Marital Violence and Women's Employment and Property Status: Evidence from North Indian villages

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Summary

Dominant development policy approaches recommend women's employment on the grounds that it facilitates their well-being. However, empirical work on the relationship between women's employment status and well-being as measured by freedom from marital violence yields ambiguous results. Motivated by the ambiguity, this paper uses data from Uttar Pradesh, to examine the effect of women's employment and asset status as measured by their participation in paid work and house ownership, respectively, on spousal violence. Unlike the existing literature, we treat women's work status as endogenous and find that engagement in paid work and house ownership, are associated with reductions in violence.

Keywords
Domestic violence, employment, house ownership, India, Asia.

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1. INTRODUCTION

Historical organization of public and private spaces naturally associates women with private sphere and domesticity, and thus home is perceived as a woman's domain. However, home is not a safe abode and around the world, women are subjected to spousal violence. Based on survey data, a recent multi-country study (Garcia-Moreno et al., 2006) pegs the incidence of intimate partner inflicted physical violence at between 15 and 71 %.

Domestic violence is recognized as a violation of the basic rights of women, and freedom from such violence is an important aspect of women's welfare. Domestic violence has severe health and social consequences for women (WHO, 2002). Various studies have shown (Carrillo, 1992; Heise et al., 1994, Menon-Sen and Shiva Kumar, 2001; Morrison and Orlando, 1999; UNICEF, 2000) the large economic and social costs of domestic violence. Violence or even the threat of violence constrains the choices women make and restricts their participation in development, thus, preventing them from realizing their full potential (ICRW, 1999, 2000, 2002).

Empirical evidence on violence against women in India is available from various sources. For instance, the National Family Health Survey III (NFHS III) conducted in 2005-06 (IIPS and Macro International, 2007) reveals that 37 per cent of married women in India have experienced physical or sexual violence. According to a multi-site household survey conducted by the International Center for Research on Women, 52 per cent of women have suffered at least one incident of physical or psychological violence in their lifetime (ICRW, 2000).

Beyond the incidence of violence, there is a small but growing body of literature which uses information from various parts of India and elsewhere to examine the empirical link between domestic violence and various socio-economic attributes. One

strand of the literature focuses on the link between domestic violence (women's welfare) and dowry. Examples include, Bloch and Rao (2002) and Srinivasan and Bedi (2007) for India, Naved and Persson (2005) for Bangladesh and Zhang and Chan (1999) for Taiwan.

A second strand examines the links between domestic violence and women's involvement in income generating activities as captured by a woman's earnings and participation in paid employment, and between violence and women's ownership of economic assets (gold and property). Theoretically, the effect of a woman's intra-household economic status on violence is ambiguous. While an increase in household economic resources attributable to a woman may reduce economic stress and spousal violence, it may also introduce additional tension and struggle within a household. In an effort to maintain the status quo, the increased economic strength of a woman may be countered by an increase in violence. Consistent with this ambiguity, the existing empirical evidence on the link between a woman's involvement in income generating activities and violence is not clear-cut.[1] In the Indian context, Rao's (1997) study on a community in Karnataka shows that a wife's income is associated with reduced lifetime violence. With regard to women's employment, Jejeebhoy (1998) finds that a woman's employment in wage work has no statistically significant impact on the probability of experiencing violence in Uttar Pradesh and Tamil Nadu, while based on NFHS II, Kishor and Johnson (2004) report that, as compared to non-working women, women being paid in cash were more likely to have experienced lifetime physical violence. In contrast, Panda and Agarwal (2005) report that in Kerala, women with regular employment as compared to unemployed women, were far less likely to have ever experienced violence. Beyond employment status, Panda and Agarwal's (2005) innovative study uses women's

ownership of property (land and house) to capture economic status and finds that women's ownership of property is associated with a sharp reduction in domestic violence.

An empirical concern which has rarely been addressed in the literature is the endogeneity between a woman's economic status (employment, income) and violence.[2] For instance, as is the key concern in the developed country literature (see Staggs and Riger, 2005; Tolman and Wang, 2005), violence may inhibit women's participation in employment or women who experience violence may be more likely to seek paid employment. If women who experience violence are more likely to seek paid employment, then estimates that do not account for this possibility are likely to draw the misleading conclusion that women with higher earnings or those engaged in paid work are more likely to experience violence.

Our paper belongs to the genre of work that examines the link between women's employment status and ownership of economic assets on domestic violence. In particular, based on qualitative and quantitative primary data collected from eight villages of Kaushambi district in Uttar Pradesh, a northern Indian state, this paper examines the link between women's participation in paid work and women's ownership of a house on domestic violence. While there are other papers that have examined such links, this paper offers several relatively novel features. First, unlike other papers which are usually based only on responses from females, this paper draws its insights from the testimonies of women *and* men. Information from both women and men allows us to compare the reasons both sexes provide for the use of violence and allows us to gauge the extent to which violence may be under-reported. Second, we attempt to control for the potentially endogenous relationship between women's engagement in paid work and spousal violence. Third, while there are a number of papers that have examined the link between

women's income/employment and violence, the link between women's property ownership and violence is restricted to Panda and Agarwal (2005). Their paper on the effect of women's ownership of property on violence is based on Kerala, a south Indian state where a substantial proportion of the population follows a matrilineal system and where women enjoy relatively more autonomy and freedom of movement, as compared to the north. In contrast, this paper examines whether the violence-reducing effects of house ownership also prevail in a north Indian state which has a strong patrilineal system and where women enjoy relatively less autonomy.

The following section of the paper provides a brief description of the study area and the data. Section 3 discusses female employment patterns and spousal violence in the study area. Section 4 outlines the empirical specification. Section 5 discusses the econometric estimates and section 6 concludes.

2. THE CONTEXT AND THE DATA

The paper is based on information from Kaushambi, a relatively less developed district in Uttar Pradesh (henceforth UP), a northern Indian state. According to Census 2001 data, Kaushambi has a high degree of illiteracy (70 % amongst women and 38 % amongst men, as compared to corresponding state-level averages of 58 % and 31 %, respectively), and a high infant mortality rate (94 per 1000 live births as compared to 84 per 1000 for the state).[3]

Hindus constitute the majority of the state's population (about 85 %) and the social order in the state is based on the caste system amongst the Hindus. As in other North Indian states, gender relations are driven by patriarchal socio-cultural norms which are, as noted by Agarwal (1988, p.92), 'characterized by lower female labour participation (and higher gender disparities in participation), a higher incidence of dowry,

greater intra-household discrimination against female children, and lower female (to male) survival chances than the southern states'.

Empirical confirmation of the nature of gender disparities comes from various sources. For instance, 2001 census figures show that female labor force participation rate is 29 % in Uttar Pradesh as compared to 45 % in the Southern states (Planning Commission, 2002). Dowry differences across regions also reflect the asymmetric gender relations and a recent study by Dalmia and Lawrence (2005) reports that dowries are about thirty five % higher in Uttar Pradesh (north India) than in Karnataka (south India).[4] The lower chances of female survival are reflected in the state's female life expectancy of 59.3, over the period 2001-2005) which may be compared to the average female life-expectancy of 66.3 in the four southern states.[5]

The data used in this paper were collected in 2006 and the data collection process was designed to deal with two issues. First, to examine the role of women's economic status (as captured by their participation in paid employment and house ownership) on domestic violence and the effect of women's work participation on the health of their children (in the age group zero to five). Given these aims, Kaushambi district was chosen as it has a relatively high rate of female work participation as compared to the rest of the state.[6] In order to explore caste and class variations within Kaushambi district, data was gathered from eight multi-religious and multi-caste villages.

A variety of data collection methods was used. In terms of sequencing, after village selection, an entry meeting in the form of an interview was undertaken with the village *Pradhan* (head). Thereafter, eight focus group discussions were conducted. To encourage open discussion the groups were segregated along gender lines and there were four all male and four all female groups. Among other topics, these discussions dealt with

attitudes towards women's work participation. On the basis of these discussions the semi-structured survey instrument was amended and a pilot survey was conducted, after which the survey was canvassed.

The survey was fielded in 155 households, that is, about 20 households from each of the eight villages.[7] Given the aims of the study, the target population was defined as complete pair households, that is, both husband and wife are alive and living in the same physical space, with at least one child in the age group zero to five.[8] Households satisfying these criteria were further sub-divided into those in which women participated regularly in paid work (that is, women who worked more than six months during the year) and those in which women did not engage regularly in paid work. About half the respondents were randomly chosen from each of these two groups. At the household level both husbands and wives were canvassed. The survey gathered a wide range of information on issues such as educational and employment status, economic status and ownership of assets, intra-household allocation of resources and household violence.

Given the purposive manner in which the sample data have been gathered, focusing on complete pair households, and the relatively small sample, it should be clear that our aim is not to generalize our findings for women in the state or even the district. [9] Rather, the aim is to examine whether in the particular context of a poor North Indian rural setting, characterized by a patrilineal system and relatively low status of women, whether a woman's work status has a bearing on her welfare.[10]

III. FEMALE EMPLOYMENT STATUS AND DOMESTIC VIOLENCE

Based on focus group discussions with men and women and responses to structured questionnaires, this section provides an account of female employment status,

characterizes domestic violence and subsequently explores the expected effects of several socio-economic variables on violence.

(a) Female employment and attitude towards working women

Consistent with the research design, as displayed in Table 1, about half the women in the sample are engaged in paid work. About 43 % are working regularly as agricultural laborers (at least six months of the year) while six percent are engaged in non-agricultural occupations.[11]

[Table 1 here]

[Table 2 here]

Female work patterns differ remarkably across castes, with work participation rates varying from 82 % amongst the lower castes to only 27 % amongst women belonging to the general caste group (see Table 2). Amongst Hindu lower castes and Muslim households, women's work force participation is poverty-driven and women reported that children's well-being was the primary motivation driving their decision to seek paid employment. Given their lack of assets and the limited earning capabilities of their husbands, they reported that they had no choice but to work. The general sentiment may be captured by a statement made by a female lower-caste agricultural wage laborer,

If we do not work who will feed our kids?

A majority, about 76%, of husbands (87% if wife worked and 65% if wife was not working) supported work participation of their wives and pointed out that the main benefit was that their economic contribution would allow them to share household expenses and reduce the burden on husbands.[12] For example, according to the husband of a lower-caste agricultural wage labourer,

Her earning contributes to family income and she can also fulfill some of her wishes, which I am not able to fulfill.

A similar sentiment comes from the husband of an upper-caste woman engaged in a non-agricultural government job,

> *She is in a government job, so if my business does not run well she will be able to support the family with her stable income. She will be able to bring up our kids in a better manner.*

For a few husbands the economic contribution of their wives was not important, and they felt that women should work as they need to be occupied. As a husband of a lower-caste wage labourer commented,

> *Women waste their time on idle gossip and quarreling with each other. So they should utilize their time and earn some money.*

While the overall impression gathered from the focus groups, conversations and responses to the structured questions was that women's economic contribution is valued, responses from the focus group discussion to questions on the effect of women's work on their status were not as positive. According to a lower caste unemployed husband,

> *Women's participation in low wage work does not improve their self-worth, as they earn a paltry sum and their income does not make any change in their intra-household status.*

Working women's self-perception varied across caste/class. Upper caste women engaged in the service sector felt that their economic contribution was acknowledged within the family and it enhanced their self-respect.[13]

While a majority of husbands valued the work contribution of their wives, at the same time a majority (about 76%) also pointed out that there were disadvantages. Specifically, amongst husbands expressing reservations, 60% pointed out that women's work participation would affect the upbringing of children and their physical and cognitive development.[14] Other concerns were the negative health consequences

(tiredness) of work on their wives, which would reduce their ability to carry out household chores and compel their husbands to contribute to household work.

(b) Domestic violence – A characterization

The boundaries of the relationship between the perpetrator and the abused, the norms of acceptable behaviour and specific acts constituting violence are crucial elements in defining domestic violence.[15] Here we restrict ourselves to the incidence of inter-spousal physical violence that has taken place anytime during the course of a marriage.[16]

[Table 3 here]

[Table 4 here]

The information collected from the study villages shows that while there are instances of other family members inflicting violence on the respondent (wife), the husband is the primary assailant. Based on the responses of wives, 52 % of them have experienced physical violence during the course of their marriage.[17] In terms of husbands' responses, while fewer men were willing to respond to this question, about 59 % of those who did respond mentioned that they had beaten their wives.[18] There is a high degree of consistency in the responses of husbands and wives and both provide the same response in 78 % of the cases. Assuming that both husbands and wives have a tendency to underreport violence, the figures in Tables 3 and 4 suggest that men are far more likely to underreport as compared to women. In 16 out of 44 cases men who indicated using no violence are contradicted by their wives while only 8 of 65 women contradict their husband's claims of using violence. While there is underreporting, the consistent responses across men and women and the fairly limited degree of the underreporting supports the idea that these data on a sensitive issue such as domestic violence are not unduly influenced by measurement error.

[Table 5 here]

The survey and discussions reveal that there are a variety of factors that trigger physical violence and there are sharp differences in the motives for inflicting violence as reported by husbands and wives (see Table 5). As far as husbands are concerned, the most common reason for using violence is a need to discipline women if they challenge male authority and/or if they do not perform tasks as expected. About 73 % of husbands admitted using violence when women were "disobedient," that is, when women questioned or objected to their behaviour (gambling, drinking), did not follow their instructions, and confronted mother-in-laws. About 46 % of husbands used violence when household tasks were not properly performed by their wives (for example, food was not cooked properly and on time, clothes were not washed or children were not taken care of) and 11 % mentioned the use of violence when women crossed a "private boundary" - by talking to other women, not observing *purdah* or meeting relatives without a husband's permission.

While a similar percentage of women (46 %) support the idea that violence in the form of punishment for neglecting housework triggers violence, the responses provided by women yields a different picture. The key differences are the larger proportion of women who point out that violence (and drinking) is used by men as a way of releasing stress, anger and frustration. According to about 31 % of the women, men's failure as a provider and their injured masculinity fuels violence and that wife beating is an outlet for the economic and social stress that they experience.

In the sample, the use of violence was justified by about half the women (50 %) and a majority of men (80 %). While female justification of wife-beating is not unusual in the Indian context, the interesting aspect of these numbers is that the percentage is 'only'

about 50 %. This figure may be contrasted with a justification rate of 74% amongst a sample of women from Uttar Pradesh in 1993-94 as reported in Jejeebhoy (1998). While half the women mentioned that violence was justified at times and under certain circumstances, a similar percentage vociferously condemned the practice.

(c) Domestic violence and socio-economic correlates

Drawing on the characterization provided above, the following sub-section provides a discussion of the expected effects of the main variables of interest on the incidence of violence.

(i) Income and employment

Based on the idea of economic stress as a source of violence it may be expected that an expansion of household economic resources, for example, due to an increase in income or an increase in land holding should ease economic stress and in turn reduce violence. In particular, since agricultural land is the key income generating asset in the village, an increase in access to land should be associated with a decline in violence. While an increase in overall economic resources should relieve the stress experienced by a husband, the source of the increased resources probably plays a key role in determining the relative welfare of the members of the household. An increase in the economic resources of the household, attributable to the husband, may unambiguously be expected to reduce economic stress and in turn to a reduction in violence. A husband's improved employment prospects should exert a similar effect. In contrast, an increase in household economic resources attributable to the wife may be expected to have an ambiguous effect on violence. While an increase in earnings reduces economic stress it may also introduce additional tension and struggle within the household. In an effort to extract and control

the increased income and to counter the threat to the image of the male bread winner a man may resort to violence.

The divorce-threat models presented by Farmer and Tiefenthaler (1997) and Zhang and Chan (1999) predict that an increase in a woman's income will unambiguously decrease the level of violence/increase welfare in intact marriages through its effect on raising her threat point. Additionally, the separate-spheres bargaining models presented by Lundberg and Pollack (1993) and Suen, Chan and Zhang (2003) show that even when divorce is not an option an increase in a woman's income increases her welfare. Unlike these models, our characterization of violence combined with the context under scrutiny suggests that the effect will be ambiguous.

The divorce-threat models are unlikely to apply in the current context. In much of rural India it is not easy for a woman to leave a marriage. Even if a woman can support herself financially and live on her own, leaving a husband is likely to invite strong social disapproval. Whitehead in her study (1981:109) on the conjugal contract points out that 'the relative power of husbands and wives does not simply reflect relative wages commanded in the labour market'. Regardless of their employment and income prospects, familial ideologies about roles and responsibilities, of society's expectations, may often lead women to continue in a marriage. Kabeer (2000, p. 52) notes that, when the ideology of 'togetherness' is the primary organizing principle in a society, women invest time and energy to keep their marriage alive, seeking separation only in extreme circumstances. Apart from the social stigma of divorce, even if credible, the need for male protection may also prevent women from exiting a marriage. Men's traditional role as a "protector" is still likely to prevail in the current context, even if women engaged in paid work do not need them as "providers".

Even if divorce is not an option, as in the separates-spheres bargaining models, and an increase in a woman's earnings increases her welfare in terms of increased consumption and leads to a "clearer perception of her individuality and well being" (Sen 1990, p. 144), this may not always translate into reduced violence.[19] Given the use of violence as a way of retaining control it is quite possible that an increase in consumption induced by an increase in women's income is accompanied by additional control-induced violence. This is similar to the possibly ambiguous effects of income on violence as proposed by Tauchen et al. (1991). Based on a non-cooperative family model Tauchen et al. (1991) point out that, if a man's marginal utility of violence were increasing with a woman's consumption then he may allow her greater consumption but also inflict more violence, as her income increases.

(ii) Wealth and education

Paralleling the discussion above, while an expansion of household wealth in the form of greater ownership of gold and ownership of a dwelling should reduce economic stress and violence, the ownership of such assets is likely to play a key role in determining relative welfare of the husband and wife. An increase in assets which are owned by a husband and under his control may unambiguously be expected to lead to a reduction in violence. An increase in assets owned by a wife, while reducing household economic stress, may have an ambiguous effect. While ownership of an asset such as a house may provide a credible exit option from a marriage (as argued by Panda and Agarwal, 2005), and provide a shield for women, it may induce additional control-fuelled marital violence.[20]

The predicted effects of education on domestic violence are similar to the differential patterns expected for an increase in the incomes of the husband and wife.

While an increase in husband's education through its effect on income and reinforced through its effect on his social standing may be expected to reduce violence, the effect of women's education on violence may be different. To the extent that a woman's education is associated with income increases it should reduce violence. However, her education and awareness may also be a source of social stress for the man as it may challenge the traditional male image. In order to assert his authority, he may resort to violence.

(iii) Excessive alcohol consumption

In response to questions on the reasons for violence, several respondents mentioned that their husbands resort to violence when they are drunk. It is likely that the same observed and unobserved factors that create economic and social stress and lead a man to inflict violence are likely to drive excessive alcohol consumption. This suggests that drunkenness should not be treated as an exogenous variable but as an outcome of the same factors that may drive a man's violent actions. This view is corroborated by extensive reviews of the literature. These reviews confirm a strong association between excessive alcohol consumption and violence but point out that alcohol typically triggers violent behavior mainly in interaction with a number of other factors, ranging from socio-economic, cultural to psychological and biochemical. These reports conclude that while alcohol abuse may spark violent behavior and serve as a catalyst, it is a symptom and not a cause of aggressive behaviour (The Amsterdam Group Report 2001).[21]

4. EMPIRICAL SPECIFICATION

The hypotheses outlined above are testable and this section outlines a framework to subject our expectations to empirical scrutiny. Let V, a dichotomous variable, denote the presence of physical violence in the household. V may be treated as a function of variables capturing the overall economic position of the household (X_E), a husband's

socio-economic characteristics (X_H), a wife's socio-economic characteristics (X_W), and a vector of additional explanatory variables (X_O). Thus, violence may be represented as,

$$V = X_E\beta_E + X_H\beta_H + X_W\beta_W + X_O\beta_O + \varepsilon \ . \qquad (1)$$

The βs are coefficients to be estimated and ε represents unobserved factors. Based on the assumption that ε follows a normal distribution this equation may be estimated as a probit model.

In operational terms, V captures the incidence of inter-spousal physical violence. The overall economic position of the household is captured by the amount of land owned, the quality of their house (*kuchha*-weak or *pucca*-strong), and the amount of gold. The husband's socio-economic characteristics include his occupation (self-employed in agriculture, agricultural wage labour, employed in non-agricultural activities), annual income, years of education, age and whether he drinks. The wife's characteristics include whether she is involved in paid work (wage labourer, non-agricultural activities), her annual income, years of education, age, and whether she owns the family house. Other variables included in the specification indicate number of male and female children, caste, religion and type of marital family (joint or nuclear). We estimate several variants of (1) to examine the sensitivity of the key economic status variables (women's employment status and house ownership) to changes in model specification.

A key concern is the potential endogeneity between a woman's working status and violence. This possibility suggests that in equation (1), work status may be positively correlated with the error term and single-equation estimates of the effect of work status on violence may be upward biased reflecting the effect that women experiencing more violence are more likely to work. To tackle this issue we use two strategies. First, we control for a number of observed variables which are likely to influence both violence

and women's work participation. Second, and more formally, we endogenize woman's work status and estimate a two-equation violence and work status model. Specifically, woman's work status (engaged in paid work outside the home) denoted by (W_w) is treated as a function of a vector of explanatory variables (X_2), that is,

$$W_w = X_2\delta + \nu \,. \tag{2}$$

The vector X_2 contains several variables that overlap with the variables in (1) but it also contains variables that determine work status but are assumed not to have a bearing on violence. Assuming that the error term in (2) is normally distributed, equations (1) and (2) are estimated simultaneously using a bivariate probit model.

While model estimation is straightforward, a key issue in such procedures is identification and the validity of exclusion restrictions. In the current case, there are some natural candidates that may serve as instruments. For instance, caste captures a family's economic and social standing and is a crucial variable in determining work status. The caste of a family should be strongly correlated with work status but should not have a bearing on violence, after controlling for the economic resources of a household.[22] Additionally, as pointed out in Section 3a, presence of young children and type and size of family are likely to influence women's work participation but may not have a direct bearing on violence. In our empirical work we test the validity of the exclusion restrictions and the strength of the instruments.

5. EMPIRICAL ANALYSIS

(a) Descriptive statistics

Descriptive statistics for the independent variables are provided in Table 6. Some of the salient features of these data are discussed below. The average land holding is 3.95 *bighas* or about two and a half acres, and about 37 % of households do not own any land.

Conditional on owning land, the average land holding is 6.19 *bighas*. Husbands are typically more educated than wives (6 years versus 3 years) and about 68 % of women are illiterate while the corresponding figure for men is 34 %. As may be expected, given the target population, the average couple in the sample is relatively young with a mean age of 32 for men and 28 for women. About nine percent of the women report that they own the house in which the family lives while the corresponding figure for the husband is 60 %. For the remaining cases the dwelling is owned by the parents of the husband. While female house ownership is limited, given the North Indian context, it is not unexpected. In fact compared with the 16 % female house ownership rate in rural Kerala (Panda and Agarwal, 2005) the figure here may not seem too low. The average number of children per household is three and a half with an equal proportion of boys and girls. About 23 % of the men consume alcohol.

[Table 6 here]

(b) Domestic violence and selected characteristics

As a preview to the econometric work, Table 7 shows the bivariate relationship between domestic violence and some selected characteristics. The numbers suggest that domestic violence is negatively correlated with the economic position of the household. For instance, the average land holdings in households where women experience violence is 2.21 *bighas* as compared to 5.87 *bighas* in households where women do not experience violence. Similarly, the education level of husbands who do use violence is almost twice that of husbands who do resort to such measures (8.31 versus 4.62 years of education). Women who experience violence are far less educated than those who do not (1.65 versus 4.24 years of education).

[Table 7 here]

A wife's engagement in wage work appears to be associated with increased violence. The incidence of paid work amongst women experiencing violence is 56 % as compared to 42 % amongst who do not experience violence. While the higher proportion of working women amongst those who experience violence should not be construed as the effect of work on violence, as women from poorer households and those experiencing more violence maybe more likely to work, the figures highlight the importance of endogenizing work participation. It is interesting to note that consistent with the literature from other developing countries, as reviewed in Vyas and Watts (2008), the bivariate analysis presented here shows that women's access to income is associated with a *higher* lifetime history of physical violence. A wife's ownership of a house is associated with a sharp reduction in violence. Female household ownership is about 16 % amongst those who do not experience violence as compared to two percent amongst those who do.

(c) Single equation probit estimates

Table 8 presents estimates of several probit specifications of the violence equation. Following the narrative provided in the earlier sections, the discussion focuses on the role of household economic resources, and the socio-economic characteristics of the husband and wife in influencing the probability of experiencing violence.

[Table 8 here]

We begin with what may be termed a "canonical" specification (Table 8, specification 1), variants of which have been estimated in other studies on domestic violence (for example, see Aekplakorn and Kongsakon, 2007; Flake, 2005; Jejeebhoy, 1998; Hindin and Adair, 2002; Naved and Persson, 2005; Rao, 1997).[23] The common feature of this specification is that it does not control for husband's occupational status.

Based on this specification we may draw the conclusion that there is no association between a woman's work status and violence.

Table 8, specification 2, includes controls for the occupational status of husbands and as shown there is a sharp change in the coefficient on women's work status.[24] The effect is now statistically significant at conventional levels and the coefficient indicates that women engaged in paid work outside the household are about 21 percentage points less likely to experience violence as compared to women who do not work or work on the family farm. The sharp change in the absolute value of the coefficient indicates that in the absence of controls for husband's occupational status the coefficient on women's work status will be upward biased (more positive than it should be) and may lead to the misleading conclusion that there is a positive link between violence and work. To probe the effect of female work we split the work status variable into three different categories, that is working outside the home as an agricultural labourer, working in non-agricultural occupations and working on the family farm. As the estimates (Table 8, specification 3 to 5) show, the protective effect of women's employment on violence, a reduction of between 24 to 29 percentage points, comes mainly from women working as agricultural wage labourers (regular employment for at least six months a year). The effect of working in non-agricultural activities is not statistically significant, probably due to the small number of women engaged in such work. The interesting aspect is that working on the family farm does not offer any protection.

As far as the other key variable of interest - female house ownership - is concerned, consistent with the findings of Panda and Agarwal (2005), there is a clear link between this variable and violence. Across all specifications, women's house ownership (as opposed to ownership by other family members) is associated with a 33 to 36

percentage point reduction in violence.[25] This is a large effect. However, it is possible, given the context, that women who do own a house are exceptional in some way and ignoring this aspect may lead to an exaggeration of the protective effect of house ownership. We return to this issue later in the text.

Turning briefly to the other variables we see that consistent with the bulk of the literature the amount of land owned by a household is negatively linked to violence but the effect is not statistically significant. Similarly, the estimates show that families residing in a *pucca* as opposed to a *kuccha* house are 17 to 25 percentage points less likely to experience violence, but the effect is not very precisely measured. The effect of husband's occupation is large and shows that husbands who are self-employed in agriculture (the highest income category) are 32 to 37 percentage points less likely to inflict violence as compared to husbands involved in non-agricultural occupations.[26]

A one year increase in a man's education is associated with a 2.5 to 2.9 percentage point reduction in violence. While a woman's education also exerts a negative effect, it is not statistically significant.[27] Education may exert an effect on violence due to the correlation between education and income but it is also likely to have a direct effect on violence, regardless of the income effect.[28]

The number of sons, daughters and type of family are not associated with violence. In section 4, we argued that after controlling for household economic resources, caste should not have a bearing on domestic violence. To examine this empirically, Table 8, specification 5 includes a set of caste and religion dummies. The caste variables do not exert an effect on violence. The religion dummy is also statistically insignificant at conventional levels (although the *p*-value is close to 10 %). Jointly the set of variables

that capture family composition, family type and caste are jointly statistically insignificant (*p*-values ranging from 0.30 to 0.35).

Finally, while alcohol consumption certainly appears to trigger violence (see Table 7), it is likely that domestic violence and alcohol consumption are endogenous. Nevertheless, in the spirit of conducting a sensitivity analysis we include an indicator of the drinking habits of husbands in our estimated models (Table A1, specification 6). As may be expected there is a large and statistically significant effect of drinking on violence. However, regardless of the inclusion of this variable, the magnitude of the coefficient on work status and women's house ownership, remains in the same range as observed in our baseline specifications (Table 8, specifications 2 and 3).

(d) Bivariate probit estimates

To account for the endogeneity of a woman's work status, equations (1) and (2) are estimated simultaneously. Maximum likelihood estimates of three different bivariate probit specifications are presented in Table 9. In addition, instrumental variable regression estimates (that is, estimating equations 1 and 2 using OLS) are presented in Table A2 (specification 2). Although not entirely appropriate, as the dependent variables are discrete, we use an instrumental variables model as this approach allows us to apply specification tests to examine the strength and validity of the instruments.

[Table 9 here]

The work status equation presented in specification 1 is identified on the basis of family composition and type while estimates in specification 2 are identified on the basis of family composition, family type and caste variables and specification 3 uses only the caste variables to aid identification. Focusing on specification 2 we see that belonging to a scheduled caste sharply increases the probability of working while as shown earlier,

caste does not have an influence on domestic violence (see Table 8, column 6). Based on an IV specification (see Table A2), formal statistical tests show that the instruments are correlated with a woman's work status. An *F*-test for excluding the instruments records a *p*-value of 0.059 and the partial *R*-squared of the excluded instruments is 0.083. To examine the validity of the instruments we carried out a test for overidentifying restrictions. The test statistic has a p-value of 0.418, that is, the test does not reject the null hypothesis of no correlation between some of the instruments and the error term in the violence equation.[29]

Turning to the estimates, a glance shows that for the most part, they are not sensitive to the variable set used for identification (compare Table 9, specs. 1, 2 and 3) nor are they sensitive to the estimation method (compare Table 9 estimates and Table A2, specification 2). Focusing on the violence estimates we see that the story emerging from the bivariate probit specifications is similar to that from the single-equation estimates. Husband's education continues to be associated with a reduction in violence and husband's engaged in more remunerative occupations are less likely to use violence. The effect of women's house ownership is somewhat smaller than the single-equation estimates, but it remains statistically significant and continues to exert a protective effect. Given the limited female house ownership it is possible that women who do own a house are in some way exceptional. In order to isolate a "cleaner" ownership effect we estimate an additional bivariate probit specification which controls for caste and block fixed effects. The ownership effect is smaller as compared to estimates in Table 8 and 9 and not as precisely estimated although still statistically significant at conventional levels (see Table A2, specification 1).

The effect of a woman's work status also exerts a protective effect but is much larger as compared to the single equation estimates. These estimates indicate that women engaged in regular paid work outside the household are 62 to 64 percentage points less likely to experience violence as compared to non-working women. The jump in the magnitude of this coefficient supports the idea that it is important to account for the endogeneity of a woman's working status. While a doubling of the coefficient may seem large it is not unusual. For example, in their study of low-income women in the United States, Gibson-Davies et al. (2005) show that estimates that do not account for the endogeneity between domestic violence and employment grossly overestimate the effect of women's employment status on abuse. According to their estimates, single-equation probit estimates reveal a zero or even a positive relationship between employment and abuse, while their instrumental variable probit estimates show that for all types of violence, employment is associated with a reduction in violence of between 4 to 8 percentage points (that is, an infinite increase in the magnitude of the employment status coefficients between the probit and instrumental variable probit estimates). The sharp change increase between the bivariate and single equation probit estimates supports the idea that at the very least, women's engagement in regular paid agricultural work (as compared to women who do not work for wages or are self-employed on the family farm) reduces the incidence of violence by 24 to 29 percentage points (Table 8).

6. CONCLUDING REMARKS

On the basis of a micro-level village study this paper explored the link between the effect of women's ownership of their household dwelling and the effect of their regular employment in paid work on intra-spousal violence. The study showed that women's employment in such work is associated with a reduction in violence.

Methodologically, this paper displays that it is important to treat female work status as endogenous. Estimates that do not account for the possibility that violence may motivate a woman to seek work, are more likely to draw the misleading conclusion that women's work status is associated with an increase in violence. The results presented here are based on a small sample, and while robust, their wider applicability still needs to be established.

In addition to the work effect, across all specifications we found that women's ownership of a house has a violence reducing effect. This is similar to Panda and Agarwal's (2005) finding for Kerala. A similar result in a very different context suggests the wider implications of their view that women's ownership of property increases a woman's economic security, reduces her willingness to tolerate violence and by providing a credible exit option works towards deterring spousal violence.

Overall, the results presented in this paper suggest that women's access to income-generating opportunities and control over assets play a key role in reducing their vulnerability to violence. Policies which encourage income-generation and greater involvement of women in regular paid work outside their homes and help women build and retain control over assets are necessary in order to increase their security.

[1] **NOTES**

In a recent survey of the link between marital violence and women's involvement in income generation in developing countries, Vyas and Watts (2008) report that women's involvement in such activities is generally associated with a *higher lifetime history* of physical violence, although in three of the 20 sites the authors reported a statistically significant protective association and in five there was no association. Based on studies from 22 sites which examined the link between women's involvement in income generation and physical violence in the *past year*, the authors report that five recorded a protective association, six recorded a greater risk, while the rest did not find any association.

[2] Rao (1997) points out that, women's income and violence may be endogenously determined but is unable to correct for this possibility due to lack of instrumental variables. A notable exception is Gibson-Davies et al. (2005) who use data from the United States and present instrumental variable estimates of the effect of women's employment on domestic violence.

[3] Although the census does not directly gather data on infant mortality, census based information has been used to compute state and district level infant mortality rates. The mortality figures provided are for 2001 and are from Population Foundation of India (2008).

[4] Dowry differences are in monetary terms. All gifts and cash are valued at constant 1994 prices. For details see Dalmia and Lawrence (2005).

[5] Life-expectancy data are from (http://planningcommission.nic.in/data/datatable/Data0910/tab%2084.pdf, 2001).

[6] According to data from Census 2001, the female work participation rate in rural Kaushambi is 31 % versus 19 % in rural Uttar Pradesh. Female work participation is higher in Kaushambi due to the district's caste composition. Based on Census 2001, the Schedule Caste (SC) population of Uttar Pradesh was 21.1 % while that of Kaushambi was 36.1 %. Typically, and as is also evident in our data set female work participation tends to be higher amongst the schedule caste population.

[7] Before each individual interview, respondents were informed that the instrument was designed to collect the perspectives of husbands and wives on several topics and that some of the topics would be of a personal nature. Only if respondents agreed did the interview proceed. Thus, informed consent was obtained. Second, husbands and wives living in the same household were interviewed separately and confidentially by same sex interviewers.

[8] Where ever a joint family was selected and more than one complete pair household lived in the family, one woman/pair was randomly selected to be included in the survey.

[9] The econometric work reported in the paper relies on a relatively small data set of 155 households. Recently published studies such as Rao's (1997) work on domestic violence is based on a data set of 160 women; Bloch and Rao's (2002) analysis of domestic violence is based on a sample of 137 women. Similarly, Srinivasan and Bedi (2007) rely on a sample of 137 to 142 women. Set against these contributions the data set that we use is not unusually small. While the

small size has its disadvantages, it also has the advantage of allowing coverage of a wide range of topics and the collection of reliable information on sensitive issues.

[10] In other words the paper is concerned mainly with internal validity – that is attempting to isolate the causal effect of women's economic status on spousal violence – and not with generalization or external validity.

[11] While we also gathered information on husband and wife individual incomes, given the difficulty of gathering reliable income information we rely mainly on occupational status as the key variable to capture the income status of the household. Occupational status is relatively easy to observe and is far less likely to be measured with error as compared to income.

[12] The responses were remarkably similar across caste groups with support for work participation ranging from 72 to 78 % across caste groups.

[13] Only 3 of them were working.

[14] Except for the general caste group which expressed a higher rate (about 77 %) of concern about the effect of women's work participation on the welfare of children the rest of the caste/religion groups expressed a similar rate of reservation (between 56 and 60 %).

[15] See ICRW (1999) for a discussion on definitional issues.

[16] Physical violence includes acts such as slapping, beating, arm-twisting, stabbing, strangling, kicking, burning. A focus on physical violence excludes emotional violence and is likely to underestimate the extent of total violence (emotional and physical). Data from NFHS III (IIPS and Macro International, 2007) shows that while this is indeed the case the extent of the underestimate is not large. For example, at the all-India level, lifetime incidence of physical/sexual violence is about 37.2 %. The inclusion of emotional violence increases this figure to 39.7 %. This underestimate of about 3 percentage points remains the same across wealth classes, levels of female education, and caste.

[17] The key dependent variable in our analysis is inter-spousal physical violence which has occurred any time during the course of the marriage. We tried to collect information on (i) whether there has ever been an incidence of spousal physical violence and (ii) whether there has been any spousal violence in the 12 months preceding the survey. However, it was difficult for respondents to distinguish between these two questions and the survey question essentially became (i).

[18] Before canvassing the sections on violence, respondents were informed about the nature of the questions and could refuse to respond to the entire section or to specific questions. As the numbers show, while all 155 women provided information on the incidence of violence, only 81 chose to provide information on reasons for violence. For men, the corresponding numbers were 109 and 71.

[19] Sen (1990) argues that "Outside earnings can give the woman in question a better breakdown position, possibly a clearer perception of her individuality and well being and a higher 'perceived contribution' to the family's economic

position." This argument may still hold without necessarily translating into reduced violence.

[20] Panda and Agarwal (2005) point out argue that it is not an issue of whether women actually use the exit option that ownership of property provides, but that the existence of such an option may be expected to deter marital violence.

[21] A report prepared by The Social Issues Research Centre (1998) reaches a similar conclusion, "From the research evidence available, we can conclude that there is no direct causal relationship between alcohol and violence. Where the immediate social context is non-aggressive and where cultural beliefs and norms inhibit aggression, drinkers are highly unlikely to become aggressive".

[22] Support for this idea comes from various sources. In particular, a number of ICRW (1999, 2000, 2002) studies explore the links between caste and domestic violence. ICRW's study on Rajasthan reports that there is "no significant variation with respect to the caste of the respondent". Similarly, ICRW's Tamil Nadu study finds that 43 % of non-Dalit men have inflicted physical violence as compared to 45 % among Dalit men. Srinivasan and Bedi's (2007) study on Tamil Nadu also reports that there is no link between caste and violence after controlling for household economic status.

[23] While there are wide variations in the specifications that are estimated across these papers, their common characteristic (as in the specification presented in Table 8, specification 1) is that they do not control for husband's occupational status. Hindin and Adair (2002) control for husband's employment status (works for pay or not) but given that 92 % of the husbands in their sample work, this is not a very informative variable. Papers that do attempt to account for husband's job quality/occupation include Panda and Agarwal (2005) who control for husband's type of employment (regular and seasonal employment) while Kishor and Johnson (2004) control for husband's occupational status (agriculture or non-agriculture).

[24] The key dependent variable in our analysis is inter-spousal physical violence which has occurred any time during the course of the marriage which we link to women's employment status in the last one year. Ideally we should link women's employment status in the last year with inter-spousal physical violence in the last year. The measure that we do use, lifetime physical violence is not ideal but contains useful information to support the analysis. First, lifetime physical violence and violence in the last 12 months are likely to be correlated. Second, the lifetime measure will provide a higher estimate of violence as compared to the 12 month measure and the gap between the two is likely to increase with the age of the respondents. Accordingly, all our estimates control for the age of the husband and wife. Finally, since the gap between the two measures is likely to increase with age, to provide an empirical assessment of the effect of linking life-time physical violence to current employment we estimated a specification where we restrict ourselves to women who are less than or equal to 25 years of age and compared that with our baseline estimates. As shown in Table A1, specification 2, even with such a sharp restriction, the effect of female work status on violence remains negative and statistically significant. While a number of other variables are not as precisely estimated the

stability of the estimates (compare specifications 1 and 2, Table A1) is remarkable and suggests that life-time physical violence may be a reasonable proxy for physical violence experienced in the last year.

[25] We use household ownership of land and gold to capture overall household wealth. We do not have information on women's ownership of gold but do have information on women's ownership of farm land and women's house ownership. We work only with women's ownership of a house as ownership of farm land and house ownership are highly correlated (0.75) and house ownership captures the variation in both these variables. As a sensitivity check we provide an estimate where we include both women's ownership of land and house. As a comparison of specifications 1 and 3 in Table A1 shows, the coefficient on wife ownership of farm land is insignificant while the coefficient on house ownership lies in the same range as in other specifications.

[26] We prefer to use occupational status indicators to capture household income as these variables are less likely to be plagued by measurement error. Nevertheless, we estimate a specification where we do control for the income of the husband and wife (Table A1, specification 5). The inclusion of these measures does not have a substantial effect on the estimates.

[27] Rao (1993) and Zhang and Chan (1999) estimate specifications where women's welfare, are treated as functions of educational and age differences between husband and wife. As pointed out by Edlund (2000) such specifications impose the restriction that the attributes of husband and wife influence women's welfare in a symmetric manner. This may not be and is certainly not the case in our data and hence we treat violence as a function of individual traits rather than differences.

[28] As displayed in Table A1, specification 5, the coefficient on husband's education is not influenced by the inclusion of the income variables displaying that the direct effect of education dominates.

[29] The estimates of the work status equation are broadly consistent with the views expressed in the FGD and show that women whose husband's are engaged as wage laborers are more likely to work as are schedule caste women.

[Table A1 here]

[Table A2 here]

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Table 1
Male and Female Main Occupational Status
[absolute numbers]

MaleFemale %% Work on own/leased farm14.2

[22]14.2
[22]Agricultural Wage Laborer52.3
[81]43.2
[67]Non-agricultural occupations
(own business, nurse, sewing, mason, carpenter)30.9
[48]6.45
[10]
Does not participate2.6
[4]36.1
[56]

Table 2
Female Occupational Status by Caste/Religion (%) [absolute numbers]
Hindu-GeneralHindu-OBCHindu-SCMuslimWork on own/leased farm10

[3]30
[13]5
[3]13
[3]Agricultural Wage Laborer0
[0]33
[14]74
[43]44
[10]Non-agricultural occupations
(own business, nurse, sewing, mason, carpenter)17
[5]2
[1]
3
[2]
9
[2]Does not participate 74
[23]35
[15]17
[10]35
[8]

Table 3
Incidence of physical violence (%) [absolute numbers]

Reported by wives	Reported by husbands
52.3	
[81]	59.6
[65]	*N* 155109

Table 4
Incidence of physical violence (% of total) [absolute numbers]
Reported by husbands
Reported by wivesYesNo*N*Yes52.3
[57]14.7
[16]73No7.34
[8]25.7
[28]36*N*6544109

Table 5
Reasons for physical violence (%)

Reported by husbands	Reported by wives	Disobedience	73.2	20.8
Neglecting housework	46.4	45.7		
Crossing the *private* sphere	11.2	5.0		
Release for husband's frustration/tension/anger	0.0	14.8		
Release tension/anger under the influence of alcohol	2.8	16.0		
Without any reason	0.0	13.6		
Infidelity	0.0	2.5		
N	71	81		

Note: Based on multiple responses

Table 6
Descriptive Statistics

Variable (units)	Mean	Std. Dev.
Land owned by household (in *bighas*)		
Condition of house – *pucca* (percent)		
Condition of house – *kuccha-pucca* (percent)		
Quantity of gold (in grams)		
Husband's education (in years)		
Husband's age		
Husband's annual income in Rupees		
Husband drinks (percent)		
Wife's education (in years)		
Wife's annual income in Rupees		
Wife's age		
Wife owns house (percent)		
Number of living sons		
Number of living daughters		
Nuclear family (percent)		
Hindu – General (percent)		
Hindu – Other Backward Castes (percent)		
Hindu – Scheduled Caste (percent)		
Muslims (percent)	3.95	
	23.0	
	22.0	
	4.95	
	6.39	
	32.3	
	17,905	
	23.0	
	2.89	
	2879	
	28.27	
	9.0	
	1.70	
	1.82	
	73.0	
	20.0	
	28.0	
	37.0	
	15.0	12.8
	.	
	.	
	12.11	
	5.40	
	6.01	
	30,441	
	.	

4.67
4260
5.26
.

1.18
1.45
.

.
.
.

.***Notes:*** The number of observations is 155 except for the variable indicating husband's drinking habits where $N = 125$

.**Table 7**
Domestic Violence and Selected Characteristics

VariableDo not experience violenceExperience violence*p*-valueLand owned by household (in *bighas*)
Condition of house – *pucca* (percent)

Husband's education (in years)
Husband's age
Husband's main activity-agricultural wage laborer (percent)
Husband's main activity-self-employed in agriculture (percent)
Husband's annual income in Rupees
Husband drinks (percent)

Wife's education (in years)
Wife's age
Wife's annual income in Rupees
Wife engaged in paid work outside home (percent)
Wife owns house (percent)

Number of living sons	8.31
Number of living daughters	30.8
Family type: Nuclear (percent)	39.1
	23
	22077
	9
Hindu – General (percent)	4.24
Hindu – Other Backward Castes (percent)	27
Hindu – Scheduled Caste (percent)	2593
Muslims (percent)	42
	16.2
	1.59
	1.42
	64
	28
	27
	40
	42.21
	14.8
	4.62
	33.6
	64.2
	6.1
	14095
	35
	1.65
	30
	3141
	56
	2.4
	1.80
	2.18
	81
	12
	28
	34
	250.075
	0.015
	0.000
	5.87
	31

0.000
0.001
0.002
0.119
0.000

0.000
0.000
0.431
0.090
0.000

0.276
0.000
0.155

0.013
0.851
0.446
0.000***Notes:*** The last column of the table reports p-values for a two-tail t-test. The null hypothesis is equality of means. The number of observations is 155 except for the variable indicating husband's drinking habits where $N = 125$

Table 8
Probability of Experiencing Violence – Probit Estimates

VariableMarginal effectsSpec. 1Spec. 2Spec. 3Spec. 4Spec. 5Land owned by household-0.0037-0.00080-0.0011-0.0012-0.00056(-1.14)(-0.24)(-0.31)(-0.35)(-0.16)Condition of house – *pucca*-0.17-0.20-0.21-0.25**-0.22*(-1.42)(-1.61)(-1.63)(-1.96)(-1.66)Condition of house – *kuccha-pucca*0.0520.00930.0130.0190.019(0.45)(0.078)(0.11)(0.15)(0.15)Amount of gold in household0.00510.00240.00280.00210.0024(1.14)(0.51)(0.59)(0.47)(0.52)Husband's education-0.025**-0.029***-0.029***-0.028**-0.026**(-2.35)(-2.66)(-2.68)(-2.44)(-2.23)Husband's age-0.027-0.026-0.024-0.027-0.023(-1.29)(-1.16)(-1.10)(-1.30)(-1.09)Husband's occupation – agri. wage laborer-0.0200.0210.0340.0080(-0.15)(0.15)(0.24)(0.053)Husband's occupation – agri. self-employed-0.35**-0.32*-0.33*-0.37**(-2.27)(-1.77)(-1.77)(-2.02)Wife's education-0.021*-0.016-0.022-0.019-0.014(-1.71)(-1.22)(-1.58)(-1.35)(-1.00)Wife's age0.056**0.054**0.053**0.057**0.051**(2.25)(2.09)(2.03)(2.32)(2.04)Wife's occupation – agri. wage laborer..-0.29**-0.29**-0.24*(-2.11)(-2.19)(-1.68)Wife's occupation – agri. Self-employed..-0.069-0.066-0.042(-0.39)(-0.39)(-0.23)Wife's occupation – non-agricultural ..-0.12-0.12-0.11(-0.70)(-0.71)(-0.60)Wife engaged in paid work outside home-0.13-0.21*...(-1.30)(-1.95)Wife owns house-0.36**-0.35**-0.35**-0.34**-0.33*(-2.14)(-2.02)(-2.04)(-2.01)(-1.86)Number of living sons...-0.065-0.072(-1.36)(-1.39)Number of living daughters...0.0280.023(0.63)(0.50)Nuclear family...0.100.056(0.85)(0.46)Hindu – other backward castes....0.15(1.08)Hindu – scheduled caste....0.079(0.49)Muslim....0.33(1.64)Observations155155155155155Pseudo $R^2$0.2010.2270.2330.250.268**Notes**: Robust z-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 9

Probability of Experiencing Violence and Working – Bivariate Probit Estimates

VariableMarginal effectsSpec. 1Spec. 2Spec. 3WorkingViolenceWorking ViolenceWorking ViolenceLand owned by household

Condition of house – *pucca*

Condition of house – *kuccha-pucca*

Amount of gold in household

Husband's education

Husband's age

Husband's occupation – agri. wage laborer

Husband's occupation – agri. self-employed

Wife's education

Wife's age

Wife engaged in paid work outside home

Wife owns house

Number of living sons

Number of living daughters

Nuclear family

Hindu - other backward castes = 1

Hindu - scheduled caste = 1

Muslim = 1-0.005
(-0.52)
0.173
(1.13)
-0.035
(-0.28)
0.001
(0.25)
-0.021*
(-1.85)
0.003
(-0.13)
0.63***
(7.42)
-0.282*
(-1.77)
0.021
(1.34)
0.006
(0.23)
.

-0.054
(-0.27)
0.092**
(2.09)
-0.004
(-0.12)
-0.021
(-0.19)
.

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.
-0.001
(-0.28)
-0.154
(-1.42)
-0.038
(-0.35)
0.002
(0.41)
-0.033***
(-3.27)
-0.016
(-0.95)
0.295***
(2.78)
-0.389***
(-3.62)
-0.004
(-0.27)
0.043**
(-2.21)
-0.64***
(-11.79)
-0.28**
(-2.00)
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.-0.0047
(-0.45)
0.119
(0.67)
-0.018
(-0.14)
0.0014
(0.26)
-0.038***
(-3.16)
-0.010
(-0.46)
0.606***
(5.73)
-0.244
(-1.52)

0.040**
(2.22)
0.040
(1.58)
.

-0.027
(-0.14)
0.036
(0.71)
-0.006
(-0.18)
-0.089
(-0.52)
0.025
(0.14)
0.374**
(2.01)
-0.085
(-0.39)-0.001
(-0.21)
-0.160
(-1.44)
-0.060
(-0.54)
0.002
(0.38)
-0.032***
(-3.14)
-0.015
(-0.91)
0.271**
(2.47)
-0.395***
(-3.71)
-0.004
(-0.33)
0.042**
(2.14)
-0.624***
(-11.14)
-0.286**
(-2.09)
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.-0.0034
(-0.37)
0.052
(0.33)
-0.014
(-0.11)
0.001
(0.21)
-0.037***
(-3.33)

-0.011
(-0.56)
0.582***
(5.75)
-0.237
(-1.56)
0.042*
(2.53)
0.042**
(2.05)
.

-0.050
(-0.27)
.

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0.006
(0.04)
0.382***
(2.57)
-0.106
(-0.60)-0.001
(-0.20)
-0.153
(-1.39)
-0.060
(-0.54)
0.002
(0.41)
-0.031***
(-3.21)
-0.016
(-0.93)
0.278**
(2.61)
-0.394***
(-3.71)
-0.005
(-0.35)
0.042**
(2.22)
-0.627***
(-11.44)
-0.289**
(-2.12)
.

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.Observations
*Log likelihood*155
-146.40155
-139.64155

-140.08***Notes:*** Robust z-statistics in parentheses. Specification 1 is based on using number of living sons, number of living daughters and nuclear family as instruments. In addition to those used in Specification 1, Specification 2 relies on the caste/religion variable to achieve identification. Specification 3 relies only on the caste/religion variables to achieve identification. *** p<0.01, ** p<0.05, * p<0.1

Table A1: Probability of Experiencing Violence – Additional Probit Estimates

VariableMarginal effectsSpec. 1Spec. 2Spec. 3Spec. 4Spec. 5Spec. 6Land owned by household -0.000800.0058-0.00078-0.00110.0020-0.0076*(-0.24)(0.53)(-0.23)(-0.31)(0.46)(-1.75)Condition of house –*pucca* -0.20-0.16*-0.20-0.21-0.20-0.078(-1.61)(-1.75)(-1.63)(-1.63)(-1.55)(-0.53)Condition of house – *kuccha-pucca* 0.0093-0.16*0.0130.0130.0140.079(0.078)(-1.73)(0.11)(0.11)(0.11)(0.51)Amount of gold in household 0.0024-0.0160.00240.00280.00180.0078*(0.51)(-1.17)(0.50)(0.59)(0.38)(1.70)Husband's education -0.029***-0.019-0.029***-0.029***-0.029***-0.038***(-2.66)(-1.48)(-2.65)(-2.68)(-2.69)(-2.98)Husband's age-0.026-0.0073-0.025-0.024-0.027-0.026(-1.16)(-0.33)(-1.12)(-1.10)(-1.19)(-1.16)Husband's occupation-agri. wage laborer-0.0200.18-0.0180.0210.0150.12(-0.15)(1.49)(-0.13)(0.15)(0.10)(0.76)Husband's occupation-agri. self-employed-0.35**-0.18**-0.35**-0.32*-0.31*-0.20(-2.27)(-2.23)(-2.26)(-1.77)(-1.71)(-0.76)Wife's education -0.016-0.021-0.017-0.022-0.022-0.014(-1.22)(-1.40)(-1.27)(-1.58)(-1.55)(-0.86)Wife's age 0.054**0.098**0.054**0.053**0.055**0.063**(2.09)(2.37)(2.07)(2.03)(2.11)(2.53)Wife's occupation-agri. wage laborer...-0.29**-0.41**-0.35**(-2.11)(-2.43)(-2.15)Wife's occupation – agri. self-employed...-0.069-0.098-0.18(-0.39)(-0.57)(-0.95)Wife's occupation – non-agricultural...-0.12-0.38-0.13(-0.70)(-1.53)(-0.63)Wife engaged in paid work outside home-0.21*-0.24*-0.20*...(-1.95)(-1.82)(-1.92)Wife owns house -0.35**-0.074-0.41**-0.35**-0.36**-0.38*(-2.02)(-0.59)(-2.28)(-2.04)(-2.05)(-1.73)Husband annual income ....-3.1e-06.(-0.89)Wife annual income....0.000025.(1.44)Husband consumes alcohol.....0.29**(2.15)Wife owns farm land ..0.13...(0.57)Observations15550155155155125Pseudo $R^2$0.2270.090.2290.2330.2430.288**Notes**: Robust z-statistics in parentheses. Specification 1 is the same specification as reported in Table 8, specification 2 and has been provided to aid comparisons. Specification 2 is restricted to women who are less than or equal to 25. Specification 3 may be compared with specification 1 and includes an additional regressor to control for wife's ownership of farmland. Specification 4 is the same as Table 8, specification 3 and has been provided to aid comparisons. Specification 5 includes all the variables in specification 4 and also controls for wife and husband annual income. Specification 6 includes all the variable in specification 4 and a variable indicating whether husband drinks.*** p<0.01, ** p<0.05, * p<0.1

Table A2: Probability of Experiencing Violence and Working

VariableMarginal effectsBivariate
Probit
Spec. 1Instrumental Variable
Spec. 2WorkingViolenceWorkingViolenceLand owned by household

Condition of house – *pucca*

Condition of house – *kuccha-pucca*

Amount of gold in household

Husband's education

Husband's age

Husband's occupation – agri. wage labourer

Husband's occupation – agri. self-employed

Wife's education

Wife's age	Muslim = 1-0.0009
	(-0.17)
Wife engaged in paid work outside home	0.001
	(0.01)
Wife owns house	0.014
	(0.09)
Number of living sons	0.003
	(0.45)
Number of living daughters	-0.046**
	(-3.73)
Nuclear family	-0.009
	(-0.41)
Hindu - other backward castes = 1	0.683*
	(6.64)
Hindu - scheduled caste = 1	-0.120
	(-0.52)
	0.047**
	(2.49)
	0.038
	(1.35)
	.
	-0.086
	(-0.37)
	0.059
	(1.07)
	0.006
	(0.35)
	-0.135
	(-0.77)
	0.088
	(0.42)
	0.526***
	(2.93)
	0.031
	(0.11)-0.000
	(-0.01)
	-0.136
	(-1.11)
	0.062
	(0.50)
	0.004
	(0.83)
	-0.035***
	(-3.20)
	-0.012
	(-0.67)

0.254*
(1.91)
-0.375***
(-3.07)
-0.003
(-0.18)
0.040*
(1.85)
-0.628***
(-9.50)
-0.275*
(-1.79)
.

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.

0.189
(1.29)
0.243
(1.55)
0.169
(0.82)-0.0003
(-0.10)
-0.023
(-0.26)
-0.052
(-0.54)
0.0007
(0.19)
-0.016**
(-2.05)
-0.0001
(-0.01)
0.442*
(4.68)
-0.167
(-1.55)
0.018
(1.78)
0.014
(0.87)
.

-0.014
(-0.12)
0.013
(0.39)
0.005
(0.17)
0.014
(0.15)
0.046
(0.43)
0.265**
(2.20)
-0.027
(-0.19)-0.0004
(0.15)
-0.176
(1.54)
-0.034

(0.35)
0.001
(0.37)
-0.031*
(2.84)
-0.018
(1.00)
0.249
(1.12)
-0.369*
(2.74)
-0.004
(0.32)
0.046*
(2.24)
-0.623*
(1.73)
-0.270*
(2.40)
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N

Partial R-squared of excluded instruments
F-Test of excluded instruments (p-value)
*Overidentification test (p-value)*155
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.
.155
0.083
0.0596
0.418***Notes:*** Robust z-statistics in parentheses. Specification 1 controls for caste and block fixed effects and may be compared with the various specifications reported in Table 9. Specification 2 is estimated using linear probability models, it relies number of living sons, number of living daughters, nuclear family and caste as instruments. It may be compared with estimates reported in Table 9, specification 2. *** p<0.01, ** p<0.05, * p<0.1.