are substantial when compared to Haryana's monthly per capita consumption expenditure (Rs. 1,080 in 2005), the cost of an ultrasound test and an abortion (Rs. 500 - Rs. 2,000), and the average dowry payment.

To ensure that the decrease in fertility is permanent, these incentives are conditional on the adoption of a permanent method of family planning by either spouse (female or male sterilization).[4] In

[3]One US dollar is approximately equal to Rs. 60.

[4]Female sterilization is the most prevalent contraceptive method in India (and the world). In 2007-08, more than one-third of married Indian women in the age group 15-44 years were sterilized (Source: DLHS).

addition, the husband and the wife should not be income tax payers and their respective ages at the time of sterilization should be less than 45 and 40 years. However, these age- and income-based eligibility criteria are largely irrelevant since most couples complete their fertility by the time the wife is 30 years old and less than 1% of households pay income tax in India (Banerjee and Piketty (2005)).

To estimate the effects of Devirupak, I utilize data from the 1992-93, 1998-99, and 2005-06 rounds of the National Family Health Survey and the 2002-04 round of DLHS. These cross-sectional surveys are representative at the state-level and report a woman's complete birth history and provide detailed information on her contraceptive use and other demographic and economic variables. I combine data from all four rounds to create a retrospective woman-year panel, as in Section 2.

Devirupak introduces exogenous variation in the exposure to financial incentives along three dimensions: (i) temporal, (ii) geographic, and (iii) compositional. Women in Haryana who were childless, or had one child or two girls in 2002 were "treated" by the program in the years since. My empirical strategy[5] utilizes the methods of differences-in-differences and differences-in-differences-in-differences to estimate the causal effect of Devirupak by comparing women in Haryana to their counterparts in a group of similar neighboring states before and after 2002. The control group of states is restricted to seven northern and north-western Indian states most similar to Haryana along dimensions that are considered important determinants of fertility and sex-selection decisions, e.g., son preference and kinship structures.[6] To ensure that my estimates are not confounded by any differences in socioeconomic characteristics between the Haryana and non-Haryana samples, I control for variables such as religion, caste, standard of living, years of schooling, and residence in an urban area in my regressions. To take into account state-specific factors, I include state fixed effects and also control for state-specific time trends (and, in some specifications, state-year fixed effects).

My findings are as follows. Devirupak reduces fertility. The number of living children decreases by 1%. However, this decrease is primarily driven by a 2% decrease in the number of daughters; there is no significant effect on the number of sons. There is no increase in the proportion of one-girl couples despite it being the most remunerative child composition. Instead, couples are more likely

[5]More details are available in Anukriti (2014).

[6]These are Punjab, Rajasthan, Himachal Pradesh, Delhi, Gujarat, Uttar Pradesh (inclusive of Uttarakhand) and Madhya Pradesh (inclusive of Chhattisgarh).

(5%) to have one boy and no girls. This effect is driven by a larger decrease in the likelihood of a second birth for couples who already had one boy (relative to those who already had one girl) when Devirupak began, as well as a 4.5% increase in the sex ratio of first births. Prior literature has found no evidence of sex-selection for first parity births in India. By requiring parents to have either a first-born son or no sons at all, Devirupak creates incentives for son-preferring couples to sex-select sooner.

Another unintended effect of Devirupak is the increase in the sex ratio of second births for couples who already had one child at its start. Couples who give up the scheme's one-child incentives and choose to have a second birth, have a stronger preference for sons than those who stop childbearing, and due to this "selection" effect, the probability of sex-selection at second parity is higher than it would have been in the absence of Devirupak. My findings on birth spacing are consistent with greater use of sex-selection; the gap between marriage and first birth as well as the gap between the first two births increase. The probability of sterilization also goes up, suggesting that the decline in fertility I observe is permanent.

The adverse effects of Devirupak are concentrated among socioeconomic groups that have displayed a higher propensity to practice sex-selection in the past. These include relatively educated women (who have 1-5 years of schooling) and those who belong to households that are upper-caste Hindus, urban, and relatively wealthy. It is precisely these groups that are more likely to face the fertility-sex ratio trade-off due to higher opportunity cost of children and lower desired fertility. On the other hand, women who belong to relatively poor, lower-castes, and rural households do respond to the incentives in a manner expected by the policymakers. They are more likely to have only one girl, and experience a larger decrease in the number of sons (relative to daughters). However, this effect is insufficient in reversing the adverse effect on the sex ratio of other groups. Hence, Devirupak increases the likelihood that girls are born is relatively low socioeconomic status families, thereby exacerbating gender inequities in other areas (Edlund (1999)).

Devirupak has, thus, been successful in achieving only one of its objectives (lower fertility) and has made the sex-imbalance worse. In a related paper, Ebenstein (2011) uses simulations to forecast that a potential subsidy worth 9 months of income for daughters-only parents may lower fertility by 2.2% (from 1.81 to 1.77 births) and reduce the sex ratio by 3.5% (from 1.14 to 1.10) in China.

In comparison, Devirupak lowers fertility by 1% (from a base of 2.24 births) and *increases* the sex ratio for the first two births.

Devirupak is the first among many schemes (see Table 1) that attempt to resolve the fertility-sex ratio trade-off by providing substantial incentives. Since its implementation, at least eight other Indian states have instituted similar programs. In conjunction with the OCP, China's Care for Girls Campaign also creates incentives for smaller families and lower sex ratios. Despite the proliferation of such policies, there is no evidence of their effectiveness. My findings suggest that the structure of these programs must be carefully designed to prevent unintended outcomes, especially since key parameters, such as the strength of son preference, are difficult to quantify.

Table 1: Financial Incentive Schemes Targeting Both Total Fertility and Sex Ratio

Scheme	Country	State	Year	Eligible compositions
Devirupak	India	Haryana	2002	G, B, GG
Girl Child Protection Scheme	India	Andhra Pradesh	2005	G, GG
Balri Rakshak Yojana	India	Punjab	2005	G, GG
Care for Girls Campaign (in conjunction with the OCP)	China	Nationwide	2005	G, B, GB, GG
Dikari Yojana	India	Gujarat	2006	G, GG
Bhagya Lakshmi Scheme	India	Karnataka	2006-07	G, GG, BGG, BBG
Ladli Laxmi Scheme	India	Madhya Pradesh	2007	G, GG, BG
Indira Gandhi Balika Suraksha Yojana	India	Himachal Pradesh	2007	G, GG
Majoni	India	Assam	2009	G, GG, BG

NOTES: G stands for a girl and B stands for a boy. More details on some of the above schemes are available in Sekher (2012).

The unintended consequences of Devirupak are likely due to its following two features: (i) it does not allow parents to have children of both sexes, and (ii) it also rewards couples who have one son and no daughters. Are schemes that relax these requirements, e.g. Madhya Pradesh's Ladli Laxmi Scheme, likely to perform better?

While programs that do not reward couples without daughters are unlikely to cause an unintended increase in the sex ratio at first birth, they may also lead to smaller declines in fertility relative to Devirupak. In other words, removing the one-boy option from Devirupak may avoid some of its

unintended effects, but may also weaken the effect on fertility. Similarly, a scheme that incentivizes couples to have a boy *and* a girl would also avoid some of the ill-effects of Devirupak, but not all. Like Devirupak, it will adversely affect the sex ratio of second births for families who already have a girl when the scheme is launched. In an attempt to ensure that their second child is male so as to receive the scheme's benefits, these couples will be more likely than earlier to practice sex-selection for second pregnancies. Moreover, these schemes may not be better than Devirupak in resolving the fertility-sex ratio trade-off, especially as desired or mandated fertility gets closer to one or two children. Lastly, any scheme that imposes a fertility limit of n births would increase the sex ratio at the $(n+1)^{th}$ parity due to the "selection" effect mentioned earlier.

4. Conclusions

In recent years, policymakers have increasingly become more interested in the causes and effects of male-biased sex ratios. Moral arguments can be made both in favor of parents' right to choose the sex of their offspring as well as against selective abortion of girls (Kumar (1983)). Putting these ethical dilemmas aside, an unbalanced sex ratio at birth is undesirable for many reasons. The resulting scarcity of women on the marriage market can substantially increase the number of unmarried and childless men, who may face destitution in old age since children through marriage are the most important source of old-age support in countries like India and China that lack institutional social security (Das Gupta et al. (2010)). Bhaskar (2011) estimates that one in five boys born in recent cohorts in China will be unable to find female partners. Rising sex ratios can lead to increased trafficking[7] of women, higher prevalence of sexually-transmitted diseases (Ebenstein and Sharygin (2009)) and more crime (Edlund et al. (2007), Drèze and Khera (2000)). Kaur (2010) and others also link the recent resurgence of caste-based village councils, *khap panchayats*, in north India and the imposition of social restrictions on intra-subcaste marriages to the shortage of brides.

On the other hand, sex-selective abortions might be preferable to infanticide or postnatal discrimination (Goodkind (1996)). Lin et al. (2010) show that access to practice prenatal sex-selection reduces postnatal discrimination against girls.[8] A shortage of women on the marriage market may

[7] Recent evidence shows that a shortage of women in north Indian states has led to the import of brides from other poorer states in India (Kaur (2004), Ahlawat (2009)).

[8] In a similar vein, Pop-Eleches (2006) shows that a ban on abortions in Romania led to inferior socioeconomic outcomes during adulthood for "unwanted" children.

also increase their bargaining power.[9] Stopnitzky (2012) shows that a relative scarcity of women in Haryana has increased their bargaining power on the marriage market and, as a result, they are able to secure improved sanitation facilities at their marital home.

Despite a growing literature on the consequences of skewed sex ratios, there is limited evidence on whether sex ratios will balance on their own and whether proactive public policy can reduce these imbalances. Moreover, the experience of China's One-Child Policy has shown that programs aimed at reducing fertility may lead to undesirable increases in the sex ratios. In other countries where population policies are not coercive or restrictive, such as India, we may observe a similar trade-off between fertility and the sex ratio at birth as desired fertility decreases while son preference remains strong. Thus, an understanding of the factors that underlie decisions about the quantity of children and sex-selection as well as the efficacy of incentives in resolving the fertility-sex ratio conflict is of tremendous practical importance.

This chapter shows that even macroeconomic policies can affect sex ratios and relative mortality of girls by changing the gender differentials in labor market returns. However, the demand for sons appears to be less price elastic relative to the demand for daughters, reflecting the strength of son preference. If a program requires parents to choose between a son and a daughter, even substantially higher incentives for the latter may not decrease the sex ratio. When there are no restrictions on the number of sons, greater incentives to have daughters can lower sex ratios but at the expense of higher fertility. Ultimately, the fertility-sex ratio conflict will persist as long as daughters are imperfect substitutes for sons.

Effective policymaking thus requires an understanding of the reasons why sons are more valuable than daughters in some societies. Prior literature[10] has hypothesized that religion, rigidly patrilineal kinship systems, absence of institutional old-age support, the suitability of soil quality for male-intensive crops, and dowry payments could be some of the underlying factors, however, most research is not causal in nature[11] and does not have clear policy implications. The prevalence of sex-selective abortions among second-generation South and East Asian immigrants in Canada (Almond

[9] See Chiappori et al. (2002) and related papers for the large literature on household bargaining in developed countries.

[10] Bardhan (1974), Boserup (1970), Bhaskar and Gupta (2007), Carranza (2012), Das Gupta and Shuzhuo (1999), Das Gupta (2010), Dyson and Moore (1983), Jain (2014), Rahman and Rao (2004).

[11] Carranza (2012) is an exception.

et al. (2013)) suggests that son preference is also persistent. Moreover, it is unclear if economic development can completely eliminate son preference. As Dahl and Moretti (2008) show, parents in the United States prefer boys over girls and families with first-born daughters have inferior outcomes in terms of marital status, family structure, and fertility. On the other hand, Das Gupta et al. (2003) suggest that the recent decline in sex ratios in South Korea can be explained by a change in social norms. An understanding of son preference remains a fruitful area for future research.

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