It's a boy! Women and non-monetary benefits from a son in India

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Abstract

It is well-documented that in a number of countries unnaturally few girls are born relative to boys. Explanations have focused on a range of potential reasons, including economic and cultural benefits from having a son. Households are usually treated as monolithic entities, however, and the motivations of particular household members are understudied. In contrast, this paper looks at a potential benefit mothers derive from giving birth to a boy - an improvement in their position within the household. I analyze this hypothesis using households with young first-borns from a nationally representative Indian dataset. The results suggest that women do indeed gain in non-monetary terms: Having a boy rather than a girl leads to increased joint household decision-making powers. This effect seems to vanish after six months, however, implying that the female-specific self-interest in practicing son preference may be low.

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1 Introduction

In a number of countries like China, India, South Korea, and Taiwan, the number of girls relative to boys is unnaturally low (see e.g. Das Gupta et al. 2009). This son preference[1] is also highly persistent despite major changes in the lives of families in many developing countries over the last decades. Rising literacy and education levels, for example, for the most part have not had a big impact on the existence of son preference. Research has suggested various different explanations for these patterns, including higher economic returns from a son than a daughter, family tastes for a certain sex composition of children, and special cultural traditions and practices which require having a son (see e.g. Almond et al. 2009, Qian 2008, Rose 2000, Rosenzweig and Schultz 1982).

While most explanations implicitly treat households as monolithic entities with a single utility function, one potential explanation for the persistence of son preference specifically focuses on the non-monetary benefits mothers derive from giving birth to a son rather than a daughter.

In countries where social prestige depends on having male heirs, economic benefits and societal and household tastes may not be the only reasons why women might want to have a boy rather than a girl. An additional consideration that may play an important role in shaping fertility outcomes could be non-monetary benefits derived from the birth of a boy in the form of a strengthening of the woman's position in the household. The birth of a son can improve the mother's position through different channels. One potential mechanism is that the birth of a boy increases the respect of the mother within the household, and ensures that the woman is accepted as a full family member. This acceptance may then lead to more responsibilities in household decision-making being transferred to her (Das Gupta et al. 2002). We may therefore expect the birth of a son to increase a woman's say in the household decision-making process.

How important this acceptance channel is for understanding the persistence of son preference is a very understudied question. To the best of my knowledge, there is no previous research in economics that specifically analyzes this channel empirically. In this paper, I test the existence of the acceptance channel by using a large, nationally representative dataset on Indian households. Because of endogeneity concerns in a society with skewed sex ratios, my main analysis focuses on first-born children who are at most six months old. I argue that for this restricted sample, the gender of a child is exogenous, and there is little time to change household behavior after the first child is born, for example by decreasing birth spacing intervals if the first child happens to be a girl. In consequence, families with a girl should have similar individual and household characteristics as families with a boy.

I find that having given birth to a boy rather than a girl leads to increased female

[1] In this paper, son preference is defined as preferring a son to a daughter. The use of the term in this sense therefore includes a number of channels that may lead to this outcome, like economic returns as well as taste-based discrimination.

decision-making powers, but that this improvement in the woman's position in the household is subject to three qualifications. First, the results are driven by increases in joint decision-making: While there is no improvement in women's sole decision-making powers, mothers with young boys are significantly more likely to decide jointly with their husbands about a range of household issues than women with young daughters. Second, the improvement in women's position in the household is limited to decision-making and does not translate into major improvements in other monetary or non-monetary ways, for example more financial independence or more freedom in carrying out activities outside the house. Third, the positive effects of having given birth of a son vanish after the child is six months old, suggesting that the non-monetary benefits of a son are short-lived.

Overall, the results in this paper suggest that women do indeed benefit from having a son in non-monetary ways through an increase in decision-making power. At the same time, it seems that household dynamics adjust after a honeymoon period of about six months so that there no longer is a difference in the position of women who had a son and those who had a daughter. Unless there are other women-specific benefits not captured in the analyzed variables, or unless the most important benefits from having a son accrue later than the up to 12 months considered here, this suggests that these benefits likely only explain a small part of the persistence of son preference in developing countries.

The rest of this paper is structured as follows. Section 2 provides some background information on son preference and advanced hypotheses in the Indian context. Section 3 explains the empirical strategy and presents descriptive statistics. Section 4 focuses on the main results as well as some extensions. Section 5 concludes.

2 Son Preference in India

Sex ratios in India, usually reported as the number of girls per 1000 boys in the 0-6 year age group, are skewed towards males. Table 1 reports the child sex ratio for India as a whole as well as a number of Indian states for the last three Indian censuses (1991, 2001 and 2011 (provisional results)). The table shows that sex ratios have been falling over the past 20 years both at the national level and in many Indian states, although a number of states with very low sex ratios seem to have stabilized the relative number of girls to boys over the last decade. The results also reveal that, although the trend of falling sex ratios seems to be almost nationwide, sex ratios differ regionally.

Sex ratios below 1000 females per 1000 males are not necessarily unnaturally low, however: While the gender of a child is random if parents do not resort to sex-selective abortion or, after the child is born, infanticide or sex-specific neglect, naturally slightly more boys than girls are born. The sex ratio at birth is therefore below 1000 even in developed countries where son preference is usually not an important consideration. From birth onwards, however, girls have a biological survival advantage, which tends to raise sex ratios as children get older if children are treated equally (see for example

Waldron 1983). As developed country sex ratios may not necessarily be a good comparison group for children in India, however, two papers have tried to estimate the natural sex ratio at birth for India specifically: Bhat and Zavier (2007) argue that 943-971 female births per 1000 male births is the normal range, whereas Srinivasan and Bedi (2009) put the confidence interval at 932-965. Given that boys are more likely to die than girls, these estimates present a lower bound for the natural sex ratio of 0-6 year old children reported in Table 1. Bold numbers in the table are all sex ratios that are below the most conservative estimate for a normal sex ratio of 932 females per 1000 males. Unnaturally low numbers of females are therefore concentrated in North-West, North-Central and West India, although the national sex ratio has also been too low for the last two censuses.

These patterns strongly suggest that son preference is an important concern in India. Especially the continuing fall of sex ratios over the years has attracted a lot of academic research on the potential underlying causes of this preference for boys over girls. In general, researchers focus on two main channels: economic and cultural considerations. With respect to economic considerations, boys may be a better investment if they have a higher probability of earning income and are expected to provide shelter and financial support for their parents later in life. Male labor force participation in India generally is significantly higher than that of women, so having a son may indeed lead to better old-age support for the parents (see e.g. Chung and Das Gupta 2007, Rosenzweig and Schultz 1982, Rose 2000). Especially in North India, on the other hand, girls are traditionally seen as ceasing to be part of the family when they marry, so that a daughter's earnings benefit her husband's family instead. Additionally, dowries are paid in large parts of the country when a girl marries, and, although its existence is still debated in the literature, anecdotal evidence suggests that dowry inflation is an important concern in India and the broader region (see e.g. Rao 1993, Anderson 2003, Arunachalam and Logan 2008).

Cultural considerations are also often advanced as an important factor for son preference in India. Parents may prefer sons for a number of reasons: Some religious rituals like lighting the funeral pyre of the parents, for example, need to be performed by a son. Women also traditionally cannot inherit property in large parts of the country so that parents need a male heir to pass on their land and family possessions. These cultural influences coincide quite well with the regional patterns seen in Table 1, as many traditions that disincentivize having a daughter are particularly engrained in the North-West Indian kinship system, whereas they tend to be considerably weaker in East and South India where son preference is typically lower (see e.g. Almond et al. 2009, Dyson and Moore 1983).

Most of these potential reasons implicitly focus on household behavior and tastes and therefore assume that households are monolithic entities with a single utility function, which collectively prefer sons over daughters. While this may be a good way to describe overall household preferences, the channels that lead to individual members' son preference are understudied. Women of childbearing age seem to be an especially interesting case in this respect: Being women themselves and having grown up in surroundings

where son preference is widespread, one could assume that these women would practice less discrimination against girls in their own fertility and sex composition decisions. Similarly, with modernizing influences of increased female education and labor force participation that increase females' economic contributions to the household and their bargaining power, one might expect women to use their increased say in household matters to practice less preferential treatment among their own children. Empirical results demonstrate, however, that this is not always the case: The results in Table 1 show, for example, that sex ratios continue to fall even though factors like female educational attainment have improved markedly over the years. Das Gupta (1987) also shows that educated mothers are far more efficient in gender discrimination than women without education.

A potentially important reason for this empirical pattern may be that women across India, but maybe especially in Northern India, benefit from the birth of a son in additional ways, for example through increased decision-making powers in the household. Research on the family and kinship system prevailing in Northern India suggests that non-monetary benefits may be an important explanation for son preference among women (see e.g. Das Gupta et al. 2002, Kishor 1993, Kaur 2008): The position of women in the household changes importantly over the life cycle. Women in this region are typically seen as ceasing to be members of their parentsf family when they marry and in general cannot inherit family property. They have a weak position in the household that they enter as brides, even though women make important contributions to the household by working on the fields or managing the household chores. The birth of a son, however, raises the social prestige of the family and leads to increased respect for the mother of the child. Furthermore, husbands typically start withdrawing from being involved in family decision-making as they get older, and women start taking over the management of the household with the support of their grown-up sons (Das Gupta 1995, Rahman, Foster and Menken 1992). This pattern, papers like Das Gupta et al. (2002) suggest, leads to a preference for sons, as sons can provide support and protection for their mothers. In South India, on the other hand, family systems tend to be more flexible and allow women a more important role in society, which translates into less pressure to have sons.

The North Indian kinship system therefore facilitates women's preference for boys through two distinct but related channels: First, having a son increases a woman's bargaining power in the household. While young women have little say in household matters that are typically decided by the mother-in-law or other household members, women can take over the management of the household with the support of their grown-up sons. Das Gupta et al. (2002) therefore argue that a woman may work to ensure the loyalty of her sons by spoiling them or letting them see how other household members mistreat her. Since sons are the later supporters of the household and therefore the key figure in deciding on the future allocation of resources within the household, household members may want to stay on the child's good side. The presence of a loyal son therefore increases a woman's bargaining power, which she can use to take over household responsibilities.

Second, the birth of a son may also lead to increased acceptance of a woman by other household members and the society at large. A son typically increases a family's social prestige, and women can be seen as having fulfilled the duty of carrying on the family line. Women in North India are often called X's mother, and change their name after the birth of a son. This reflects an increased respect for the mother of the child (see for example Das Gupta 2009). As a way of demonstrating a new level of acceptance after the birth of a son, other household members may willingly transfer some of their responsibilities to the woman. On the other hand, anecdotal evidence suggests that women without sons are often the target of gossip or snide remarks in their village.

Both of these channels predict that the woman's position in the household should improve after the birth of a son, for example through an increased say in household decision-making. As both bargaining power and the respect by other family members are typically unobserved, the two channels cannot be directly separated empirically. The strength of the two channels should, however, depend on the age of the child: Specifically, young children are not yet able to witness how their mother is treated by other household members, so that the bargaining power channel should be weak for mothers of young children, whereas the acceptance channel works for all children, regardless of age. As children get older, both bargaining power and acceptance by others may interact to increase a woman's say in the household.

In this paper, I therefore test the existence of the acceptance channel by focusing on first-born children that are at most 6 months old. If the outlined hypothesis is correct, the mother of a young son should have a significantly better position in the household than a woman with a daughter. The empirical strategy used to estimate this effect in a society with heavily skewed sex ratios is discussed in the next section.

3 Empirical Strategy and Summary Statistics

The empirical analysis in this paper makes use of the National Family and Health Survey (NFHS) of 2005, a representative cross-sectional dataset for India.[2] It includes a household survey, collecting information on all members of the household, and a more detailed survey administered to all women aged 15-49. The women's questionnaire has information on the complete birth history of a woman as well as questions on decision-making powers and women's position within the household.

Various papers have documented that in India, as well as in other countries with son preference, gender is correlated with birth order (see e.g. Chen et al. 2010, Jayachandran and Kuziemko 2011, Lee 2008). Particularly, the sex of a child tends to be within the naturally expected bounds at low birth orders and especially the first birth, since even in the presence of son preference parents usually want more than one child (Almond et al. 2009, Bhalotra and Cochrane 2010). At higher parities, on the other hand,

[2]There are also two earlier NFHS surveys, but decision-making questions are not comparable between waves and less extensive in the earlier surveys, so that they are excluded from the main analysis here.

sex ratios become more skewed towards boys, which is thought to be a combination of sex-selective abortion and, in the Indian context, excess female mortality.

Table 2 calculates the sex ratio, defined as the number of girls over the number of boys, for all children of a given parity in the dataset separately. As we can see, the sex ratio is 962 for the first birth and therefore within the natural range identified by both Bhat and Zavier (2007) and Srinivasan and Bedi (2009). The sex ratios for the second to fifth birth, however, are much lower and clearly outside the calculated range for naturally occurring patterns of child gender. Sex ratios for the sixth and seventh birth are closer to being normal again, but lie within the estimated natural range for only one of the two papers.

This pattern presents problems for the identification of the causal effect of child gender on the mother's position within the household. Ideally, we would like to estimate the following regression for all women with children:

$$y_i = \alpha + \beta male_i + \epsilon_i$$

where y is a decision-making variable for woman i, and *male* is an indicator variable for whether a woman has a boy. The coefficient of interest is β, but in the presence of son preference, *male* will be correlated with the error term, even when controlling for birth order.

In order to identify the causal effect of child gender on the mother's position within the household, I therefore restrict my sample to first-born children, where the sex of the child was shown to be arguably exogenous in Table 2. [3] This research strategy has been used in some other papers in the literature (see for example Chen et al. 2010, Barcellos et al. 2011).

A related endogeneity concern is that households will practice differential stopping rules depending on the sex composition of their children (see for example Jensen 2002). Specifically, a family may keep having children until the desired number of sons is reached. This implies that the sex of the first child may be correlated with other factors like the number of children, birth intervals or household income if parents try to have a son after the first child turned out to be a girl. Without controlling for all potential intervening factors that may have an independent influence on the woman's position in the household, the estimate of β will therefore still be biased. Furthermore, almost all families eventually have at least one son, so if the birth order of a son does not matter for the woman's powers in the household, including women who already have more than one child may make the effect of having a son undetectable.

In consequence, I further limit my sample to women who only have one child and who, in order to circumvent potential endogeneity concerns about differential birth spacing correlated with the gender of the child, have not had time to have a second child. There is a trade-off between sample size and bias in deciding on the appropriate

[3] I also restrict the sample to non-multiple births only in order to ensure that we cleanly measure the impact of the child's gender on women's position in the household. Multiple births can have different effects.

cutoff. The older we allow the first child to be, the larger the sample size of women who fall into this category, but the higher is the probability that a woman will have had a second birth. For the main part of my analysis, I focus on first-born children who are 0-6 months old, although I later conduct robustness tests that also look at children that are up to 12 months old. This strategy is also used in Barcellos et al. (2011) in their analysis of differential treatment of boys and girls, although they use less conservative age cutoffs of 12 and 24 months in their analysis with older NFHS rounds.

Table 3 presents summary statistics for the main sample used for the empirical analysis. Women for whom the first child is a son are similar to women who have a daughter in terms of characteristics like household size, the household head's age, religion, caste and wealth (calculated by principal component analysis in the form of a wealth index). Women in the two groups also have no significantly different probability of currently being pregnant. This alleviates concerns about women with a girl becoming pregnant sooner than women with a boy in the sample used for analysis, which otherwise could cause differences in household decision-making powers. Boys and girls are also of the same age on average, so that any differences in women's position in the household are not driven by age differences of their children.

Unfortunately, however, women with boys and girls are not balanced on the mother's age and years of education, which are statistically significantly different at the 5 percent level, although the differences are not large in absolute terms in both cases. Women who have a first-born son of at most six months are slightly older and more educated than women with first-born daughters of similar age.[4]

The NFHS includes a couple of variables that can be used to measure a woman's powers in the household. Women are asked to name the person who has the last say in their own health care, large purchases, daily purchases, visiting family and about what to do with the husband's money. The answer categories are either the respondent on her own, the respondent jointly with her husband, the husband on his own, or someone else. These outcomes will be used for the main analysis of this paper. For each decision-making question, I construct indicator variables for sole and joint decision- making powers: The sole decision-making variable is equal to 1 if the woman alone has the last say in a given decision and 0 otherwise, whereas the joint decision-making variable is equal to 1 if the woman decides jointly with her husband and 0 otherwise. I also construct a female decision-making indicator variable that is equal to 1 if the woman either has sole or joint decision-making power and is 0 otherwise. Additionally, I create a decision-making index variable from the five individual decision-making questions by principal component analysis and standardize it by subtracting the mean and dividing by the standard deviation. This allows a more meaningful interpretation of regression coefficients as standard deviations.

The survey also includes information on whether the woman has her own money, whether she has a savings account and whether she is allowed to go to the market,

[4]The overall age and education distributions of mothers with daughters and sons look very similar, however (results not reported). I also include the mother's age and years of education in my regressions to control for this difference in characteristics that could potentially bias my results.

a health facility and somewhere outside the village or community on her own, with someone else's permission only, or not at all. These outcome variables proxy for improvements in the position of a woman in the household that go beyond decision-making powers.

I estimate the effect of child gender on the woman's position in the household by using a linear probability model. Given that the sample is not balanced on some observable characteristics, I control for a number of variables in my regressions. Those include household size, mother's age and the age of the household head, indicator variables for living in a rural area and for each year of mother's schooling, indicator variables for being Hindu, Muslim, a member of the scheduled castes or scheduled tribes (SC and ST, respectively), and for being currently pregnant. I also include state fixed effects.

4 Results

4.1 Main Results

Tables 4 and 5 present the main results of the impact of the child's gender on the mother's decision-making powers in the household, both with and without control variables. Table 4 focuses on the impact of child gender on having any decision-making power, whereas the two panels in Table 5 look separately at sole and joint decision-making.

Table 4 shows that women do benefit from having a son rather than a daughter in terms of increased decision-making powers: Having a boy is associated with an about 4 percentage points higher probability of having a say in one's own health care, and an about 7 percentage points higher probability of being involved in decisions concerning large purchases. The probability of having a say in decisions about family visits increases by about 4.6 percentage points if the child is a boy. The coefficients for both large purchases and family visits are statistically significant at at least the 5 percent level, whereas the coefficient for own health care is only statistically significant at the 10 percent level once we include the control variables. The coefficients on the other two categories of decision-making, daily purchases and husband's money, are statistically insignificant, and the magnitude of the husband's money coefficient is basically zero. With a standardized index of the decision-making variables, decision-making increases by 0.18 standard deviations if the child is a son. The inclusion of control variables typically lowers the magnitude of the estimated coefficients a bit, suggesting that their inclusion is important, but the qualitative pattern remains the same.

Table 5 shows that improvements in female decision-making in Table 4 are driven by increases in joint rather than in sole decision-making: The estimated impact of a boy on sole female decision-making power in panel 5A is negative for all outcome variables with the exception of large purchases and the index, but is typically statistically insignificant at conventional levels. The exception is a woman's final say in daily purchases, where

having a son decreases the probability of having the sole decision-making power by about 4.5 percentage points.

In panel 5B, on the other hand, having a boy rather than a girl translates into increases in joint decision-making powers both for individual outcome variables and the constructed index. Having a son increases joint decision-making in the woman's health care, in large and daily purchases and regarding family visits by about 5 to 7 percentage points. Again, there is no significant impact of child gender on making decisions about what to do with the husband's money. With a standardized index of the decision-making variables, joint decision-making increases by 0.18 standard deviations if the child is a son. As in Table 4, the inclusion of control variables somewhat lowers the magnitude of the estimated coefficients, but the qualitative pattern remains the same.

The overall patterns in Tables 4 and 5 therefore suggest that having a son significantly increases the probability of having some say in household matters, but in general does not imply that women become sole decision-makers. In the case of daily purchases, having a son may even negatively impact her decision-making powers.

4.2 Additional Analysis

The main results analyzed the impact of child gender on female decision-making powers within the household. Household members may show their increased acceptance of the mother after the birth of a son in additional ways that go beyond increased responsibilities in the household, however. Table 6 therefore looks at additional outcome variables that proxy for a woman's position in the household, namely indicator variables for whether the woman has access to some money of her own, and whether she has a savings account. Panel A also includes indicator variables for three questions relating to the woman's ability to go to the market, a health facility, and to places outside the village without having to ask for the permission of other household members. The indicator variables are 0 if the woman has to ask for the permission or is not allowed to go at all. Panel B looks at changes in these last three variables where the indicator variable is equal to 1 if the woman has to ask for the permission of another household member to go somewhere, and is 0 otherwise.

The results in Table 6 demonstrate that the improvements in the woman's position in the household are confined to increases in decision-making power and for the most part do not translate into more financial or individual independence. Once we include control variables, the only coefficient that is statistically significant at conventional levels is the coefficient for having a savings account. The probability of having an account is 2.6 percentage points higher for women with a son than for women with a daughter, and the effect is statistically significant at the 10 percent level. The coefficients on the personal freedom questions generally seem to suggest a decrease in having to ask for the permission of other household members of about 1 percentage point for the market and health facility questions, and a similar increase in being able to go without someone else's permission, but the coefficients are all statistically insignificant. The estimated

coefficient for having access to money of her own is even negative, although again statistically insignificant.

Overall, Table 6 shows that there seem to be few changes in financial and personal independence that depend on the gender of the child. The main benefits of having a boy for a woman are therefore the increases in joint decision-making in various household decisions from Tables 4 and 5. Given that this is the case, it is important to understand how long these positive non-monetary benefits from a son last. The cutoff of the child's age at six months is arbitrary and was designed to balance the two goals of large sample size and cleaner identification by giving households little time to re-optimize and have a second child. As a robustness check not reported here, I therefore re-estimated the regressions in Tables 4 through 6 for a less conservative sample of children up to 12 months old. The qualitative pattern of the estimated coefficients is similar for this new sample, but the coefficients are typically only half as big. This suggests that the positive effects of having a boy on decision-making may wear off over time.

To analyze this more systematically, Table 7 reports the estimated coefficients of the linear probability models with control variables for samples of children aged 0-3 months, 4-6 months, 7-9 months, and 10-12 months separately for all the decision-making questions and the created index.[5] Table 7 reveals that for the most part the results in Table 4 were driven by the impacts of child gender on female decision-making power for women with 4-6 months old children. Both economic and statistical significance are highest for mothers with children in this age group, with the estimated coefficients being similar in magnitude and statistical significance to the results in Table 3. The estimated coefficients are much smaller for the younger children (at most 3 months old) and statistically insignificant with the exception of the coefficient for the index, which is significant at the 10 percent level. The coefficients for children older than 6 months are typically small and, except for the coefficient on large purchases for 10-12 month old children, statistically insignificant. All coefficients for the oldest age group of children (10-12 months) even go into the wrong direction with being negative.

These patterns suggest that it takes some time for the positive effects of having a boy to feed through to improvements in decision-making powers since the highest effects are observed for mothers of 4-6 month old children. At the same time, these positive effects seem to wear off after the child is half a year old. For children that are older than six months, the gender of the child is no longer an important predictor of female decision-making power. This points at some version of a honeymoon effect where women can reap benefits in intra-household decision-making for the first six months, after which the household seems to reoptimize until the child gender is unimportant for decision-making powers. So while the acceptance channel seems to work for younger children, it vanishes for 7-12 month old children.

An additional extension of the main specification is to look at heterogeneous effects. The earlier discussion on son preference in India suggests a number of potentially inter-

[5]A similar analysis for the additional variables from Table 6 shows no interesting patterns. The estimated coefficients are statistically insignificant throughout.

esting differences in the strength of the acceptance channel: Women who live with their in-laws, and women living in areas where the traditional North Indian kinship system is still intact, for example, would seem to be more affected after fulfilling the expectations of having a son than other women. Unfortunately, it is unclear a priori how we would expect treatment effects to differ along the lines of these variables as well as other characteristics like caste, rural/urban residence, or relationship to the household head. On the one hand, we might assume that the position of the woman within the household is weakest, and the pressure of having a son is especially great in North India, in rural areas, and for women who are daughters-in-law, so that they potentially have the most to gain from giving birth to a son rather than a daughter. On the hand, however, it is not clear that the reward for giving birth to a son would necessarily be bigger in those households than in others, since rural households, for example, might still limit the responsibilities and independence of their females even though there now is a son. So the reward from having a son may actually turn out to be bigger in supposedly less conservative households because those households are willing to reward the female by transferring responsibilities to her. Unfortunately, empirically I cannot disentangle the two. I also cannot distinguish between women being rewarded for having a son versus being punished for having a daughter.

The empirical results of different heterogeneity analyses (not reported here) do not reveal strong patterns. Scheduled caste and scheduled tribe women, who are traditionally believed to be more independent than women of other castes because of their low socio-economic status and, in the case of tribal women, their traditionally greater independence, in general do not benefit differentially from a son. There are no especially strong effects for women living in North India, except for a gain in sole female decision-making powers in daily purchases. Rural women drive the increases in decision-making in daily and large purchases, but do not benefit more in other areas. There are no differential effects for daughters-in-law who form about 40 percent of the sample.

Overall, these results suggest little importance for heterogeneous treatment effects. Given the a priori uncertainty about the direction of the effects, these results could either mean that specific characteristics like the North Indian kinship system are not as important as traditionally thought since women across India seem to benefit equally from a son; or they could suggest that the two effects of greater benefits but also greater reluctance of transferring responsibilities to women outlined above work to balance each other out, thereby concealing important underlying patterns. Unfortunately, it is impossible to disentangle these effects empirically.

Overall, this analysis implies, however, that Tables 4 through 7 give a quite accurate picture of the treatment effect of having a boy for women across India.

5 Conclusion

This paper has analyzed whether women of child-bearing age gain from giving birth to a son in non-monetary terms through an improved position in the household. As

the results show, having a young son rather than a daughter of the same age leads to increased joint decision-making powers in a number of areas, but does not affect sole decision-making powers and the freedom to perform more day-to-day activities without having to ask for the permission of other household members. The benefits are concentrated on children aged 0-6 months, and disappear for older children.

Even though the duration is limited and there is no increase in women's sole decision-making powers, the empirical results therefore suggest that for a honeymoon period women do indeed benefit from having a son. Other household members seem to reward the mothers for the birth of a male heir by accepting them more fully as household members and by transferring some household responsibilties to them.

These effects are arguably a lower bound of the improvement of a woman's position in the household after the birth of a son, since some changes in household decisionmaking may take more time than the up to 12 months considered in this paper. Furthermore, increased bargaining power due to a son's loyalty to his mother may lead to additional increases in intra-household powers once the child is old enough to witness how his mother is being treated by other family members. So while the empirical analysis in this paper seems to suggest that the non-monetary benefits for women from having a son are very limited, it may not fully capture all the positive effects that women experience after the birth of a boy. More research is needed to analyze this issue further and to better take into account more long-term benefits that cannot be focused on here because of endogeneity concerns.

Nevertheless, the current results seem to suggest that women may not have a significant non-monetary self-interest in giving birth to a son rather than a daughter. Especially in a world where more female decision-making power is increasingly seen as desirable by both policymakers and women themselves, it is important to know that son preference does not seem to harm the survival chances of girls: Since women do not seem to majorly benefit from the birth of a son through an improvement in their position in the household after a honeymoon phase of about six months, they do not seem to have to trade off their own future benefits for having a daughter rather than a son. This implies that it should be possible for policymakers to encourage both female decision-making and discourage son preference simultaneously without having to worry too much about the interaction effects of these two policies.

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Table 1: Child Sex Ratios (0-6 years) Census 1991, 2001, 2011, Select States

	Females per 1000 males		
State	1991	2001	2011
India	945	**927**	**914**
North-west			
Himachal Pradesh	951	**896**	**906**
Punjab	**875**	**798**	**846**
Haryana	**879**	**819**	**830**
Chandigarh	**899**	**845**	**867**
Delhi	**915**	**868**	**866**
North-central			
Uttar Pradesh	**928**	**916**	**899**
Madhya Pradesh	952	932	**912**
West			
Gujarat	**928**	**883**	**886**
Rajasthan	**916**	**909**	**883**
Maharashtra	946	**913**	**883**
Goa	964	938	**920**
East			
Bihar	959	942	933
Jharkhand	NA	965	943
West Bengal	967	960	950
Nagaland	993	964	944
Orissa	967	953	934
South			
Andhra Pradesh	975	961	943
Karnataka	960	946	943
Tamil Nadu	948	942	946
Kerala	958	960	959

Notes: Table adapted from John (2011); data come from Census of 2001 and Census of 2011.

Table 2: Sex Ratios in NFHS 2005 by Birth Order

birth order	N of boys	N of girls	sex ratio
1	38,747	37,259	962
2	32,976	30,271	918
3	21,418	19,241	898
4	12,352	11,135	901
5	6,803	6,248	918
6	3,660	3,443	941
7	1,949	1,823	935

Notes: Calculations by author using NFHS (2005)

Table 3: Summary Statistics

	boy	girl	p-value of difference
N	963	955	
child's age	3.36	3.30	0.46
household size	6.59	6.76	0.23
mother's age	22.18	21.80	0.04
household head age	46.61	45.98	0.36
years of schooling mother	4.08	3.87	0.02
Hindu	0.74	0.74	0.72
Muslim	0.13	0.13	0.74
SC	0.17	0.17	0.89
ST	0.14	0.14	0.84
wealth index	1719	-2703	0.32
currently pregnant	0.005	0.003	0.49

Notes: The last column gives the p-value of a test for the equality of sample means for mothers with sons and mothers with daughters.

Table 4: The impact of child gender on household decision-making

	own health care	large purchases	daily purchases	family visits	husband money	index
son (no controls)	0.0424*	0.0750***	0.0319	0.0490**	-0.0067	0.1746***
	(0.0230)	(0.0236)	(0.0238)	(0.0235)	(0.0231)	(0.0523)
R-squared	0.0018	0.0057	0.001	0.0024	0.0001	0.0076
son (with controls)	0 .0394*	0.0693***	0 .0264	0.0461**	0.0003	0.1822***
	(0.0221)	(0.0224)	(0.0223)	(0.0218)	(0.0227)	(0.0516)
R-squared	0.1233	0.1482	0.1685	0.1819	0.0862	0.0947
N	1839	1772	1758	1788	1546	1451
mean	0.5759	0.4458	0.4846	0.5593	0.7083	0.0000

Notes: *** p<0.01, ** p<0.05, * p<0.1

The index for each panel was created by principal component analysis, using the five indicator variables as imputs, and then standardized by subtracting the mean and dividing by the standard deviation.

Control variables are: household size, mother's age and the age of the household head, indicator variables for living in a rural area and for each year of mother's schooling, indicator variables for being Hindu, Muslim, a member of the scheduled castes or scheduled tribes (SC and ST, respectively), and for being currently pregnant. I also include state fixed effects.

Table 5: The impact of child gender on sole and joint household decision-making

Panel A: sole women decision-making power

	own health care	large purchases	daily purchases	family visits	husband money	index
son (no controls)	-0.0179	0.0041	-0.0410**	-0.0048	-0.0155	-0.0760
	(0.0191)	(0.0102)	(0.0198)	(0.0127)	(0.0109)	(0.0525)
R-squared	0.0005	0.0001	0.0024	0.0001	0.0013	0.0014
son (controls)	-.0192	0.0024	-0.0445**	-0.0096	-0.0139	-0.0874*
	(0 .0191)	(0.0102)	(0.0193)	(0.0123)	(0.0109)	(0.0519)
R-squared	0.0497	0.0525	0.1058	0.0716	0.0558	0.0839
N	1839	1772	1758	1788	1546	1451
mean	0.2126	0.0485	0.2218	0.0783	0.0485	0.0000

Panel B: joint decision-making power

	own health care	large purchases	daily purchases	family visits	husband money	index
son (no controls)	0.0603***	0.0709***	0.0728***	0.0538**	0.0088	0 .1769***
	(0.0224)	(0.0232)	(0.0209)	(0.0236)	(0.0241)	(0.0523)
R-squared	0.0039	0.0052	0.0068	0.0029	0.0001	0.0078
son (controls)	0.0586***	0.0669***	0.0709***	0.0558**	0.0141	0.1808***
	(0.0215)	(0.0223)	(0.0205)	(0.0224)	(0.0237)	(0.0505)
R-squared	0.1214	0.1227	0.0977	0.1436	0.0881	0.1347
N	1839	1772	1758	1788	1546	1451
mean	0.3632	0.3973	0.2628	0.4810	0.6598	0.0000

Notes: *** p<0.01, ** p<0.05, * p<0.1

Control variables are: household size, mother's age and the age of the household head, indicator variables for living in a rural area and for each year of mother's schooling, indicator variables for being Hindu, Muslim, a member of the scheduled

castes or scheduled tribes (SC and ST, respectively), and for being currently pregnant. I also include state fixed effects.

Table 6: The impact of child gender on other household outcome variables

Panel A: Have own money and a savings account, allowed to go somewhere without permission

	have own money	have savings account	go to market	health facility	go outside village
son (no controls)	-0.0125	0.0364**	0.0445**	0.0345	0.0290
	(0.0221)	(0.0150)	(0.0225)	(0.0219)	(0.0203)
R-squared	0.0002	0.003	0.002	0.0013	0.0011
son (controls)	-0.0152	0.0257*	0.0249	0.0149	0.0083
	(0.0206)	(0.0143)	(0.0199)	(0.0204)	(0 .0189)
R-squared	0.1649	0.1418	0.2496	0.1779	0.1803
N	1918	1917	1918	1918	1918
mean	0.3717	0.1242	0.4119	0.3608	0.2732

Panel B: allowed to go somewhere only with permission

	go to market	health facility	go outside village
son (no controls)	-0.0320	-0.0310	-0.0136
	(0.0228)	(0.0225)	(0.0220)
R-squared	0.001	0.001	0.0002
son (controls)	-0.0168	-0.0138	0.0035
	(0.0214)	(0.0212)	(0.0211)
R-squared	0.1543	0.1528	0.1251
N	1918	1918	1918
mean	0.4645	0.5886	0.6330

Notes: *** p<0.01, ** p<0.05, * p<0.1

Control variables are: household size, mother's age and the age of the household head, indicator variables for living in a rural area and for each year of mother's schooling, indicator variables for being Hindu, Muslim, a member of the scheduled castes or scheduled tribes (SC and ST, respectively), and for being currently pregnant. I also include state fixed effects.

Table 7: The impact of child gender on decision-making over time

	own health care	large purchases	daily purchases	family visits	husband money	index
0-3 months	.0060	.0475	.0192	.0310	-.0035	.1373*
	(.0309)	(.0311)	(.0309)	(.0306)	(.0322)	(.0728)
4-6 months	.0751**	.0906***	.0343	.0633**	.0078	.2308***
	(.0325)	(.0331)	(.0329)	(.0315)	(.0329)	(.0758)
7-9 months	.0245	.0177	.0387	.0707**	.0107	.0545
	(.0322)	(.0321)	(.0319)	(.0312)	(.0321)	(.0749)
10-12 months	-.0386	-.0712**	-.0389	-.0422	-.0256	-.0544
	(.0341)	(.0336)	(.0337)	(.0324)	(.0340)	(.0756)

Notes: *** p<0.01, ** p<0.05, * p<0.1

Control variables are: household size, mother's age and the age of the household head, indicator variables for living in a rural area and for each year of mother's schooling, indicator variables for being Hindu, Muslim, a member of the scheduled castes or scheduled tribes (SC and ST, respectively), and for being currently pregnant. I also include state fixed effects.