

Ten Facts About Son Preference in India[§]

ABSTRACT This article discusses son preference in India, including both greater investment in sons and the fertility preference for sons. Regarding differential investment, I focus on child health and show that gender gaps in inputs and outcomes have narrowed in recent years. Nonetheless, girls remain disadvantaged in important ways, and making health services free is unlikely to be enough to close these remaining gaps. In addition to gender gaps, there are also stark health gaps between eldest sons, whom parents favor, and other sons. Fertility preferences likewise center on eldest sons. The desire to have at least one son—who can fill that eldest son role in the family—drives the skewed sex ratio, and this preference shows little sign of abating. In fact, the downward trend in family size is exacerbating how the desire for a son translates into sex-selection. Families’ quest for a son also imposes collateral damage on sisters’ health. The policy challenge, particularly around reducing the desire for sons, is large. Empowering women is not a panacea, and offering financial incentives to have daughters risks further concentrating girls in poorer families. While we do not know which policies will erase the disadvantages girls face, some that might help are public pensions as an alternative to old-age support from sons, increased delivery of health services through schools, and norm-change interventions that aim to increase the intrinsic value that Indian families place on girls.

Keywords: Son Preference, Sex Ratio, Son Bias, India

JEL Classification: J13, J16, O15

1. Introduction

This article summarizes some key facts and recent evidence on son preference in India. I define son preference to encompass both greater investment in sons than daughters and a fertility preference to have sons. These two dimensions of favoritism have connections, yet the root causes, trends, and policy solutions differ in important ways. In my discussion of gender-biased investments, I focus on those related to health.

* jayachandran@princeton.edu

§ The author thanks Meghana Mungikar and Juliana Sanchez Ariza for valuable research assistance and Farzana Afridi and Ajay Mahal for their Discussants’ Comments.

I organize the discussion around ten facts:

1. Gender gaps in child health inputs and outcomes have narrowed in recent years.
2. Nonetheless, girls remain disadvantaged in important ways.
3. Unfortunately, making health services free might not be enough to close the remaining gender gaps.
4. In addition to gender gaps, there are also stark health gaps between eldest sons, who tend to be favored, and other sons.
5. The desire to have a son—specifically to fill the eldest son role in the family—is what drives the skewed sex ratio.
6. Unlike gender gaps in child investment, the desire to have a son shows little sign of abating.
7. In fact, the downward trend in family size is exacerbating how the desire for a son translates into sex selection.
8. Families' quest for a son also imposes collateral damage on sisters' health.
9. Empowering women is not a panacea that will solve the problem of son preference.
10. Offering financial incentives to have daughters risks further concentrating girls in poorer families.

I close by discussing policies that seem promising to reduce son preference, in particular the desire for sons. While we do not know which policies will erase the disadvantages girls face in India, some that might help are public pensions, which serve as an alternative to old-age support from sons, increased delivery of health services through schools, and attitude- and norm-change policies that aim to increase the intrinsic value that Indian families place on girls.

2. Gender Gaps in Health Inputs and Outcomes

One dimension of son bias is providing more inputs, such as food and health care, to sons than daughters. Such behavior by parents could arise if they intrinsically care more about sons than daughters or because they perceive the instrumental benefit—the financial return to the investment in the form of higher adult earnings, for example—to be higher for males. The returns hypothesis can be broken down further. There might be lower returns for girls after accounting for the benefits that accrue to everyone, perhaps because labor productivity is less dependent on health for the type of work that adult women tend to do. Alternatively, returns could be the same overall, but lower from the parents' point of view, for example, because of India's system of patrilocal exogamy whereby females join their husbands' families upon marriage.

It is useful to benchmark child health inputs and outcomes in India against other countries, first, because some gender differences in outcomes are biological so parity does not always correspond to lack of discrimination, and, second, to the extent there is discrimination, it is useful to understand if it is related to India's stage of economic development or is anomalous among countries with similar GDP per capita. India being like other countries points to a full-returns-to-investment explanation, while India being anomalous is more consistent with preferences or the investment distortions created by exogamy.

Most of the original data analysis in this paper uses India's National Family Health Survey (NFHS), which is part of the Demographic and Health Survey (DHS) series of surveys fielded in low- and middle-income countries. The five rounds of the NFHS were conducted in 1992-93, 1998-99, 2005-06, 2015-16, and 2019-21. The surveys collect information from a representative sample of women aged 15 to 49 years, with detailed data on fertility and maternal and child health. I show comparisons both across NFHS rounds and between India and other countries.

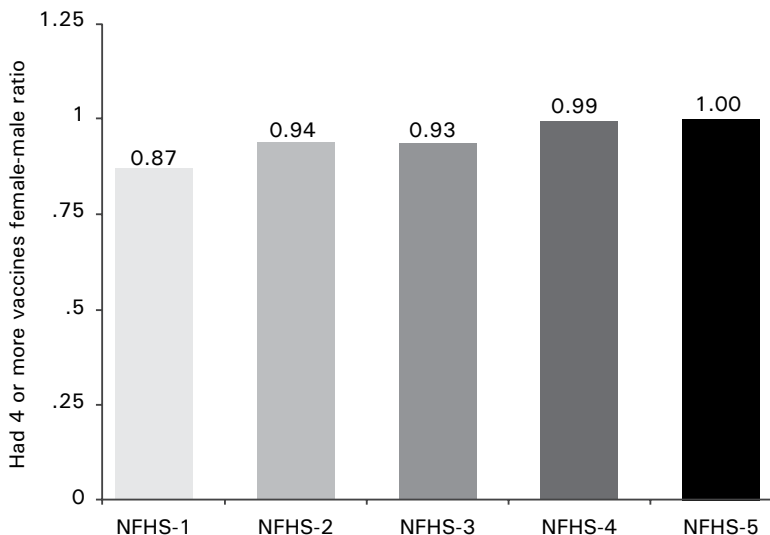
The first fact is a welcome one:

2.1. Gender Gaps in Child Health Inputs and Outcomes have Narrowed in Recent Years

Figure 1 shows the girl-boy ratio of receiving at least four of the following nine vaccines recommended for infants: BCG, DPT doses 1 to 3, polio doses 0 to 2

FIGURE 1. Female-male Ratio of Vaccinations Across NFHS Rounds

Unit: Y-axis, no unit; it is a ratio



Source: National Family Health Survey (1993-2021).

3, and measles. Here, as throughout the article, I construct variables so that a higher value is a better outcome and present female-male ratios; a higher value represents a relative improvement for girls. As seen in the figure, there was a gender gap in vaccinations that favored boys in the 1990s and 2000s, but it has closed.

Figure 2 shows a similar improvement for infant survival, i.e., the share of children who survive until at least their first birthday, using births within five years of the survey. Here, I compare India to other countries, plotting the female-male ratio of infant survival versus the country's GDP per capita (in purchasing power parity terms), where each point represents a country. India's improvement over time can be seen by contrasting the top panel, which uses NFHS-3, with the bottom panel, which uses NFHS-5. The comparison group for NFHS-3 includes other DHS data sets collected from 2004 to 2007, while the comparison group for NFHS-5 includes DHS data sets collected from 2016 to 2022.¹

The gray line in Figure 2 marks the average female-male infant survival ratio for the comparison countries. The ratio of 1.01 means that the survival probability is 1 percent higher for girls than boys elsewhere. This advantage for girls is consistent with the well-known biological fragility of male infants (Kraemer 2000). The top panel in the figure shows that for children born in the early 2000s in India, girls had an abnormally low survival rate below 1, equivalent to "excess mortality" for 1.6 out of every 100 girls born. The bottom panel in the figure shows that while India is still below the international average for low- and middle-income countries, it has closed most of the gap.

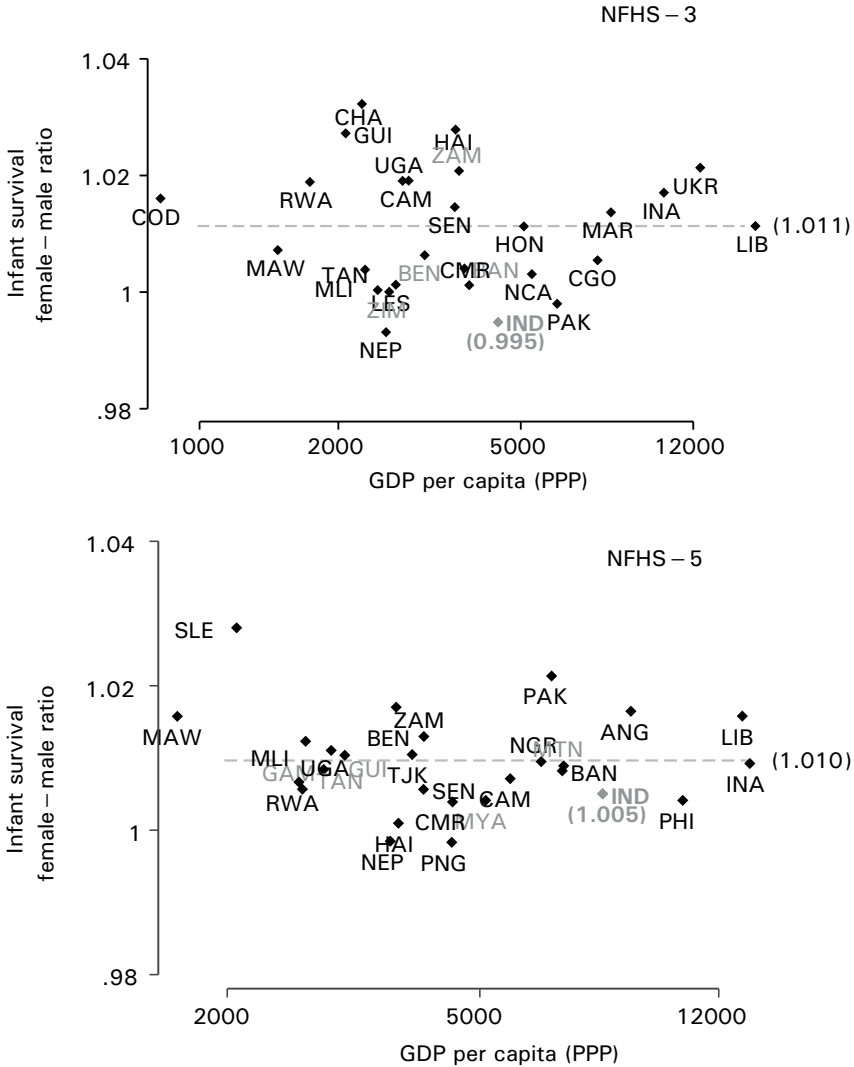
One plausible reason for the relative improvements in girls' inputs and outcomes is that there was more room for improvement for girls than boys, and as families' incomes rose, parents provided more basic inputs to girls that helped them survive. Such catch-up was not a foregone conclusion, as families might instead use extra resources to let boys pull further ahead, for example, by giving them more expensive inputs like protein-rich food.

Policy also likely played a role in girls' catch-up. Importantly, these policies need not have been gendered in their design. A striking finding in syntheses of education interventions is that gender-neutral policies that reduce the barriers to education tend to have larger impacts on girls because they are disadvantaged

1. The comparison countries for NFHS-3 are Armenia, Azerbaijan, Bangladesh, Benin, Cambodia, Cameroon, Chad, Colombia, Congo, Democratic Republic of Congo, Guinea, Haiti, Honduras, India, Indonesia, Jordan, Lebanon, Lesotho, Malawi, Mali, Morocco, Nepal, Nicaragua, Pakistan, Rwanda, Senegal, Tanzania, Uganda, Ukraine, Zambia, and Zimbabwe. The comparison countries for NFHS-5 are Albania, Angola, Armenia, Bangladesh, Benin, Cambodia, Cameroon, Colombia, Gambia, Guinea, Haiti, India, Indonesia, Jordan, Lebanon, Malawi, Mali, Mauritania, Moldova, Myanmar, Nepal, Nigeria, Pakistan, Papua New Guinea, Philippines, Rwanda, Senegal, Sierra Leone, South Africa, Tajikistan, Tanzania, Uganda, and Zambia.

to begin with (J-PAL 2017; Evans and Yuan 2022). The same pattern is likely to be true of health interventions. Gender-blind policies that have increased childbirth in health facilities and provided postnatal checkups through home visits might disproportionately help girls, narrowing gender gaps.

FIGURE 2. Female-male Ratio of Infant Survival (NFHS-3 and NFHS-5)
 Unit: Y-axis, no unit; it is a ratio. X-axis, GDP per capita (PPP) expressed in 2022 USD



Source: NFHS-5 and Demographic and Health Surveys (2016-2022).

2.2. *Nonetheless, Girls Remain Disadvantaged in Important Ways*

Despite the positive trends along important dimensions, several recent studies document that girls continue to fare worse than boys in health inputs, such as dietary diversity and receipt of healthcare.

Dutta et al. (2022) document gender gaps in infant and young child feeding practices using NFHS-4 data. They find that girls under the age of six months are less likely to be exclusively breastfed than boys, and then, from age 6-23 months, they are less likely to be fed high-protein foods. Aurino (2017) uses the Young Lives data set that has dietary data through adolescence for a sample in Andhra Pradesh and Telangana. This study finds that boys enjoy a more diverse diet starting at young ages, and the pro-boy gap significantly widens between the age of 12 and 15 years, by which time girls consume fewer protein- and vitamin-rich foods such as eggs, legumes, root vegetables, and fruit.

Turning to healthcare uptake, Vilms et al. (2017) test for gender gaps in neonatal illness, care-seeking for neonatal illness, hospitalization, facility-based postnatal visits, immunizations, and postnatal home visits by health workers in a representative sample of households with infants in Bihar in 2014. Girls had a lower rate of neonatal illness and hospitalization than boys, consistent with the greater biological precariousness of males in infancy. However, in terms of care-seeking, girls were less likely to receive care if they were ill and less likely to receive a post-birth home check-up. However, there was no gender gap in vaccinations, consistent with what Figure 1 showed.

Dupas and Jain (2023) analyze claims data from Rajasthan's Bhamashah Swasthya Bima Yojana Health Scheme (BSBY) health insurance program that offers enrollees free care in public and private hospitals. They find that females account for only 45 percent of all hospital visits, with especially large gaps among children under 10 years (33 percent of visits in this age range are for girls). This gap is particularly large for care in private hospitals and higher-value tertiary care.

These choices parents make collectively can lead to excess female mortality. In the absence of a universal civil registration system, the census of population offers a useful data source for measuring mortality, arguably better than NFHS because of the universal coverage. Guilmoto et al. (2018) use 2011 Census data to quantify excess female mortality before the age of 5 years. The study uses as a benchmark 46 countries with no known excess female mortality or sex selection and that have relatively similar mortality rates to India. The comparison countries allow one to calculate what female mortality one would expect if there were no son bias, given the observed rate of male mortality. The study finds that excess female mortality, averaged from 1996 to 2011, is 1.85 per 100 live births, with more than 90 percent of districts exhibiting excess female mortality. The five States and Union Territories with the highest rate of excess female under-5 mortality were the Hindi belt States: Uttar Pradesh,

Bihar, Delhi, Rajasthan, and Madhya Pradesh. It would be valuable to augment this analysis to examine trends over the study period and to update it when more recent Census data become available. NFHS-5 analysis is analogous to Figure 2 but for child mortality shows about 1 excess female death per 100 live births.

2.3. Unfortunately, Making Health Services Free Might not be Enough to Close the Remaining Gender Gaps

Gender gaps in health inputs exist even when the health services are free to families. This suggests that policies need to go beyond making healthcare free. Offsetting parents' time and hassle costs might be necessary to close gender gaps in health care.

The Dupas and Jain (2023) study on Rajasthan found a gender gap despite free medical care for insurance enrollees. Travel costs or time costs are likely to be a major factor. Tandon et al. (2016) similarly find a gender gap in a context of free medical care. The male-to-female ratio of patients who received cardiac intervention, after being recommended for tertiary care through screenings at school, is 1.66, while the male-female prevalence ratio for congenital heart disease is only 1.1 to 1.25. The needed surgery was free for patients. Much of the gender gap seems to enter at the stage of who is being referred for care by the diagnosticians and cannot be explained by gender gaps in school enrollment. It is possible that girls opt out of the screenings or those doing the screenings are gender-biased in their screenings.

In an earlier study, Ramakrishnan et al. (2011) found that for children identified at the All India Institute of Medical Sciences in New Delhi as needing surgery to correct a congenital heart condition, a year later, 70 percent of the boys but only 44 percent of the girls had undergone surgery. Financial concerns are one issue, but qualitative interviews suggested that marriageability was also a factor: parents thought that the scar from surgery might hurt her marital prospects.

Other health inputs without a direct monetary cost also show gender gaps, such as breastfeeding (Jayachandran and Kuziemko 2011; Vilms et al. 2017). Another example is that, among families with one child at the time, households with an infant boy spend roughly 60 minutes more per day (about 30 percent more time) on childcare than households with an infant girl (Barcellos et al. 2014).

How can policy offset parents' time and hassle costs to obtain health care for their daughters? In the case of medical care, policy options include reimbursement for travel costs. One could also offer incentives for follow-up care once a referral has been made; the after-a-referral provision addresses the concern that incentives could encourage overuse of medical care, but it is also possible to loosen this restriction. An alternative is to reward the outcome: payments for having healthy girls, for example, as measured by anthropometrics

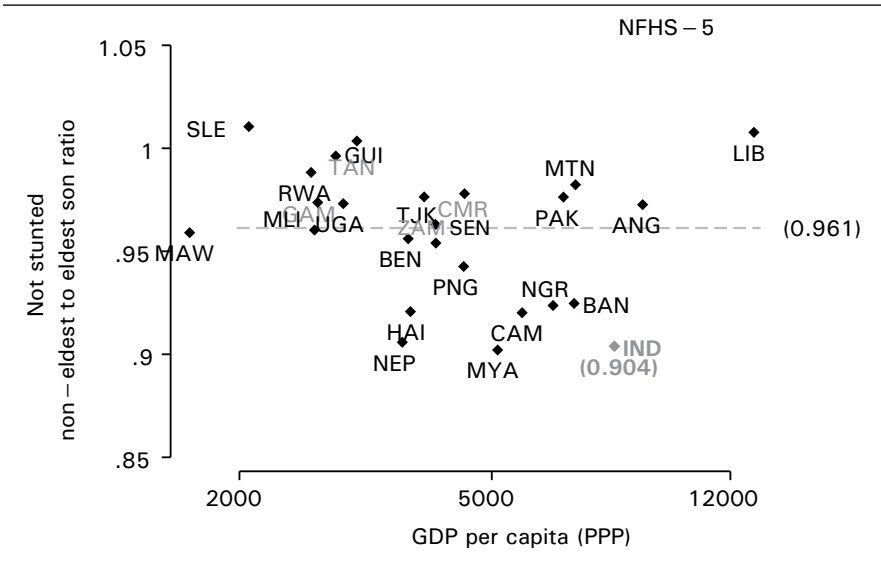
or anemia levels. This kind of policy has the advantage that it indirectly incentivizes pro-girl choices within the home such as time spent caring for children, breastfeeding, or food given to the child, which policymakers cannot directly observe, and therefore, cannot directly intervene on.

3. Eldest Son Preference and Fertility Patterns

While favoritism toward sons over daughters receives more attention, favoritism toward eldest sons relative to other sons is also an important phenomenon in India. Hinduism and patrilocal norms give eldest sons special roles in funeral rites and old-age support for parents. This centrality that eldest sons play in their parents’ life leads to greater investment in them.

A 2022 Pew opinion poll shows the strong gender norms for these familial roles, though without being specific about birth order. While 63 percent of the respondents said that sons should have the primary responsibility for parents’ funeral rites, only 1 percent said daughters should; the remaining 35 percent said responsibility should be shared (Pew Research Center 2022). Regarding the responsibility for caring for parents in old age, the majority thought it should be shared between sons and daughters, yet a large minority of respondents, 39 percent, said that sons bear this responsibility compared to only 2 percent who said that daughters do so.

FIGURE 3. Not-stunted Non-eldest to Eldest Son Ratio (NFHS-5)
 Unit: Y-axis, no unit; it is a ratio. X-axis, GDP per capita (PPP) expressed in 2022 USD



Source: NFHS-5 and Demographic and Health Surveys (2016-2022).

3.1. In Addition to Gender Gaps, There are Also Stark Health Gaps between Eldest Sons, Who Tend to be Favored, and Other Sons

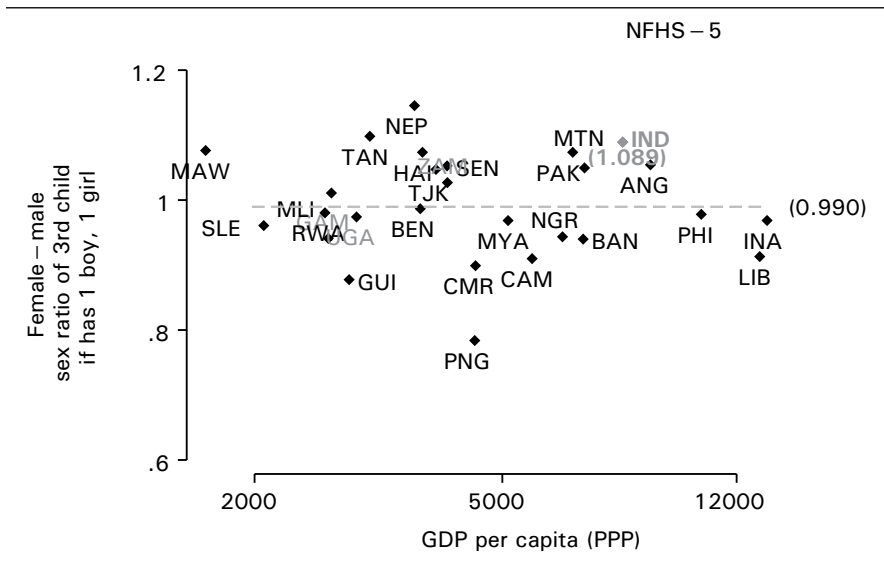
Jayachandran and Pande (2017) show that the anomalously high rate of stunting in India is related to eldest son preference. India’s stunting problem is almost as stark among non-eldest sons as among daughters, with eldest sons as the exception. These patterns are less pronounced among Muslims, who do not have strong eldest son preference as compared to Hindus, and in matrilineal parts of India, where son preference is weaker.

This pattern of eldest sons doing better than non-eldest sons continues to be true in more recent data. Figure 3 shows the non-eldest to eldest son ratio of not being stunted. Lower values map to more favoritism toward eldest sons, and India is a negative outlier.

3.2. The Desire to Have a Son—Specifically to Fill the Eldest Son Role in the Family—Is What Drives the Skewed Sex Ratio

The skewed sex ratio is concentrated at last births in the family, in cases where the previous children are daughters (Jayachandran 2015). A family that wants two children might have two daughters, try again, and use sex selection to ensure that their third child is a boy.

FIGURE 4. Sex Ratio of 3rd Child When Family Has 1 Boy and 1 Girl
Unit: Y-axis, no unit; it is a ratio. X-axis, GDP per capita (PPP) expressed in 2022 USD



Source: NFHS-5 and Demographic and Health Surveys (2016-2022).

This pattern is consistent with a premium on having at least one son, which differs from a general aversion to having daughters (for example, because of dowry expenses), which might lead to a high rate of sex selection even for first births. Jayachandran (2017) surveys parents in Haryana about fertility preferences and finds that they strongly want at least one son, but conditional on achieving that, prefer a balanced sex composition; they do not have a general preference to always have sons rather than daughters.

Indeed, when families with one boy and one girl give birth to a third child, there is no indication that they engage in sex selection to ensure that most of their children are boys. Figure 4 plots the female-male ratio of third-born children in families who already have a boy and a girl. For this category, India's ratio is comparable to other countries' and, in fact, is above 1.

Another way to see the link between eldest son preference and sex selection comes from studying patrilocality. Many cultures including India practice patrilocality, whereby a married couple joins the husband's family and resides near or with his parents. This cultural system creates the strong perceived need for a couple to have a son so that he can support and care for them in old age. Ebenstein (2014) shows the strong association between the practice of patrilocality and the male-skewed sex ratio. Using Census micro-data and Demographic and Health Survey Data from several countries, he quantifies how often older men (age 60-plus) reside with an adult son, which provides a measure of de facto patrilocality. He finds that this measure is strongly correlated with the sex ratio at birth. As he writes, "Patrilocality is the single feature common to the social norms of Christians in Armenia, Muslims in Azerbaijan, Hindus in India, and Buddhists in China—all live with their sons when they are old" (pg. 3). These groups all exhibit a male-skewed sex ratio. The correlation also holds when comparing ethnic or religious groups within a country. For example, within India, Sikh and Jain elderly men are most likely to co-reside with a son, and these groups have especially male-skewed sex ratios at birth.

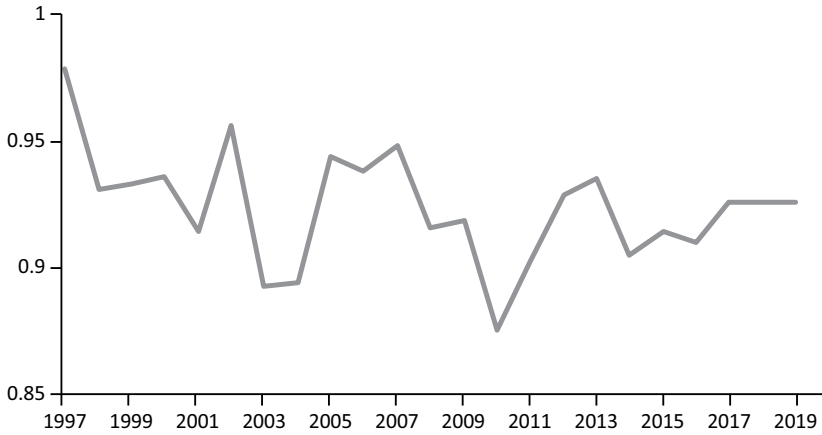
In addition to patrilocality, religious roles and the passing down of lineage and property also play a role, though it is worth noting that sex ratio is skewed even in patrilocal societies without the attendant religious premium put on sons.

3.3. Unlike Gender Gaps in Child Investment, the Desire to have a Son Shows Little Sign of Abating

Figure 5 shows that India continues to have an abnormally low female-male sex ratio at birth. The figure plots the sex ratio of births reported in NFHS, pooling the third to fifth waves and including births up to eight years before the survey. This enables a retrospective panel from the late 1990s to 2019. (I exclude 2020 and 2021 because the composition of States surveyed, year-by-year for NFHS-5, makes births in these years unrepresentative for all-India.)

FIGURE 5. Female-male Sex Ratio in India

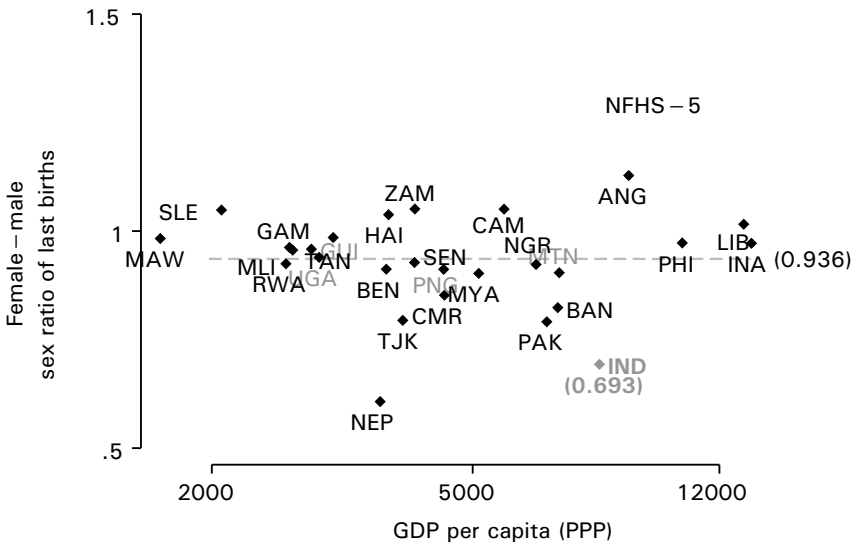
Unit: Y-axis, no unit; it is a ratio. X-axis, year



Source: NFHS (1993-2021).

FIGURE 6. Female-male Sex Ratio at Last Birth (NFHS-5)

Unit: Y-axis, no unit; it is a ratio. X-axis, GDP per capita (PPP) expressed in 2022 USD



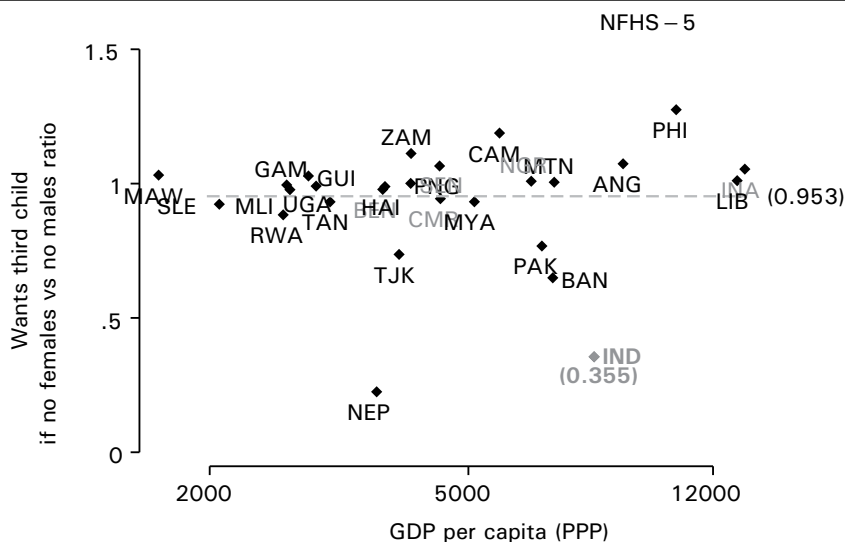
Source: NFHS-5 and Demographic and Health Surveys (2016-2022).

The quest to have at least one son leads parents to engage in sex selection at the point when they no longer are willing to enlarge their family size to try for a son. This means, first, that the population sex ratio skews toward males and, second, the last child in the family is especially skewed toward sons.

Even when a family does not resort to sex selection, the sex ratio of the last child in the family becomes skewed through “stopping rules” (though the overall population sex ratio does not). If families keep trying to have a son, stopping once they have their sought-after son, then the son is their youngest child. Thus, the sex ratio at last birth is another metric of the desire to have a son, one that encompasses both sex selection and “trying again” as the means to obtain a son. Figure 6 shows the sex ratio of last births in India versus other countries. India’s ratio is 0.69 girls per boy, compared to 0.94 as the average among other countries.

Indian parents articulate their stronger preference to keep having children to obtain a son than a daughter. Figure 7 shows India’s exceptionalism, comparing NFHS-5 respondents to comparison-country DHS respondents. The figure focuses on those who have either two boys or two girls, using their response to a question about wanting to have another child. The variable along the vertical axis is the share of those with only boys who want another child (presumably to obtain a daughter) divided by the share of those with only girls who want another child (presumably to obtain a son). India’s male-biased mean of 0.36 is drastically below the comparison-group average of 0.95.

FIGURE 7. Wants Third Child if No Daughters Yet versus No Sons Yet
Unit: Y-axis, no unit; it is a ratio. X-axis, GDP per capita (PPP) expressed in 2022 USD



Source: NFHS-5 and Demographic and Health Surveys (2016-2022).

3.4. The Downward Trend in Family Size is Exacerbating How the Desire for a Son Translates into Sex Selection

Returning to sex-selection specifically, one reason why this practice has not abated is that the technology of sex selection has become more widely available and affordable. Another factor in sex selection is declining fertility.

The fertility squeeze is the term for the phenomenon that when family size is smaller, fewer families will have at least one son naturally (Das Gupta and Mari Bhat 1997). When parents want to have three or four children, the likelihood of naturally ending up with no sons is fairly low, but this scenario becomes more likely when couples want only two or even just one child. Therefore, as couples' desired family size gets smaller, they are more likely to resort to sex-selective abortions to obtain their desired son. Jayachandran (2014), using survey data from Haryana, documents this pattern that the desired sex ratio is more male-skewed at low fertility levels.

3.5. Families' Quest for a Son Also Has Collateral Damage on His Sisters' Health

The beginning of this paper discussed intentional (even if subconscious) underinvestment in girls relative to boys. Girls can also receive fewer inputs than boys as a by-product of fertility choices around obtaining a son.

One reason this arises is due to total family size. A couple whose first two children are both sons, by chance, is more likely to stop having children than if the first two children are girls. The second family will keep trying to have a son. Girls, on average, grow up in larger families because of this type of fertility behavior (Yamaguchi 1989; Clark 2000). Given fixed financial resources, girls will grow up in families that have fewer resources to spend on each child. Thus, even if within the family, boys and girls receive equal inputs, because of cross-family differences, girls will receive fewer resources.

Another phenomenon, shown by Jayachandran and Kuziemko (2011), is that because women in India want to and are more likely to become pregnant again after a daughter is born, they stop breastfeeding girls sooner to regain their fecundity or because of the new pregnancy. This is detrimental to girls because of the health benefits of breastfeeding. In this case, the gap arises without parents having an explicit preference to provide more health inputs to sons. Dutta et al. (2022) similarly find a link with family composition consistent with plans for further fertility as the driver. Specifically, the lower rate of exclusive breastfeeding of girls and worse dietary diversity is especially large if the family already has two or more daughters and smaller if the family already has sons.

The desire to have an eldest son also increases girls' stunting in India. Part of the collateral damage to girls' health is that they are in larger families and competing with their favored brother for resources. A more subtle pattern is that later-born girls are harmed more by competition from brothers than their older sisters are (Jayachandran and Pande 2017). This arises partly because an

earlier-born girl is less likely to have a brother yet, so she is less likely to be competing with him, for example, over parental time, during the critical early stage of life. In addition, the birth of a second daughter after the first child was also female often triggers parents to adjust upward the number of children they plan to have so that they can obtain a son. This realization requires them to re-budget, and the spending cutbacks, even if spread equally across the two daughters, especially harm their second daughter because she is at the younger, more critical stage of child development. Thus, another harmful aspect of competition with the eldest son is that parents cannot anticipate their fertility perfectly (of course), and this makes outcomes for their daughters less equal.

4. Policy Implications

In this section, I discuss policy responses to the challenge of son preference, first, offering a cautionary assessment of two potential approaches and, second, discussing some tentative ideas for more promising approaches.

4.1. Empowering Women is not a Panacea that will Solve the Problem of Son Preference

The fact that the skewed sex ratio is exacerbated when family size is smaller upends some standard intuitions about what might solve the problem. For example, educating girls so that they grow up to be empowered mothers might perversely worsen the sex ratio. This is because while women's education is associated with less son preference, it is also linked with lower desired and actual fertility (Pande and Astone 2007; Dreze and Murthi 2001). This link between female empowerment and smaller family sizes means that the sex ratio could become either more or less skewed with female empowerment.

To walk through this logic, Table 1 examines the association between maternal education and the preferences that feed into the sex ratio, following Jayachandran (2014). The key independent variable is a dummy variable for the mother having at least 8 years of education (which 40 percent of mothers in the Haryana survey sample have). The regressions control for the husband's level of education and an extensive set of income and wealth proxies, but the results should be interpreted cautiously as unobservable factors correlated with mother's education could be playing a role.

Column 1 of Table 1 examines the effect of female education on the sex ratio (defined as the percent of children who are sons) that the respondent desires at a family size specified by the surveyor. The data are from a survey conducted in Haryana. Because family size is exogenous to the respondent in this hypothetical scenario, the outcome variable is a "pure" measure of son preference, rather than a measure of how son preference manifests in the sex

ratio. The negative coefficient indicates that education reduces women's son preference, as most people would conjecture. Column 2 examines the effect of education on desired family size. The outcome is based on the standard DHS-type fertility preference question which elicits the ideal family size. As has been documented often in the literature, more education is associated with a smaller desired family size.

TABLE 1. Mother's Education does not Decrease the Desired or Actual Sex Ratio

	<i>Haryana data from Jayachandran (2017)</i>			<i>Data from NFHS-3</i>	
	<i>% sons desired at specified family size</i>	<i>Desired family size</i>	<i>Actual % sons desired at desired family size</i>	<i>Actual % sons</i>	<i>Actual % sons</i>
	(1)	(2)	(3)	(4)	(5)
Mother finished class 8+	-0.039*** [0.011]	-0.087*** [0.017]	0.005 [0.006]	-0.023*** [0.005]	0.002 [0.005]
Actual family size dummies	No	No	No	Yes	No
Observations	2,883	2,597	2,597	35,091	35,091

Source: ICF (1993-2021) and Jayachandran (2017).

Notes: Standard errors, clustered by school, are in brackets. Asterisks denote significance: * $p < .10$, ** $p < .05$, *** $p < .01$. All regressions control for dummy variables for whether the father has completed primary school, grade 8, or grade 10+, and a cubic polynomial in the first principal component of several wealth. The NFHS-3 sample is restricted to women age 35+ with at least 1 living child.

These two results lay out offsetting effects: education reduces son preference at any given family size, which should decrease the desired sex ratio, but it also decreases desired family size, which increases the desired sex ratio if people want to still have at least one son. The net effect is shown in Column 3 of Table 1, where the outcome is the percentage of sons desired at the desired family size using the standard DHS-type question. The two effects almost exactly offset each other. The coefficient is small and statistically indistinguishable from zero. This null result is noteworthy: a progressive force like female education need not improve a woman's desired sex ratio.

NFHS-3 data corroborate these patterns. Here, I analyze the actual sex ratio. Educated women have a less skewed sex ratios among their children, conditional on family size, suggesting that they have weaker son preference (or, alternatively, more power in their marriage to realize their preferences), as shown in Column 4 of Table 1. But the total effect of female education on the sex ratio, unconditional on family size, appears to be zero, as shown in Column 5 of Table 1. Female education does not make the sex ratio less skewed.

This analysis is consistent with the findings of Chhibber et al. (2021), who analyze the 2001 and 2011 Censuses and find that the sex ratio at birth is more

skewed among more educated mothers. They also find that the survival rate of girls is higher among educated mothers, but this second force is not enough to offset the first force, so educated mothers end up with fewer surviving girls. This phenomenon also means that girls are disproportionately in families with less educated mothers, a point I return to below.

To be clear, empowering women is worthwhile *per se* and seems to narrow some gender gaps affecting children, but it is far from clear that it will ameliorate the male-skewed sex ratio.

4.2. Offering Financial Incentives to Have Daughters Risks Further Concentrating Girls in Poorer Families

A widely used approach to address the skewed sex ratio is to offer financial incentives to have daughters. While one of the early schemes evaluated, Devi Rupak in Haryana, backfired by simultaneously trying to incentivize families to have more girls but fewer children overall, thereby worsening the sex ratio (Anukriti 2018), most policies now focus simply on the policy goal of encouraging daughters. These policies likely have increased the number of girls who are born. Biswas et al. (2023) evaluate the Government of India's Dhanlakshmi scheme that was piloted in 11 blocks from 2008 to 2013. A family received Rs 5000 for showing proof of the birth's registration (roughly equivalent to monthly household expenditures in the study sample), plus Rs 1250 for immunizing the girl, with further payments for schooling and remaining unmarried until 18 years. The study focuses on Sirhind block in Fatehgarh Sahib district in Punjab and finds an increase in the number of girls born. It is worth noting that some of the subsequent payments, such as to keep a girl in primary school, will be infra-marginal to families' behavior, i.e., the family would have made this choice for their daughter anyway. Thus, the subsequent payments should also be thought of as partly just increasing the financial reward for giving birth to a daughter.

There are at least three limitations of policies that offer financial rewards for having daughters. First, they can be an expensive solution to the problem because most of the payments are infra-marginal. Suppose a program increases the share of newborns who are girls from 45 percent to 50 percent, as the Biswas et al. (2023) study roughly found. This means that for every 50 girls who were born, 45 would have been born absent the incentives, or only 10 percent of the payments were changing behavior. Moreover, 10 percent is an upper bound on how much of the program expenditure worked toward the goal of changing the sex ratio of births, as a smaller payment would have been sufficient to motivate some of those families that did change their behavior because of the reward. While the infra-marginal payments are not wasted money—the families who receive it are likely poor, and the family can use the money to invest more in their daughter—this approach is not the most targeted way to achieve either the

goal of providing anti-poverty transfers or to ensure that families invest more in their daughters.

Besides the high degree of infra-marginality, a second risk with this approach is that “extrinsically motivating” people to have daughters, by offering payment, could crowd out the intrinsic valuation of daughters.

The third and perhaps most worrisome limitation of such programs is that most of the increase in female births will be in poor families. Many of the State schemes limit participation to the poor, for example, to those with a Below the Poverty Line (BPL) card. But even without such a restriction, a payment of Rs 5000 is more likely to influence fertility choices for a poor family than a rich one. Thus, those who respond to the incentives will be poorer. As is, girls are disproportionately concentrated in poor families. One reason is that richer families have a smaller desired family size, and they can more readily afford ultrasound tests and abortions. Thus, they “need” and can engage in sex selection more. In addition, the scarcity of brides in the marriage market gives poorer families an incentive to have daughters who have an opportunity to “marry up” (Edlund 1999). Girls systematically growing up in poorer families creates societal-level gender gaps even absent within-family discrimination. Financial incentives to have daughters, which poor families are more responsive to, exacerbates this problem. While decreasing sex selection among the poor is valuable, it is important that improvement happens across the income distribution.

We are then left with the question of what policies can effectively solve this problem.

4.3. We Do Not Know Which Policies Will Erase the Disadvantages Girls Face in India, but There Are Several Policies That Warrant Pursuing or Testing

To address the skewed sex ratio, a key component of policy going forward must be to continue to robustly enforce the Pre-Conception and Pre-Natal Diagnostic Techniques Act, which bans sex selection. Enforcement is only becoming more challenging as ultrasound technology becomes cheaper and more mobile, but enforcement needs to continue to be a key part of the policy response.

Other policies that could address son bias include ramping up delivery of health services through schools, a public pension system, and policies that strengthen the intrinsic value that families place on girls.

4.3.1. USING SCHOOLS TO DELIVER HEALTH INPUTS AND HEALTH CARE

As mentioned earlier, universal programs might disproportionately benefit girls. One example of gender gaps being narrowed through a universal program is iron supplementation through schools. Krämer et al. (2021) find that making the mid-day meals iron-fortified in Bihar schools (by providing iron-and-iodine double-fortified salt to schools to cook with) decreased anemia by 10

percentage points, or 22 percent, after one year of treatment. The point estimates suggest larger effects for girls (a 12-percentage point decline) than boys (an 8-percentage point decline), likely because girls' baseline anemia rate is higher.

This example also highlights the importance of schools as a delivery vehicle for health interventions. India has made tremendous progress in closing education gender gaps, and this positions schools, as well as *anganwadis*, as a place to deliver health interventions. Using schools is valuable because it removes the "hassle cost" of a special trip to the health facility, which seems to be a surprisingly large barrier to girls' health care.

Already this is happening. Child nutrition was a key motivation for setting up *anganwadis*, schools now provide mid-day meals, and health screenings at schools are common. Some recent studies have studied gender differences in the effects of these schemes. Ravindran (2021) found that the ICDS program, which encompasses *anganwadis*, had larger effects on the height, weight, and education of girls than those of boys. Ganimian et al. (Forthcoming) find larger benefits on cognitive outcomes for girls than boys of adding a worker to *anganwadis*, but, in this case, the health effects are similar across genders.

Another existing program in this vein is the weekly iron and folic supplementation (WIFS) program. While causal evidence on the effects of WIFS is scarce, various studies document implementation problems (Kapil et al. 2019). Fixing implementation problems in school-based health programs (or similarly in ASHA home visit programs that reduce time costs for parents to get health check-ups for children) will likely differentially help girls. Thus, strengthening implementation of existing gender-blind programs is likely to be helpful in closing gender gaps in health outcomes.

4.3.2. GOVERNMENT-PROVIDED OLD-AGE SUPPORT

One type of policy that could attenuate the skewed sex ratio is a formal system for income support in old age. A government pension scheme offers older adults a substitute for support from sons, lessening the need to have a son. While the problem of the skewed sex ratio should not be the impetus for instituting a pension scheme, a decision that entails many other considerations, the key point is that such a program could have a secondary benefit related to sex-selection.

Evidence supporting this idea exists for China. Ebenstein and Leung (2010) analyze the introduction of the Rural Old-Age Pension Program, and show, first, that households without sons are more likely to participate in the pension program and, second, having access to the pension program is associated with a less male-skewed sex ratio. Guo et al. (2023) report similar results in their analysis of the more recent New Rural Pension Scheme in China, finding that the sex ratio became less skewed among those with access to the pension scheme.

The success story of a country that overcame its problem of male-skewed births is South Korea. While the keys to South Korea's turnaround are multi-

faceted, one factor may have been pensions. In 1995, the government pension scheme in South Korea was expanded to cover self-employed workers in rural areas. Ebenstein (2014) tests the prediction that this group should experience a decline in sex selection. In a difference-in-difference design, the sex ratio indeed becomes less skewed for self-employed workers relative to salaried workers, who were already covered by the pension and experienced no change in 1995.

While none of the existing evidence is airtight, the combination of evidence from other contexts and theory suggests that alternatives to eldest-son support for Indian parents might lessen the centrality of having a son.

4.4. *Changing Hearts and Minds*

The desire for sons goes beyond pragmatic reasons like old-age support and takes on a life of its own as a conferrer of status. Ultimately, the status associated with having sons must dissipate to fully close gender gaps. The Government of India's '*Beti Bachao Beti Padhao*' ("Save girls, educate girls") scheme that began in 2015 includes awareness campaigns, celebration of daughters, and other policies to raise the status of girls. While we do not have reliable evidence on the impacts, such efforts to "change hearts and minds" seem essential to fully solve this problem.

Here, too, schools could be a powerful venue, as seen in Dhar et al.'s (2022) evaluation of a gender equality curriculum added to Haryana secondary schools. The program, designed and run by the non-profit breakthrough, succeeded in instilling more support for equality among students, including around fertility preferences.

Beyond schools, media campaigns and messaging embedded in films seem important avenues for more innovation and effort. Testimonials from politicians and celebrities about their satisfaction with their daughter-only families seem promising too. As two-child families become typical in India, a quarter of families will be daughter-only naturally, and making this a satisfying outcome is the only way to fully address India's sex imbalance.

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Comments and Discussion *

Chair: **Dilip Mookherjee**

Boston University

Farzana Afridi

Indian Statistical Institute

Male preferences are manifested in two key ways: (i) through decisions related to fertility, specifically in choosing the gender of the child at conception or birth, even with available technologies that may be legally restricted; and (ii) through human capital investments post-birth, impacting health outcomes. The focus of the paper presented by Seema Jayachandran is on gender differences in sex ratios at birth and how these choices translate into health outcomes. However, the conversation also broadens to encompass human capital investments more generally, spanning education and health, with implications for labor market returns and adulthood outcomes. This analysis underscores the multi-faceted nature of male preferences and their influence on the decisions that households make throughout various stages of life.

Fertility Choice

The paper primarily focuses on the first aspect, namely fertility choice, and explores how these choices are influenced by social, religious, and cultural factors. The analysis highlights the persistent nature of cultural and social norms, emphasizing their resistance to change and their impact on the lower social value assigned to female children. The discussion notes that these preferences for sons are not only enduring but may potentially intensify with decreasing family sizes, as observed in India's declining fertility rates. An intriguing question posed is whether empowering or educating women could lead to an improvement in the sex ratio, as women with increased decision-making power might opt for a more balanced gender distribution at birth. This consideration underscores the importance of understanding the interplay between cultural

* To preserve the sense of the discussions at the India Policy Forum, these discussants' comments reflect the views expressed at the IPF and do not necessarily take into account revisions to the conference version of the paper in response to these and other comments in preparing the final, revised version published in this volume. The original conference version of the paper is available on NCAER's website at the links provided at the end of this section.

norms, education, and gender dynamics in shaping fertility decisions. A table presented in the paper discusses the evolving educational attainment of women, noting a declining gender gap in education in India. I observe that policy discussions often place responsibility on women or mothers for changes in societal dynamics, especially regarding empowerment and education. However, I emphasize that fertility decisions are joint choices, involving both partners. In the cultural context discussed, husbands can influence these decisions with their preferences. This raises a crucial point about the need to understand how men's education is affecting their preferences in terms of achieving a more balanced gender ratio. Additionally, I underscore the importance of considering and documenting data on men's preferences, as these are integral to the joint decision-making process in family planning.

Investment Preferences

The second aspect discussed in the paper revolves around investment preferences after the birth of children. While cultural and religious factors shape the desire for at least one son, I shift the focus to decisions regarding resource allocation, particularly in health. This involves determining how to distribute resources for the health and education of children, with a current emphasis on health outcomes such as BMI and anemia. These investment preferences are more flexible and potentially responsive to changes in market returns. This opens up a discussion on policy interventions aimed at influencing households' preferences regarding the gender ratio of their children. There is need to consider policy strategies to alter these investment preferences and, by extension, the impact on health and education outcomes. The first point emphasizes that gender gaps in child health inputs, such as vaccinations, and survival rates have reduced, indicating positive changes in investment preferences. Additionally, gender-neutral school-based transfer programs, particularly from the Integrated Child Development Services (ICDS) and school meal programs, have shown improvements in girls' outcomes, both in nutrition and education. The paper, according to me, effectively documents that financial incentives to favor girl children have been inefficient or even counterproductive in some states. Instead, the paper recommends reinforcing the ban on sex-selective abortions, implementing public pensions, and utilizing nutrition and health delivery programs administered through schools. This proposed set of policies aims to address and potentially reshape households' preferences toward a more balanced gender ratio in their children.

Policy Interventions

The potential policy interventions that can be explored are the ones with a broader focus on intra-household resource allocation, aiming to increase incentives for households to invest more in the human capital of daughters. The central question is how to encourage families to allocate resources equitably among their children. I suggest considering the labor market dynamics, but the specific details are not provided in the current context. However, the broader idea seems to involve developing policies that address and reshape traditional intra-household resource allocation patterns, ultimately promoting greater investment in the education and well-being of daughters. Thinking beyond specific programs and incentives, I urge a comprehensive approach to incentivize positive changes in household preferences and behaviors. The significant gender gaps in labor market returns highlight that women typically demand or receive lower returns. This disparity, coupled with perceptions of low market demand for women's labor, creates challenges in justifying investments in daughters' education and health. The additional factors influencing these decisions include issues related to exogamy, patrilocality in marriage, and dowry practices. The concern is that investing in a girl child may not yield sufficient returns for the family, as she may either contribute little due to low market returns or become part of another family. Consequently, households perceive the net returns to investments in daughters as low or even negative, potentially influencing fertility decisions. This perspective underscores the need for addressing broader societal and cultural factors that impact the perceived value of investing in the human capital of daughters.

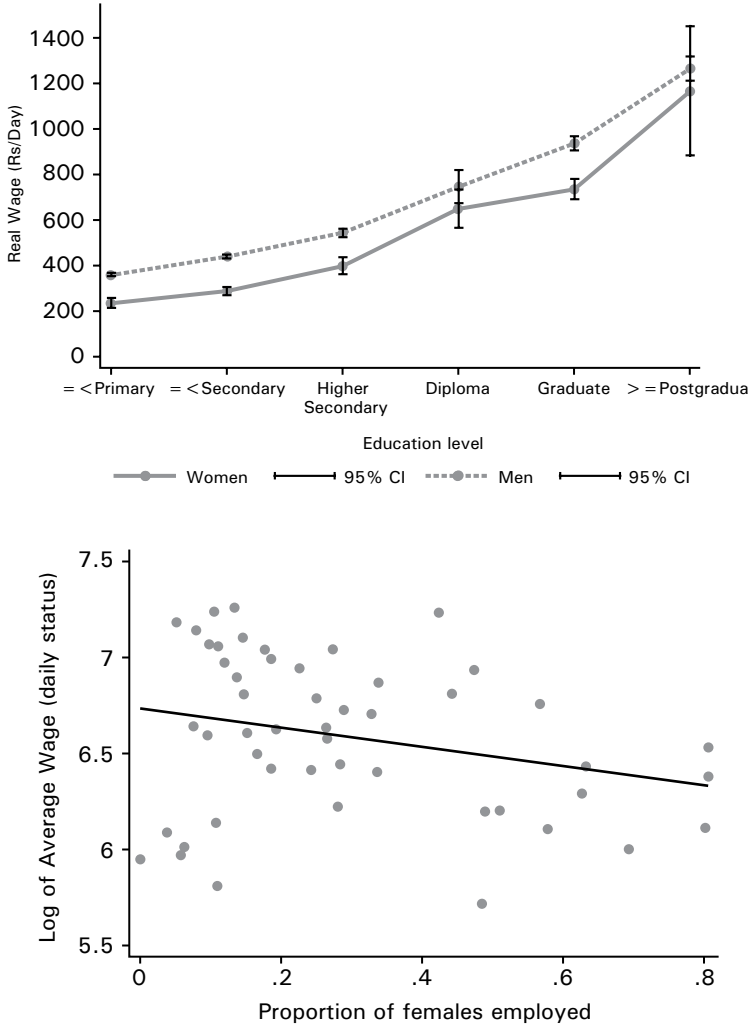
Gender Gaps

Figure 1, illustrating the ratio of female to male daily wages, based on data from the Periodic Labour Force Survey (PLFS, 2018-19) highlights the gender gap in the returns in terms of daily wages (Afridi et al. 2023). This gap tends to decrease with higher levels of education. Notably, the average education level for women is around higher secondary, with many completing school education.

The right panel in Figure 1 depicts the average daily wage by the proportion of female employees in various occupations. The trend shows that as the proportion of female workers in an occupation increases, the average wage in those occupations tends to decrease. This suggests that certain occupational choices made by women, influenced by cultural and social factors, may contribute to the observed wage disparities. Women might be inclined toward occupations that allow them to balance domestic and market work. From a parental perspective, considering potential returns on investments in a girl child, there's a perception that these returns are likely to be lower as compared to investments in a boy

child. This insight underscores the impact of occupational choices on gender-based wage differentials and its implications for family decisions.

FIGURE 1. Gender Gap in Wages and Occupational Segregation



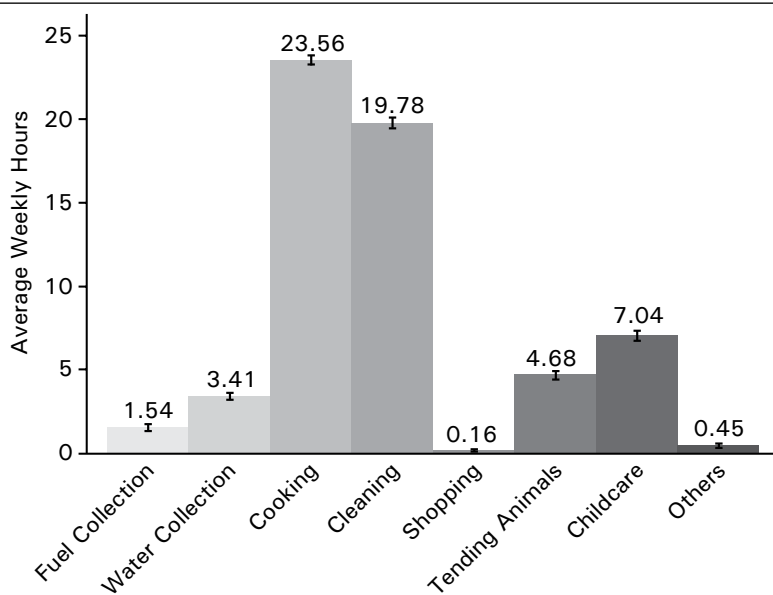
Source: Afridi, Arora, Dhar and Mahajan (2023a).

Note: The left panel in the figure plots average daily wage rates for employed individuals in paid employment (salaried or casual) by gender and education. The right panel in the figure shows the correlation between the proportion of women workers of the total employees in an occupation (X-axis) and the log of the average daily wage in each occupation (Y-axis) in urban India. Data is from PLFS (2018-19).

Case Study: Low Adoption of Technology That Can Improve Women's Health and Productivity

A study was conducted by Afridi et al. (2023), building on the Ujjwala program, a government initiative in India, which encouraged households to shift from solid fuels to LPG for cooking, through an information campaign. Time use survey data from the study (Figure 2) indicate that women predominantly spend their time on cooking and cleaning, making any technological change that enhances women's productivity within the home potentially valuable. However, the study reveals that, despite the availability of this technology, households show a low incentive to adopt it due to the perceived low returns from the market. On average, the adoption of this technology accounts for only about 20 to 30 percent of the monthly household income, while the time savings, if translated into average wages, represent merely about 5 percent of monthly household income. This lack of alignment between the perceived economic benefits and the costs of adopting the technology results in a minimal incentive for households to make the switch, which can improve women's health—the primary cooks in most Indian households.

FIGURE 2. Distribution of Rural Women's Time in Domestic Work



Source: Afridi, Debnath, Dinkelman and Sareen (2023b).

Thus, when considering investments in women and girls, as compared to men and boys, the challenge lies in the combination of low market wages and the perception or reality of insufficient demand for women's labor. Data suggest that along the education spectrum of women, from illiterate to graduate and above, the returns to home productivity increase significantly, but the returns to the market work do not keep pace. This raises questions about the incentives for educating women and investing in the health and education of girls.

Two influential papers underscore the need to enhance investments in the girl child, with implications for their health outcomes. The first, by Jensen (2012), involved a Randomized Control Trial (RCT) that increased awareness and access to employment opportunities in the BPO sector in States with skewed sex ratios, such as Haryana, Punjab, and Delhi. Notably, the paper found that just providing information about the higher returns girls could receive led to a substantial increase in the Body Mass Index (BMI) of 5-to-15-year-old girls in these households. This outcome suggests intergenerational effects resulting from improved awareness and corrected perceptions of the potential returns on investment in girls' education and employment.

The second prominent paper from China (Qian 2008), highlights an increase in the market value of returns to cultivating tea, a sector where women are more engaged. This shift resulted from higher support prices post-Mao and led to less male-skewed sex ratios in China. Both the China study and the one by Jensen in India underscore that boosting the returns on investments in women can have broad implications, influencing not only the human capital investments in currently alive girls but also impacting fertility choices.

I now shift the discussion to additional policy interventions on the demand side, aiming to enhance women's engagement in the labor market. The cultural and social factors, such as patrilocality and exogamy, which may limit the perceived returns for families investing in the education and employment of girls. Despite the legal minimum age of marriage being 18 years, a significant portion of women aged 18 to 29 years still marry before reaching this minimum age. The policy interventions to delay girls' marriages are potentially tied to perceived returns in the labor market. Additionally, the importance of addressing physical mobility, ensuring access to workplaces, work opportunities, and ensuring safety become crucial in promoting greater female participation in the labor market while addressing associated social costs.

In conclusion, we must acknowledge the progress made but emphasize that more efforts are needed, as highlighted in the paper by Dr Jayachandran. Positive effects have been observed with certain measures addressing the skewed sex ratio and associated health outcomes. The key takeaway is the urgent need to increase the perceived returns on investments in women. The fundamental issue identified is the low value placed on women's time and labor. Changing this persistent challenge requires a fundamental shift in the perceived and actual returns to investments in women.

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Ajay Mahal

University of Melbourne and NCAER

Introduction

The paper by Professor Jayachandran reviews the modern significance of the phenomenon of “son preference”, a key dimension of gender-linked inequalities in India. Following a brief review of the gains on this front in recent years, mainly arising from reduced gender differentials in infant mortality, the paper presents evidence on the persistence of adverse outcomes for girl children in India, relative to their boy counterparts. The author then discusses the pros and cons of alternative policy options to address son preference and presents a future research agenda focused on investigating policy steps that appear promising.

Professor Jayachandran is especially concerned about how the desire to have a son drives a sex ratio that favors males at younger ages and lowers human capital investments among girl children. The paper notes that owing to the differential ability of households across economic strata to afford technological means (such as ultrasounds) to identify the sex of the child, the skewed sex ratio in India is accompanied by a concentration of girls in poorer households. This feature, in turn, results in lower health outcomes for households and educational investments in girl children, all else remaining the same. The trend towards lower fertility rates in India is, if anything, exacerbating sex selection because *the desire for at least one male child* results in the share of male children increasing in an environment of overall fewer children.

Professor Jayachandran has discussed various policy alternatives in the paper. It is suggested that strategies that empower women may not be very effective in addressing the inequalities resulting from son preference because though they would lower son preference and fertility rates, the desire to have *at least one*

male child could skew the sex ratio against girls. Moreover, health subsidies for curative care targeted towards women are discounted on grounds of moral hazard, alongside delivery of public health interventions through schools, taking advantage of increased school enrolments among girl children. Since at least some of the desire for son preference in Indian households stems from social expectations of the son as a provider of old age support to parents, it is suggested that publicly-funded pensions could help to limit the skewed sex ratios in India and lower investments in girl children. Finally, the author suggests focusing on interventions that address social attitudes and son preference norms.

Thoughts on the Paper plus Some Speculation

This paper covers a lot of ground and is engaging reading. That the phenomenon of son preference persists even 75 years after Independence, plus India's lagging behind its neighbors such as Bangladesh and Sri Lanka in indicators of gender equality, ought to be a matter of deep policy anguish. The implications of son preference can be expected to go well beyond that of gender equity, including adversely influencing national economic growth, a subject that is close to the heart of Indian policymakers. But I also suspect that trends in population and disease dynamics currently underway are likely to ensure that the situation will not remain static, and that future changes in the status of women and the girl child are likely to occur in ways that could not have been visualized previously. In the remainder of my comments, I will expand on these ideas and additionally indulge in some speculation. Underpinning these comments is the idea that it will be important to keep track of ongoing developments in this somewhat dynamic space.

First, a few comments on the recommendations in the paper, especially those related to increased provision of old age pensions and research on interventions to influence son preference norms. I understand the rationale for these policy proposals, but I am not totally convinced that these are going to work. For pensions, I suspect that we are talking about government money on a scale that is unlikely to be forthcoming in the near term. To be considered credible, it will be good to see some estimates of just how much money is required to compensate parents forgoing the role of the older son as a source of social security. Nor will it be straightforward to bring *about norm change* from external interventions. Instead, I would argue that efforts by internal change agents, often influential members of the community, are much more likely to change parental preferences for sons but these are unlikely to be readily identifiable by experimental research projects. Unlike the author, I am not as concerned about moral hazard issues resulting from efforts to enhance gender equity via improving girls' and women's access to healthcare through policies that increase reimbursement for the costs of medical care. The average levels of

health services accessed are so low on average, say as compared to high-income countries, or even high-functioning States such as Kerala and Tamil Nadu, that any increase in health service use is likely desirable.

Second, policy design must consider the population and disease dynamics underway and the social changes that are likely to occur as a result. A key theme in the son-preference literature is the role of the elder son as a source of support in old age. But this role will confront an awkward fact at some point: that large numbers of elderly Indians are living much longer than before and with high levels of sickness and disability, due to the rising prevalence of non-communicable conditions. One potential consequence is that taking care of the elderly will become increasingly more strenuous in smaller households and expensive, relative to any perceived economic advantages. I suspect a role reversal could well take place—that is, it is not the economically strongest (the elder son) but the economically weakest (usually a daughter or the younger son) who ends up taking care of the elderly, ideally one who is unable to migrate or is married into a family close to where the elderly live. I suppose then that the implications for sex selection and parental investments in children of different genders going forward can be quite dramatic.

Third, I wish to suggest a way forward to help bring issues of son preference to policymakers' attention, by a focus on the economic bottom line, and not just the associated equity dimension. These days, it is common to speak of India as enjoying a huge potential demographic dividend just waiting for the right set of policy initiatives to be properly enjoyed. How does an environment of "elder son-preference" impact this economic potential? Two arguments that have typically been used in this context are that as fertility declines as part of the demographic transition, parents can invest more in their children, which also offers an opening for women to increase their participation in the workforce. But if resource allocation distortions such as those outlined in the paper dominate, son preference would have the effect of ensuring continued high levels of investment among men who already have high work participation rates, and the neglect of women, who have the largest economic potential, given their low work participation rates. We can expect the share of marriages across the economic divide to increase (poorer women with richer men) due to a general shortage of women in richer groups, which could also drive down women's work participation, on average, as women in lower income groups tend to have higher rates of work participation than average. Skewed sex ratios may also lead to increased age gaps among couples (older men and younger women), which may also adversely impact educational investments among women.

Related to the thesis of the preceding paragraph, I suspect the Chinese experience with the one-child policy might be pertinent for understanding another dimension of India's growth prospects in an environment of son preference. Cameron et al. (2013) have suggested that the one-child policy was associated with parents "over-investing" in their children, producing children

who tended to exhibit traits characterized by greater risk-averse behavior, less trust in others, less reliability, and less competitiveness, that is, not well-suited to the labor market. Do the Chinese of the one-child cohort share these traits with the beneficiaries of the ‘son preference’ syndrome (the male progeny, especially the oldest male child) in India? Is that a factor in the high levels of excess demand for government jobs in India? That may be a topic for further work.

Reference

Cameron, Lisa, Nisvan Erkal, Lata Gangadharan, and Xin Meng. 2013. “Little Emperors: Behavioral Impacts of China’s One-child Policy”, *Science*, 339: 953–957.

General Discussion

Maitreesh Ghatak began the discussion by mentioning the inheritance laws in India. He said that there are variations in inheritance laws across Indian States, particularly in relation to gender. Some southern States have altered these laws, which have been studied in research papers to examine their impact on factors like human capital investment. The paper raises questions about policy approaches to address this issue and their feasibility. He also highlighted the significant heterogeneity in gender outcomes presented in the paper, with regard to different Indian States, such as Haryana, Kerala, and Tamil Nadu. He emphasized the need to consider these differences, along with variations in culture, history, and economic conditions, as well as the compositional factors that influence outcomes across the income and wealth spectrums. He suggested that exploring more specific data beyond averages would offer better insights.

Ratna Sahay made a series of observations and shared a personal experience. She explained her involvement in promoting gender inclusion in macro policy-making, mentioning that the IMF’s approach had changed due to female leaders’ influence. She described how she initiated this work, initially seeking volunteers. However, when 25 women volunteered, she realized the need for men’s participation too in the decision-making process. She noted that men, though not inherently biased, need greater awareness and involvement to make impactful decisions. She mentioned that her strategy was endorsed by 190 countries, wherein the involvement of senior men led to more comprehensive decisions. She cited Saudi Arabia’s example, where leadership decisions have led to a significant increase in the female labor force participation in a short time. In contrast, India’s low ranking in terms of social, cultural, and religious norms, and its impact on women’s economic empowerment, even compared to several sub-Saharan and Middle Eastern countries, is a surprise. She also suggested that the author could explore additional variables such as urban

versus rural settings and higher versus lower income groups, which could also impact the outcomes.

Barbara McPake shared her insights on the tension between declining fertility rates and gender implications. She discussed the importance of policy implications, emphasizing the role of easy and accessible healthcare services in reducing gender inequities in vaccination rates. She mentioned research on children with acute respiratory infections in Uttar Pradesh and Odisha, where boys were not more likely to be treated, but they received more spending and care. She highlighted the need to focus on improving the quality of primary care and making it easily accessible for everyone to address these disparities.

Sonalde Desai appreciated the author's distinction between investments in children and sex preference, noting that evidence suggests these factors can move in opposite directions, with some parents choosing not to have daughters if they strongly prefer sons. Second, she expressed skepticism about the link between women's employment and investments in children or sex preference, citing research that did not find a clear connection. She also noted that while women's employment has been falling in India, there has been a slight decline in sex preference, suggesting a complex relationship that might require further examination in future research.

Devesh Kapur flagged the paradoxical combination of low female labor force participation alongside increased investment in female education, and achievement of gender equality in education in India, reflected in the fact that more women are now graduating from college than men, a significant global trend. This paradox raises questions about how to comprehend this shift in the context of traditional barriers to investing in girls, such as patrilocality and dowry.

Manish Sabharwal asked if improvement in general prosperity and the increase in per capita income have been the primary drivers of change in female education or if it is the result of smaller, localized interventions and bans, which he referred to as 'fireflies and froth'. He also expressed uncertainty about the actual impact of State capacity, suggesting that what is documented on paper may not necessarily translate into real-world results. The key question was what played a more crucial role—the rise in prosperity and per capita income or localized interventions and bans.

Analyzing the question raised by Devesh Kapur about the disparity between increased education parity and women's labor force participation, Farzana Afridi emphasized the importance of taking the marriage market into account when contemplating investments in children, especially girls. She argued that the marriage market plays a significant role in influencing parents' investments in their daughters, encompassing both health and education. This is because as long as marriage remains a universal and primary goal for most women and girls, it becomes the parents' foremost objective. She also pointed out the need to establish a clear connection between the investments made and the returns observed in the labor market versus those in the marriage market, as

currently, this decomposition has not been explored thoroughly. She further raised another critical question: Are women receiving education that leads to significant labor market returns? For instance, many women may be choosing careers like teaching due to societal expectations, which might not have the same labor market rewards as other professions like law or engineering. In this context, she cited Claudia Goldin's work, which highlights how structural transformations and technology changes in the U.S. have allowed women to make longer-term investments in professions like law and medicine.

Karthik Muralidharan suggested that it is crucial to examine data on time use related to elderly care. He pointed out that the traditional patriarchal norm often does involve daughters taking care of their parents in certain cultures. However, if daughters have more autonomy and income, it could enable them to contribute more to elderly care. This, in turn, might circumvent some of the challenges associated with norms and female labor force participation. He inquired about any recent data sources or attempts to examine elderly care and time use, and how norms might intersect with female labor force participation in this context. He also wondered if these norms vary significantly from village to village, district to district, or State to State, as the localization of norms is relevant for policy implications. He cited the historical example of changes in norms in the U.S. during and after World War II when women entered the workforce, a phenomenon that had far-reaching social effects.

Surjit Bhalla commented on gender parity in education, particularly in the STEM (Science, Technology, Engineering, and Mathematics) fields. He noted the significant advances in this area, highlighting that India has the fifth-highest representation of women in STEM graduation in the world. He challenged the common conclusion that there are very few women in STEM in India and argued that the situation may not be as dire as it is sometimes portrayed.

Poonam Gupta raised an important point regarding policymaking and gender parity in India. She argued that policymakers at the highest levels believe that the next phase of India's economic growth will be driven by women but are uncertain about how to facilitate this transformation. She emphasized that the discussion has revolved around not just achieving parity in areas like access to healthcare and education but also about how to harness the potential of the female workforce effectively. She pondered over the role of messaging in changing norms and promoting gender equality without necessitating extensive fiscal or logistical efforts. The Government has already invested in messaging campaigns like "save the girl child, educate the girl child", and the potential impact of public awareness campaigns and messaging in shaping attitudes and norms towards gender equality and women's participation in the workforce needs to be examined. She also raised concerns about promoting more flexibility for women to work from home. Farzana's presentation revealed that women already spend a significant amount of time on household chores, and their productivity has increased. Women are often expected to continue performing these household

tasks, and adding the expectation of working from home on top of that may not be the ideal direction to pursue. This leads to questions about the balance between work and domestic responsibilities, and whether such an approach truly aligns with the goals of promoting gender equality and women's well-being.

Dilip Mookherjee inquired about the impact of reservations of positions for women in panchayats (local self-government bodies) on gender roles in villages. He asked if any studies had examined the effects of such reservations on the dynamics of gender roles within rural communities. This question pertains to the broader discussion about gender equality and women's participation in decision-making at the grassroots level in India.

Ajay Mahal questioned whether education in the STEM fields would significantly impact women's labor force participation in India, given the prevalence of female dentists, doctors, and engineers, who are married and not working. He then addressed Poonam Gupta's point about elderly care, mentioning research conducted in Australia showing that when the elderly take care of children, it can facilitate women's participation in the workforce. He opined that in India, the primary issue may be the limited availability of elderly caregivers other than the husband's parents.

Farzana Afridi raised important points about the challenges of capturing caregiving responsibilities and time use in data, particularly in the context of changing family structures. She mentioned that as families move towards nuclear arrangements, daughters may make occasional trips to help elderly parents, which may not be reflected in traditional time use surveys that focus on an average or normal day. She acknowledged the difficulty in accurately capturing such occasional caregiving activities in survey data. She also touched upon her work on platform and gig work, and the impact of such work on women's social networks and engagement with society. It is important to understand women's labor force participation from a rational perspective. For instance, women may choose to stay at home because the available opportunities and returns in the labor market do not justify their participation in work outside. Hence, rather than pushing women to work, policymakers should focus on creating better opportunities and improving conditions in the labor market, allowing women to make choices that align with their preferences and optimize their contributions.

Deeksha from the Ministry of Finance raised an interesting question about whether social messaging encourages women to take responsibility for caring for their parents, especially in their old age. She suggested that nudging women to consider this responsibility could potentially help shift societal norms and expectations.

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