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Mothers-in-Law and Son Preference in India

Abstract

In India, the mothers-in-law are often portrayed as the most powerful entity in the household in Indian popular culture and media. Similarly, in the literature, the influence of the Indian mothers-in-law is often taken for granted. However, most of the empirical evidence relies on qualitative data or on small samples. Looking at stated son preference and using the third nationally representative National Family and Health Survey dataset, we show that mothers-in-law do indeed have an influence on their daughter-in-law, everything else constant. Given the stronger son preference among mothers-in-law, this contributes to the high imbalance in the male to female sex-ratio observed among children in India.

Keywords: son preference, sex-ratio, mothers-in-law, India.

JEL: J1, J7

My first child is a girl. My mother-in-law said that is okay, she said at least it is good that I can have babies. But when my second child was also a girl, she did not want to hold her after the birth. She yelled at me that I should have had this test to know if I had a boy or girl. This is why I am getting the test now for my third child. (Puri et al. 2011).

1. Introduction

In India, sons are often preferred over daughters for various socio-economic reasons. With the advent of new medical technologies it has become even easier to sex-selectively abort unwanted fetuses without having to rely on sex-selective neglect leading to death or infanticide.[i] Son preference has thus become a serious issue, with an estimated annual half a million female fetuses sex-selectively aborted (Jha et al. 2006), thereby causing significant gender imbalance. In this paper we argue that one reason behind this practice is the influence of the mother-in-law.

With trade liberalization in the early 1990s, job opportunities have opened up for women in India and the younger generation has been influenced by western values. Those important social changes are reflected in the media. For example, in the 1970s and 80s films would depict women entering the work force mostly under dire straits and not as being a wife and a mother were perceived to be the most important roles for a woman. However, in the last few decades, films depict women as choosing professional careers. Thus, with more modern attitudes about gender roles, the younger generation of mothers is not expected to have as strong a preference for sons as older generations of mothers did, which is supported by data on stated son preference. This however has not translated into more balanced sex-ratio among less than 6 years old, which have worsen for the last four decades.

While there is no doubt that the reduction in the cost of engineering the sex-ratio among own children is the major reason why amidst weaker son preference, revealed son preference is on the

increase, we argue in this paper that another important factor is at play, namely the influence of the mother-in-law.

Indian mothers-in-law are generally considered as a powerful figure in the household (Gangoli and Rew 2011). They are also having on average stronger son preference, as they come from an older generation. We postulate that they use their influence to interfere in the decision to engineer the sex-ratio among their grand-children, either through pressure or via socialization (out of respect and affection).While we cannot distinguish between those two mechanisms, this paper shows that mothers-in-law are indeed influential in impacting the preference of the daughters-in-law.

This paper contributes to the literature in two main ways. It contributes to the family relation literature by being the first paper to use a nationally representative data to quantify the impact of the mother-in-law on her daughter-in-law's preference and decision. It also contributes to the literature by being the first paper to discuss the importance of older generations on stated son preference.

The remaining of this paper is organized as follow. Section 2 gives background information on son preference in India while section 3 describes the data and the model. Section 4 presents some descriptive statistics followed by section 5, which discusses key results and robustness checks. Finally, section 6 concludes and policy implications are discussed.

2. Background

As early as 1853, the British recorded abnormal sex-ratios among some communities in India (J.P. Grant, Officiating Secretary the Government of India, 7 September 1853, cited in Oldenburg, 2002:41). In his report, Grant states that the motivations behind sex-selective neglect

and infanticide leading to these abnormal sex-ratios are for religious, caste and financial reasons. Almost two centuries later, the root causes of son preference remain the same. What has changed, however, is that the imbalance in sex-ratios has now spread across communities with the process of sex-selective elimination of females becoming widely accessible and easy.

Among the key cultural motivation for preferring sons over daughters is the crucial role played by the son in performing religious rites and rituals, securing a good afterlife for his parents (Manu 2004), continuing the family name (Das Gupta et al. 2003) and inheriting the family land (Kishor and Parasuramam 1998).

Financial motivations, rooted in cultural practices, also play a crucial role. Indeed, once of adult age, a son will marry and will bring a daughter-in-law—and a dowry—to his natal family, he will remain with his parents and the fruits of his labor will be shared with his parents and siblings. In contrast, a daughter will be married off—a dowry will have to be paid—she will live with her marital family and will be forbidden from supporting her natal family by both cultural taboo and her in-laws (Das Gupta 1987; Das Gupta et al. 2003). Her parents are, however, expected to offer her gifts, pay for her upbringing and, keep offering gifts after her marriage. An Indian saying summarizes this situation well: “Raising a daughter is like watering your neighbour’s garden” (Guilmoto 2007).

As bearing a son is considered to be a daughter-in-law’s duty and responsibility, a woman who cannot give birth or who gives birth only to daughters may be scorned by her in-laws until the birth of her first male child (Das Gupta et al. 2003). This displeasure would be expressed with the daughter-in-law being given less autonomy, having a higher share of household chores to perform or being given less time to recover after the delivery of a female child. As a result,

having a son is generally seen as empowering women in their marital family, leading women to dearly desire sons (Das Gupta et al. 2003). In a more extreme case, not giving birth to a son may result in domestic violence, psychological abuse or abandonment. The birth of a son would not only eliminate one reason behind physical and emotional abuse but can also provide protection against future violence, once the son is of age to protect his mother (Rao 1997).

For all those reasons, there is an entrenched preference for sons in India, with the average women desiring 1.16 sons for each desired daughter in 2006 (authors' calculation, NFHS data).

While the level of stated son preference is still high, it has declined significantly in recent year (Figure 1, Panels D to F). This drop in stated son preference came about by the oldest generations reducing their stated son preference as they come into contact with modern beliefs, and by the youngest generation having much lower stated son preference to start with (Figure 2, Panel A). Strong stated son preferences are, however, more widespread among the oldest generations than among the youngest ones (Figure 2, Panel B).

This has important consequences. Given the importance of male descendants in India and given the perceived important role of the mother-in-law in decision making, it would be surprising that mothers-in-law do not influence, or at least try to influence, their son's and daughter-in-law's desire for sons. As they have on average higher stated son preference than their daughter-in-law, their influence would lead to an increase in the sex-ratio – defined as the number of boys to the number of girls – among young children, even though the mothers of those children may have no ex-ante preference for sons (before marriage, that is, before being influenced by the mother-in-law). This, we believe, partly explains why, amidst a decrease in stated son preference, the sex-ratio remains very high (Figure 1).

[Figures 1 to 2, about here]

While only a limited number of studies have been conducted on the role of mothers-in-law in decision making on matters directly concerning their sons, there is some evidence that they do indeed play an important role. These evidences, however, come mostly from qualitative studies and/or studies that have a limited geographic coverage.

Starting with qualitative evidence, Ganatra et al (2002) and Puri et al (2011) show, in very different contexts — Maharashtra and Indian immigrants in the United States, respectively — that mothers-in-laws' pressure were often invoked as a reason for seeking sex-selective abortion.

While no quantitative studies have yet looked at the impact of mothers-in-law on stated son preference, Char et al (2010) have looked at the influence of mothers-in-law on modern contraception use in rural Madhya Pradesh, using a sample of 60 daughter-in-law/mother-in-law dyads. They conclude that the mothers-in-law do not have an impact on temporary contraception use but they have a say on when the daughters-in-law should get sterilized and that this decision depends on the number of sons the daughter-in-law already has.

While among scholars there seem to be a consensus that Indian mothers-in-law are powerful, the same cannot be said about respondents' opinions. Indeed, in a study on Karachi (Pakistan)[ii], Kadir et al. (2003) show that for a range of decision making events mothers-in-law, and even more so, sons, believe that the mother-in-law has a say. This belief however is not shared by the daughters-in-law.

Hence, while the literature seems to point towards a key role played by the mothers-in-law in decision making, respondents' perception is much less obvious. In any case, a mother-in-law can use three main strategies to influence the sex-ratio among her grand-children.

The first strategy is simply to select a daughter-in-law that shares the same degree of preference for sons. This is feasible in the Indian context given the involvement of parents, particularly the mothers, in selecting the bride/groom of their offspring, often without the direct involvement of the bride and groom (Mathur 2007). If this is the case, a similarity in son preference between the mother-in-law and the daughter-in-law should be observed immediately after marriage.

The second strategy would be to socialize the daughter-in-law so that she develops an attachment towards her mother-in-law and takes into account, in her preference, the preference of the mother-in-law. This strategy would take some time and, hence, the mothers-in-law's influence would be felt only some years after the marriage.

Finally, a mother-in-law can use a "stick and carrot" strategy to align her daughter-in-law's son preference to hers.[iii]

3. Data and Estimation Strategy

To empirically test if the mother-in-law is able to influence her daughter-in-law's stated son preference, we use the third National Family and Health Survey (NFHS-3), a nationally representative survey conducted from November 2005 to August 2006. Each of the 26 Indian states has been divided into rural, urban and sometimes slum/non-slum areas, having a probability of one to be sampled. Each rural stratum has then been subdivided into primary sampling units (PSU), with a probability of being sampled proportional to size. In urban areas, within each PSU sampled, a census enumeration block was selected with a probability proportional to size. Households have then been randomly selected from those PSU/census enumeration blocks, and a household questionnaire was administered. A woman questionnaire was also administered to all women aged 15 to 49 years old.

In order to study the impact of a mothers-in-law's son preference on their daughters-in-law's son preference, we need to observe the daughter-in-law along with her corresponding mother-in-law. In NFHS-3, this situation occurs whenever the mother-in-law and her daughter-in-law co-reside.[iv] More precisely, NFHS-3 data contains information about all women aged 15-49 years old in the surveyed household. Given the young average age of marriage in India (18 years old for women and 23 years old for men in 2001 (UNICEF: 2014)), we are able to match the daughter-in-law with her mother-in-law in 3,534 cases.[v]

One caveat is that the information is only available for relatively young daughters-in-law and mothers-in-law, as mothers-in-law cannot be aged more than 49 years old if they are to be part of the sample. Young women are, however, the most important group as they are the ones starting their fertility history and, hence, are the ones whose decision on the number of sons and daughters they will bear matters in determining the sex-ratio among young children for the overall population.[vi]

Another limitation is that we are only looking at the preference of daughters-in-law living in extended households. 46% of the women surveyed by NFHS-3 are living in such households.[vii] Thus, while our results cannot be generalized to the whole Indian population, it does shed light on how preferences are constructed for almost half of the Indian female population, a far from negligible group.

A third caveat is that we do not have data on mother-in-law's stated son preference *for her daughter-in-law* but rather need to rely on her stated son preference *for herself*. Even though these two variables are not the same, they are likely to be highly correlated since mothers-in-law

would want to pass on their own beliefs to their daughters-in-law. This is however a non-tested assumption.

Finally, it is likely that other persons — notably her parents, the husband and the father-in-law — also influence the daughter-in-law's stated son preference. While ideally, we would include in the model the preference of all of the above, data limitation preclude us from doing so. Indeed, data on daughters-in-law's parents are not available and while data on the husband and the father-in-law have been collected it is only for a sub-sample of the households. Thus, once we restrict the sample to the daughters-in-law cohabiting with their mother-in-law aged less than 49 years old and for whom we have data for their husband (or their father-in-law), the sample size drops so much that it will be unwise to estimate a three-stages-least-square model, necessary in such case as both spouses will influence the other. We, however, investigate the relation between husband's and wife's stated son preferences in another paper and we have performed a simple robustness check to see if the mother-in-law's coefficient would be significantly reduced if we were to include her son's preference. We conclude that our results are unlikely to be driven by the omission of the husband's stated son preference (results available on request).

Using NFHS-3 data, we want to estimate the impact of mothers-in-law's stated son preference on their daughter-in-law's stated son preference, holding constant the other determinants of son preference identified in the literature. More specifically, we estimate:

$$pref_d = \alpha + pref_m \beta + X_d \gamma + \varepsilon \qquad (3.1)$$

where $pref_d$ is the daughter-in-law's stated son preference, $pref_m$ is her mother-in-law's stated son preference, X_d is a vector of other variables influencing the daughter-in-law stated son

preference and ε is the error term. β is the influence of the mothers-in-law on their daughters-in-law.

We define stated son preference as the number of additional sons a woman wants relative to the desired number of daughters. More specifically, following Pande and Astone (2007) a woman is classified as either desiring the same number of sons and daughters (or more daughters which represents less than 2% of our sample), desiring one son more than the desired number of daughters, or desiring at least two more sons than the number of daughters she wants.[viii]

Dummy variables are included for rural residence (*rural*), cattle ownership (*own cattle*), land ownership (*own land*); religious denominations (*christian, muslim, sikh, buddhist, other* and the reference category is *hindu)*; caste (*scheduled caste, scheduled tribe, backward caste, don't know caste,* the reference category is: *other caste*), access to media — radio, television or newspaper — at least once a week (*access to media*), acceptance of domestic violence (*domestic violence is acceptable*), working status (*work*), wealth quintiles (*poorest, poorer, richer, richest* and the reference category is *middle*), main cultural regions (*North, East, West* and the reference category is *South*).[ix,x] Other control variables are years of education (*years of education*), age (*age in years*) and the number of children a woman desires (*number of children*). Those control variables are fairly standard in the literature on son preference (see, for example: Arnold and Kuo 1984, Chung and Das Gupta 2007, Koolwal 2007, Pande and Astone 2007, Robitaille 2013, and Yount 2005). The characteristics at the household level are shared by the daughter-in-law and her mother-in-law, while the characteristics specific to the daughter-in-law are: *religion, caste, access to media, years of education, age in years, work, number of children* and *if domestic violence is acceptable*.

Given the ordered nature of the dependent variable, an ordered logit model is used. Interpreting the ordered logit coefficients is not as straightforward as in the OLS case. To facilitate the interpretation of the results, predicted probabilities for changes in the variables of interest are presented.

4. Descriptive Statistics

From a public policy perspective, the influence of mothers-in-law on the child sex-ratio matters only if mothers-in-law have, on average, higher son preference than their daughters-in-law. As shown in Table 1, this is indeed the case. While co-residing daughters-in-law have no preference for sons at a proportion of 79%, this is true for only 65% of co-residing mothers-in-law, a statistically significant difference.[xi,xii]

This difference in son preference between daughters-in-law and mothers-in-law is likely to be due, in part, to differences in their characteristics. In Robitaille (2013), it was shown that younger women, more educated women and women more exposed to media have, everything else constant, a lower stated son preference. Daughters-in-law are more likely to have those characteristics than their mothers-in-law (Table 1).

[Table 1 about here]

Mothers-in-law not only have stronger stated son preference than daughters-in-law, the two of them are also highly correlated. In our sample 82% of daughters-in-law with a mother-in-law having no son preference have no son preference themselves, for mothers-in-law preferring one additional son this proportion drops with only 75% of their daughters-in-law having no son preference, and drops further to 69% for those with a mother-in-law preferring two additional sons or more.

However, this relationship between the mothers-in-law's son preference and their daughters-in-law's son preference may be due to some shared characteristics believed to influence stated son preference such as the state of residence and household's wealth. We, therefore, turn next to multivariate analysis.

5. Multivariate Results: Mother-in-law's Influence

5.1 Base Model

From Table 2 (Column 2), we find that the mothers-in-law's stated son preference is significantly correlated with their daughters-in-law's stated son preference, everything else held constant (and, nothing else constant, Column 1). Having a mother-in-law desiring one additional son is associated with an increase in stated son preference and even more so if the mother-in-law has a preference for at least two additional sons.

Interpreting ordered logit coefficients is not easy. We can easily make sense of the direction of the impact by looking at the coefficient sign but, to obtain the marginal effect, we need to select a value for all control variables. Thus we have calculated the marginal effect of mother-in-law's stated son preference for the "average daughter-in-law"; that is, we have used the average value and the mode in our sample for, respectively, the continuous and dichotomous variables.

For the average daughter-in-law — that is, a non-working rural North Indian Hindu woman, owning cattle and land, from a backward caste and of average wealth, who has access to media at least once a week, aged 21 years old, with six years of education and desiring 2 children — the predicted probability of desiring no additional son decreases by about 4 percentage points by having a mother-in-law desiring two additional sons and by almost 3 percentage points by a having a mother-in-law desiring one additional son (Table 3).[xiii,xiv,xv] To put it differently,

assuming that all women have the average characteristics, the sex-ratio would be of 119, 123 and 126 boys per 100 girls if all mothers-in-law had no son preference, a preference for one additional son or a preference for two additional sons, respectively.

[Tables 2 and 3 about here]

The results for the control variables are as expected. As the number of males in the nuclear family determines the share of land inherited once the extended family splits up (Vera-Sanso 1999), owning land increases son preference. We also find that Muslim and Christian women have lower son preference, everything else constant.[xvi] Desires for lower fertility, women's education and their exposure to media are all negatively associated with son preference. Those latter results are in line with the literature.[xvii]

5.2 Power Structure

Most households are headed by the parents-in-law couple (father-in-law, 83%; mother-in-law, 10%). This is likely to have important implications in terms of power structure. Indeed, the couple forming the household head is likely to be the dominant force in the household. Hence, a daughter-in-law who is the household head's spouse is expected to be less likely to listen to/care for or obey her mother-in-law.

To test this hypothesis, we estimate a model in which the mother-in-law's stated son preference is interacted with a dummy taking the value of one if the daughter-in-law or her husband is household head. The results are striking (Table 4). While we conclude as before that mother-in-law's preference has a strong impact on her daughter-in-law's stated son preference, this is true only in households where the mother-in-law or her husband are head. In households headed by the daughter-in-law or her husband, the mother-in-law has no influence when her preference is

moderate (desire for one additional son) and has a negative influence when her preference is strong (desire for two additional sons). Thus the underlying household power structure is a significant determinant of son preference.[xviii]

[Table 4 about here]

5.3 Influence or Selection in the Marriage Market

As previously discussed, if the mothers-in-law select daughters-in-law with similar son preference as themselves, we should observe as early as the first year of marriage a similarity between the mother-in-law's and her daughter-in-law's son preferences. Put differently, the coefficient in front of the mother-in-law's stated son preference should be positive for women who have been married for less than one year. If, however, socialization, altruism or coercion take place, women who have been married for a longer period of time and, henceforth, who have been exposed to their mother-in-law's stated son preference over a long period of time, should be more influenced by their mother-in-law than women who just got married.

To test this hypothesis, we allow the coefficient in front of the mothers-in-law's stated son preference variable to vary according to the time since marriage. More specifically, we differentiate between women who have been married for less than one year, women who have been married for 1 to 2 years, women who have been married for 3 to 5 years and women who have been married for more than 6 years.

The results presented in Table 5 indicate that for the first 2 years of marriage there is no significant impact of the mother-in-law's stated son preference on her daughter-in-law's preference (reference group: mothers-in-law with no son preference for a given number of years since marriage). However, after 3 years of marriage, we observe a positive and significant

influence. Hence, while appealing, and probably happening in some cases, the idea that the relation between the mother-in-law's and daughter-in-law's stated son preference comes from the marriage market does not appear in empirical data.

[Table 5 about here]

5.4 Does Preference Translate into Realized Sex-ratio

There is a difference between stating a son preference and to be willing to carry a sex-selective abortion, necessary to alter the natural sex-ratio among the respondent's children. Indeed, there are emotional, financial and physical costs to sex-selectively abort a child. However, we believe that those costs are fairly moderate in the Indian context. Indeed, while there is an estimated half a million female fetuses aborted each year in India, there is 6.5 million abortions overall every year (Sinha, 2012). Thus, abortion is a fairly common procedure in India and is well accepted as a fertility control method. An important emotional cost might be to go against the law that bans sex-selective abortion; however, as the risk of prosecution is extremely low, this cost is likely to deter only a fraction of respondents. Moreover, the financial costs are quite low as a sex-selective abortion costs only between 5 and 30 American dollars (Booth et al., 1994 and Vella, 2005) which is much less than the cost of raising and marrying off an unwanted daughter.[xix] Finally, maternal depletion and maternal mortality risk are lower in the case of abortion than when pregnancy is carried to term. Thus, while there is an undeniable cost, it is fairly nominal. Nevertheless, as robustness check, we look at the impact of mother-in-law's stated son preference on the realized child sex-ratio of her daughter-in-law. As sex-selective abortions are more likely late in the fertility history, we restrict our sample to those women who have achieved

their fertility target. Thus, given the young age of our daughters-in-law, our sample drops significantly and we are left with only 995 observations. The results are presented in Table 6.

It is important to note at this stage that the sex-ratio among one's children is biologically purely random. Indeed, while some medical articles claim that the gender of a foetus is partly determined by the characteristics of his/her parents, such as parents' age, the gender of the previous child, the frequency of sexual relations, and the type of response to the Hepatitis B virus (Drew et al., 1978; Ruder, 1985; Tremblay et al., 2003), the impact found is always extremely small and we can thus safely assume that the sex-ratio is random.[xx]

Given the limited sample size, we again struggle to get significance for almost all our variables. Nevertheless, we can conclude that when the mother-in-law's son preference is high (she desires at least two additional sons), the male to female ratio among her daughter-in-law's children increases (marginally insignificant). Thus, mothers-in-law not only influence their daughter-in-law's preference, they are also able to influence the sex-ratio among their grandchildren.

[Table 6 about here]

6. Discussion and Policy Implication

In this paper, we have tested empirically a common assumption in the anthropological and sociological literature, namely, that Indian mothers-in-law have a strong influence on the decisions taken by their daughters-in-law on important personal questions, such as the number of sons they will have.

In line with general beliefs in the literature, we find that in India, holding constant the daughter-in-law's characteristics, the mother-in-law's stated son preference does have a significant impact on their daughters-in-law's stated son preference. The result is robust to different specifications.

While we have not looked directly at the decision to sex-selectively abort female fetuses, there is ample evidence that the stated son preference is a key determinant leading parents to sex-selectively discriminate between their children (Robitaille, 2010). As a robustness check we have estimated an OLS model with the difference in the number of sons and the number of daughters as dependent variable for those women who have achieved their fertility target. Given the young age of the respondents, this represents less than 30% of our original sample. Despite the very large sample drop, we still conclude that the mother-in-law has a marginally insignificant impact.

The focus of this paper is on stated son preference. However, it is likely that mothers-in-law's influence is felt not only on how many sons to bear. For example, Char et al. (2010) find that Indian mothers-in-law also have a say in the use of contraception by the young couple. Moreover, it is highly plausible that mothers-in-law's influence could also be felt on decision regarding children's education, children's vaccination, children's care such as breastfeeding, etc. More research on those questions is necessary.

From a policy perspective, our results indicate the importance of not only targeting the reproductive age married couples but also to target the older generations in the marital household, namely, the mothers-in-law and, potentially, also the fathers-in-law on matters about sex-selective abortions, importance of girls' education and health. The limited availability of male respondents in NFHS-3 did not allow us to test the importance of fathers-.1in-law's stated

son preference on their daughters-in-law's stated son preference. This would be an interesting avenue for future research.

The conclusion reached by this paper may also apply to countries other than India. In particular, in China, a country with an even more distorted sex-ratio at birth, there is some evidence that grandparents' preference matters. For example, in a study by Xiaolei et al (2013), a respondent explains the imbalance in sex-ratio by saying: "It's the fault of the grandparents. The older generation still prefer[s] sons and they put pressure on their children to have sons (Male aged 35, urban Guizhou)". Quantifying the impact of grandparents' preference on China's sex-ratio is another interesting avenue for future research.

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[i] Stopping-behavior – that is, to continue childbearing until the desired number of sons is reached – was commonly used in the past. However, as it does not lead to higher sex-ratio at the country level, it will not be discussed further here.

[ii] As India and Pakistan used to be one country before partition in 1947 and are culturally very similar in many aspects, results found in Pakistan are likely to also hold for India.

[iii] There is some evidence that indeed, mothers of son have been found significantly less likely to be abused physically and verbally (Fernandez, 1997; Rao, 1997).

[iv] While it is not possible to study the influence of non-co-residing mothers-in-law on their daughter-in-law, we expect the influence of the mother-in-law to be smaller in such families.

[v] In India, most women enter wedlock before the age of 25, with 72% of our sample married at this age. In the case of men, 45% are married by the age of 25.

[vi] However, if our hypothesis that older generation is able to pass on their own beliefs to the younger generation is true then the current mothers-in-law would bear the trace of beliefs of generations before her.

[vii] Excluding non de jure residents.

[viii] In NFHS-3, the relevant question for respondents who have no living children is: "If you could choose exactly the number of children to have in your whole life, how many would that be?". For respondents who have living children the relevant question is: "If you could go back to the time you did not have any children and could choose exactly the number of children to have in your whole life, how many would that be?". Finally, for all respondents, the following question was asked: "How many of these children would you like to be boys, how many would you like to be girls and for how many would it not matter?".

[ix] We consider the states of Andhra Pradesh, Karnataka, Kerala and Tamil Nadu to be Southern states; the states of Arunachal Pradesh, Bihar, Chhattisgarh, Delhi, Haryana, Himachal Pradesh, Jammu & Kashmir, Madhya Pradesh, Nagaland, Punjab, Rajasthan, Uttaranchal and Uttar Pradesh to be Northern states; the states of Assam, Jharkhand, Manipur, Meghalaya, Mizoram, Orissa, Sikkim, Tripura and West Bengal to be Eastern states; and, the states of Goa, Gujarat and Maharashtra to be Western states.

[x] As a robustness check we have also estimated a model including state fixed effects. The results are very similar and are available on request.

[xi] While with our data we can only show that mothers-in-law have on average stronger stated son preference than their daughters-in-law, there are evidences in the literature that they may also see female feticide with more favorable eyes than their daughters-in-law. Indeed, Joshi and Bajwa (2012) using a sample of 200 respondents from the Jat Sikh community in Ludhiana district (Punjab) find that while 78% of the mothers-in-law are neutral vis-à-vis

female feticide and 12% are favorable, among the daughters-in-law 78% are unfavorable and 23% are neutral, with none being favorable.

[xii] Alongside a decrease in stated son preference, an important decline in desired fertility has also occurred in India in recent years. In our sample, while mothers-in-law have on average a desire for 2.9 children, their daughters-in-law desire only 2.2 children. Higher fertility, by allowing more "free space" for daughters, should result in smaller stated son preference. Indeed, if women have a desire for at least one or two sons (49% and 22% of all 124,355 women in NFHS-3 express such a desire, respectively), a lower overall fertility will automatically increase the desired sex-ratio, a result first discussed by Das Gupta (1987). Henceforth, if mothers-in-law were to have the same desired fertility than their daughters-in-law, we should expect mothers-in-law to state an even stronger stated son preference than what they do in our data.

[xiii] As some mothers-in-law co-reside with more than one daughter-in-law, to ensure that those over-represented mothers-in-law do not drive the results, we have re-estimated the model using just those mothers-in-law who have only one co-residing daughter-in-law. While the smaller sample (17% of the original sample was composed of daughters-in-law co-residing with other daughters-in-law) leads to less precise estimate, we nevertheless still conclude that mothers-in-law's preference influences their daughters-in-law's stated son preference (results available on request).

[xiv] Given the nature of the dependent variable, the most suitable models are either the ordered logit or the ordered probit. However, given the complexity involved in interpreting the results, we have also estimated the model using logit and OLS. For those models, the dependent variable is redefined as a dummy variable taking the value of 1 when the respondent has a preference for son and 0 otherwise. We reach the same conclusion as before (results available on request).

[xv] Pande and Astone (2007) conclude that a key variable explaining stated son preference is the sex-ratio of existing children. This variable is however likely to be endogenous as the availability of sex-selective abortion techniques make it is easy for parents with strong stated son preference to engineer the sex-ratio among their children. As the sex-ratio of existing children is random, no instrument variable can be found. So far, we have ignored the issue by not including the sex-ratio of existing children in the model. The main conclusions remain even when the sex-ratio of existing children is included in the model (results available on request).

[xvi] In contrast, Pande and Astone (2007) conclude that Muslim women have higher son preference than Hindu women but that women who are of another faith than Hinduism or Islam have lower son preference than Hindu women.

[xvii] For education, see Chung and Das Gupta (2007), Koolwal (2007), Pande and Astone (2007), Robitaille (2013), Yount (2005). For media exposure, see Pande and Astone (2007) and Robitaille (2013).

[xviii] While this paper focuses on mothers-in-law's influence, there is no doubt that husbands are also important decision makers. Husbands and wives are expected to influence each other's preference post marriage. When we include the husband's preference for a smaller sample (due to data restrictions) we lose statistical significance for the mother-in-law's preference, along with other explanatory variables (results available on request). While those results cannot be used to invalidate or confirm either the impact of mother-in-law or the impact of husband, they are re-assuring in the sense that we do not find any statistical differences between the coefficient for the mother-in-law's stated son preference when we include her son's stated son preference and when we exclude her son's stated son preference. This supports our assumption that the mother-in-law has an influence on her daughter-in-law that is not mediated by her son. It should be clear that those results are only a robustness check. As we do not control for the potential endogeneity between husband's and wife's stated son preferences, the results found are not causal.

[xix] Marrying off daughters is considered a social responsibility for parents (Das Gupta et al. 2003).

[xx] It can also measure under-reporting of females. However, great care was taken by the NFHS team to collect full fertility history. Moreover, as our sample includes only young women, they are less likely to have had time to forget giving birth to some of their daughters.

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Tables

Table 1: Descriptive Statistics

	Household	Co-residing Daughter-in-Law	Co-residing Mother-in-law
Son Preference: None		0.7887	0.6518***
Son Preference: One		0.1853	0.2721***
Son Preference: At Least Two		0.0260	0.0761***
Rural	0.6631		
Own Cattle	0.6164		
Own Land	0.5412		
Religion: Hindu		0.7898	0.7879
Religion: Christian		0.0308	0.0303
Religion: Muslim		0.1400	0.1404
Religion: Sikh		0.0223	0.0227
Religion: Buddhist		0.0074	0.0091**
Religion: Other		0.0096	0.0096
Caste: Scheduled Caste		0.1924	0.1943
Caste: Scheduled Tribe		0.1143	0.1137
Caste: Backward Caste		0.3590	0.3567
Caste: Don't Know		0.0368	0.0371
Caste: Other		0.2976	0.2982
Education: Years		6.0034 (4.7715)	1.7337*** (3.2448)
Access to Media		0.6851	0.5649***
Age: Years		21.3327 (3.4869)	44.1573*** (3.8230)
Work		0.3100	0.4963***
Wealth Quintile: Poorest	0.1298		
Wealth Quintile: Poorer	0.1813		
Wealth Quintile: Middle	0.1924		
Wealth Quintile: Richer	0.2337		
Wealth Quintile: Richest	0.2628		
Number of Children		2.2022 (0.7022)	2.8687*** (1.1906)
Domestic Violence is Acceptable		0.4385	0.5117***
Obs.		3,535	3,535

Notes: *t*-tests have been performed between the co-residing daughters-in-law sample and the co-residing mothers-in-law sample. ***, *p*-value<0.01, **p-value<0.05 and *p-value<0.10.

Table 2: Daughters-in-law's Stated Son Preference: Ordered Logit

	(1)	(2)		(1)	(2)
Rural		0.0880	*Age: Years*		-0.0148
		(0.5373)			(0.2544)
Own Cattle		-0.0549	*Work*		0.0210
		(0.6787)			(0.8391)
Own Land		0.3622***	*Wealth Quintile: Poorest*		-0.2196
		(0.0012)			(0.1630)
Religion: Christian		-0.7089**	*Wealth Quintile: Poorer*		-0.0093
		(0.0477)			(0.9441)
Religion: Muslim		-0.2580*	*Wealth Quintile: Richer*		0.0767
		(0.0969)			(0.5823)
Religion: Sikh		-0.2362	*Wealth Quintile: Richest*		-0.0190
		(0.5155)			(0.9091)
Religion: Buddhist		-0.1798	*Number of Children*		1.2564***
		(0.8374)			(0.0000)
Religion: Other		0.0591	*Domestic Violence is Acceptable*		0.0785
		(0.9143)			(0.3960)
Caste: Scheduled Caste		-0.0280	*Region: North*		0.8566***
		(0.8444)			(0.0000)
Caste: Scheduled Tribe		-0.0355	*Region: East*		0.7054***
		(0.8428)			(0.0011)
Caste: Backward Caste		0.0500	*Region: West*		0.8642***
		(0.6751)			(0.0003)
Caste: Don't Know		0.3519	*Mother-in-law: Son Preference: One*	0.4357***	0.1907**
		(0.1508)		(0.0000)	(0.0493)
Education: Years		-0.0334***	*Mother-in-law: Son Preference: At Least Two*	0.7503***	0.2827*
		(0.0055)		(0.0000)	(0.0552)
Access to Media		-0.2287**			
		(0.0262)			
Cut-off Point: 1				1.5102***	4.6972***
				(0.0000)	(0.0000)
Cut-off Point: 2				3.8294***	7.3269***
				(0.0000)	(0.0000)
Obs.				3,535	3,535
Pseudo R-squared				0.00962	0.147
Log pseudolikelihood				-2082	-1792

Notes: Standard errors are adjusted for cluster at the primary sampling unit level. ***, *p*-value<0.01, ***p*-value<0.05 and **p*-value<0.10.

Table 3: Predicted Probability

		Mother-in-law: Son Preference		
		None	*One*	*At Least Two*
Daughter-in-law: Son Preference	*None*	0.8352 [0.8028, 0.8676]	0.8072 [0.7690, 0.8454]	0.7925 [0.7426, 0.8424]
	One	0.1508 [0.1214, 0.1802]	0.1759 [0.1413, 0.2104]	0.1890 [0.1442, 0.2338]
	At Least Two	0.0140 [0.0099, 0.0182]	0.0169 [0.0118, 0.0220]	0.0185 [0.0121, 0.0249]

Note: 90% confidence interval in bracket.

Table 4: Robustness Check: Power Structure

Mother-in-law: Son Preference: One	0.1855*
	(0.0638)
Mother-in-law: Son Preference: At Least Two	0.3638**
	(0.0115)
HH Head: Daughter-in-law	-0.1863
	(0.4304)
*Mother-in-law: Son Preference * HH Head: Daughter-in-law*	
Mother-in-law: Son Preference: One	0.0671
	(0.8520)
Mother-in-law: Son Preference: At Least Two	-2.6227**
	(0.0300)
Control Variables	Yes
Joint significance	
Mother-in-law: Son Preference: One, alone and interacted	(0.4700)
Mother-in-law: Son Preference: At least Two, alone and interacted	(0.0624)

Table 5: Daughters-in-law's Stated Son Preference: Selection or Socialization? Ordered Logit.

Married Since One or Two Years	-0.1065
	(0.5543)
Married Since Three to Five Years	0.0947
	(0.5989)
Married Since At Least Six Years	0.2363
	(0.2827)
Married Since Less than One Year	
Mother-in-law: Son Preference: One	-0.0408
	(0.8541)
Mother-in-law: Son Preference: At Least Two	-0.5539
	(0.1975)
Married Since One or Two Years	
Mother-in-law: Son Preference: One	0.0876
	(0.6281)
Mother-in-law: Son Preference: At Least Two	0.3603
	(0.1731)
Married Since Three to Five Years	
Mother-in-law: Son Preference: One	0.2133
	(0.2171)
Mother-in-law: Son Preference: At Least Two	0.4480*
	(0.0511)
Married Since At Least Six Years	
Mother-in-law: Son Preference: One	0.4552**
	(0.0188)
Mother-in-law: Son Preference: At Least Two	0.4319
	(0.2175)
Control Variables	Yes

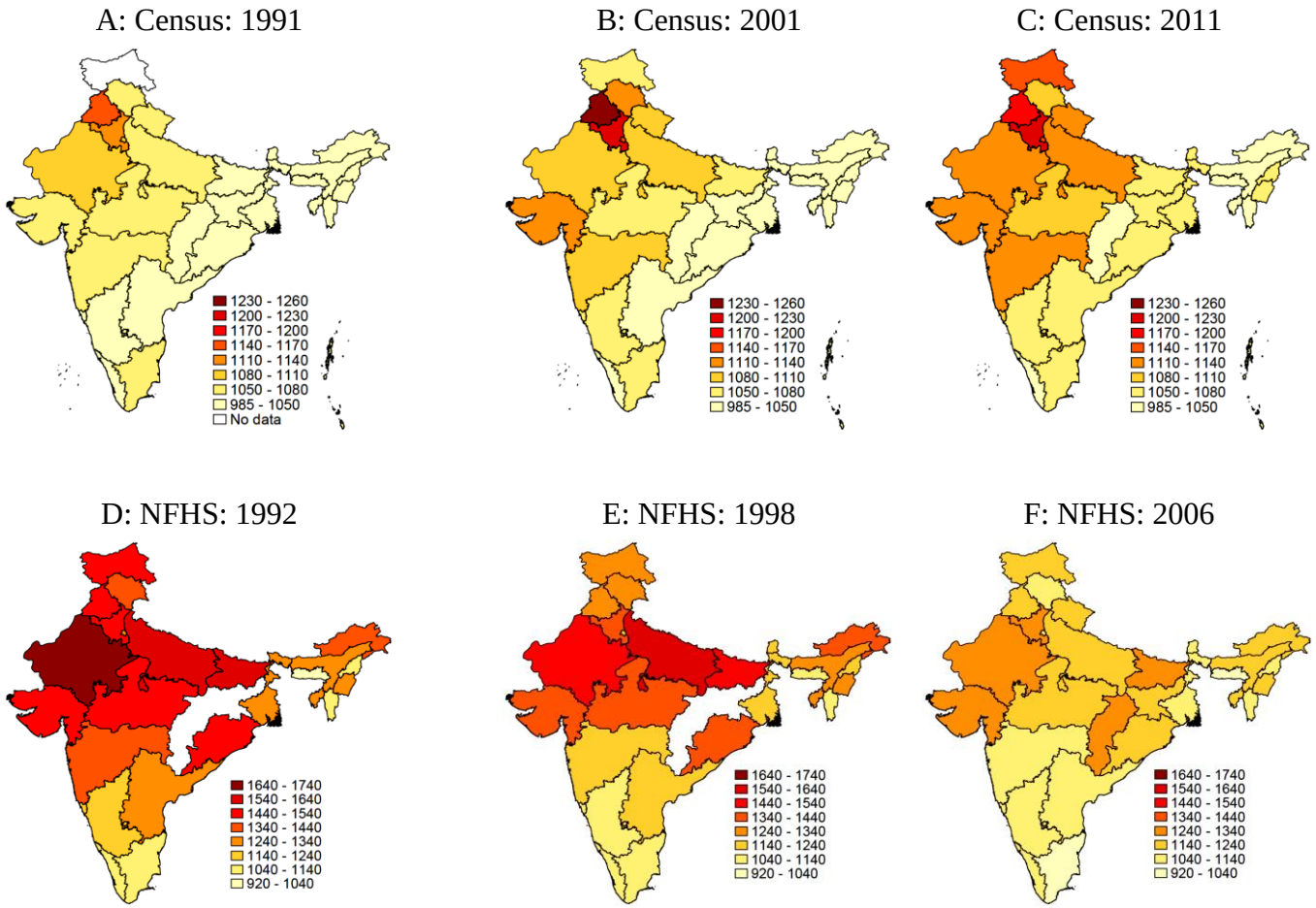
Notes: Standard errors are adjusted for cluster at the primary sampling unit level. ***, *p*-value<0.01, **p-value<0.05 and *p-value<0.10.

Table 6: Daughter-in-law Having Achieved their Fertility Target: Number of Additional Sons

Rural	0.0210	*Age: Years*	0.0046
	(0.8908)		(0.7742)
Own Cattle	-0.0437	*Work*	0.0673
	(0.7433)		(0.5588)
Own Land	-0.0329	*Wealth Quintile: Poorest*	-0.1839
	(0.7907)		(0.4019)
Religion: Christian	-0.0355	*Wealth Quintile: Poorer*	-0.3637**
	(0.9482)		(0.0341)
Religion: Muslim	0.0717	*Wealth Quintile: Richer*	-0.0415
	(0.6855)		(0.7684)
Religion: Sikh	0.2641	*Wealth Quintile: Richest*	-0.2374
	(0.1854)		(0.1410)
Religion: Buddhist	-0.2401	*Number of Children*	-0.0386
	(0.5122)		(0.6818)
Religion: Other	-0.6386	*Domestic Violence is Acceptable*	0.0097
	(0.4204)		(0.9259)
Caste: Scheduled Caste	0.0946	*Region: North*	-0.1523
	(0.5300)		(0.4129)
Caste: Scheduled Tribe	0.2775	*Region: East*	-0.2762
	(0.1346)		(0.1769)
Caste: Backward Caste	0.1719	*Region: West*	-0.2404
	(0.1488)		(0.2639)
Caste: Don't Know	-0.0905	*Mother-in-law: Son Preference: One*	-0.0103
	(0.7331)		(0.9255)
Education: Years	-0.0056	*Mother-in-law: Son Preference: At Least Two*	0.2754
	(0.6678)		(0.1451)
Access to Media	0.2867**	*Constant*	0.0925
	(0.0268)		(0.8259)
Obs.			995
R-squared			0.0269

Notes: Standard errors are adjusted for cluster at the primary sampling unit level. ***, *p*-value<0.01, **p-value<0.05 and *p-value<0.10.

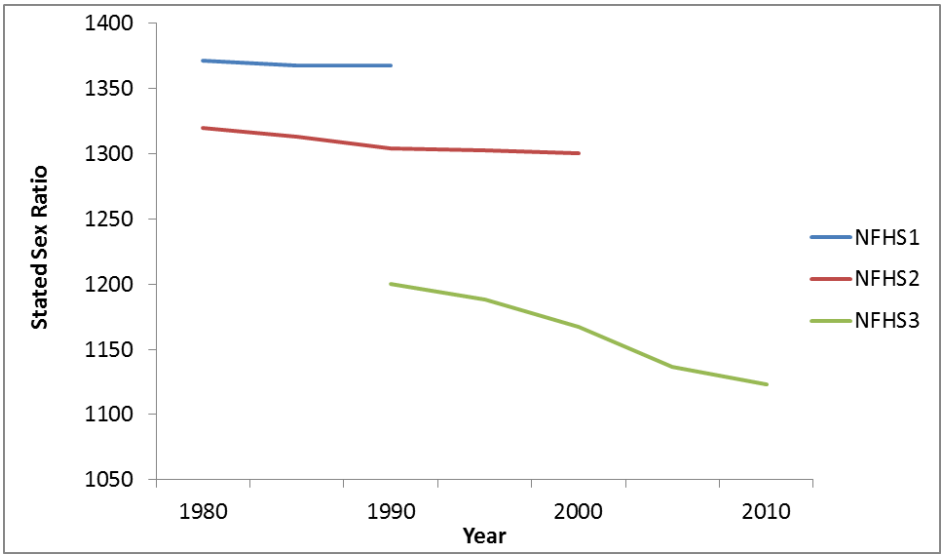
Figure 1: Sex-ratio among 0 to 6 Years Old and Stated Son Preference Across Time and Geography



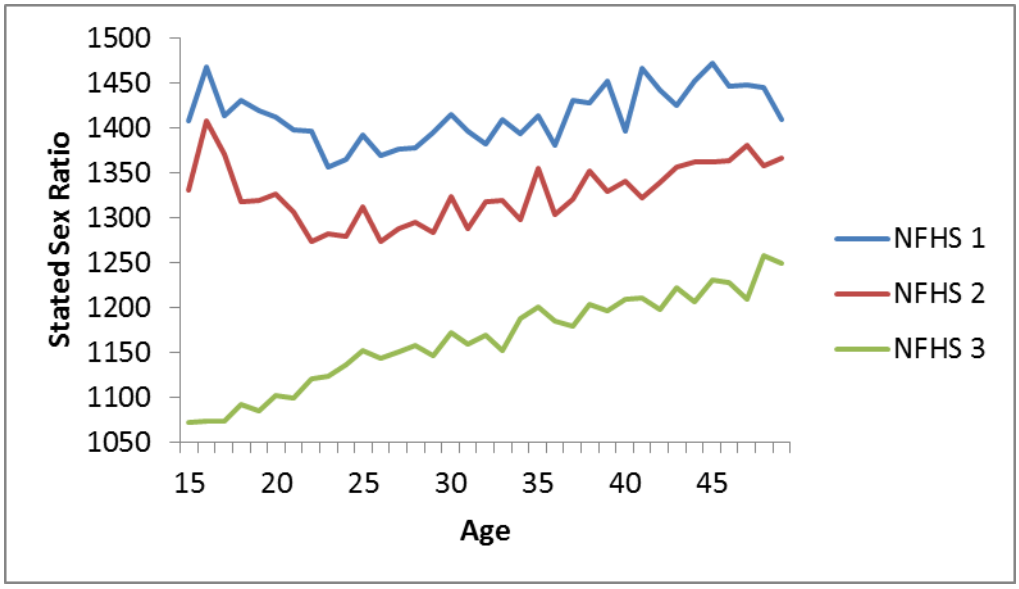
Notes: Panels A to C: Number of boys per 1,000 girls aged 0 to 6 years old. The natural sex-ratio among this age group is around 1.050 boys per 1,000 girls. Panels D to F: number of boys desired per 1000 girls desired.

Figure 2: Stated Desired Sex-ratio (Boys per 1000 Girls)

Panel A: Women Aged 15 to 35 Years Old across Time and Generation



Panel B: by Women's Age Across Different NFHS Waves.



Source: NFHS data. Notes panel A: This figure should be read as follow: Change in desired sex-ratio across generation can be read by moving horizontally on a given curve. Change overtime, for a given generation, can be seen by comparing the stated desired sex-ratio for a given year across NFHS wave.