# The Effect of Preference for Sons over Daughters on Women's Agency and Empowerment Within a Household

Prakriti Panthi
Economics Honors Thesis
Washington and Lee University

Advisor: Professor Silwal
Committee Members: Professor Shester and Professor Grajzl

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***Abstract***

While studies have shown how son preference negatively affects life outcomes of both born and unborn daughters, there is limited research examining how it, in turn, affects women who do not give birth to the desired number of sons. Employing data from Nepal and India's Demographic Health Survey (DHS), I find that women with firstborn daughters have higher fertility and shorter birth intervals than women without firstborn daughters. Likewise, women have less decision-making power in Nepal and India and a higher likelihood of experiencing domestic violence in India for not meeting their desired number of sons. Drawing upon cultural norms and marriage market setup, I also incorporate the Bargaining Model of Conflict to understand these outcomes. In summary, women bear the responsibility to deliver sons, and failure to do so is punishable with social, emotional, physical, and economic sanctions within a household. This study, therefore, is novel in uncovering substantial and previously unseen burden women in developing world carry.

**JEL codes:** C78, D13, I31, J12, J13, N35, O12, and Z13.
**Keywords**: missing women, son preference, gender-based violence, bargaining model of conflict, women empowerment.

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*emptying out of my mother's belly*
*was my first act of disappearance*
*learning to shrink for a family*
*who likes their daughters invisible*
*was the second*
*the art of being empty*
*is simple*
*believe them when they say*
*you are nothing*
*repeat it to yourself*
*like a wish*
*I am nothing*
*I am nothing*
*I am nothing*
*so often*
*the only reason you know*
*you're still alive is from the*
*heaving of your chest*

- *The Art of Being Empty by Rupi Kaur*

## I. Introduction

Amartya Sen brought to the world's attention the unusually low ratio of women to men in developing countries like China, India, and throughout Africa. He estimated that the low ratio meant there were about 100 million "missing" girls/women all over the world (Sen 1990, 1992). One of the biggest reasons for missing girls/women is the socio-cultural norm of preferring sons to daughters (Bandyopadhyay, 2003; Gupta, 2005; Oster, 2006). Such preference for sons leads to sex-selective abortion (Gupta 2005) and mistreatment of girls (Oster, 2006), which provides a possible explanation for why girls are "missing." In this paper, I examine how, in addition to hurting and perpetuating discrimination against girls, this regressive norm also affects the empowerment and agency of women who are not able to give birth to sons.

In the prevalence of preference for sons, it is the women who carry the burden of fulfilling the entire family's desire for having the ideal number of male heirs and, therefore, also bear the consequences of giving birth to unwanted daughters in place of desired sons (WHO, 2011).[2] Disappointment over not having their desired number of sons may lead husbands to act with hostility towards their wives and assert their dominance over them. Additionally, in societies with a strong preference for sons, women may themselves internalize gender norms. Consequently, not being able to give birth to their own desired number of sons may lead to women justifying and, hence, perpetuating gender-regressive norms that allow men to assert their dominance over them and control their lives (Brunson, 2010; Nanda, 2014).

Thus, I hypothesize that, in the light of preference for sons over daughters, there are, among others, two possible consequences of women not giving birth to her husband's or her own desired number of sons: (i) she is likely to be subjected to domestic violence from her husband, or (ii) she has less say in household decisions. I explore these overlooked effects of son preference on women's outcomes in South Asia, focusing specifically on Nepal and India.

Using data from Nepal and India's Demographic Health Survey (DHS) conducted in 2015/2016, I begin my analysis by showing that both men and women generally prefer sons to daughters. Given this preference, I then look at how the discrepancy between the ideal and actual number of sons, for both the wife and her husband, affects the wife's likelihood of being subjected to domestic violence and her ability to make household decisions. I use the bargaining model of conflict as a framework to theorize these outcomes. Although I cannot directly test the mechanism, the comparative static analyses of the model help me understand the mechanisms at play.

I find that, compared to women with their ideal number of sons, women in Nepali and Indian households who do not have their ideal number of sons are more likely to have reduced decision-making power within the household. Additionally, in Indian households, women who do not have their desired number of sons are more likely to experience domestic violence. Furthermore, in households with only daughters, the husband not having his ideal

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[2] https://www.unwomen.org/en/news/stories/2011/6/son-preference-perpetuates-discrimination-and-violations-of-women-s-rights-it-must-and-can-end

number of sons increases the likelihood of the wife lacking decision-making power in Nepal and increases the likelihood of her experiencing domestic violence in India.[3]

This study, as such, advances research on how son preference affects women's wellbeing. It does so by (a) investigating the outcomes of son preference on a wife's (a previously overlooked demographic cohort) decision-making and domestic violence, (b) using a novel measure of son preference that captures the mismatch between ideal vs. actual number of sons (a previously unexplored measure of son preference), and (c) isolating the effects of the husband's and wife's gap in ideal vs. actual number of sons. To my knowledge, no existing quantitative studies have examined the effect of not having the ideal number of sons on a wife's empowerment and agency. Likewise, no other quantitative studies that I am aware of have examined husband and wife's preferences separately. Therefore, my research is novel in its attempts to use a new measure and a different approach to capture the effect of son preference. Informed by the setup of the marriage market in South Asia, guided by cultural norms of the region, and founded on the economic reality of households, my research also paves ways for further research on these topics.

The organization of this study is as follows. I review the existing literature in Section II, followed by Data and Measurement in Section III. Section IV presents the Bargaining Model of Conflict, and Section V discusses the Empirical Strategy. Results and Robustness Checks are presented in Sections VI and VII, respectively. Lastly, I discuss the results in Section VIII and conclude with Section IX.

## II. Literature Review

### Preference for Sons over Daughters: Background and Measure

Prior research has identified cultural/religious norms, patriarchal systems, and Confucian values (Gupta et al., 2003) as reasons that contribute to the presence of preference for sons over daughters.[4] There are perceived economic advantages of having a son in the household in South Asian countries like Nepal and India (Foster & Rosenweig, 1999). Indian and Nepali societies practice patrilocal exogamy where, upon marriage, daughters move away with their husbands and in-laws (often to a different village). Whereas, sons stay with their parents and bring daughters-in-law, who, in turn, help with household chores. As such, sons serve as the future breadwinners and source of future income and support in Indian and Nepali households. In contrast, daughters move away and do not contribute to their parents' future income (Foster & Rosenweig, 1999).
Additionally, the dowry system's prevalence adds further financial burden on the family and increases the cost of having a daughter (Gupta et al., 2003).[5] Furthermore, as per Hindu customs, sons are required to perform last rites at parents' funerals, and therefore, deemed necessary for religious reasons as well (Vlassoff, 1990). These norms and cultural practices

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[3] The data for Nepal and India are not identical. Although the controls used for Nepal and India are the same, India has considerably more observation counts. Additionally, while more than half (63 percent) of Nepali women live in an urban area, 29 percent of the Indian women in the sample live in an urban area.

[4] Confucianism is an old Chinese folk religion that values patriarchy.

[5] Dowry is the tradition whereby there is a net transfer in assets from the bride's family to the groom's family at the time of marriage (Rao, 1993). Dowries are costly and often comprise a large sum of money (more than a year's income), jewels/precious metals, land/property, home furnishings, vehicles, and more. Dowry is akin to premortem bequest (Foster & Rosenweig, 1999).

make daughters less desirable, which perpetuates discrimination against 'unwanted' daughters as well as mothers who must bear the consequence of not giving birth to a son.

Literature studying the causes and implications of son preference have mostly relied on the exogeneity of the gender of the firstborn child and used this as their key explanatory variable in their empirical strategies (Li & Wu, 2011; Milazzo, 2014; Takaku, 2018; Inchino et al., 2015).[6] In my analysis, I use the gender of the firstborn child to examine if there is son-preferring fertility behavior in Nepal and India. Alternatively, the desire for one or more sons greater than the number of daughters has also been used as a measure of son preference (Sabarwal et al., 2011). However, the two measures of son preference used in existing literature are not the most appropriate for capturing the effect of the husband/wife not having their *desired* number of sons. Therefore, in my study, I use discrepancy between the desired and actual number of sons to study the effects of son preference on women's decision-making and domestic violence. In the prevalence of son preference, having less than the ideal number of sons might lead to frustration or disappointment from either the husband or the wife, which may subsequently result in unfavorable outcomes for women. Therefore, using the discrepancy between the desired and actual number of sons as a measure of son preference allows me to test how not having the "right number of sons" affects women's decision-making and domestic violence outcomes. I measure this discrepancy for the husband and wife separately to examine whether the husband's or the wife's son preference has a greater effect on the wife's outcome.

To the best of my knowledge, no prior research has looked at how preference for sons, as measured by the difference between the ideal and actual number of sons, affects women's wellbeing and agency. Additionally, to my knowledge, no study has created measures for the husband's and wife's preferences separately and considered if unfavorable outcomes for the wife stem from the husband's disappointment or the wife's own disappointment.

**Relationship between Son Preference and Wife' Wellbeing: Identifying Gaps in The Literature**

While studies have focused on how gender bias and son preference manifests into poor outcomes for daughters (Borooah, 2004; Pande & Astone, 2007), such as sex-selective abortion, high infant mortality rate, and skewed sex ratio (Sen, 1990), they tend to largely ignore how it impacts mothers' outcomes. There is limited research on how the existing preference for sons affects women who do or do not "deliver" sons, "the right number" of sons or "too many" daughters. Some qualitative studies look at the implication of this norm on the wellbeing and status of women. One such qualitative study finds that not having a son leads to women not getting the support of their husbands and facing hostility from their husbands and in-laws (Rodrigues et al., 2003). On the other hand, a different study documents a link between son preference and marriage dissolution (Bose & South, 2003).

Only a few quantitative studies have explored how son preference affects women's health and wellbeing. In a study conducted in India, Milazzo (2014) finds that 2.2–8.4 percent of women between the ages of 30 and 49 with firstborn daughters are 'missing' because of son preference. Women with firstborn daughters engaged in behaviors that increased their

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[6] To test the randomness of the gender of the firstborn child, the authors compare the sex ratio of the firstborn children with the natural sex ratio. Ichino et al. (2014 ) also test the association between sex of the firstborn child and other household characteristics to establish that the gender of the first child is indeed random.

fertility, which in turn had detrimental effects on their health and caused higher maternal and adult mortality. Similarly, Li and Wu (2011) find that having a firstborn daughter hurt the mother's nutrition intakes and increased her likelihood of being underweight in China. In Nepal, Leone, Matthews, and Zuanna (2003) find that sex preference decreased contraceptive use by 24 percent and increased the total fertility rate by more than 6 percent.

There has not been a significant number of studies conducted on Nepal, and of the research focused on India, very little attention has been on how son preference affects a wife's decision-making power and incidence of domestic violence in the household. Additionally, the studies that analyze the effect of son preference on domestic violence in India have contradictory results. While Schuler et al. (1996) and Mitra (2006) find that having a son reduces the risk of facing intimate partner violence, other studies do not support these results. Sabarwal et al. (2011) find husband's son preference is not associated with a higher risk of domestic violence for the wife, and Srinivasan & Bedi (2007) find no correlation between the number of sons born and the likelihood of domestic violence. These studies also do not take into account how the norm of preferring sons over daughters affects other factors, such as decision-making power in the household.

The majority of research on women's decision-making and domestic violence outcomes have focused on socioeconomic factors such as wealth, income, and education, as opposed to socio-cultural factors considered in this study (Ellsberg et al.,1999; Kimuna & Djamba, 2008; Chin, 2011). A few studies have also looked at how bargaining power within a household can be indicative of unfavorable outcomes for women. For example, Mattina (2017) finds that the decrease in the number of men in the marriage market in post-genocide Rwanda caused the bargaining power of women entering the marriage market to decrease, resulting in reduced decision-making power and a higher incidence of domestic violence for women. Similarly, postulating that women's potential earning can increase their bargaining positions within the household, Chin (2011) uses data from India and examines if participation in the labor force lowers women's risk of domestic violence. Since sons are seen as the future breadwinners and source of future income and support in Indian and Nepali households, women's potential future income may be tied to whether they give birth to a son or not. This expected future returns may, therefore, directly affect their current bargaining power, which in turn can determine decision-making and domestic violence outcomes. However, a robust literature that examines how son preference manifests to reduce decision-making power and domestic violence for women is still lacking.

## III. Data and Measurement

This study employs data from the 2015/2016 wave of the Demographic and Health Surveys (DHS) conducted in Nepal and India.[7] Women aged 15-49 and men aged 15-54 are eligible to participate in the DHS. The men and women are asked questions from separate questionnaires. The Women's Questionnaire contains information on women's background characteristics, reproductive behavior and intentions, knowledge and use of contraception, status relating to their decision-making, land ownership, and incidence of domestic violence, husbands' background, and more. The Men's Questionnaire contains similar information, but

[7] DHS is a nationally representative population-based survey that collects information on demographic and health topics. The survey mostly conducts research centered around women and children and has a large sample size.

instead of their status within the household, men answer questions about their attitude towards women's status. Within a household, an eligible respondent is interviewed privately without the presence of another respondent to maintain confidentiality. This privacy allows husbands and wives to be asked questions of sensitive nature, such as sexual activity and domestic violence. Using the household identifier to merge the dataset, I aggregate the information from the wife and husband questionnaires into one dataset for analysis. For this study, I primarily use questions from the DHS data regarding the incidence of domestic violence, wife's decision-making power within the household, the ideal number of sons and daughters desired, fertility behavior, and other household characteristics.

**The Outcome Measures**

The World Health Organization (WHO, 2017) estimates that almost 30 percent of women worldwide report having been subjected to domestic violence by their partner at some point in their lives.[8] Gender-based violence is one of the biggest obstacles to achieving women's empowerment; therefore, domestic violence is one of the primary outcome measures used to estimate women empowerment and agency. Following Mattina (2017), I construct an indicator variable, Domestic violence (*DV*), that takes the value of 1 if a woman responds yes to experiencing any one of the following violent behavior from her husband: pushing, shaking, throwing something, slapping, twisting an arm, punching with a fist or something harmful, kicking or dragging, attempting to strangle or burn, forcing sex/sexual acts, or threatening with a weapon. If she reports not experiencing any of the mentioned violence, *DV* is 0. However, while Mattina (2017) only considers domestic-violence occurrence in the past 12 months, I allow *DV* to take the value of 1 if the wife has *ever* been subjected to domestic violence. If the wife gives birth to a daughter instead of a son, she may have been subjected to ill-treatment from her husband at any point during the childrearing period (Sabarwal et al., 2011). Since the timing at which wives are most susceptible to violence is unknown, the measure of domestic violence may be under-reported if only domestic violence status in the past year is considered, which is why I do not limit domestic violence occurrence to the past year. In the DHS survey, only one woman from each household was selected to answer questions about domestic violence; therefore, there are many missing values for *DV* in my dataset, and the small sample size creates data limitations for my analysis. [9]

The other outcome measure is decision-making (*DM*). Having more say in household decisions may indicate that the woman has more bargaining power, and, therefore, more empowerment and agency in the household. Following Mattina (2017), I measure lack of decision-making power (*DM*) by a binary variable that takes the value of 1 if a woman has no final say in at least one decision amongst decisions over her own health care, making large household purchases, making household purchases for daily needs, visits to family or relatives, and the food to be cooked each day. All women in the household answer questions about household decision-making, and this variable does not have significant missing values. Therefore, data from both India and Nepal contain more observations about the decision-making variable than domestic violence.

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[8] Data retrieved from https://www.who.int/news-room/fact-sheets/detail/violence-against-women

[9] On average, there are 1.7 women in Nepali households and 1.5 women in Indian households who are eligible for the survey. A complete summary statistics of the number of women in a household eligible to take part in the survey can be found in Table 1.2.

**Measure of Son Preference**

DHS provides information on the number, gender, birth order of children, the birth interval between consecutive children, as well as the ideal number of girls and boys wanted by wives and their husbands. Using this data, I construct a variable, *IdealGap*, that measures the difference between the ideal number of boys and the ideal number of girls, separately for husband and wives. Following Foster and Rosenweig (1999), I use this measure to check whether there is a general desire for more sons than daughters.

Using the data on the ideal number of sons husbands and wives desire, I construct an indicator variable *SonMismatch* that takes the value of 1 if the reported ideal number of sons is higher than the actual number of sons, and 0 otherwise. As such, the variable is a measure for the mismatch between the ideal and desired number of sons. *SonMismatch* measures the discrepancy, and, subsequently, the possible dissatisfaction caused by the prevalence of son preference. In the existing literature, other measures, such as the gender of the firstborn child, or the gap between the ideal number of sons and the ideal number of daughters, has been used to measure son preference. However, I do not use the gender of the firstborn child as the key variable for my main analysis because, if Nepali and Indian households prefer sons over daughters but still desire one daughter, then solely having a firstborn daughter might cause a couple to bear more children until a son is born, but it might not affect the wife's empowerment and autonomy. Additionally, while the difference between desired sons and desired daughters may be indicative of a person preferring sons over daughters, it does not take into account the actual number of sons that a person has, and consequently, cannot capture the possible discrepancy between the desired and actual number of sons. Therefore, the gap between the ideal number of sons and the ideal number of daughters alone cannot capture the effect of the discrepancies between the desired and actual number of sons, which is what I am interested in studying. In the succeeding Theory Section of my study, I use comparative static analysis to model different scenarios in which a mismatch between the ideal and actual number of sons leads to the wife being subjected to violence or losing her decision-making power within a household. Therefore, I find the ideal vs. actual son mismatch variable to be the most fitting to use in my analysis.

## IV. Theory

In this section, I use the Bargaining Model of Conflict (BMC, henceforth) to examine how preference for sons over daughters affects intra-household bargaining between husband and wife and explore its implications on the wife's autonomy and empowerment within the household. To do so, I begin with a brief overview of the BMC and then extend the BMC to incorporate how preference for sons over daughters can drive unfavorable outcomes for the wife in a household where either the husband or the wife's desired number of sons is not born. I conclude this section with both potentially testable hypotheses that can be derived from BMC and the limitations encountered in empirically testing the theory.

**The Bargaining Model of Conflict: A Brief Overview**

The Bargaining Model of Conflict (BMC) is used to understand how violent outcomes are results of strategic interactions between two players as they bargain over a resource that is of value to both. For instance, it is used to model how two nation-states bargaining over disputed territory, or a government and a terrorist organization competing for control of a population, can lead to either conflictual outcome or a peaceful settlement (Anderton &

Carter, 2019; Schelling, 1960). The model is set up on two key propositions: conflict is costly, and peace presents mutual gains for both parties. Conflict is costly because, among other things, it involves the diversion of resources from other productive activities to fighting and leads to the destruction of resources. Additionally, peace is mutually beneficial because not only does it avoid the costs of conflict, but it also generates positive externalities that are mutually desirable. Why, then, does conflict occur?

As per Schelling (1960), "To study the strategy of conflict is to take the view that most conflict situations are essentially bargaining situations." He writes that when conflict is possible, players have a mutual interest in not destroying their resources. This is done by bargaining, which helps avoid mutually destructive behavior. It is when negotiation is not possible, and no one concedes that conflict is unavoidable.

As mentioned earlier (Section II), other studies of the economics of households also look at bargaining within a household to examine the prevalence of domestic violence and other gender-based outcomes (Mattina, 2017 and Chin, 2011). The objective of this study is to examine how preference for sons over daughters affects bargaining between husband and wife in circumstances where either the husband or the wife's desired number of sons is not born and how this can ultimately lead to violence against the wife (domestic violence) and/or decrease her decision-making power. I explore how the husband's and wife's individual preference for sons over daughters, and whether those preferences are met, can influence their bargaining power and result in loss of empowerment and autonomy for the wife.

## Incorporating Preference for Sons over Daughters in the BMC

I start by clarifying the key elements of the BMC and then incorporate son preference into the model.

### i. Disputed Resource

In this model, I assume that the husband's and wife's dispute is over who should have more say or the final say over major household decisions that impact the functioning and wellbeing of the family.[10] I call this disputed resource 'control over household decisions'. I assume that this resource is divisible. This control is rival in consumption, meaning the husband and wife jointly cannot share the control of the same household decision.[11] The cases where the husband and wife come to a peaceful resolution is akin to them sharing power within a household; still, the husband may have more control over household decisions, which implies that the wife has less of it.[12]

### ii. Settlement Opportunity Curve

The Settlement Opportunity Curve (SOC) captures the different ways control over household decisions can be distributed or shared between a husband and a wife. We assume that when there is conflict over the disputed resource, a part of it is lost; this is a typical assumption in

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[10] As discussed earlier, decisions include household expenditures, such as how much of household resources should be allocated to children's education, family trips, land purchases, healthcare expenditure, and so on.

[11] When husband and wife differ in their decision regarding a certain matter, only one of them can get their way. The person who gets their way is said to have control over that decision.

[12] The divisibility of the control of household decision-making allows us to examine power-sharing within the household. If the goods were indivisible, such as ideology or acquisition of a property, a peaceful settlement is impossible, and any kind of third-party intervention futile in devising sustainable peace (Anderton & Carter, 2019).

BMC, which is put in place because a conflict has many direct and indirect costs associated with it. For instance, conflict results in diversion of resources, destruction, and displacement of physical and human capital, and disruption of economic activities. In the context of a household, when there is conflict in the form of domestic violence against the wife, the physical and mental abuse results in the loss of the wife's production abilities, human capital, and, consequently, some household resources as well. There is also the additional cost associated with hospital fees and the retribution that the husband may face, either implicitly or explicitly, by society or by law, over his act of domestic violence. Total control over decision-making is constrained by the resources available. Therefore, when the household resources decrease, the means available to make decisions also decreases, and there is less control overall to divide amongst the husband and wife in the household.[13]

If the husband and wife choose to resolve their dispute peacefully, however, all the household resources are available, and they have the means to make their planned household decisions. The SOC represents the various ways the control of decision-making can be divided. In some ways, the curve is akin to a production possibilities frontier (PPF) of a country. Figure 1 depicts the SOC with the husband's and wife's share of control over decision-making on x and y-axes, respectively. The curve, HN, shows the combination of all the different ways control of household decisions can be divided between the husband and wife. At y-intercept (point H in Figure 1), the wife has full control over the household decisions, while the husband has none. Likewise, at x-intercept (point N in Figure 1), the husband has complete control over the household decisions. The area outside the HN curve reflects combinations of control that are mutually beneficial but where settlement is not feasible. Lastly, the area inside the curve shows likely distributions if part of the disputed resource is lost due to conflict.

Finally, the bowed-out shape of the HN curve allows for complementarities in production that are available when the players choose to cooperate rather than fight (Anderton & Carter, 2019; Hirshleifer, 1989). Alternatively, one could allow HN to be linear. Following Anderton and Carter (2019), I assume a bowed-out shape of HN. Moreover, there is reason to assume the bowed-out shape due to increasing opportunity cost. To clarify, if the husband has more and more control over decision-making, the opportunity cost of giving him further control may increase if the wife is better suited than her husband to make those decisions.

### iii. Indifference Curves

We have two sets of preferences to consider. I start by assuming there is an underlying preference for sons. This assumption is supported by the data and is discussed in the next section. The question then becomes: how does the preference for sons over daughters affect the empowerment and autonomy of women? To answer this, I focus on preference over control of decision-making within a household.

The husband and the wife each have a preference over how the control over household decisions is distributed between them. Their preference may be characterized as either benevolent, malevolent, or egoistic. If they have benevolent preferences, they view both alternatives (their control and their partner's control of household decisions) as desirable. On the other hand, if the husband and the wife have malevolent preferences, they consider their

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[13] For instance, a decrease in income may mean that good schools, property, vacation, etc. is no longer affordable, and therefore decisions on these matters are out of both parties' controls.

partner's control over decisions to be a 'bad' – something that is undesirable- and hence, their utility decreases when their partner's share of control increases. In this study, since the husband and wife are bargaining for more control over decision-making for themselves, I assume that they have egoistic preferences (Figure 1).

In Figure 1 below, the husband's indifference curve is $IC_{HUSB}$, and that of the wife is $IC_{WIFE}$. All the points that lie on the same indifference curves are equally desirable. Since a husband (and also the wife) is an egoist, regardless of how much control their partner has, they only care about how much control over decision making they themself have. In this case, the indifference curve will be a vertical line.

**The Model: Equilibrium and Peaceful Resolution**

Combining the elements of the model, I begin by exploring situations where a peaceful settlement is possible between the husband and the wife. For a peaceful settlement to occur, there needs to be at least one distribution that would leave at least one party better off and no party worse off than what would be expected if they were to fight. I assume that the husband and wife have perfect information about their productive capacities, i.e., they have the same expectation regarding the outcome of a fight and the resulting distribution of the disputed resource. This expectation is indicated by the conflict (or disagreement) point E. The expected distribution of the resource is E in the case of conflict; however, if resources are peacefully divided, alternative outcomes are possible. Additionally, the expected outcome E determines which settlements are desirable for the husband and the wife.

With expected outcome E, the husband prefers all the distribution to the right of E, and the wife prefers all the distribution above E. This is shown in Figure 1. A peaceful settlement is feasible if the distribution leaves the husband or the wife better off, and neither of them is worse off than what would be expected if they were to fight. The shaded area shows the region of mutual gain. On the HN curve, SS' includes all points that are Pareto preferred to E.

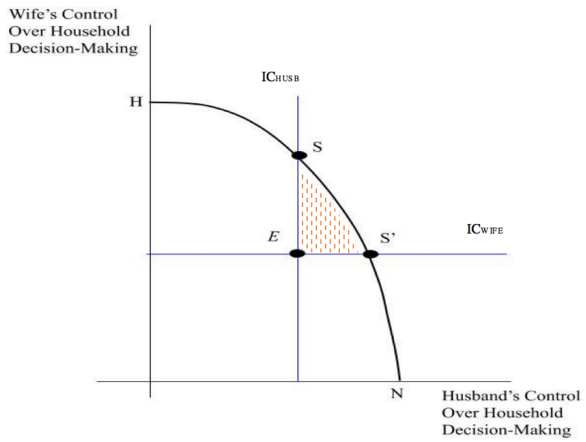


*Figure 1: The husband and wife both have same expectation (E) regarding the outcome of any conflict. The area of mutual gain (shaded region) lies within HN and peaceful settlement is possible. Points along SS' are distributions that are feasible and Pareto efficient to E.*

Now, the question becomes, why would bargaining fail? If peace is mutually beneficial and conflict is costly, why would the husband and wife fail to reach a peaceful settlement? The answer to this question can be illustrated with comparative static analyses. Note that there are

many possible comparative static analyses, but I restrict my study to those that are relevant for the empirical analysis.

**Comparative Static Analysis: Rationalist Sources of Domestic Violence and Lower Decision-Making**

### i. Domestic violence

In South Asian countries like Nepal and India, dowry giving, a tradition whereby there is a net transfer in assets from the bride's family to the groom's family at the time of marriage (Rao, 1993), is prevalent. Dowries are costly and often consist of a large sum of money (more than a year's income), jewels/precious metals, land/property, home furnishings, vehicles, and more. In fact, dowry is akin to premortem bequest (Foster & Rosenweig, 1999). Because of this, there are higher future expenses associated with having a girl. Likewise, sons not only stay with their parents throughout their adulthood and earn money but also bring in daughters-in-law, who, in turn, help with household chores. On the other hand, daughters marry and go on to stay with their in-laws, often outside the parent's locality (patrilocal exogamy practice). Therefore, there is a higher expected cost associated with having a daughter instead of a son.

As discussed earlier, household decisions are constrained by the available resources, meaning that as resources decrease, the means available to make decisions also decreases. Therefore, after a daughter is born in the household, the settlement-opportunity curve might shift in because the household resources decrease. Having a daughter might also lead households to have more children until a son or the ideal number of sons is born. When the family size increases, household expenses also increase, decreasing the resources that can be allocated towards making certain decisions, which can also lead to the HN curve shifting inward. Conflict may arise if the shift in the settlement opportunity curve from HN to $H_2N_2$, as shown in Figure 2, makes the initially expected outcome of fighting (E), where the indifference curves intersected, unattainable. Since the point E is outside of the $H_2N_2$ curve, the region of mutual gain lies outside of the settlement opportunity curve. In this case, peaceful settlement along HN is not possible, and the predicted outcome is conflict. Given that the society under consideration is male-dominated and patriarchal, a conflict could indicate domestic violence or gender-based violence against the wife in the household.

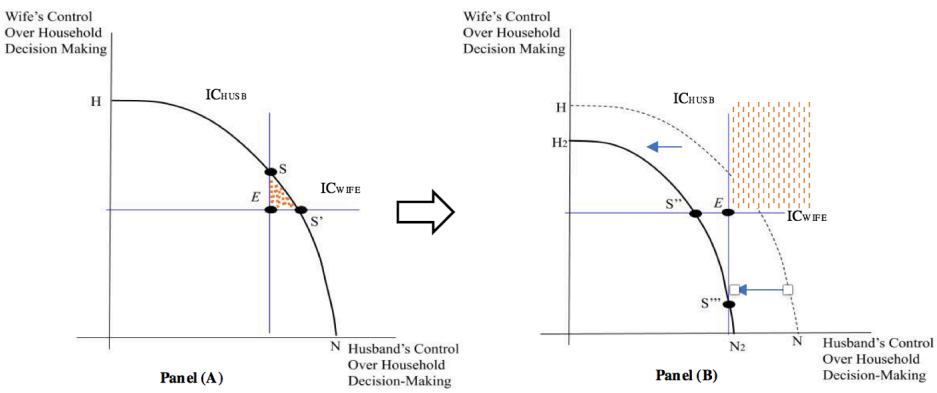


*Figure 2: Having a daughter causes the SOC curve to shift from HN to $H_2N_2$. In Panel (A) the area of mutual gain, represented by the shaded region, lies within the HN curve and peaceful settlement is possible along SS'. In Panel(B), with SOC shifting in, area of mutual gain (shaded) lies outside the new SOC and there is conflict.*

Following this comparative static analysis, as part of my empirical study, I check to see if not having the desired number of sons (which may drive fertility up) leads to a greater incidence of domestic violence. Furthermore, I examine if the effect of an ideal vs. actual son mismatch is greater in households with only daughters. The comparative static analysis, as such, helps illustrate how not having the desired number of sons or having only daughters may lead to failure of bargaining, and consequently, to a conflictual outcome.

### ii. Reduced Decision-Making

The outcome of the bargaining could be that husband and wife reach a peaceful settlement but at the cost of the wife losing some of her decision-making power. Therefore, as part of my empirical analysis, I also examine the effect of the husband or the wife not having their desired number of sons on the decision-making power of the wife. As such, comparative static analyses allow me to examine why a mismatch between ideal vs. actual sons would lead to lowered decision making for the wife. I explore, among others, two possible sources that could result in lower decision-making for a wife. They are (a) change in husband's preference due to him not having his desired number of sons, and (b) change in wife's expectation due to her own disappointment over not having her desired number of sons.

If the husband is disappointed and spiteful over not having his ideal number of sons, his preference may become malevolent, as indicated by indifference curve $IC^2_{HUSB}$ in Panel B of Figure 3. The wife's preference is unchanged for simplicity. Now, the wife prefers distribution above $IC_{WIFE}$, whereas the husband prefers distributions to the right of $IC^2_{HUSB.}$ The shaded region shows the new area of mutual gain in Panel B of Figure 3. The new settlement point occurs along S"S'. Comparing the two graphs in Figure 3 below, we observe that the area of mutual gain is smaller than before. Although a peaceful resolution is possible, it is unfavorable towards the wife. Now, part of her bargaining power is taken away, and she is willing to settle for less control over decision making. Therefore, there is a peaceful settlement, but at the cost of lower decision-making for the wife.

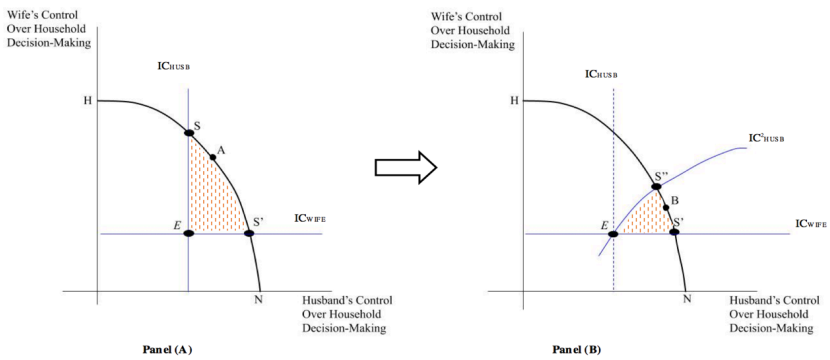


*Figure 3: In Panel (A), the husband has egoistic preference and settlement is possible at any point along SS'. However, with the change in preference from egoistic to malevolent following the husband's disappointment over not having a son, the area of mutual gain becomes smaller, as shown in Panel (B). Settlement is no longer feasible at A. Instead settlement is feasible along S"S, say at B, with lower decision-making power than the wife would have had at distribution A.*

Lower decision-making could also stem from the wife internalizing the gender norms and believing that she needs to deliver sons or the right number of sons. There is an intense pressure on the wife to give birth to a son(s); therefore, not being able to do so may make her feel like a disappointment. She may perceive herself as a failure, since procreation is a big part of domestic life, and may then justify male dominance, leading to her losing her bargaining power and expecting worse outcome for herself in the event of a conflict. In

particular, suppose in Panel (B) of Figure 4, the wife expects the outcome of conflict to be $E_2$. Here, the husband's indifference curve stays the same, but the wife's indifference curve shifts from $IC_{WIFE}$ to $IC^2_{WIFE}$, due to her own internalized beliefs and acceptance of male dominance. Subsequently, there will be an increase in the area of mutual gain, but in such a way that the wife is now willing to accept less control over household decisions than before. While a peaceful resolution was only feasible along SS' previously, with the change in the wife's expected outcome, every point along S'S'' shown in Panel (B) of Figure 4, including point B with lower control over decision-making for the wife, is now feasible.

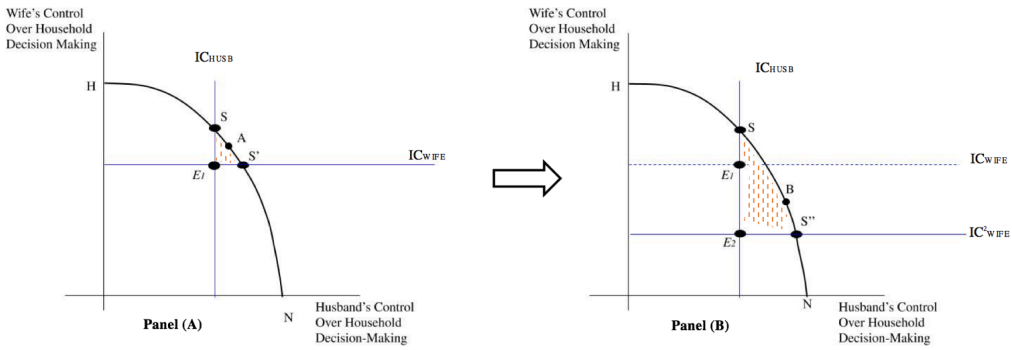


*Figure 4: In Panel (A) husband and wife have egoistic preferences with same expectation ($E_1$) regarding the outcome of conflict. The area of mutual gain (shaded region) lies within HN and peaceful settlement is feasible along SS'. Whereas in Panel(B), with her bargaining power reduced, the wife expects the outcome of fighting to be distribution $E_2$ and peaceful settlement is now along SS''. The area of mutual gain in Panel (B) is larger than in Panel (A), but not in favor of the wife's control over decision-making. If the wife settled at point A along SS' before (Panel A), she is now willing to settle at lower points, say point B, along SS'' with lower control over household decision-making.*

## Testable Hypothesis

I have adapted BMC and used the comparative static analysis to model different scenarios where a preference for sons over daughters alters intra-household bargaining and consequently leads to domestic violence for the wife or decreases her control over decision-making. While BMC serves as a useful lens through which we can examine a myriad of outcomes, it is not proof of a theory per se. Instead, it is a framework that allows us to study various circumstances that could lead to a peaceful or conflictual outcome. Hence, my goal here is not to prove anything specific; rather, I am simply using BMC to explain how, given preference for sons over daughters, either the husband or the wife not having the desired number of sons, or only daughters, could lead to various outcomes for women. A limitation of this approach is that I cannot directly map the theory to empirical analysis as I cannot test if the Settlement Opportunity Curve shifts or if there is a change in preference when the desired number of sons is not met. Hence, I cannot test the mechanism in play. Although I cannot test specific mechanism, which BMC is not meant to do anyway, I can (i) establish the basis of using BMC, (ii) show how wife's outcomes, such as domestic violence or lower control over decision-making, are different based on how elements of the model interact and (iii) use BMC to understand the impact of mismatch between ideal and actual sons, given preference for sons, on the wife's outcomes (domestic violence and reduced decision-making). As such, I have the following testable hypothesis.

**Hypothesis 1:** Given the preference for sons over daughters, wives whose husband's ideal number of sons is not met report a higher incidence of domestic violence and lower decision-making power.

**Hypothesis 2:** Given the preference for sons over daughters, wives whose own ideal number of sons is not met report a higher incidence of domestic violence and lower decision-making power.

## V. Empirical Strategy

As per the outline in the Theory Section above, I first examine if there is evidence of husband and wife preferring sons over daughters. I then test if households where husbands and wives ' desired number of sons are not met also report a higher incidence of domestic violence and lower decision-making power for wives.

### Do husbands and wives, on average, prefer more sons to daughters?

I use two methods to check to see if there is a general preference for sons over daughters. First, I study how fertility behavior differs based on the gender of the first child, i.e., if having a firstborn daughter is associated with greater fertility and a shorter birth interval between consecutive children. Second, following Foster and Rosenweig (1999), I show that, on average, both husband and wife ideally want more sons than daughters. For the latter, I simply look at summary statistics, whereas to test the relationships for the former, I fit a linear regression with firstborn daughter as the independent variable and the total number of children and birth interval as the outcome variables. The model is as follows:

$$TotalChildren_i = \beta_0 + \beta_1 FirstDaughter_i + \beta_k \boldsymbol{X_i} + \epsilon_i \ (1),$$
$$BirthInterval_i = \alpha_0 + \alpha_1 FirstDaughter_i + \alpha_k \boldsymbol{X_i} + \epsilon_i \ (2),$$

where $FirstDaughter$ is the primary independent variable of interest.[14] $FirstDaughter$ is a binary indicator variable that takes the value 1 if the firstborn child is a girl, and 0 otherwise. Income, geographic and demographic variables are also added as controls and are represented by the vector $\boldsymbol{X}$. The controls include household characteristics (the type of place of residence, i.e., rural vs. urban, wealth index), wife's characteristics (age, education, working status, and caste), and husband's characteristics (education level and working status). $\epsilon_i$ is the error term.

The independent variables are regressed on two outcome variables of interest: (i) $TotalChildren$ and (ii) $BirthInterval$. $TotalChildren$ is a discrete variable that measures the total number of children a couple has. $BirthInterval$ measures, in months, the gap between the woman's first and second birth. If there is a preference for sons over daughters, I expect $\beta_1$ to be positive, indicating that having a firstborn daughter leads couples to continue having children until a son is born (stopping rule), thereby having relatively more children in the process. Similarly, if there is son-preferring fertility behavior, having a firstborn daughter will be associated with shorter birth intervals. Therefore, I expect $\alpha_1$ to be negative.

Table 2 presents the results for models (1) and (2). Compared to couples who have firstborn sons, couples with firstborn daughters have 0.37 more children in Nepal. The mean number of total children is 2.8 for women, and an increase of 0.37 represents a 13 percent increase with respect to the sample mean of the total of children for Nepali women. This increase is

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[14] Foster and Rosenweig (1999) look at the average difference between the ideal number of sons and daughters to assume there is a preference for sons over daughters. Therefore, this method is, more or less, standard.

statistically significant at the 1 percent level. Also, compared to couples who have a firstborn son, couples with firstborn daughters wait 2.87 months *less* between the birth of their first and second child. This increase is statistically significant at the 1 percent level. Since the average birth interval is 36.36 months, this decrease represents an 8 percent decrease with respect to the mean birth interval for Nepali women.

Similarly, in India, compared to couples who had a son first, couples with firstborn daughters are expected to have 0.30 more children. This increase is statistically significant at the 1 percent level and represents an 11 percent increase with respect to sample mean for Indian women (2.7). Additionally, compared to couples who had firstborn sons, couples with firstborn daughters wait 0.53 months less between the birth of the first and second child. This increase is also statistically significant at the 10 percent level but represents only a 1 percent increase with respect to the sample mean. Although the decrease in the birth interval is small for India, the overall results do indicate that son-preferring fertility behavior is prevalent in both countries. The results show that couples with firstborn daughters are more likely to have more children and wait a shorter period between consecutive births, which can be seen as suggestive evidence that there is a general preference for sons over daughters in Nepal and India.

**Are wives likely to be victims of domestic violence and have lower decision making if the ideal number of sons is not met?**

As discussed in the Theory Section, we expect there to be contention or lower decision making when the desired number of sons is not born. I use a linear probability model to explore the impact of the preference for sons over daughters on wife's autonomy and empowerment in Nepal and India. The outcomes of interest are $DM_i$ and $DV_i$ , whereas the key explanatory variable is an indicator of whether the ideal number of sons is greater than the actual number of sons. I call this explanatory variable $SonMismatch$. As discussed in the Data Section, there are two measures of *SonMismatch*: one measures the husband's mismatch, and the other measures the wife's mismatch. For every analysis, I run two separate regressions – one for the husband and another for the wife. The regression equation is as follows:

$$DM_i = \gamma_0 + \gamma_1 SonMismatch_i + \delta' \boldsymbol{X_{1i}} + \zeta' \boldsymbol{X_{2i}} + \omega' \boldsymbol{X_{3i}} + \varepsilon_i \ (3),$$
$$DV_i = \theta_0 + \theta_1 SonMismatch_i + \delta' \boldsymbol{X_{1i}} + \zeta' \boldsymbol{X_{2i}} + \omega' \boldsymbol{X_{3i}} + \varepsilon_i \ (4).$$

$DM_i$ is an indicator variable for lack of wife i's decision making in a household, and $DV_i$ is an indicator for whether the wife faced domestic violence from her husband. *DM* and *DV* are calculated as described in the Data Section. *DM* takes the value of 1 if the wife reports having a lack of decision-making power, and *DV* takes the value of 1 if she reports being subjected to domestic violence. I control for three sets of independent variables: (i) $\boldsymbol{X_1}$ is a vector of variables controlling for household characteristics such as wealth, type of place of residence (rural vs. urban), and district of residence; (ii) $\boldsymbol{X_2}$ is a vector of variables measuring wife's characteristics such as age, education, caste, and working status; (iii) $\boldsymbol{X_3}$ is a vector that includes husband's characteristics, such as his educational attainment and working status. Additionally, $\varepsilon_i$ is the idiosyncratic error term.

Besides the preference for sons over daughters, women's empowerment and agency may also be influenced by different socioeconomic factors such as income, employment, and education. Poverty is often seen as a risk factor for domestic violence (Kishor & Johnson,

2006; Kimuna & Djamba, 2008). The stress and shame brought about by not being able to provide for the family might cause the husband to assert his dominance in the household and take his frustration out on his wife. Therefore, I expect wealth to have a negative effect on both incidence of domestic violence and lack of decision-making. The effect of the wife working on the probability that she is subjected to DV and has lower DM is, however, unclear. On the one hand, if the woman is working, she might have more bargaining power and, therefore, more say in the household decisions. Working also reduces the time wife is at home and in contact with her husband, which might decrease the incidence of domestic violence as well. However, the wife's earning may induce jealousy and may be perceived as a threat to male dominance, which might have a negative effect on her empowerment and agency (Paul, 2016). Considering that both the wealth and working status of the wife may impact domestic violence and decision-making, I include these controls in the model. The relationship between wife working and domestic violence/decision making, however, remains an empirically open question.

Additionally, both husband and wife's education attainment may have an impact on how the wife is treated in the household. Sen (1999) finds that rather than employment opportunity, women's education beyond the primary level is associated with a lower likelihood of domestic violence. Other studies (Bates et al., 2004; Hidrobo & Fernald, 2013) have also found that low educational achievement is associated with a lack of decision making and higher domestic violence. Education allows women to seek employment, be independent, and question the status quo. Moreover, it challenges peoples' views of the world and plays a vital role in re-defining gender roles. Therefore, the husband and wife's education is included in the model.

Geographic controls like district and urban/rural help control for effects on the wife's outcome, which may be particular to a certain geographic area due to unobservable or observable differences, such as access to a helpline or women's empowerment groups. I control for caste as well, since there are unique social norms and other directly unobservable characteristics associated with different castes that may affect the wife's status in the household differently. Additionally, some women from lower castes often have lower socioeconomic backgrounds, lower levels of education, and face stigma that might make them more susceptible to receiving and internalizing ill-treatments.

As mentioned, to the best of my knowledge, the key explanatory variable, *SonMismatch,* has not been used in past studies to capture the effect of preferring sons over daughters on women's empowerment and agency. I calculate both husband and wife's mismatch separately as it allows me to capture their effects individually, which will enable me to examine if unfavorable outcomes for the wife stems from husband's disappointment or her own. Any unfavorable outcome when using the husband's *SonMismatch* as a key explanatory variable suggests that it is likely that his frustration over not having his desired number of sons is the source of the unfavorable outcome for the wife. Alternatively, if we observe negative outcomes when using the wife's *SonMismatch*, then it is likely that the wife's internalized norms and expectations from bearing a son could be justifying and perpetuating gender-regressive norms — leading to her having less agency and empowerment in the household.

I estimate Equations (3) and (4) using a linear probability model to predict the likelihood of the wife facing a certain outcome. This model is useful as it allows me to interpret the

parameters in the probability scale.[15] Thus, I interpret $\gamma_1$ as the increase in the probability that the wife becomes a victim of domestic violence (Eq. 3) and $\theta_1$ as the increase in the probability that she has less bargaining power (Eq. 4), given she doesn't have the ideal number of sons. The estimates for $\gamma_1$ and $\theta_1$ will differ depending on whether I am using the husband's ideal number of sons or the wife's. As per the BMC theory, I hypothesize that not having the desired number of sons will affect the wife's autonomy and bargaining power, leading to an increased likelihood of her being subjected to domestic violence and lacking decision-making power. Hence, I expect both $\gamma_1$ and $\theta_1$to be positive. Additionally, I cluster standard errors at the district level to allow for unobservable characteristics to be correlated within a district.

There is a possibility that the effect of not having the desired number of sons on domestic violence and decision-making power is conditional on the gender composition of children in a household. For instance, the effect of not having the desired number of sons might be higher in households with only daughters. Therefore, I stratify the data by the gender composition of children and re-estimate the outcomes for households that have: (i) only daughters, (ii) only sons, and (iii) at least one son.[16] This allows me to see if not having the desired number of sons affects the outcome variables *DM* and *DV* differently depending on whether the couple has a son or not. It also allows me to capture any non-linearities in the effects of *SonMismatch*. I expect greater negative effects of *SonMismatch* in households with only daughters and the least negative effects of *SonMismatch* in households with only sons.

A potential concern in the estimates is that of endogeneity as a wife's agency might affect her ideal and the actual number of sons. For example, if a woman has been subjected to domestic violence, she may change her ideal number of sons/daughters to match her husband's ideal number and to avoid further mistreatment. However, studies argue that cultural beliefs, such as the ideal number of sons one should have, are deep-seated values and difficult to change over time (Araújo & Scalon, 2006). As such, I argue that reverse causality is likely not a serious concern here. Additionally, during DHS's data collection stage, an eligible respondent is interviewed privately in a household without the presence of another respondent to maintain confidentiality. Therefore, it is unlikely that a wife changes her answer to match her husband's. Lastly, lack of wife's agency may lead to higher fertility, but not necessarily more sons, since her child's gender is something the wife cannot control. Hence, I argue that the ideal vs. actual son mismatch is still a credibly exogenous explanatory variable. Therefore, I interpret the coefficient as a causal impact of not having the desired number of sons on the incidence of domestic violence decision-making.

## VI. Results

### Summary Statistics

Table 1 presents summary statistics for the key variables of interest and other relevant variables. The figures show that most Nepali and Indian women prefer having boys to girls, with the average difference between the ideal number of sons and daughters as being 0.26 for

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[15] Mattina (2017) uses a similar strategy to examine the impact of civil conflict on domestic violence and intra-household bargaining.

16 Although there is a general preference for sons over daughters, some households in India and Nepal that have only daughters report having no desire for sons. This allows me to test the effect of *SonMismatch* in households with only daughters. Tables 1.3 and 1.4 provide summary statistics for *SonMismatch* by the gender composition of children in a household.

Nepali women and 0.231 for Indian women. Most men also showed similar preferences, with the average difference between the ideal sons and daughters as being 0.27 for Nepali men and 0.21 for Indian men. The descriptive statistics, along with the findings from regressions results discussed earlier and reported in Table 2, support the assumption with which we started out our comparative static analysis: there is a general preference for sons over daughters.

The figures also show that, on average, both husband and wife report having more children than they would like ideally. However, this difference between the ideal and actual number of children wanted (Ideal # - Actual #) is more negative for girls than for boys, suggesting that, on average, daughters are more *undesired*, which also supports our hypothesis of households preferring sons to daughters.

Additionally, while the average birth interval between the firstborn and the second-born child is 36 months (or three years), the average birth interval after a firstborn child is smaller for a firstborn daughter than a firstborn son. This difference is more pronounced in Nepal, with a difference of 2 months. Thus, the difference in this unconditioned mean suggests that, on average, couples with firstborn daughters wait for less time to have their second child; the results from Table 2 corroborate this finding.

With regards to the outcome variables of interest, 67 percent of the women in the sample from Nepal report having no say in at least one household decision; the percentage for India in comparison is 40 percent. These numbers are very large and highlight the gender disparity in decision making that is present in these two South Asian countries. Domestic violence statistics are relatively lower (but still high), with 24 percent of women in Nepal and 29 percent of women in India reporting that they have been subjected to domestic violence. We observe that while more Nepali women, on average, report having less decision-making power, more Indian women, on average, are subjected to domestic violence.

Along with different domestic violence and decision-making statistics, the number of women who reported having worked in these two countries is also substantially different. Compared to 71 percent of Nepali women, only 33 percent of Indian women reported that they have worked in the last 12 months. Similarly, while more than half (63 percent) of Nepali women live in an urban area, 29 percent of the Indian women in the sample report living in an urban area. The summary statistics suggest likely inconsistencies across these two countries.

## Regression Results

### How does preferring sons over daughters affect wife's (women's) wellbeing?

Table 3 presents the results of the effect of ideal vs. actual son mismatch on outcomes of interest (*DM* and *DV*). Likewise, Tables 4 and 5 show the result with the data stratified according to the gender composition of children. These tables include socioeconomic, demographic, and individual level controls. Each outcome of interest (*DM* and *DV*) is reported four times: twice for each country, and within each country, once using husband's ideal vs. actual son mismatch and once using the wife's. The reference group for education in the results shown is 'no education.'

**Results from Nepal**

Table 3 presents the first results of my analysis. The primary coefficient of interest is that on *SonMismatch*. This coefficient can be interpreted as the change in the probability of the wife being subjected to domestic violence (Column 2, 6) or lacking decision-making power (Column 1, 5) if the ideal number of sons is not met.

In Column 5, the positive coefficient on wife's *SonMismatch* suggests that, compared to wives who had their desired number of sons, wives who did not have their desired number of sons have 6.3 percentage points greater probability of having reduced decision-making power. A 6.3-percentage point increase represents a substantial 9 percent increase with respect to the sample mean (0.669). This increase is statistically significant at the 10 percent level and supports my hypothesis. The coefficient on *SonMismatch* in Columns 2 and 5 are insignificant, suggesting no statistically significant effect of *SonMismatch* on domestic violence.

Looking at other covariates, the coefficients on the education variables in Column 1, 2, 5, and 6 suggest that, as expected, the wife's education has a positive impact on decision-making. All else equal, wives who have a higher education have more decision-making power compared to wives who have no education. The coefficient for *wife working* is also negative and statistically significant in Columns 1 and 5, suggesting that working wives have 4.1 percentage points higher probability of having decision-making power in a household compared to wives who do not work. However, the coefficient for *wife working* in Columns 2 is positive and statistically significant, suggesting working women are more likely to experience domestic violence. Together, the results suggest that while wives working is associated with higher decision making within the household, it also comes at the cost of a greater likelihood of being subjected to domestic violence.

**Results from India**

The results for India are shown in Columns 3,4,7, and 8 of Table 3. In Column 8, the coefficient on wife's *SonMismatch* suggests that, compared to wives who have their desired number of sons, wives who do not have their ideal number of sons have 0.8 percentage points greater probability of experiencing domestic violence. This represents an almost 3 percent increase with respect to sample mean (0.292). The results using the husband's ideal vs. actual son mismatch show that women whose husbands do not have their ideal desired number of sons have 1.4 percentage points higher probability of lacking decision-making power (Column 3). A 1.4-percentage point increase represents an almost 4 percent increase with respect to sample mean (0.396). This result is significant at the 5 percent level.

Similar to results from Nepal, the negative coefficient on the wife's education variable in Column 3 and 7 suggests that having education beyond the primary level decreases the likelihood of the wife not having decision-making power in the household. Moreover, the probability of the wife being subjected to domestic violence decreases if the wife has a secondary or higher education (compared to no education), as shown by results in Columns 4 and 8. The husband's education, however, has the opposite effect on decision making. Wives whose husbands have a primary or secondary education are expected to have less decision-making power in the household than wives with husbands who have no education. Additionally, the coefficients for *wife working* are negative and significant in Columns 3 and 7. They suggest that the probability of not having a say in any household decisions decreases by 5 percentage points if the wife is working, representing an almost 13 percent increase with

respect to the sample mean (0.396). Conversely, results from Column 4 and 8 show that the probability of being subjected to domestic violence increases by 6.6 percentage points if the wife is working. This represents a 22 percent increase with respect to the sample mean (0.292), which is a substantial increase in the likelihood of domestic violence.

**Results by stratification based on the gender composition of children within a household**

As mentioned in the Empirical Section, I re-estimate separate regressions for households with only daughters, only sons, and at least one son. The results of the regressions are shown in Tables 4 and 5. The primary coefficient of interest is that on *SonMismatch*. Table 4 shows results using the husband's *SonMismatch*, while Table 5 shows results using the wife's *SonMismatch*. This coefficient on SonMismatch can be interpreted as the change in the probability of the wife lacking decision-making power (Columns 1, 2, 3, 7, 8, and 9) or being subjected to domestic violence (Columns 4, 5, 6, 10, 11, and 12) if the ideal number of sons is not met.

**Results from Nepal**

In Column 2 of Table 4, the coefficient on husband's *SonMismatch* is positive, suggesting that in households with only daughters, the husband not having his ideal number of sons is associated with 0.1 percentage points increase in the probability that the wife has reduced decision-making power. This increase represents a 0.15 percent increase with respect to the sample mean of 0.669 and is significant at the 10 percent level. In Column 2 of Table 5, the coefficient on the wife's *SonMismatch* suggests a larger 10.5 percentage points increase in the probability of wife not having a say in decision-making. A 10.5 percentage point increase is equivalent to a 15.6 percent increase with respect to the sample mean (0.669), which is economically meaningful. This result is also significant at the 10 percent level.

Moreover, the coefficient on wife's *SonMismatch* in Column 3 of Table 5 shows that even in households that have at least one son, wives that do not have their desired number of sons have a 6-percentage point greater probability of having no say in household decisions. A 6-percentage points increase is equivalent to a 9 percent increase with respect to the sample mean (0.669). Although this effect is not as large as the effect in households with only daughters, it is still significant at the 5 percent level. Furthermore, the result suggests that having a single son might still not be enough: even in households with at least one son, there are still negative effects on women when the *desired* number of sons is not met, as hypothesized.

The coefficient on husband's and wife's *SonMismatch* in Columns 5 of Table 4 and Table 5, respectively, are not significant, suggesting no statistically significant effect of ideal vs. actual son mismatch on domestic violence against women. This result might be due to the low observation count on domestic violence.[17] We might also not be seeing significant results due to endogeneity. Domestic violence may affect *SonMismatch* in two possible ways: (i) domestic violence may lead to a miscarriage of the baby which might lead to fewer than ideal sons, or (ii) sexual violence against the wife may increase her chances of getting pregnant, increasing her chance of having more than the desired number of sons. Due to simultaneity, a significant bias could result in the *SonMismatch* estimate being insignificant.

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[17] As I discussed in the data section, only one woman from each household was selected to answer domestic violence questions. Therefore, only a subset of women from my sample reported an answer about domestic violence.

**Results from India**

Columns 7 to 9 of Table 4 and Table 5 provide the result for the effect of *SonMismatch* on decision-making, whereas Columns 10 to 12 of Table 4 and Table 5 provide the result for its effect on domestic violence for households in India. I am particularly interested in seeing how not having the desired number of sons affects women in households with only daughters (Column 8 and 11). In Columns 8 of Table 4 and 5, the coefficients on *SonMismatch* are not significant; hence, there is no evidence that not having the desired number of sons decreases the wife's decision-making power in households that have only daughters. However, in Column 11 of Table 4, I find in households with only daughters, husband's *SonMismatch* is associated with a 1.9-percentage points increase in the probability of wife being subjected to domestic violence, which represents a 6.5 percent increase with respect to the sample mean (0.292). This increase is significant at the 10-percent level. Similarly, Column 11 of Table 4 shows that wife not having her ideal number of sons in a household with only daughters is associated with a 0.07-percentage points increase in the probability of wife being subjected to domestic violence. This increase is also significant at the 10-percent level but represents a relatively small 2 percent increase with respect to the sample mean (0. 292).

## VII. Robustness Checks and Other Identification Strategies

In results not reported, I added interactive terms, whereby I interacted *SonMismatch* with wealth and education, to account for the possibility of a greater effect of *SonMismatch* in poorer and less educated households. The results were robust to adding interaction terms. The coefficient's estimates on the interaction terms were small and statistically insignificant. In addition to that, I re-estimated the regression using a logit model. The results were also robust to re-fitting the model using logit.

Additionally, I re-estimated the outcomes by creating three categories to measure ideal vs. actual son mismatch instead of two: (a) ideal sons > actual sons, (b) ideal sons = actual sons, and (c) ideal sons < actual sons. On finding that the outcomes are not considerably different for (b) and (c), I grouped the two categories together.

I also considered other measures to capture preference for sons over daughters. Postulating that having more than the desired number of daughters might also affect women, I created another indicator variable, *DaughterMismatch*, that takes the value of 1 if the actual number of daughters is greater than the ideal number of daughters. However, given my study is focused on preference for sons rather than aversion towards daughters, I only report results that look at the effect of *SonMismatch*.

Finally, I also created a gap index to measure the total household (i.e., husband and wife jointly) dissatisfaction over not having the desired number of sons by calculating the sum of the square of the difference between ideal and actual sons for the husband and the wife and then dividing this by 2.[18] However, the results using the index were insignificant and inconsistent across different specifications. I also grouped the index into high and low

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[18] The gap index determines the variation between the husband and the wife's ideal number of sons relative to the number of sons they have. Therefore, the gap index is akin to sample standard deviation in the way that it is calculated: Gap Index = $\sqrt{\left(\frac{\Sigma\left(\left(husband's\ ideal\ son - actual\ sons\right)^2 + \left(wife's\ ideal\ sons - actual\ sons\right)^2\right)}{2}\right)}$.

dissatisfaction categories (25th and 75th percentile, disregarding the middle quartile) and re-estimated the regressions range. I find no significant difference in outcome based on high and low household dissatisfaction, and the results are also sensitive to the specifications used.

## VIII. Discussion

The results of my analysis show two things: (i) there is a general preference for sons over daughters in Nepali and Indian households, and (ii) this preference can negatively impact women when the desired number of sons is not met. Additionally, in a Nepali household with only daughters, both the husband and the wife not having their ideal number of sons is associated with less decision-making power for the wife. Similarly, in Indian households with only daughters, the discrepancy between the ideal and actual number of sons is associated with a higher incidence of domestic violence against the wife. Therefore, there is evidence to believe that, in a society with strong son preference, not having a son can affect the bargaining power of women, which, in turn, can make them more susceptible to facing domestic violence from her husband and having less decision-making power.

The results also show that it is likely that women themselves internalize the norms and values that place emphasis on having a son, which could lead them to justify having less autonomy and empowerment in a household. This result is consistent with other studies that report Nepali women internalize the need for sons (Brunson, 2010) and that women in India often believe that their most important role is not just to produce children but to produce a son for her husband's family (Nanda, 2014).

There are, nevertheless, some limitations to this analysis. As mentioned in the Results section, there are some possible concerns related to the endogeneity of the key variable of interest. There is also the possibility that households practice sex-selective abortion. If so, it would mean that there is less discrepancy between the ideal and actual number of sons in the data. In such a case, a mismatch may no longer be a factor that determines the decision-making and domestic violence outcomes. The fact that I still find negative effects of this discrepancy, however, suggests that there are still some unmet needs when it comes to wanting more sons and that the negative results reported here are only lower-bound estimates. Alternatively, households, where men assert their dominance and women have less decision-making power, may be more likely to desire more sons and practice sex-selective abortion to ensure that a son is born. In such a case, the estimates might be biased due to simultaneity bias.

Additionally, not all of my results are consistent across the two countries. Besides observable and unobservable differences between the two countries, this disparity may be due to the difference in the data sample of these two countries: while 63 percent of Nepali women in the sample live in an urban area, only 29 percent of Indian women, in comparison, live in an urban area. Moreover, the number of observations for Nepali women who answered the question about domestic violence is small. Therefore, the data itself may not be representative *across* the two countries; however, the data sample is representative of each country.

Nevertheless, the results show a negative association between son preference and domestic violence (in India) and decision-making outcomes (in Nepal and India). Additionally, the analysis indicates that there are other socioeconomic factors, such as working status and the wife's education level, that place some women at higher risk of domestic violence and

reduced decision-making power. Results suggest that working wives have more decision-making power but are more likely to experience domestic violence. Moreover, while I find a positive effect of the wife's education on wife's decision-making, the husband's education has a negative effect on the wife's decision-making in India. This result might be because, given the prevalent notion of male superiority in households in India, being educated may make husbands feel even worthier of authority, especially if the wife is not as educated.

## IX. Conclusion

Due to a myriad of economic, religious, and cultural reasons, the preference for sons is deeply rooted in Nepali and Indian societies. The dowry system present in both Nepal and India continues to add a financial burden on parents with daughters. Although the practice is banned in Nepal, the law still allows dowry up to 10,000 Nepali Rupees ($90) to be taken, with addition to any jewelry worn by the wife on the wedding day. Dowry is illegal in India as well, but like in Nepal, there are no mechanisms in place that effectively implement the existing laws. Formal rules on the books stand in contrast to social and cultural norms. The laws themselves also have several loopholes as they include clauses protecting religious and personal freedom that often undercut legislation meant to cease exploitative practices. Parents of the bride succumb to the practice in the name of tradition or because they fear their daughters will be mistreated if they fail to abide by this practice. One way to fight this practice in Nepal and India is to have bystanders report this unconstitutional act when they see it taking place. Therefore, a Civil Responsibility Act stating that every citizen is obligated by law to report social malpractices if they see it is necessary. If there are personal costs and societal repercussions for being a passive bystander or not reporting a crime, citizens may be more likely to comply with the law.

Another way to uproot the socio-cultural norms that perpetuate discrimination against girls and women is through robust education. Education can play an important role in uplifting and empowering women; it gives women tools that can help them understand their value and protect themselves from violence. Moreover, it can also change women's attitudes towards gender-regressive norms. It is, however, not just important that everyone has access to education, but what people are learning in schools also matters. Girls and boys from an early age need to have access to an educational and awareness curriculum that aims at tackling gender norms and attitudes. Through education, we can plant attitudes and practices that promote gender equity during the formative years of childhood to combat the issues brought about by son preference in Nepal and India. As Nelson Mandela said, "Education is the most powerful weapon which you can use to change the world."

Whether it is via just laws or widespread education, ultimately, what matters is that people change their discriminatory norms and behavior. Improvements in economic circumstances alone are insufficient in bringing societal change (Foster & Rosenweig, 1999). As such, policies should work towards valuing women and girls as equal to men and boys. The new constitution of Nepal, for instance, has taken a step in the right direction by articulating equal protection for women, children, disabled, and other vulnerable populations in Nepal. Once these codified values become more ingrained in society and generate complementarities across industries, we can hope that there will be a meaningful and lasting improvement in women's wellbeing. Until that happens, there is a clear need for a bottom-up and top-down approach to protecting and empowering women.

**References:**

Alesina, A. F., Giuliano, P., & Nunn, N. (2011). On the Origins of Gender Roles: Women and the Plough. *SSRN Electronic Journal*. doi: 10.2139/ssrn.1856152

Anderton, C. H., & Carter, J. R. (2019). *Principles of conflict economics: the political economy of war, terrorism, genocide, and peace*. Cambridge, United Kingdom: Cambridge University Press.

Araújo, C., & Celi, S. (2006). Gender and Distance between Intention and Action. *Revista Brasileira de Ciências Sociais*. *ANPOCS*. Accessed November 20, 2019. http://socialsciences.scielo.org/scielo.php?script=sci_arttext&pid=S0102-69092007000100007.

Arnold, F. (2001). Son Preference in South Asia. Pp. 281–99 *Fertility Transition in South Asia*, edited by Sathar, Z. A., Phillips, J. F., New York: Oxford University Press.

Ashraf, N., Bau, N., Nunn, N., & Voena, A. (2020). Bride Price and Female Education. *Journal of Political Economy*, *128*(2), 591–641. doi: 10.1086/704572

Bates, L. M., Schuler, S. R., Islam, F., & Islam, M. K. (2004). Socioeconomic Factors and Processes Associated With Domestic Violence in Rural Bangladesh. *International Family Planning Perspectives*, *30*(04), 190–199. doi: 10.1363/3019004

Bandyopadhyay, M. (2003). Missing Girls And Son Preference In Rural India: Looking Beyond Popular Myth. *Health Care for Women International*, *24*(10), 910–926. doi: 10.1080/07399330390244220

Bhaskar, V., & Gupta, B. (2007). India's missing girls: biology, customs, and economic development. *Oxford Review of Economic Policy*, *23*(2), 221–238. doi: 10.1093/oxrep/grm016

Borooah, V. K. (2004) Gender bias among children in India in their diet and immunization against disease. *Social Science & Medicine,* 58, 1719–1731.

Bose, S. & South, S. J. (2003) Sex composition of children and marital disruption in India. *Journal of Marriage and Family,* 65, 996–1006.

Brunson, J. (2010). Son Preference in the Context of Fertility Decline: Limits to New Constructions of Gender and Kinship in Nepal. *Studies in Family Planning*, *41*(2), 89–98. doi: 10.1111/j.1728-4465.2010.00229.x

Chin, Y.-M. (2011). Male backlash, bargaining, or exposure reduction: women's working status and physical spousal violence in India. *Journal of Population Economics*, *25*(1), 175–200. doi: 10.1007/s00148-011-0382-8

Clark, S. (2000). Son Preference and Sex Composition of Children: Evidence from India. *Demography*, *37*(1), 95. doi: 10.2307/2648099

Ellsberg, M., Caldera, T., Herrera, A., Winkvist, A., & Kullgren, G. (1999). Domestic violence and emotional distress among Nicaraguan women: Results from a population-based study. *American Psychologist*, *54*(1), 30–36. doi: 10.1037/0003-066x.54.1.30

Foster, A.D., & Rosenzweig, M.R. (1999*). Missing Women, the Marriage Market and Economic Growth* (Working Paper No. 49). Retrieved from Stanford University, Center for Research on Economic Development and Policy Reform website: https://siepr.stanford.edu/research/publications/missing-women-marriage-market-and-economic-growth

Gupta, M. D. (2005). Explaining Asias "Missing Women": A New Look at the Data. *Population and Development Review*, *31*(3), 529–535. doi: 10.1111/j.1728-4457.2005.00082.

Gupta, M. D., Zhenghua, J., Bohua, L., Zhenming, X., Chung, W., & Hwa-Ok, B. (2003). Why is Son preference so persistent in East and South Asia? a cross-country study of China, India and the Republic of Korea. *Journal of Development Studies*, *40*(2), 153–187. doi: 10.1080/00220380412331293807.

Hesketh, T., Lu, L., & Xing, Z. W. (2011). The consequences of son preference and sex-selective abortion in China and other Asian countries. *Canadian Medical Association Journal*, *183*(12), 1374–1377. doi: 10.1503/cmaj.101368

Hidrobo, M., & Fernald, L. (2013). Cash transfers and domestic violence. *Journal of Health Economics*, *32*(1), 304–319. doi: 10.1016/j.jhealeco.2012.11.002

Hirshleifer, J. (1995). Chapter 7 Theorizing about conflict. *Handbook of Defense Economics*, 165–189. doi: 10.1016/s1574-0013(05)80009-2

Ichino, A., Lindström, E.-A., & Viviano, E. (2014). Hidden consequences of a first-born boy for mothers. *Economics Letters*, *123*(3), 274–278. doi: 10.1016/j.econlet.2014.03.001

Kimuna, S. R., & Djamba, Y. K. (2008). Gender Based Violence: Correlates of Physical and Sexual Wife Abuse in Kenya. *Journal of Family Violence*, *23*(5), 333–342. doi: 10.1007/s10896-008-9156-9

Kishor, S., & Johnson, K. (2006). Reproductive Health and Domestic Violence: Are the Poorest Women Uniquely Disadvantaged? *Demography*, *43*(2), 293–307. doi: 10.1353/dem.2006.0014

Leone, T., Matthews, Z., & Zuanna, G. D. (2003). Impact and Determinants of Sex Preference in Nepal. *International Family Planning Perspectives*, *29*(2), 69. doi: 10.2307/3181060

Li, L., & Wu, X. (2011). Gender of Children, Bargaining Power, and Intrahousehold Resource Allocation in China. *Journal of Human Resources*, *46*(2), 295–316. doi: 10.3368/jhr.46.2.295

Li, L., & Wu, X. (2015). The Consequences of Having a Son on Family Wealth in Urban China. *Review of Income and Wealth*, *63*(2), 378–393. doi: 10.1111/roiw.12215

Lowes, S., & Nunn, N. (2018). Bride Price and the Well-Being of Women. *Oxford Scholarship Online*. doi: 10.1093/oso/9780198829591.003.0006

Mattina, G. L. (2017). Civil conflict, domestic violence and intra-household bargaining in post-genocide Rwanda. *Journal of Development Economics*, *124*, 168–198. doi: 10.1016/j.jdeveco.2016.08.001

Milazzo, A. (2018). Why are adult women missing? Son preference and maternal survival in India. *Journal of Development Economics*, *134*, 467–484. doi: 10.1016/j.jdeveco.2018.06.009

Mitra, S. (2006). Domestic violence along with its sociocultural determinants among pregnant women attending MCH clinic of a subdivisional hospital in West Bengal. *Indian Journal of Community Medicine*, 31, 267–269.

Nanda, P. (2014). *Masculinity, Intimate Partner Violence and Son Preference in India*. ICRW.

Opinion Forum. (n.d.). Retrieved from http://inseconline.org/en/forum/a-strategy-to-end-dowry-practice-intertwining-property-rights-dowry-system-and-civic-responsibility-act/

Oster, E. (2005). Hepatitis B and the Case of the Missing Women. *Journal of Political Economy*, *113*(6), 1163–1216. doi: 10.1086/498588

Pande, R. & Astone, N. (2007). Explaining son preference in rural India: the independent role of structural versus individual factors. *Population Research and Policy Review*, 26, 1–29.

Paul, S. (2016). Women's Labour Force Participation and Domestic Violence. *Journal of South Asian Development*, *11*(2), 224–250. doi: 10.1177/0973174116649148

Rocca, C. H., Rathod, S., Falle, T., Pande, R. P. & Krishnan, S. (2009). Challenging assumptions about women's empowerment: social and economic resources and domestic violence among young married women in urban South India. *International Journal of Epidemiology* 38, 577–585.

Rao, V. (1993). The Rising Price of Husbands: A Hedonic Analysis of Dowry Increases in Rural India. *Journal of Political Economy, 101*(4), 666-677. Retrieved April 16, 2020, from www.jstor.org/stable/2138743

Rodrigues, M., Patel, V., Jaswal, S. & de Souza, N. (2003). Listening to mothers: qualitative studies on motherhood and depression from Goa, India. *Social Science & Medicine*, 57, 1797–1806.

Sabarwal, S., Sabarwal, M. C., Subramanian, S. V., & Silverman, J. G. (2011). Son Preference And Intimate Partner Violence Victimization In India: Examining The Role Of Actual And Desired Family Composition. *Journal of Biosocial Science*, *44*(1), 43–56. doi: 10.1017/s002193201100037x

Schelling, T. C. (1960). *The strategy of conflict:. Camb., MA: Harvard Univ. Pr.*

Schuler, S. R., Hashemi, S. M., Riley, A. P. & Akhter, S. (1996) Credit programs, patriarchy and men's violence against women in rural Bangladesh. *Social Science & Medicine,* 43, 1729–1742.

Sen, A. (1990). More Than 100 Million Women Are Missing. *The New York Review of Books 37.*

Sen, A. (1992). Missing Women. *British Medical Journal* 304 (1992), 587–588.

Sen, P. (1999). Enhancing Women's Choices in Responding to Domestic Violence in Calcutta: A Comparison of Employment and Education. *The European Journal of Development Research*, *11*(2), 65–86. doi: 10.1080/09578819908426739

"Son preference" Perpetuates Discrimination and Violations of Women's Rights - It Must and Can End. (n.d.). Retrieved from: https://www.unwomen.org/en/news/stories/2011/6/son-preference-perpetuates-discrimination-and-violations-of-women-s-rights-it-must-and-can-end

Srinivasan, S., & Bedi, A. S. (2007). Domestic Violence and Dowry: Evidence from a South Indian Village. *World Development*, *35*(5), 857–880. doi: 10.1016/j.worlddev.2006.08.005

Takaku, R. (2018). First Daughter Effects in Japan. *Journal of the Japanese and International Economies* 50, 48–59.

Vlassoff, C. (1990). The Value of Sons in an Indian Village: How Widows See It. *Population Studies*, *44*(1), 5–20. doi: 10.1080/0032472031000144356

## Tables

### Table 1.1: Summary Statistics – Nepal and India

| | VARIABLES | | Nepal N | Nepal mean | Nepal sd | India N | India mean | India sd |
|---|---|---|---|---|---|---|---|---|
| Preference for sons vs. daughters[19] | Wife's response | Idea # of sons – Ideal # of daughters | 5,508 | 0.264 | 0.556 | 101,151 | 0.232 | 0.423 |
| | | Ideal # of sons – Actual # of sons | 5,508 | -0.229 | 0.975 | 101,151 | -0.096 | 1.009 |
| | | Ideal # of daughters – Actual # of daughters | 5,508 | -0.418 | 1.115 | 101,151 | -0.202 | 1.079 |
| | | Ideal # of children – Actual # of children | 5,508 | -0.872 | 1.741 | 101,151 | -0.286 | 1.398 |
| | Husband's response | Ideal # of sons – Ideal # of daughters | 2,796 | 0.270 | 0.584 | 76,739 | 0.219 | 0.414 |
| | | Ideal # of sons – Actual # of sons | 2.796 | -0.77 | 1.230 | 76,739 | -0.196 | 1.223 |
| | | Ideal # of daughters – Actual # of daughters | 2,796 | -0.535 | 1.308 | 76,739 | -0.290 | 1.267 |
| | | Ideal # of children – Actual # of children | 2,796 | -0.615 | 1.785 | 76,739 | -0.412 | 1.850 |
| Women empowerment and fertility | Worked in the last 12 months | | 5,508 | 0.712 | 0.453 | 77,964 | 0.325 | 0.468 |
| | Decision Making [20] | | 5,508 | 0.669 | 0.471 | 101,151 | 0.396 | 0.489 |
| | Domestic Violence[21] | | 3,633 | 0.239 | 0.426 | 57,418 | 0.292 | 0.455 |
| | Domestic Violence Justified[22] | | 5,508 | 0.273 | 0.445 | 76,182 | 0.423 | 0.494 |
| | Firstborn child is a girl | | 6,710 | 0.488 | 0.500 | 351,958 | 0.473 | 0.499 |
| | Birth interval between consecutive children | | 6,710 | 36.36 | 21.29 | 351,958 | 34.20 | 20.46 |
| | Birth interval if firstborn is daughter | | 3,347 | 35.01 | 19.81 | 170,130 | 33.76 | 20.05 |
| | Birth interval if firstborn is son | | 3,363 | 37.72 | 22.59 | 181,828 | 34.61 | 20.82 |
| Demographic characteristics | Age | | 5,508 | 33.09 | 8.422 | 101,151 | 34.02 | 8.162 |
| | Total number of children | | 5,508 | 2.774 | 1.612 | 101,151 | 2.700 | 1.519 |
| | Age at first birth | | 5,508 | 19.94 | 3.041 | 101,151 | 21.01 | 3.539 |
| | Husband currently working | | 5,508 | 0.967 | 0.179 | 101,151 | 0.939 | 0.239 |
| | Urban | | 5,508 | 0.630 | 0.483 | 101,151 | 0.285 | 0.451 |
| | Total number of schooling (in years) | | 5,508 | 4.052 | 4.273 | 101,151 | 5.686 | 5.149 |
| Wealth indicator | poorest | | 5,508 | 0.216 | 0.412 | 101,151 | 0.198 | 0.398 |
| | poorer | | 5,508 | 0.211 | 0.408 | 101,151 | 0.214 | 0.410 |
| | middle | | 5,508 | 0.206 | 0.404 | 101,151 | 0.206 | 0.404 |
| | richer | | 5,508 | 0.194 | 0.395 | 101,151 | 0.195 | 0.396 |
| | richest | | 5,508 | 0.173 | 0.378 | 101,151 | 0.188 | 0.390 |

[19] The variable 'ideal # – # actual' measures the difference between the ideal number of sons/daughters/children that parents stated they would like and the actual number of sons/daughters/children they have.
[20] Decision making is a dummy variable that takes the value of 1 if a woman has no final say in at least one decision regarding her health, household purchase, visits outside of her town/village, and her own earnings.
[21] Domestic violence is a dummy variable that takes the value of 1 if the wife responses yes to being shaken, slapped, punched, kicked, strangled, threatened, or forced into sex/sexual acts by her husband.
[22] Domestic Violence Justified is also a dummy variable that takes the value of 1 if a woman justifies being subjected to domestic violence in the case that she goes out without telling her husband, argues with her husband, neglects their children, refuses sex, or burns food.
Data source: Nepal and India DHS data from 2015/2016

**Table 1.2: Summary Statistics: Eligible Women in Household for Survey**

| Country | N | Mean (sd) | Min | Max |
|---|---|---|---|---|
| Nepal | 3,126 | 1.654 (1.107) | 1 | 16 |
| India | 76,739 | 1.549 (0.857) | 1 | 12 |

**Table 1.3: Summary Statistics: *SonMismatch* by Children Composition - Nepal**

| | Husband's *SonMismatch* | | | Wife's *SonMismatch* | | |
|---|---|---|---|---|---|---|
| | Only daughters | Only sons | At least one son | Only daughters | Only sons | At least one son |
| ***SonMismatch***[23] | Freq (Percent) | Freq (Percent) | Freq (Percent) | Freq (Percent) | Freq (Percent) | Freq (Percent) |
| 0 | 132 (27.56) | 812 (94.20) | 2,333 (88.98) | 127 (26.57) | 820 (95.46) | 2,368 (90.62) |
| 1 | 347 (72.44) | 50 (5.800) | 289 (11.02) | 351 (73.43) | 39 (4.540) | 245 (9.376) |
| Total | 479 | 862 | 2622 | 478 | 859 | 2613 |

**Table 1.4: Summary Statistics: *SonMismatch* by Children Composition - India**

| | Husband's *SonMismatch* | | | Wife's *SonMismatch* | | |
|---|---|---|---|---|---|---|
| | Only daughters | Only sons | At least one son | Only daughters | Only sons | At least one son |
| ***SonMismatch*** | Freq (Percent) | Freq (Percent) | Freq (Percent) | Freq (Percent) | Freq (Percent) | Freq (Percent) |
| 0 | 2,310 (19.15) | 21,134 (93.25) | 56,957 (88.65) | 2,289 (19.05) | 21,517 (95.36) | 57,118 (89.42) |
| 1 | 9,755 (80.85) | 1,531 (6.755) | 7,290 (11.35) | 9,729 (80.95) | 1,046 (4.636) | 6,757 (10.58) |
| Total | 12065 | 22665 | 64247 | 12018 | 22563 | 63875 |

[23] SonMismatch is a dummy variable that takes the value 1 if the husband's reported ideal number of sons is greater than the actual number of sons that the husband (or wife) has.

## Table 2: Effect of Gender of Firstborn Child on Fertility Behavior of the Wife

| | Nepal | | India | |
|---|---|---|---|---|
| VARIABLES | Birth Interval[24] | Total Children | Birth Interval | Total Children |
| (Mean) | (36.36) | (2.77) | (34.20) | (2.70) |
| Firstborn daughter[25] | -2.867*** | 0.367*** | -0.529* | 0.301*** |
| | (0.998) | (0.039) | (0.320) | (0.046) |
| Wife's current age | 0.108 | 0.105*** | 0.270*** | 0.085*** |
| | (0.084) | (0.007) | (0.069) | (0.013) |
| Wife's educational level = primary | -0.980 | -0.193*** | -1.135*** | -0.187*** |
| | (1.083) | (0.059) | (0.276) | (0.028) |
| Wife's educational level = secondary | 2.980* | -0.287*** | 0.878** | -0.419*** |
| | (1.610) | (0.072) | (0.288) | (0.046) |
| Wife's educational level = higher | 6.118** | -0.479*** | 5.162*** | -0.722*** |
| | (2.746) | (0.093) | (1.412) | (0.082) |
| Husband's education level = primary | 0.452 | -0.0563 | -1.124** | -0.0181 |
| | (1.340) | (0.068) | (0.480) | (0.048) |
| Husband's education level = secondary | 0.744 | -0.246*** | 0.866 | -0.129** |
| | (1.230) | (0.057) | (0.730) | (0.057) |
| Husband's education level = higher | -1.340 | -0.364*** | 2.779** | -0.286*** |
| | (1.805) | (0.093) | (1.047) | (0.057) |
| Wife working | -1.104 | 0.029 | -0.319 | 0.064* |
| | (1.047) | (0.059) | (0.691) | (0.029) |
| Wealth index = poorer | -0.130 | -0.128 | -0.694 | -0.151*** |
| | (2.083) | (0.118) | (0.857) | (0.029) |
| Wealth index = middle | -1.920 | -0.317** | -0.961 | -0.337*** |
| | (2.566) | (0.132) | (1.358) | (0.060) |
| Wealth index = richer | -0.522 | -0.445*** | -0.667 | -0.547*** |
| | (3.019) | (0.131) | (1.397) | (0.069) |
| Wealth index = richest | -1.196 | -0.679*** | 1.632 | -0.764*** |
| | (2.648) | (0.158) | (1.594) | (0.081) |
| Wealth index = rural | -0.111 | 0.017 | -1.135* | -0.004 |
| | (1.243) | (0.082) | (0.582) | (0.0334) |
| District Control | Yes | Yes | Yes | Yes |
| Ethnicity Control | Yes | Yes | Yes | Yes |
| Constant | 28.00*** | -0.114 | 28.68*** | -0.336 |
| | (3.356) | (0.316) | (1.253) | (0.548) |
| Observations | 2,162 | 2,731 | 14,533 | 18,376 |
| R-squared | 0.052 | 0.507 | 0.042 | 0.385 |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

[24] Birth interval is the gap, in months, between the first and the second child.

[25] Firstborn daughter is an indicator variable that takes the value 1 if the firstborn child is a girl and 0 if it is a boy.

- The reference group for wealth is 'poorest', for education is 'no education' and for type of residence is 'rural'

Data source: Nepal and India DHS data from 2015/2016

## Table 3: Effect of Husband and Wife's Ideal vs. Actual Sons Mismatch on Wife's Agency and Empowerment

| | Husband's Son Preference Mismatch | | | | Wife's Son Preference Mismatch | | | |
|---|---|---|---|---|---|---|---|---|
| | Nepal | | India | | Nepal | | India | |
| VARIABLES | DM[26] | DV[27] | DM | DV | DM | DV | DM | DV |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| SonMismatch[28] | 0.013 | 0.025 | 0.014** | -0.009 | 0.063*** | 0.002 | 0.026*** | 0.008* |
| | (0.017) | (0.028) | (0.007) | (0.007) | (0.018) | (0.032) | (0.007) | (0.008) |
| Wife's educational level = primary | -0.004 | 0.008 | -0.015 | -0.004 | -0.002 | 0.007 | -0.014 | -0.004 |
| | (0.027) | (0.036) | (0.012) | (0.012) | (0.027) | (0.037) | (0.012) | (0.012) |
| Wife's educational level = secondary | -0.040 | -0.051 | -0.043*** | -0.038*** | -0.038 | -0.054 | -0.043*** | -0.037*** |
| | (0.024) | (0.034) | (0.011) | (0.012) | (0.024) | (0.035) | (0.011) | (0.012) |
| Wife's educational level = higher | -0.106*** | -0.075** | -0.106*** | -0.086*** | -0.102** | -0.076** | -0.107*** | -0.085*** |
| | (0.038) | (0.036) | (0.016) | (0.017) | (0.039) | (0.036) | (0.016) | (0.017) |
| Husband's Education level = primary | 0.023 | 0.020 | 0.036*** | 0.006 | 0.023 | 0.018 | 0.036*** | 0.006 |
| | (0.035) | (0.048) | (0.012) | (0.014) | (0.035) | (0.048) | (0.012) | (0.014) |
| Husband's Education level = secondary | 0.048 | -0.065 | 0.023** | -0.019 | 0.048 | -0.064 | 0.024** | -0.020 |
| | (0.032) | (0.046) | (0.011) | (0.012) | (0.032) | (0.046) | (0.011) | (0.012) |
| Husband's Education level = higher | 0.058 | -0.081 | 0.020 | -0.047*** | 0.057 | -0.083 | 0.021 | -0.048*** |
| | (0.038) | (0.053) | (0.016) | (0.016) | 0.023 | (0.053) | (0.016) | (0.016) |
| Wife Working | -0.041* | 0.060*** | -0.052*** | 0.066*** | -0.041* | 0.060*** | -0.051*** | 0.066*** |
| | (0.023) | (0.021) | (0.008) | (0.009) | (0.024) | (0.022) | (0.008) | (0.009) |
| Other controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Constant | 1.067*** | 0.071 | 0.682*** | 0.259*** | 1.041*** | 0.092 | 0.677*** | 0.257*** |
| | (0.112) | (0.103) | (0.028) | (0.031) | (0.109) | (0.100) | (0.028) | (0.031) |
| Observations | 3,071 | 2,327 | 31,352 | 24,478 | 3,062 | 2,322 | 31,174 | 24,338 |
| R-squared | 0.174 | 0.141 | 0.093 | 0.160 | 0.177 | 0.141 | 0.093 | 0.160 |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

[26] Decision making is a dummy variable that takes the value of 1 if the wife has no final say in at least one decision regarding her health, household purchase, visits outside of her town/village, and her own earnings.
[27] Domestic violence is a dummy variable that takes the value of 1 if the wife responses yes to being shaken, slapped, punched, kicked, strangled, threatened, or forced into sex/sexual acts by her husband.
[28] SonMismatch is a dummy variable that takes the value 1 if the reported ideal number of sons is greater than the actual number of sons that the husband (or wife) has.
- The reference group for wealth is 'poorest', for education is 'no education' and for type of residence is 'rural'
Data Source: 2015/2016 Nepal and India DHS data

## Table 4: Effect of Husband's Son Mismatch on Wife's Outcome based on Children Composition in a Household

| | Nepal | | | | | | India | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DM[29] | | | DV[30] | | | DM | | | DV | | |
| VARIABLES | only sons (1) | only daughters (2) | at least one son (3) | only sons (4) | only daughters (5) | at least one son (6) | only sons (7) | only daughters (8) | at least one son (9) | only sons (10) | only daughters (11) | at least one son (12) |
| Husband's SonMismatch[31] | 0.032 | 0.001* | -0.020 | 0.145 | 0.105 | 0.040 | 0.002 | 0.002 | 0.003 | -0.014 | 0.019* | -0.002 |
| | (0.066) | (0.046) | (0.027) | (0.090) | (0.065) | (0.035) | (0.024) | (0.019) | (0.010) | (0.025) | (0.021) | (0.012) |
| Wife's educational level = primary | -0.065 | -0.052 | -0.001 | 0.020 | -0.100 | 0.025 | -0.030 | -0.033 | -0.012 | -0.012 | -0.053 | 0.005 |
| | (0.051) | (0.070) | (0.030) | (0.068) | (0.117) | (0.036) | (0.026) | (0.035) | (0.013) | (0.024) | (0.040) | (0.013) |
| Wife's educational level = secondary | -0.065 | -0.083 | -0.038 | -0.057 | -0.200* | -0.033 | -0.054** | -0.042 | -0.043*** | -0.035 | -0.062* | -0.032** |
| | (0.049) | (0.058) | (0.029) | (0.060) | (0.105) | (0.033) | (0.021) | (0.028) | (0.012) | (0.023) | (0.032) | (0.013) |
| Wife's educational level = higher | -0.119* | -0.237** | -0.071 | -0.103 | -0.199 | -0.067 | -0.132*** | -0.121*** | -0.108*** | -0.076** | -0.098** | -0.082*** |
| | (0.068) | (0.097) | (0.051) | (0.078) | (0.120) | (0.041) | (0.030) | (0.037) | (0.019) | (0.031) | (0.040) | (0.019) |
| Husband's education level = primary | 0.067 | -0.029 | 0.027 | -0.062 | 0.089 | 0.009 | 0.029 | 0.021 | 0.041*** | 0.014 | -0.016 | 0.011 |
| | (0.088) | (0.093) | (0.041) | (0.140) | (0.143) | (0.056) | (0.027) | (0.037) | (0.013) | (0.029) | (0.042) | (0.016) |
| Husband's education level = secondary | 0.032 | 0.018 | 0.053 | -0.228* | -0.087 | -0.067 | 0.022 | 0.018 | 0.026** | -0.025 | -0.001 | -0.018 |
| | (0.084) | (0.078) | (0.037) | (0.121) | (0.153) | (0.051) | (0.024) | (0.031) | (0.012) | (0.026) | (0.035) | (0.013) |
| Husband's education level = higher | 0.069 | 0.087 | 0.051 | -0.183 | -0.084 | -0.072 | -0.003 | 0.002 | 0.026 | -0.026 | -0.028 | -0.047*** |
| | (0.097) | (0.089) | (0.046) | (0.136) | (0.157) | (0.060) | (0.031) | (0.041) | (0.017) | (0.031) | (0.041) | (0.018) |
| Wife Working | -0.089** | -0.079 | -0.032 | 0.034 | 0.055 | 0.058** | -0.042** | -0.077*** | -0.048*** | 0.075*** | 0.071*** | 0.065*** |
| | (0.039) | (0.056) | (0.024) | (0.032) | (0.065) | (0.023) | (0.017) | (0.022) | (0.009) | (0.016) | (0.025) | (0.010) |
| Other Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Constant | 0.003 | 0.381* | 0.056 | 0.035 | 0.266 | 0.264*** | 0.731*** | 0.862*** | 0.646*** | 0.429*** | 0.385*** | 0.229*** |
| | (0.214) | (0.219) | (0.111) | (0.181) | (0.184) | (0.077) | (0.052) | (0.071) | (0.031) | (0.051) | (0.068) | (0.035) |
| Observations | 663 | 329 | 1,984 | 285 | 157 | 879 | 9,505 | 5,295 | 25,899 | 7,957 | 3,942 | 20,419 |
| R-squared | 0.269 | 0.389 | 0.145 | 0.325 | 0.432 | 0.104 | 0.167 | 0.195 | 0.099 | 0.234 | 0.289 | 0.165 |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

[29] Decision making is a dummy variable that takes the value of 1 if the wife has no final say in at least one decision regarding her health, household purchase, visits outside of her town/village, and her own earnings.
[30] Domestic violence is a dummy variable that takes the value of 1 if the wife responses yes to being shaken, slapped, punched, kicked, strangled, threatened, or forced into sex/sexual acts by her husband.
[31] SonMismatch is a dummy variable that takes the value 1 if the husband's reported ideal number of sons is greater than the actual number of sons that the husband (or wife) has.
-The reference group for wealth is 'poorest', for education is 'no education' and for type of residence is 'rural'
Data Source: 2015/2016 Nepal and India DHS data

## Table 5: Effect of Wife's Son Mismatch on Wife's Outcome based on Children Composition in a Household

| | Nepal | | | | | | India | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Decision Making[32] | | | Domestic Violence[33] | | | Decision Making | | | Domestic Violence | | |
| VARIABLES | only sons (1) | only daughters (2) | at least one son (3) | only sons (4) | only daughters (5) | at least one son (6) | only sons (7) | only daughters (8) | at least one son (9) | only sons (10) | only daughters (11) | at least one son (12) |
| Wife's SonMismatch | 0.078 | 0.105* | 0.060** | 0.090 | 0.017 | -0.002 | 0.035 | 0.033 | 0.010 | -0.031 | 0.007* | 0.004 |
| | (0.070) | (0.055) | (0.028) | (0.097) | (0.073) | (0.045) | (0.034) | (0.022) | (0.012) | (0.037) | (0.022) | (0.014) |
| Wife's educational level = primary | -0.065 | -0.045 | -0.002 | 0.021 | -0.083 | 0.024 | -0.027 | -0.036 | -0.011 | -0.012 | -0.054 | 0.005 |
| | (0.052) | (0.067) | (0.030) | (0.069) | (0.124) | (0.036) | (0.026) | (0.035) | (0.013) | (0.024) | (0.041) | (0.014) |
| Wife's educational level = secondary | -0.062 | -0.079 | -0.035 | -0.060 | -0.196* | -0.035 | -0.050** | -0.043 | -0.043*** | -0.037 | -0.060* | -0.031** |
| | (0.049) | (0.059) | (0.029) | (0.061) | (0.107) | (0.033) | (0.021) | (0.028) | (0.012) | (0.023) | (0.033) | (0.013) |
| Wife's educational level = higher | -0.112 | -0.225** | -0.065 | -0.108 | -0.190 | -0.070 | -0.128*** | -0.125*** | -0.109*** | -0.078** | -0.095** | -0.081*** |
| | (0.069) | (0.097) | (0.052) | (0.080) | (0.119) | (0.042) | (0.030) | (0.037) | (0.019) | (0.031) | (0.040) | (0.019) |
| Husband's educational primary | 0.066 | -0.029 | 0.027 | -0.061 | 0.071 | 0.007 | 0.026 | 0.020 | 0.040*** | 0.012 | -0.014 | 0.010 |
| | (0.087) | (0.094) | (0.040) | (0.140) | (0.146) | (0.056) | (0.027) | (0.037) | (0.013) | (0.029) | (0.043) | (0.016) |
| Husband's education level secondary | 0.031 | 0.020 | 0.054 | -0.224* | -0.126 | -0.066 | 0.022 | 0.018 | 0.027** | -0.027 | -0.002 | -0.019 |
| | (0.084) | (0.078) | (0.037) | (0.122) | (0.164) | (0.051) | (0.023) | (0.031) | (0.013) | (0.026) | (0.035) | (0.013) |
| Husband's education level higher | 0.065 | 0.088 | 0.051 | -0.174 | -0.133 | -0.070 | -0.004 | 0.006 | 0.027 | -0.026 | -0.031 | -0.048*** |
| | (0.097) | (0.092) | (0.046) | (0.138) | (0.165) | (0.061) | (0.031) | (0.041) | (0.017) | (0.031) | (0.042) | (0.018) |
| Wife working | -0.088** | -0.079 | -0.033 | 0.034 | 0.043 | 0.059** | -0.040** | -0.075*** | -0.047*** | 0.076*** | 0.073*** | 0.064*** |
| | (0.039) | (0.057) | (0.024) | (0.032) | (0.068) | (0.024) | (0.017) | (0.022) | (0.009) | (0.016) | (0.025) | (0.010) |
| Other Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Constant | 1.640*** | 0.895*** | 1.032*** | 0.084 | 0.472** | 0.077 | 0.722*** | 0.828*** | 0.647*** | 0.248** | 0.474*** | 0.337*** |
| | (0.184) | (0.177) | (0.131) | (0.223) | (0.204) | (0.114) | (0.051) | (0.071) | (0.031) | (0.082) | (0.095) | (0.058) |
| Observations | 843 | 476 | 2,562 | 661 | 328 | 1,980 | 9,470 | 5,278 | 25,739 | 3,704 | 2,281 | 10,925 |
| R-squared | 0.291 | 0.349 | 0.170 | 0.265 | 0.388 | 0.145 | 0.167 | 0.195 | 0.099 | 0.092 | 0.115 | 0.088 |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

[32] Decision making is a dummy variable that takes the value of 1 if the wife has no final say in at least one decision regarding her health, household purchase, visits outside of her town/village, and her own earnings.
[33] Domestic violence is a dummy variable that takes the value of 1 if the wife responses yes to being shaken, slapped, punched, kicked, strangled, threatened, or forced into sex/sexual acts by her husband.