

**Domestic Violence and Intra-Household Resource Allocation in Rural India:
An Exercise in Participatory Econometrics**

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1. Introduction

The violent abuse of wives is a widespread and well recognized problem. Yet, there is not much statistical research on the issue in the developing world (Connors 1989, Hiese et al. 1993). The main reason for this is the lack of data resulting from the sensitivity of the subject and the difficulty of including questions about it in conventional surveys. A report by Hiese et al. (1993) summarizes the existing qualitative and quantitative studies from LDCs and provides a convincing argument that wife-beating has serious consequences for the health and well-being of women. Wife-abuse, however, is part of a larger set of issues marginalized by quantitative social science which are ignored because they are difficult to measure. The complexity and cultural specificity of such questions do not lend themselves easily to the traditional tools of neoclassical economics, and are consequently absent from the discourse of development.

Wife-abuse also has obvious implications for power relations within the family. There is a large literature on the intra-household allocation of resources¹, yet there are no studies that analyze the connection between domestic violence and intra-household resource allocation. This connection is important for two reasons: 1) It suggests that domestic violence may have implications that go beyond its direct effects on the well being of women, 2) It suggests, unlike most of the literature on the subject, that intra-household resource allocation may be affected by inefficiencies.

In this paper I examine the relationship between domestic violence and intra-household resource allocation in three villages in India's Karnataka state. Since the three villages exchange brides, the study is designed to examine a segment of one marriage market Becker (1990). The study is part of a larger project based upon fieldwork conducted by the author in the Fall of 1992. The project uses different kinds of data -- rapid rural appraisals, informal interviews, focus group discussions, and a census survey - to examine the inter-connections between socio-economic conditions, the status of women, marriage markets, family decision-making processes, fertility, and health and nutrition.

¹ See Alderman, Chiappori and Kanbur (1995) for a survey.

The idea is to use a combination of economic, statistical and ethnographic techniques to develop a methodology of evaluating living standards that is informed by Sen's criteria of functionings and capabilities (Sen, 1988). The attempt is to view human behavior as the outcome of a combination of economic, cultural, political, and social choice sets. Thus, the paper employs an experimental approach to social science analysis which I shall call "participatory econometrics." A participatory econometrician is involved in all stages of the analysis from data collection through econometric analysis and report writing, while employing qualitative methods to complement the statistical data. Thus the subjects of the econometric analysis are more connected to the econometrician. Clearly, this is not a new approach, and is characteristic of the work of Bliss and Stern (1982), and Bardhan and Rudra (1978), among others. However, giving the approach a label helps distinguish such studies from other econometric exercises.

The paper is structured as follows: Section 2 of the paper outlines the qualitative methods and summarizes the qualitative findings, Section 3 describes the survey data and develops appropriate statistical specifications to test the hypotheses generated by the qualitative work. The quantitative results are presented in Section 4 which concludes the paper.

2. Qualitative Methods and Analysis

Qualitative Methods

Since the methods of analysis employed are unusual, it might be useful to briefly summarize the qualitative techniques employed and the complementary ways in which qualitative and quantitative methods helped inform the analysis in this paper. As a man there was a problem in getting female respondents to speak to me freely, even after living in the community for some time. Therefore, I worked with women who were trained social workers from nearby villages -- totally familiar with local conditions -- to help with the interviews. The female investigators who worked with me in collecting the base-line information were very effective in eliciting open and frank responses. However, I, along with two male colleagues, conducted the interviews with the men. Thus, female investigators spoke to women, while male investigators spoke to men. This was true in the collection of both the qualitative and the survey data.

The qualitative analysis is based upon in-depth interviews with seventy women and thirty men who represent a broad cross-section of the potter community in the three villages. All 177 women in the community, along 130 of their husbands, were interviewed for the structured survey from which the quantitative data were tabulated. Therefore, about 40% of the respondents in the survey also responded to unstructured in-depth interviews or participated in focus group discussions.

Two types of qualitative techniques were employed. The investigators would visit respondents in their homes and help with household chores or meet respondents in areas like public water faucets, where women tend to congregate. After helping the respondents become familiar and comfortable with them over a period of a few days, the investigators conducted informal interviews, with no attempt made to select respondents randomly. Other conversations were conducted in focus groups gathered for the purpose and at the sites of the pottery training program which, being exclusively restricted to women, served as a haven where women would talk freely and openly². We conducted fourteen focus group discussions focusing on a variety of topics including wife abuse and power relationships within the family, fertility and health decisions, marriage and kinship systems, and women's work. Personal interviews were much less structured and the nature of the conversation depended upon the nature and context of the interaction. The aim was to probe into the lives of men and women in attempt to understand their standard of living from their point of view.

A more formal survey of all the families in the study population was also conducted with a very extensive three part instrument, consisting of a household questionnaire, a women's questionnaire, and a questionnaire for husbands. The questions covered a range of topics, including income, wealth, expenditures, pregnancy histories, human capital investments, nutrition consumption, dowries and marriage market data, and indicators of women's relative status.

Qualitative information was thus able to complement the quantitative analysis in at least the following ways:

1) by informing the construction of the survey instrument;

² Rapid rural appraisal methods were also used in focus-group settings where simple mapping and graphical techniques were taught, taking care to use techniques that were relevant to the context of the questions being asked. However, the rapid appraisals focussed more on questions about ecology and social structure which will not be discussed in great detail in this paper.

- 2) by suggesting hypotheses that could be modeled and tested against the survey data, and by providing an alternate source of evidence against which statistical results could be compared and validated;
- 3) by eliciting information that was very difficult to get in a formal interview, like the details of incidences of wife-battery;
- 4) by asking open ended questions that permitted a discussion to be more informative by allowing a respondent more freedom in determining its direction;
- 5) by understanding people's motives, desires, aspirations, expectations.
- 6) by providing a personalized context and texture to statistical work with anecdotes and excerpts from conversations;
- 7) by understanding the nature of community interactions, and how people related to one another.

The three villages examined in the study are located in the south-eastern region of Karnataka. Since we were interested in focusing our analysis on one endogamous sub-caste we chose three villages with large and well established potter communities. We also had to ensure that the potters in the villages that we picked exchanged brides making them all part of the same marriage circle. The three villages we focused on are Halli³, Beedu and Ooru, which are all located within 100 kilometers of each other. Halli is a large multi-caste village close to Mysore, and many residents of Halli work in Mysore as day laborers, but, strangely, the village remains isolated, with very poor health and sanitation facilities.

Ooru, which is about 40 kilometers away from Halli, is also a large, multi-caste village and hosts a monastery, which is the seat of a major religious order. The monastery is the village's largest landowner and operates a large school, which village residents can attend for a small fee. Ooru also has another school that provides classes until the 10th grade and a primary hospital with a resident physician and rudimentary operating facilities.

Beedu, a village consisting entirely of potters, is the third village, located about 100 kilometers away in Coorg district, which is a "forward" area in the sense that the district has relatively good schools and a long tradition of providing basic social services. It is also a land of coffee plantations with feudal estate owners who are both the area's major employers and their main creditors.

³Names of villages and interviewees have been changed.

Potters, who form about 10% of Halli's population, and 13% of Ooru's, are the poorest community in both these villages. Even the Scheduled Caste communities in Halli and Ooru are better off than the potters due to the special efforts made on their behalf by various governments. Potters are in particularly adverse circumstances because they are not the target of affirmative action programs and, at the same time, are suffering from a complete collapse in the market for their traditional product.

As in any case-study that even partially uses ethnographic methods, the target population is small because the techniques employed demand intimate scrutiny. However, the results of the analysis are of reasonable generality since similar constraints are suffered by all OBCs who form approximately 52 percent of the Indian population (Mandal Commission Report, 1980).

Qualitative Analysis

Beedu, which is a village of about sixty families, has three arrack shops. We found it impossible to stay in the village after six in the evening due to the risk of being harassed by dozens of drunken men on the streets. Drunkenness was only a little less common in Halli and Ooru. Not surprisingly, most women who were beaten complained that the problem was exacerbated by the drunken fits of their husbands. Sometimes drunkenness acted as catalyst, in the sense that arguments that would otherwise have passed uneventfully would turn violent if the husband was drunk. But drunken husbands would also assault their wives without any other provocation.

Swami Agnivesh, a social worker and activist, has been quoted as saying, "In rural India people either don't drink or are alcoholics, there are no in-betweens." Our survey data clearly indicate this as well. Alcohol consumption is almost entirely a male activity, but seventy-five per cent of men do not consume any alcohol at all. However, those that do consume a great deal, with average monthly liquor expenditures of Rs. 143 which is 11% of their monthly household expenditures. While the causes of alcoholism were not a major focus of our study, our male respondents seemed to believe that it was primarily related to a general feeling of hopelessness due to poverty. They believed that a perceived lack of options to break out of the circle of poverty led men to drink to "forget our troubles."

However, on the supply side, the rampant profusion of liquor shops all over the state of Karnataka is clearly a result of the active encouragement of the state government. Indirect taxes on liquor are among the highest revenue earners for the government, which has consequently awarded liquor licenses to almost anyone who applies. The state also has a liquor lobby that wields a considerable amount of power in local politics. The question of whether the increased excise revenues derived from liquor sales are worth the extreme loss of well-being associated with alcoholism is an issue that is often ignored.

The other major cause of severe wife-beating appeared to be conflicts that arose from the inadequate payment of dowries at the time of marriage. Studies (Billig, 1991) have documented that dowries have risen substantially in real terms in most of South Asia. Some work has suggested that this is due to a shortage in the supply of men at marriageable ages due to changes in the age structure of the population (Rao, 1993a and 1993b). This is confirmed in conversations with respondents, who claim that the reason why they are willing to pay (and demand) such high dowries is that there is a shortage of eligible males. One woman even went to the extent of listing the eligible males available for her fifteen-year-old daughter and demonstrated that the competition for them was quite severe⁴.

Whatever the reason, the average dowry with the expenses for the marriage celebration can amount to three to four times a family's total assets. Thus if there are an excess of daughters to be married, parents could go into indefinite debt. Under these circumstances, parents often are not able to pay the dowry necessary to find an suitable match. Social tradition also prescribes that a father's responsibility to a daughter is over once she is married. Thus, if a bride enters her husband's home without an adequate dowry having been paid, she has to face the wrath of her husband and in-laws.

This is illustrated by the case of Sannamma and Raju, a young couple who have been married for about two years. Their parents arranged the marriage when Sannamma was 17 and Raju was about 24, and the wedding was celebrated about six months later. A day after the wedding Sannamma moved to Raju's house. Sannamma's parents own about 10 acres of irrigated land, while Raju's are considerably poorer with only 5 acres of dry land. Her parents paid about 25,000 rupees as a dowry, which was much

⁴ Miller (1992), in a survey paper on wife-beating in India, also emphasizes the dowry, alcohol and wife-beating nexus.

smaller than most other dowries paid in the community at the time which averages about 50,000 rupees⁵.

It is possible that the smaller dowry was accepted because Sannamma's parents are wealthier than her husband's. i.e.: Sannamma's husband's family may have been "purchasing" a marital link with a wealthy family by accepting a smaller dowry.

Raju shares a house with his parents, two brothers, and their wives and children and they all live off the five acre plot of dry land, and intermittent work as wage laborers. A few months into the marriage, Raju demanded that Sannamma ask her father to send them some money so that he could set up a small tea shop. Sannamma agreed and her father sent Raju about 2000 rupees which is what Raju makes in 4 months. About two months later Raju demanded a motorcycle, which at about 50,000 rupees was a considerably larger request, well beyond the means of Sannamma's parents. But Sannamma passed on the request to her parents, who said that they could not afford such a large sum of money. When Raju heard this, he became very angry, hit her, threw her to the ground and said that if her parents did not send the money, "he could not say what might happen to her." Subsequently tensions between Sannamma and Raju increased considerably. Sannamma at this point was very scared, and again asked her parents to send the money. Sannamma says that she now lives in fear of her life. Her parents send money when they can in response to Raju's violence, even though they cannot really afford to keep up with his demands. However, Sannamma is unwilling to leave her husband and go back to her parents fearing social isolation.

Wives who are beaten usually face a consequent loss of control over household decisions and thus suffer in the allocation of resources within the family. Family resources may be transferred away from the wife and her children to other members of the household. More importantly, the husband and wife are not able to construct a strong marital bond; which is reflected in the extent to which the husband cares for the welfare of his wife and children. Regardless of the mechanism, when a wife is hit not only does she suffer but her children are also adversely affected.

The case of Kempamma, a thirty-year-old woman from Beedu, will help illustrate this. Kempamma was married when she was sixteen and her parents could not afford to pay an adequate

⁵ The average dowry in the sample is Rs.10,345, but these are averaged over a 30 year period during which the real value of the dowry has considerably increased.

dowry. She was physically abused and tormented by her husband and mother-in-law almost from her marriage day. Ultimately, still childless, Kempamma was driven out of her husband's house. Her parents would not have her back and she was forced to live alone in a vacant hut in the village. Her husband moved to another village and married again. However, he continued to visit her and, during those times, further beat her and had sex with her. Kempamma has two small children now for whom her husband does not provide any support. She makes a meager living as a wage laborer during the seasons when there is work to be had. Her husband continues to visit for a few days every four or five months. Both she and her children are underfed, even in relation to the poor community in which they live. Many people in the village feel sorry for them but do little to help, feeling that they should not interfere in the affairs of another family.

That wife-beating has a significant impact on the extent of a woman's power within the family is also demonstrated by the case of Doddamma. Doddamma is fair-skinned, a trait that is highly valued in the marriage market, but comes from a very poor family. Her husband Mayshtu has a coveted government job as a schoolteacher and is one of the richest people in the community, but he is dark and has a disabled leg from a childhood bout with polio. Thus, he was a relatively undesirable groom, and did not get married till he was 29, about 9 years after the average male in the community. He was also not able to get a dowry as large as another groom of his economic status should have commanded, but since Doddamma's family was poor they accepted the match. However, ever since Doddamma arrived in Mayshtu's house there have been disputes over the dowry and Doddamma has suffered numerous beatings from Mayshtu as a result. She appears very scared of her husband and has practically no say in household decisions. Mayshtu saves a lot of his earnings to pay for the marriage of his sisters, and is unwilling to spend as much money on Doddamma and their two children as he could afford. Consequently, while Doddamma and the children are not destitute, they are much worse off than other people from families of equivalent wealth.

It should be noted that wife-beating in these communities is rarely a private activity that can be hidden from the rest of the village. Screams can be easily heard in the closely adjacent houses of neighbors which are often separated only by a shared mud wall. Thus community intervention can have an effect on wife-abuse, and while violence against women is widely tolerated, there are circumstances

under which the community will intervene. This is particularly true in cases where the community views the violence as extremely severe or "meaningless." An example may help illustrate this better.

Ooru village is, as explained earlier, dominated by a large monastery or *mattha*, which is the village's largest landlord. The *mattha*'s head monk, by virtue of his spiritual authority and the wealth that he controls, is treated with extreme deference and respect by the villagers. Rachamma and Shetty are village residents who have been married for about ten years. While both belong to the potter community, Rachamma works in the *mattha* as a sweeper while Shetty works as a daily wage laborer. After being married for two years Shetty began to severely beat Rachamma almost every day. The couple had no disputes over dowries, Rachamma was not a negligent housewife and Shetty was not an alcoholic, but they were childless and this seemed to be the only "reason" for the beatings. Rachamma's neighbors told the head monk about her problem after a few months of watching her run to their house bleeding and bruised almost every day. The monk threatened Shetty with expulsion from the village unless the beatings stopped. This had an almost immediate effect, and now, seven years later, Rachamma and Shetty continue to live together in relative peace.

This example illustrates that wife-abuse, while widely tolerated and often even considered necessary by the community, has to happen under circumstances that are considered legitimate. Disputes over dowries, a wife's sexual infidelity, her neglect of household duties, and her disobedience of her husband's dictates are all considered legitimate cause for wife-beating. A husband who beats his wife when he is drunk, but is otherwise a "good" husband, is also tolerated by the community, which believes that any sanctions they might impose would not have much effect on his drinking. However, husbands can suffer significant social disapproval when they batter their wives beyond levels considered tolerable by the village, or beat them for reasons not considered legitimate by the community.

The qualitative evidence as thus revealed a number of elements that are correlated with abuse. It suggests that both alcohol consumption and the size of the dowry should show a direct positive correlation with wife-beating. But, more generally it suggests that women who are less valued within the family, perhaps because they are less educated, or have not borne male children, or who have ended their reproductive careers, would be more prone to abuse. Abused women, may in turn face diminished

power in household decisions. Consequently, it is possible that the children of abused women may suffer adverse consequences.

In the econometric work I will examine some of these links using the survey data. I will attempt to translate some of the insights from the qualitative information to statistical hypothesis that can be examined with survey data. However, there is an inherent limitation in this because some insights lend themselves more easily to quantitative representation than others. For instance, it is very difficult to measure social tolerance for abuse. Thus, the econometric analysis will focus on the determinants and consequences of abuse within the family.

3. Survey Data and Estimation

A census of all 149 potter families in Halli, Beedu and Ooru was conducted using a three-part questionnaire. Heads of household were asked to respond to a household questionnaire with a roster, while providing information on assets, liabilities, incomes and expenditures. If we were unable to get the head of household to respond, an alternate "responsible" person was asked to answer the questionnaire. All 170 women in the villages who were above the age of 15 were interviewed separately for information about their private incomes and assets, dowries and marriage expenses, wife-beating, pregnancy histories, time-use, family histories, human capital investments in children, and nutrition, among other things. Additionally, if the women were currently married, an attempt was made to get their husbands to respond to a separate questionnaire providing their incomes, marriage histories, attitudes towards various issues, and time use. We managed to get 103 husbands out of a potential 120 to respond, so the information from the husbands questionnaire is not complete. However, since most husbands were also heads of household we have some information on almost all of them.

As far as possible, all the women were interviewed by female interviewers and the men by male interviewers. When women were responding to the women's questionnaire, it was done in private in the absence of adult men. All the married women were asked if they had ever been severely physically assaulted by the husbands at any time during the marriage. Information was also gathered about their reactions to the wife-beating and its degree of severity.

Additionally, women were asked to provide details about the transactions made between their parent's family and their husband's family at the time of the marriage. Since marriage transactions typically involve a variety of different transactions in jewelry, utensils, clothes, consumer goods and cash, the amounts and values of each of these goods was listed separately. Most marriages involved exchanges on both sides, some of which was due to ritual gift exchanges. To focus on the transfer aspects of the issue, the net value of transactions made from the bride's family to the groom's is used in the econometric analysis. All rupee values of transactions are reported in 1992 prices.

Women who were the primary servers of the family's meals were provided with a set of questions about the amount of different types of typical foods consumed by various members of the household during an average meal. A standard sized 200 ml cup was shown to them and they were then asked to evaluate the quantities of food items consumed in terms of the cup measure. When cup measures were inappropriate, for instance in asking about the consumption of *ragi muddes* (pearl millet dumplings) or wheat *chapathis*, they were asked to provide the information in quantities. This information was then converted to weights of cooked food and then evaluated in terms of caloric content using Indian nutritional tables (Gopalan et. al., 1971).

These nutritional data are inaccurate measures of actual nutrition intake and they will not be interpreted as such. However, they are reasonably accurate measures, in caloric units, of the relative allocations of food within the family. Thus, they are good indexes of intra-household resource distribution, and they will be used to study the impact of wife-abuse on the allocation of household resources to children.

The information on a woman's children has been sorted into separate observations giving details on the income, time use, human capital investments, and nutrition, of each of the children. The total number of living children, between the ages of 3 and 14, resident in the village amount to about 160 and they are the primary focus of the caloric regressions reported below. The wife-beating regressions are based on the questionnaire administered to the 170 married women.

Estimation

Given the size and nature of the quantitative data, it is necessary to rely on relatively parsimonious empirical specifications. Responses from the 170 women are first analyzed to look at the correlates of wife-beating. Following the patterns observed in the qualitative work, I estimate the following relationships:

$$V = V(L, D, \mathbf{X}) \quad (i)$$

V is a binary (dummy) variable indicating whether a married woman has ever been severely physically assaulted by her husband. L is the proportion of the household's monthly expenditure that it spends on liquor. D is the net dowry payment made by the bride's family to the groom's at the time of marriage. The vector \mathbf{X} represents other variables that may affect the incidence of wife-beating. Variables included are a dummy variable for brideprice paying marriages to control for the possibility that such marriages may belong to a different regime than dowry marriages. Variables for number of living sons and living daughters are also included as there is some reason to believe that some wife-beating may be related to the lack of an adequate number of male sons. A male son gives a woman a greater amount of prestige and power within a marriage, and also an older male son may be able to stop his father from beating his mother. I will also include a dummy variable for female headed households because some of the women who were abused were widowed and gave us retrospective on abuse, while other women belonged to families which were headed by women.

Income variation is treated in two different ways, due to the problems associated with including women's income as a separate regressor. Women who suffer violence may work longer hours in the labor market, so women's income may be determined endogenously with violence, but it is very difficult to find an instrument for women's income that is uncorrelated with the probability of violence. On the other hand, it is very useful to separately look at the impact of women's and men's incomes. Another issue with looking at income effects is that income is not very well measured because incomes typically come from a variety of sources and are very variable. Consequently, two different specifications are employed. I include the monthly income of women and men as separate explanatory variables, and the other controls for income variation by using a consolidated variable of the total monthly expenditures of the household.

A variable indicating if the woman has been sterilized is also included in \mathbf{X} . Female sterilization is, with two exceptions, the only form of contraception practiced in all three villages. There is some evidence to indicate that women who are sterilized are more likely to be abused because they are more likely to be suspected of infidelity by their husbands. This was a theme that emerged in our conversations with men and encapsulated in these words of one of the respondents, “If a woman is sterilized the husband cannot say if she is (having sex) with other men, so they fight more.”

\mathbf{X} also includes a set of village dummies, the years of education of the wife and her husband, and their year of marriage. Finally, \mathbf{X} includes the number of brothers and the number of sisters of the wife. This is because these variables serve as additional proxies of the wife's parents' ability to pay an adequate dowry. Parents with a large number of daughters would be more severely constrained in their ability to pay a dowry, while parents with more sons would find it easier. Thus, one would expect that a woman with more sisters would be more likely to be beaten, while one with more sons would be less likely to be beaten⁶. (i) is estimated, for the sample of 160 ever-married women with a logit regression with the Huber standard error correction, which is a version of the asymptotic jackknife (Efron, 1981) which provides more robust estimates of the estimated standard errors are more robust allowing for heteroskedasticity and other anomalies.

Given the predictions generated by the ethnographic evidence it is expected that wife beating is correlated positively with alcohol consumption, positively with the dowry shortfall, positively with female sterilization, negatively with the number of male children, and perhaps positively with the number of female children.

The second equation of interest is the relationship between wife beating and the caloric intake of children. While estimating this relationship for the wife would also be of interest, it has proved too difficult to extract information on the wife's food allocation. The equation is specified as follows:

$$k = k(\hat{V}, L, D, \mathbf{X}_1, \mathbf{Z}) \quad (\text{ii})$$

⁶The dowry variable should have captured most of this effect, but the dowry paid is imperfectly measured due to inherent problems with inflation adjustment and imperfect memories. Thus, proxies for the payment will also show significant effects.

Given the nature of the behavior that I am attempting to model, it is possible that the exercise of violence, and decisions about caloric allocations are made simultaneously. Thus, the incidence of violence V is treated as an endogenous variable using instrumental variables. A dummy variable for whether the wife has been sterilized, the number of brothers, and the number of sisters of the wife are used as instruments.

The vector X_i represents all the other variables in the Violence regression with the exception of sterilization and the number of sisters and brothers of the wife. Z contains additional characteristics of the child that may be correlated with its food allocation like the child's age, its square, and the child's sex. The IV and OLS estimates of equation (ii)⁷ for 157 children who are resident in the village below the age of fourteen, are presented in Tables 7, 8, 9 and 10.

4. Econometric Results

Mild forms of wife-beating seemed commonplace. Many men and women admitted to it in informal conversations, often claiming that it was justified if the wife did not "behave herself." However, in the context of the survey interview, only 22% of women admitted to have been physically assaulted by their husbands. Table 1 provides a summary of the survey question of wife-beating.

From impressions formed during the course of collecting the qualitative evidence, the incidence of abuse seems under-reported in the survey data. Two examples, both from the village of Halli, will help illustrate this. A focus group discussion we were conducting with a group of women was interrupted by a male relative of one of the participants. He publicly shouted at her for neglecting her "household duties," grabbed her by the hair and pulled her out of the meeting. A day later, while a colleague and I were conducting an informal discussion with a couple in their home, we heard loud screams from the house next door. We ran over and found that a woman was being slapped by her drunken husband.

Despite the fact that both these women were assaulted in our presence, neither said that they had ever been physically abused by their husbands in response to the survey questions. In fact, only 4 women

out of 21 women interviewed in Halli admitted to being beaten. Why? One indication is given by the fact that 88% of women in Halli said that if they were beaten by their husband they would accept it quietly as opposed to about 50% in the other two villages. Another is that 3 of the 4 women beaten were assaulted severely enough to require medical attention. All of this points to the possibility that beating is acceptable behavior in Halli and only the most severely beaten women considered their problem worthy of a "yes" response to the question.

This was true in the other villages as well. Only the women for whom beating was a serious and chronic problem admitted to it. Thus while wife-beating is an everyday affair for many women, they do not consider it a "problem" worthy of being characterized as assault unless it is severe. Thus, the question in the survey that is central to the quantitative work, "Have you ever been physically assaulted by your husband at any time during your marriage," was answered affirmatively only by those women who were the most severely beaten. This limitation in the quantitative data should be kept in mind while interpreting the statistical results.

Table 2 demonstrates the extent of passivity of women in situations when their husbands are violent towards them. It provides the responses of all those who gave an answer to the question of how they would react if they were beaten by their husbands. While all women did not respond to this question, they do not differ significantly in their socio-economic characteristics from women in the entire sample, thus their points of view can be considered to be representative. Note that 45% of those who responded to the question also said that they had been hit by their husbands, which is double the incidence of violence in the general population. 54% of those who responded said that they would keep quiet about it, 22% said that they would complain to the relevant authorities or leave the marriage, and 23% said that they would fight the husband in some way but stay married to them.

Looking at Table 3, focusing on the same question for those who said that had been assaulted, one sees that 56% kept quiet about it, while only 11% complained to someone. Very few are able to say that they would leave the marriage. This indicates, firstly, that the lack of options for women outside the marriage might make passivity the optimal response. Also it seems to indicate that when there are people in the community to whom a woman can complain and ask for help in case violence is threatened, the

⁷ With standard errors corrected for heteroskedasticity using the White (1980) method.

incidence of violence is reduced. Thus, the greater the degree to which violence is socially approved, the more it exists.

Table 4 presents some summary statistics of the variables used in the violence regression. Note that the size of the average net dowry is 10,282 rupees, which is about twice annual household income. However, this net dowry figure includes a few cases where the net transaction is negative, i.e.: in favor of the bride. Net dowries which are strictly positive have an average of Rs.29,532, which is a little less than six times mean annual household income. The average schooling of both women and men is rather low, at just above one year. This is because most individuals have no schooling at all and some merely have a primary education, though younger cohorts tend to be much better educated than older ones. The average monthly income of a wife is about Rs.208, while that of the rest of the family, when the wife's income has been subtracted, is Rs. 587. Relative to the rest of India this indicates a fairly high degree of female labor force participation, but women earn much less than men do, with men's daily wages at about Rs.17 and women's at about Rs. 12. However, total household expenditures are Rs. 1286, which is larger than average monthly income because incomes are not very accurately measured and are far more variable than consumption.

Table 5 and 6 provide the estimates of the wife-beating equation⁸. The net dowry is the most significant correlate of the incidence of wife-beating. The smaller the size of the dowry brought into the marriage by the wife, the greater the probability that she will be beaten. Note that the brideprice dummy variable does not have a significant effect suggesting that there is no fundamental difference in regime between bride price and dowry paying families. Brideprices could, thus, be thought of as negative dowries. Also note that the greater the proportion of the family's expenditures on alcohol, the higher the probability that the wife will be beaten. Both of these results are consistent with the ethnographic evidence.

⁸The estimation of the equation also suffers from a possible censoring problem because, as suggested by the qualitative evidence, abuse is reported only when it was particularly severe. However, the qualitative work did not provide any reason to believe that the threshold at which respondents gave a "Yes" answer to the violence question differed by any socio-economic or demographic characteristics. It also did not suggest that the reporting threshold varied from village to village. This is also confirmed by the regressions in Tables 5 and 6, which show that the abuse levels do not show any significant differences across the villages once the other variables are controlled for. Nevertheless, the wife-abuse regressions should be interpreted with caution because of the systematic under-

Another highly significant correlate of wife-beating in both table 5 and 6 is whether the wife has been sterilized. One interpretation of the result is that sterilization leads to a more heightened fear amongst husbands that their wives will be unfaithful, thus encouraging the climate for conflict. Yet another possibility is that female sterilization indicates the end of a wife's reproductive phase and thus lowers the husband's costs of being violent towards her. There is also the possibility that the causality actually goes the other way in that wives who are faced with violent husbands are more likely to get sterilized. This relationship is being investigated in other work.

The number of living male children reduces the incidence of wife-beating while the number of living female children has a positive but insignificant effect. There are at least two possible interpretations of this result. Given the extent of son preference in Indian society a woman who lacks sons may be prone to greater mistreatment by her husband. The second possibility is a "Bill Clinton" effect: male sons could protect a mother from being abused by her husband⁹. Further disaggregations of this variable by age of male and female children did not indicate significant age effects. It is also interesting to note that the number of brothers of the wife reduces the chance that she will be beaten by her husband while the number of sisters increases it. This is indicative of the constraints on the wife's parents in their ability to pay an adequate dowry. A greater number of daughters would reduce their ability to meet a dowry commitment, resulting in a higher probability that their daughter will be abused by her husband. On the other hand, if a woman has a greater number of brothers, it would indicate that her parents were less constrained in paying the dowry. However, it is also possible that the brothers variable is reflecting a "Clinton" effect, as in the case of the male children.

The effects of income variation are also interesting. The estimates presented in Table 5 indicate that family's total expenditures, which are relatively well measured, reduce the incidence of dowries. Table 6 includes the wife's income and the rest of the family's income as separate regressors, both of which are not measured with great accuracy. Nevertheless, a wife's income has a greater impact on reducing wife-beating than the rest of the family's income. Note that the wife's income is probably an endogenous variable since wives who are beaten are also probably more likely to work, however trying to

reporting of abuse. Another way of correcting for this would be to run separate regression for each village, however the small sample size does not permit enough variation in the data for this.

find an instrument to correct for this has not proved easy. Interestingly, a husband's education also seems to increase the likelihood that he will beat his wife. This is probably because more educated husbands may demand a larger dowry, while the wife's education reduced this probability indicating that women with some education may have more power within the family.

Moving to the caloric allocation analysis, Table 4 provides some summary statistics of the children's data. Note that average daily caloric consumption, which is measured with the very basic methodology described above is 748. This falls below the range of other measures of the caloric allocations of poor Indian children (Gopalan et al., 1971). However, the nutritional data are more reliable for interpersonal comparisons than for absolute measurements. The average age of children is about 7 years and the sex ratio is 55% male. Tables 7 and 8 provide estimates of the determinants of the caloric consumption of children using total household expenditures to control for income effects. 7 presents OLS estimates, while 8 presents IV estimates treating wife-beating as an endogenous variable. 9 and 10 follow the same sequence but separate out the effects of the wife's income and the income of the rest of the family. A Hausman-Wu test rejects the probability that wife-beating is exogenously determined at a 1% level of significance, for both sets of specifications.

A result that holds in all the specifications is that if a mother has been beaten, her children get fewer calories. This is consistent with the qualitative evidence presented above, as well as with a model of power relations within the household where wife-beating is an indicator of a severe threat from the husband to the wife. The result suggests that resource allocations within the family may be affected by mechanisms that lie outside the traditional realm of economics but are worthy of further theoretical and empirical investigation.

Another result that is robust across all the specifications is that the child's age increases caloric consumption while its square reduces it significantly, which is rather like the patterns observed in Gopalan et al's (1971) analysis of the nutritional consumption of poor Indian children, indicating that the nutritional data are not terribly mis-measured. The parents' year of marriage reduces the caloric consumption of children in some of the specifications. Given that the age of children is being controlled, which indicates that marriages of longer duration are more favorable to the welfare of children. As Das

⁹ Bill Clinton is said to have protected his mother from being beaten by his step-father by physically confronting him.

Gupta's (1994) work has suggested, this may indicate that with time a woman gradually acquires greater status within the family and a consequent increased control over resources. Ooru village also seems to be significantly better fed than the omitted village, Halli. The primary reason for this is that the land around Ooru is well irrigated and wages are paid in kind, resulting in the greater availability of food.

In 7 and 8, total household expenditures have a significant but small impact on caloric consumption, which is similar to the results of Behrman and Deolalikar (1987) and others. However, in Tables 9 and 10, when the earnings of the wife and the rest of the family are separated out, the earnings of neither the wife or her family are significant, though the mothers earnings increase the caloric allocation to the child while the husbands earnings reduce it. The positive sign of the wife's earnings is significant at the 10 per cent level. It is also interesting to note that in this community male children are not fed a significantly greater amount than female children once the child's age, the characteristics of the parents marriage, and socio-economic factors are controlled for. This is contrary to work that has found a gender bias in intra-household resource allocation in India (Sen and Sengupta 1983, Behrman 1988), but is consistent with Subramaniam's (1996) recent work with South Indian data showing no gender bias in resource allocation after controlling for fixed-effects.

In summary, the qualitative work suggests that wife beating seems relatively common, and the most severe cases occur when husbands are in a drunken state and when an inadequate dowry has been paid. Furthermore, mothers who are assaulted by their husbands seem to have less control over the allocation of resources within the family and their children seem to suffer as a consequence.

The hypotheses generated by the ethnographic data are tested with survey data from the 150 families in these communities. The highest correlates of wife-beating are a shortfall in dowry payments, higher expenditures on liquor, female sterilization, and the number of male children. Furthermore, wife-beating also has a negative statistical relationship with the caloric consumption of children. All of these statistical associations are in congruence with the qualitative evidence. Thus, domestic violence has consequences for many aspects of well-being within the family and plays an important role in intra-household resource allocation.

The results in the paper open up a theoretical puzzle. Clearly everyone in a violent household would be better off with the same allocation and without the violence. Why then does violence exist?

No theoretical model of intra-household behavior, that I am aware of, allows for inefficient equilibria. The results in this paper suggest that such theoretical work would fill a gap in our understanding of intra-household inequality. Finally, this paper is based on a small case study and more data and analysis needs to be done to investigate the generalizability of these results.

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Table 1

	Village			
	Halli	Beedu	Ooru	Total
Never been Assaulted (% i n Village)	31 (88)	56 (77)	40 (73)	127 78%
Have been Assaulted (% in Village)	4 (12)	17 (23)	15 (27)	36 22%
Total (% of Sample)	35 (21)	73 (45)	55 (34)	163 100%

TABLE 2

Behavior if hit, of all those who answered the question of how they would respond if assaulted.

Variable (# of Observations=77)	Percentage
Ever been hit	45
Will inform the relevant authorities	12
Will complain to a relative or a friend	10
Will leave the husband	04
Will stay quiet	51
Will fight the husband but stay in the marriage	23

Table 3

Wife-beating responses of those who have ever been assaulted

Variable	# Obs.	Percentage
Needed medical attention	35	34
Responded that hitting is sometimes right	21	5
Informed relevant authorities	36	3
Complained to a relative or friend	36	8
Temporarily left the husband	36	8
Stayed quiet	36	56
Fought the husband but stayed in the marriage	36	22

Table 4
Summary Statistics of the Wife and Her Family

Variable	Obs	Mean	Std. Dev.	
% Wives who have ever been hit	166	22.29		
% of Sample for Halli Village	173	22.9		
% of Sample from Beedu Village	173	44.7		
% of Sample from Ooru Village	173	33.5		
Proportion of Total Expenditures spent on Alcohol	173	0.03	0.08	
Net dowry payment in 1992 rupees	170	10,282.62	68,296.86	
Wife's Years of Schooling	173	1.11	2.56	
Husbands Years of Schooling	173	1.35	2.89	
Year of Marriage	170	73.23	12.41	
Number of Male Children	173	1.21	1.07	
Number of Female Children	173	1.22	1.11	
Number of Women Sterlized	173	36.99		
% Female Headed Households	173	15.61		
Number of Brothers of Wife	173	1.99	1.50	
Number of Sisters of Wife	173	1.78	1.39	
Total Household Expenditures (1992 rupees)	173	1286.32	1093.65	%
of Households that paid brideprice	180	18.89		
Wife's Monthly Earnings (1992 rupees)	173	207.82	275.85	
Rest of Families Monthly Earnings (1992 rupees)	173	587.33	677.92	
Calories Consumed by a child in a day	157	748.98	393.80	
Age of Child in Years	157	6.93	3.99	
% Children who are female	157	55.52		

Table 5

Logit Regression of Determinants of Wife-Abuse with Total Expenditures

Std. Errors are heteroskedasticity corrected

(Significance levels are provided next to the variable names in brackets)

Number of obs = 164

Log Likelihood = -68.871282

Pseudo R2 = 0.2135

Variable		Coefficient	Std. Error
Beedu Village - Dummy		0.4884	0.675
Ooru Village - Dummy		0.8622	0.731
Proportion of Expenditures spent on Alcohol	(5)	4.4764	2.044
Net Dowry payment ÷ 10,000	(5)	-0.1134	0.050
Wife's Years of Schooling		-0.1848	0.118
Husbands Years of Schooling	(10)	0.1325	0.081
Year of Marriage		0.0006	0.023
Number of Male Children	(5)	-0.6489	0.298
Number of Female Children		0.0324	0.290
Wife is Sterilized	(5)	1.4923	0.581
Female Headed Household		0.1256	0.762
Number of Wife's Brothers		-0.2833	0.181
Number Wife's Sisters	(10)	0.2988	0.175
Total Expenditures	(10)	-0.0006	0.000
Bride-Price Paying - Dummy		0.5181	0.654
Constant		-1.5229	2.032

Table 6

Logit Regression of Determinants of Wife-Abuse with Earnings of Wife and Husband

Std. Errors are heteroskedasticity corrected

(Significance levels are provided next to the variable names in brackets)

Number of obs = 164

Log Likelihood = -66.406411

Pseudo R2 = 0.2416

Variable		Coefficient	Std. Error
Beedu Village - Dummy		0.1066	0.761
Ooru Village - Dummy		0.7133	0.725
Proportion of Expenditures spent on Alcohol	(5)	4.4069	1.908
Net Dowry payment ÷ 10,000	(5)	-0.0935	0.045
Wife's Years of Schooling	(5)	-0.2189	0.108
Husbands Years of Schooling	(1)	0.2234	0.088
Year of Marriage		-0.0035	0.021
Number of Male Children	(5)	-0.6615	0.303
Number of Female Children		0.0029	0.264
Wife is Sterilized	(1)	1.5857	0.537
Female Headed Household		0.1494	0.792
Number of Wife's Brothers		-0.2257	0.190
Number of Wife's Sisters	(10)	0.2960	0.168
Wife's Monthly Earnings	(10)	-0.0016	0.001
Rest of Families Monthly Earnings	(1)	-0.0012	0.000
Bride Price Paying - Dummy		0.6219	0.603
Constant		-0.9621	2.049

Table 7

Calorie Allocation OLS Regression with Expenditures
Std. Errors are heteroskedasticity corrected

(Significance levels are provided next to the variable names in brackets)

Number of obs = 157
Adjusted R-squared = 0.4575

Variables		Coefficient	Std. Error
Has Wife Ever Been Beaten - Dummy	(1)	-124.264	49.39
Beedu Village - Dummy		26.429	76.71
Ooru Village	(5)	151.640	66.49
Proportion of Expenditures Spent on Alcohol		-79.289	187.18
Net Dowry payment ÷ 10,000		-1.255	3.56
Wife's Years of Schooling		1.792	9.81
Husband's Years of Schooling		-1.157	9.76
Year of Marriage		-7.358	3.29
Number of Male Children		-8.932	25.10
Number of Female Children		-14.476	29.31
Female Headed Household		137.014	90.83
Total Expenditures	(1)	0.073	0.02
Age	(1)	89.446	23.46
Age Squared		-2.591	1.72
Male - Dummy		-17.764	47.32
Brideprice Paying - Dummy		74.717	61.19
Constant	(1)	756.536	275.68

Table 8

Calorie Allocation IV Regression with Expenditures
Std. Errors are heteroskedasticity corrected

(Significance levels are provided next to the variable names in brackets)

Number of obs = 157
Adjusted R-squared = 0.4591

Variable		Coefficient	Std. Error
Has Wife Ever Been Beaten - Predicted	(5)	-394.360	163.23
Beedu Village		50.919	76.14
Ooru Village	(5)	177.225	71.02
Proportion of Expenditures Spent on Liquor		232.786	234.89
Net Dowry payment ÷ 10,000		-3.937	3.98
Women's Years of Schooling		-3.288	10.06
Husband's Years of Schooling		3.804	10.28
Year of Marriage	(5)	-7.348	3.26
Number of Male Children		-17.942	24.02
Number of Female Children		-11.546	28.28
Female Headed Household - Dummy		10.704	84.49
Total Expenditures	(1)	0.076	0.03
Age of Child	(1)	94.228	22.89
Age Squared	(10)	-2.875	1.67
Male - Dummy		-17.579	46.76
Brideprice Paying- Dummy		77.908	63.54
Constant	(5)	782.595	268.42

Table 9

Calorie Allocation OLS Regression with Wife's and Husband's Earnings
Std. Errors are heteroskedasticity corrected

(Significance levels are provided next to the variable names in brackets)

Number of obs = 157
Adjusted R-squared = 0.4315

Variables		Coefficient	Std. Error
Has Wife Ever Been Beaten - Dummy	(5)	-113.392	59.31
Beedu Village		-5.107	84.40
Ooru Village	(5)	133.449	66.42
Proportion of Expenditures Spent on Alcohol		-67.089	202.38
Net Dowry payment ÷ 10,000		1.913	3.04
Wife's Years of Schooling		5.321	9.57
Husband's Years of Schooling		-0.409	9.61
Year of Marriage		-5.636	3.84
Number of Male Children		3.771	24.62
Number of Female Children		-4.682	30.88
Female Headed Household - Dummy		77.800	97.16
Wife's Monthly Earnings		0.147	0.10
Rest of Family's Monthly Earnings		0.019	0.04
Age of Child	(1)	81.668	23.54
Age Squared		-1.929	1.74
Male Child - Dummy		11.813	47.56
Brideprice paying - Dummy		71.444	68.41
Constant	(5)	651.084	332.32

Table 10

Calorie Allocation IV - Regression with Wife's and Husband's Earnings
Std. Errors are heteroskedasticity corrected

(Significance levels are provided next to the variable names in brackets)

Number of obs = 157
Adjusted R-squared = 0.4289

Variable		Coefficient	Std. Error
Has Wife Ever Been Beaten - Predicted	(10)	-293.706	171.28
Beedu Village		0.815	83.24
Ooru Village	(5)	144.438	67.55
Proportion of Expenditures Spent on Liquor		178.693	260.81
Net Dowry payment ÷ 10,000		-0.166	3.56
Women's Years of Schooling		0.121	10.49
Husband's Years of Schooling		3.704	10.71
Year of Marriage		-6.143	3.85
Number of Male Children		-4.032	24.61
Number of Female Children		-4.815	30.98
Female Headed Household		-36.271	90.37
Wife's Monthly Earnings		0.105	0.11
Husband's Monthly Earnings		-0.005	0.04
Age of Child	(1)	83.878	23.03
Age Squared		-2.058	1.72
Male Child - Dummy		14.083	47.55
Brideprice Paying - Dummy		75.932	68.13
Constant	(5)	749.844	336.52