Pal, Sumantra

Working Paper

Culture counters Male-Backlash: Causal evidence from India's Northeast

CULTURE COUNTERS MALE-BACKLASH: CAUSAL EVIDENCE FROM INDIA'S NORTH-EAST

Sumantra Pal

ABSTRACT

The reverse causality between female employment and domestic violence is debatable. Due to the adverse health consequences of domestic violence women shy away from employment. For fears about backlash from their husbands, wives may abstain from working. Battered women may also take up employment to liberate themselves from the grip of domestic violence. Using a new dataset that combines ethnographic data with the third wave of the National Family and Health Survey, I identify three instruments. Those are traditional tribal norms that are more conducive to the participation of women in activities outside of their homes, namely, female political engagement, female hunting, and female gathering of food, fodder and fuel. The instrument variable procedure generates significant protective effects for working wives with a 38 percent reduction in the probability of physical violence, while controlling for observable social norms surrounding tribal marriage, separation, descent, inheritance, subsistence, and settlement patterns.

KEYWORDS

Female employment, domestic violence, social norms, male-backlash, India.

JEL-Codes: B54, J12, Z13

INTRODUCTION

Female employment is an intrinsic element in women's empowerment and well-being. Increased female employment enhances women's intra-household bargaining power and thereby reduces domestic violence against them. Therefore, promoting female employment is a promising policy agenda for preventing and eliminating violence against women (United Nations 2013). Of late, feminist scholars have engaged in a debate about the ambiguous causal direction between female employment and domestic violence (Jana Lenze and Stephan Klasen 2017; Cruz Caridad Bueno and Errol A. Henderson 2017). This debate is critically important for feminist scholarship and policymakers since female employment can reduce or eliminate violence against women.

Since employment strengthens intra-household bargaining position, working wives should be less tolerant to domestic violence. They might end the abusive marriage, if financially independent of living separately. But such exit-options may not be feasible in a society that imposes social stigma on divorced women and cannot be credible (Manasi Bhattacharya, Arjun S. Bedi, and Amrita Chhachhi 2011). Therefore, female employment should reduce domestic violence. Feminist scholarship refers to it as 'protective effects' of women's employment (Jana Lenze and Stephan Klasen 2017). On the contrary, domestic violence may dissuade women from taking up employment owing to its adverse health consequences. It is possible for battered women to take up employment to liberate themselves from the grip of violence. However, in certain societies, the predominant bread-earner role is assigned to men.

Working wives in such societies undermine the bread-earner roles of their husbands. Husbands in turn trigger domestic violence as an instrument to reinforce control over their wives. This phenomena stems from sociological hypothesis of 'male-backlash'. Intra-household negotiations over money earned by women might drag working wives into marital conflicts (Dallan F. Flake 2005). Recent empirical research endorse 'male-backlash' in several developing country context, including in India, Dominican Republic and Jordan (Haimanti Bhattacharyya 2015; Jana Lenze and Stephan Klasen 2017; Cruz Caridad Bueno and Errol A. Henderson 2017).

The crux of this ambiguous reverse causality between female employment and domestic violence depends on the prescribed social norms about seclusion of women and the mobility restrictions, as well as, the traditional norms about feasibility of attractive outside options for women. Through the 'protective effects' of female employment, the bargaining channels cannot prevent working wives from the onslaught of domestic violence. Unless the socially acceptable norms permits working women to end an abusive marital relationship. These gender-roles of men and women are ingrained in the social norms. Therefore, social norms are critical in enforcing if men are to be the prime bread-earners, and therefore, men are justified in 'male-backlash' on their working wives (Cruz Caridad Bueno and Errol A. Henderson 2017). Therefore it is important to empirically investigate how the link between female employment and domestic violence is moderated by social norms.

I investigate this research question using a unique and novel dataset that combines ethnography to the third wave of Indian Demographic and Health Survey (NFHS-3) collected during 2005-06. The ethnographic data covering the ancestral social norms and traditional cultural characteristics of the ethnicities were collected during 1985-92, referred collectively as a multi-volume publication—the People of India (POI). The POI has wider coverage of ethnicities in India than the ethnographic atlas of George Peter Murdock (1967). The combined data offers a major advantage as compared to either of the NFHS-3 or POI. For example, if POI alone is used, a researcher can answer what determines the different social status of women vis-a-vis men in matrilineal and patrilineal societies, as can be explained by the traditional social norms. When NFHS-3 is used in isolation, a research question on determinants of domestic violence or the nexus between domestic violence and female employment can be considered. But with the combined data, a more nuanced question can be explored, whether and to what extent social norms moderate the link between female employment and domestic violence.

The potential endogeneity in the nexus between female employment and domestic violence stems from reverse causality and omitted variable bias. With the combined dataset, many of the hitherto unobservables factors, such as, customs governing marriage and divorce, inheritance and lineages, women's economic roles, agro-climatic factors, and settlement patterns have been captured. After controlling for the relevant traditional social norms at the ethnicity-level, I implement an instrumental variable specification. The instruments are ethnicity-level norms about the political and productive roles of women. The IV estimates suggest that physical domestic violence reduces due to female employment. This coefficient is estimated at 38 percent, which is a large effect as compared to the average levels of domestic violence. This coefficient is both statistically significant and economically meaningful. Without IVs, the linear probability model yields a biased and misleading estimate that falsely supports 'male-backlash' theory, implying female employment leads to increased domestic violence. This implies the estimation using a linear probability model, overlooking the endogeneity issues are biased and the resultant coefficients are spurious.

LITERATURE

The previous empirical evidence on the effect of women's employment on domestic violence is ambiguous. One strand in the literature claims that women's employment decreases the likelihood of domestic violence. The theoretical foundation of this claim rests on the noncooperative bargaining models of domestic violence. For instance, Farmer and Tiefenthaler (1997) predict that the more the women earn and bring financial support for their household the lesser would be the incidence of domestic violence on them. Further, the financial self-reliance opens up the 'outside options' of women, which will increase the possibility that women might exit from abusive relationships. An increase in women's income, therefore, may act as a deterrent that constrains her husband to inflict violence. Until a 'threat-point' is reached, in the Nash-bargaining model of Helen V. Tauchen, Ann Dryden Witte, and Sharon K. Long (1991), women may be willing to accept violence, without leaving the marriage, in exchange for a financial transfer from her husband. According to this model, an increase in income of the husband allows him to afford increased violence on his wife. Consequently, an increase in income of wife should reduce violent behavior, as the 'threat-point' of the wife is lowered with her own financial independence. A similar prediction is proposed by Richard Gelles (1987) in terms of resource theory. An increase in women's income augments household income, which decreases economic stress from additional resource and reduces domestic violence. This welfare enhancing effects of women's employment via a reduction in domestic violence is empirically supported in various developing countries contexts, including in Albania, Bangladesh, Egypt, Haiti, India, and Tanzania (See Haimanti Bhattacharyya 2015, for a more detailed description, and Seema Vyas and Charlotte Watts 2009, for a systematic review).

The opposing strand in the literature posits women's employment increases their risks of facing domestic violence. Such an opposite prediction relies on the 'male-backlash' models proposed by Ross Macmillan and Rosemary Gartner (1999). The traditional gender-roles and unwritten social norms generally surround the ideal roles of husband and wives in a marital relationship. Contrary to traditional bread-earner gender-roles of husband, if wives start to earning from their employment, husbands perceive their traditional gender-roles undermined. Therefore, men in such cultural context tend to inflict more violence against their working wives to reinforce authority. This male-backlash theory, however, ignores the possibility of women exiting the abusive relationships on the strength of their financial independence stemmed from their employment (Anna Aizer 2007). But such an 'outside-cum-exit' option should also earn acceptability in the specific cultural context, in terms of admissibility of unilateral divorce, mother's right to keep the custody of the children, a social possibility of remarriage of divorced women, and entitlement of alimony of divorced women. These social norms are in the realm of ethnography of specific marital norms of the couple, which are in general not captured in conventional economic analysis. Ignoring these social norms in the analysis, we encounter contradictory and inconsistent empirical findings in the same context. For example, in the Indian context, Sunita Kishor and Kiersten Johnson (2004) find female employment increases domestic violence. Whereas, Yoo-Mi Chin (2012) and Manasi Bhattacharya, Arjun S. Bedi, and Amrita Chhachhi (2011) conclude the opposite, i.e. female employment reduces domestic violence. Similar patterns of contradictory and inconsistent findings are available in the context of Bangladesh. In contradiction to violence reduction theme of female employment (Abdullahel Hadi 2005), Ruchira Tabassum Naved and Lars Åke Persson (2005) put forward the opposite effect that female employment increases the risks of physical violence.

In the backdrop of this essentially contradictory empirical findings, a nascent strand in the literature has emerged. This strand in the literature acknowledges the reverse causality between the female employment and domestic violence as the theoretical underpinnings on both sides of the reasoning is equally strong and intuitively appealing. Haimanti Bhattacharyya (2015) in the case of India tackles the issue of endogeneity using nationally representative survey data from the third wave of the NFHS. She finds female employment is positively associated with domestic violence. Specifically, women who are facing domestic violence are more likely to take up employment but also remains susceptible to financial exploitation as women experiencing domestic violence are less likely to have a say how the money they earn to be spent. However, she includes socio-cultural factors captured at hierarchical social classes in Indian society, but not the ethnic social norms at the tribal affiliation. Controlling for the potential endogeneity issues in the link between women's employment and domestic violence, Jana Lenze and Stephan Klasen (2017) examine this ambiguous and bi-directional link in Jordan. Using Demographic and Health Survey (DHS) data from the 2007 wave, they find women's employment status has no causal effect on domestic violence. However, after distinguishing between several forms of domestic violence, namely, physical, emotional and sexual violence against women, they assert weak evidence that women's work status reduces sexual violence. Cruz Caridad Bueno and Errol A. Henerson (2017) pick up this debate between two contesting hypothesis between household bargaining model and male-backlash model on the basis of DHS data for the year 2007 in the Dominican Republic. Although they fell short of addressing the endogeneity issues, they find the household bargaining model explains physical domestic violence, whereas male-backlash model better explains the sexual violence. Their explanation for domestic violence is better through household bargaining model in case of wealthier women, whereas, for poorer women male-backlash model holds good. In a similar way, Sohini Paul (2016) finds a positive association between physical and emotional violence and female employment, but the endogeneity issues are left unaddressed in her estimation.

In essence, the empirical irregularity has been accentuated by repeated attempts. The endogeneity issues might stem from either reverse causality or omitted variable bias. Whereas, the reverse causality issue has been addressed using instrumental variable methods (Haimanti Bhattacharyya 2015; Jana Lenze and Stephan Klasen 2017), both of them point out data limitations regarding absence of social norms in their analysis. For example, Jana Lenze and Stephan Klasen (2017) open up possibilities of future research by stating “Data limitations do not allow to take into account factors at the community level, such as weak sanction against domestic violence or social norm that restrict women's public visibility.” Recognizing this, this study investigates the causal link between domestic violence and female employment using a novel dataset that captures traditional cultural factors, such as, social norms about gender roles, family structures, norms about marriage patterns, post-marital living arrangements, and economic roles of women. This kind of analysis has been introduced by Alberto Alesina, Benedetta Brioschi, and Eliana La Ferrara (2016). In Sub-Saharan Africa, they find that these traditional social norms are closely associated with contemporary domestic violence. Due to long-term persistence of social norms surrounding marriage, women's economic role affects domestic violence in a complex interplay between the increased bargaining power of women as their employment as that pose a threat to their husband. However, they focus on the effect of women’s economic value in traditional agricultural production on contemporary domestic violence and less on traditional marriage and lineage norms. They only run simple linear regressions of domestic violence on one social norm at a time. Although their estimates of heterogeneous effects of one particular social

norm taken at a time with respect to the working status of women are quite meaningful, the endogeneity issues stemming from reverse causality in the nexus of domestic violence and female employment has not been addressed. Hence, it is important to empirically estimate, in addition, to take care of the reverse causality, by controlling for traditional social norms surrounding marriage, separation, lineage, inheritance and agro-climatic conditions prevailing at the community level to address the overcome the data limitation pointed out by Jana Lenze and Stephan Klasen (2017). Therefore, based on a unique and novel dataset that is created by augmenting social norms into NFHS-3 for north-eastern India, I examine, how is the ambiguous link between women's employment and domestic violence is moderated by the traditional social norms.

DATA

The first data source in this analysis is the data from the third wave of Indian Demographic and Health Survey (NFHS-3). I focus on the third wave because the ethnic identities of the respondents are available along with their identification information. The second data source is India's ethnographic atlas, called the People of India (POI), which provides qualitative data presented in a multi-volume compendium of books. The coverage of People of India much more wider than the worldwide ethnographic atlas of George Peter Murdock (1967). Murdock's atlas has information for 862 ethnicities worldwide of which only eight[2] are from India. The People of India identified and studied 4635 communities out of 6748 communities of India during 1985 and 1992. A set of 32 social norms was coded with research assistance from ethnographers to cover marriage regulations, lineage norms, and agro-pastoral practices. With the available identifiers of each respondent and their ethnic identities in NFHS-3, the ethnographic data from POI has been merged. This combined dataset is unique and novel. It allows control for a set of social norms which was not covered in the literature that I am aware of, that explored the link between female employment and domestic violence after addressing the endogeneity issues. This study covers a relatively homogenous administrative region, with similar agro-climatic conditions, and yet has a large variation in patrilineal and matrilineal social norms. This dataset covers the eight north-eastern states of India with 118 ethnicities.

Table 1 Matching NFHS ethnicities to People of India Ethnographic Atlas

	Sample size of matched ethnicities			
matching method	Number of Observations	Percentage of observations	Number of ethnicities	percentage of ethnicities
Direct matching	8370	41.36%	107	58.79%
Spelling variations	15981	78.97%	162	89.01%
differences in nomenclature	1477	7.30%	3	1.65%
Varna system	1429	7.06%	5	2.75%
Not matched/ Misspecified	2245	11.09%	...	...

Notes: After merging the "Spelling variations" category, the number of observations in terms of ethnic groups has been reduced by the "differences in nomenclature" and "Varna systems" category. This is because, ethnicities would be merged to the identical communities since, despite different nomenclatures, ideally they belong to the same group. For example, if "Jaintia" tribe is also called "Pnar". Once the differences in nomenclature is nomenclature is detected, all the "Pnar" ethnicity was renamed into "Janitia". Thereby, merging back the observations under the "Jaintia" ethnicity. Varna systems matching does not entails into any specific ethnicities and cannot be linked to their ethnography. Therefore, those observations have to be left out. The total observation linkable to their respective ethnography is 14588.

Reconciliation between NFHS ethnicities with the POI requires a set of concordance rules. I adopt four methods from the literature (Stelios Michalopoulos, Louis Putterman, and David N Weil 2016; Alberto Alesina, Benedetta Brioschi, and Eliana La Ferrara 2017). Table 1 presents the number of ethnicities and number of observations matched and merged using those four methods. At first, a *direct match* between the name of ethnicity in NFHS and the name of ethnicity in POI is attempted. A match of 58% of observation is possible. For the remaining observations for which direct concordance is not possible. I clean the *spelling variations* in the names of ethnicities mentioned in NFHS. Such spelling corrections will make the names of ethnicities homogeneous and more observations can be matched. For instance, the NFHS ethnic group "Meitei" is also mis-spelt as 'Meeti', 'Meitee', or 'Miteei' which has to be corrected as 'Meitei'. An 89% of observations are matchable with this rule. At times, the POI ethnicities are found in NFHS by its alternative names. For example, "Jaintia" is listed in DHS by its alternative name "Pnar". These *differences in nomenclature* need to be corrected such that more observations can be matched with ethnic identity of "Jaintia". These corrections enable a match of 1.65% of observations. For a relatively smaller set of observations, NFHS recorded the sub-categories of the traditional Hindu system of fourfold social classification, called the *varna system*, namely, *Brahman*, *Khsatriya*, *Vaisya*, and *Sudra*. These are generic hierarchical caste system, which are not to be matched with any of the ethnicities in the POI. Therefore, these observations are left out as unmatched observations. Overall, in the matched and merged dataset, I have 14588 women aged 15-49 in eight north-eastern states of India.

The women-only questionnaire has a 'household relations' section that covers domestic violence questions. The selection into this section of the questionnaire is randomized through a specially designed simple selection procedure based on the Kish Grid (Kish 1965). In my sample, 9955 women out of 14588 was selected for household relations section and responded to the domestic violence questions. The remaining 5014 women were never married, and 799 women were formerly married. Further, a sub-sample of 6933 women has been considered to stay focussed on currently-married women and 547 formerly-married women were left out of the analysis. Owing to a few missing observation in the dependent and independent variables, the usable number of observation is 6758.

A set of 15 questions asked to the ever-married women by a woman investigator after securing informed consent and ensuring confidentiality. Incidence of *emotional violence* is inferred if she confirms any of the following: Does/did your husband ever: (i) humiliated you, (ii) insulted you or make you feel bad, (iii) threatened to hurt or harm you? To ascertain the incidence of *physical violence* they were asked : Does/did your husband ever: (i) pushed you, shook you, or threw something at you, (ii) slapped you, (iii) twisted your arm or pull your hair, (iv) tried to strangle or burn you, (v) threatened or attacked with knife/gun or other weapon, (vi) punched with fist or something harmful, (vii) kicked or dragged you. To reveal if the women experienced any *sexual violence,* they were asked: Does/did your husband ever: (i) physically forced sex when not wanted, (ii) forced other sexual acts when not wanted. If any of these foregoing 12 questions were affirmed with a yes, the dependent variable domestic violence takes a value 1. Constituent indicators of emotional , physical and sexual violence are also dependent variables. All four dependent variables are binary that takes a value 0 or 1. I implement a linear probability model to estimate the probability of women experiencing domestic violence and to what extent the female employment predicts the likelihood of domestic violence.

EMPIRICAL SPECIFICATION

The linear probability model explains the likelihood of domestic violence by women's working status, women's individual characteristics and social norms at the community level. The incidence of domestic violence is specified with cross-section data as,

$$V_{ie} = \alpha + \beta W_{ie} + \gamma X_{ie} + \delta Q_{ie} + \varepsilon_i \quad (1)$$

The incidence of domestic violence, and its types namely, emotional, physical and sexual violences are represented with the dependent variable V_i. Women's working status W_i, is a dummy variable that takes the value 1 if the woman respondent worked in the past 12 months. The individual characteristics X_i capture age, years of education, and childhood witness of parental violence. The household characteristics include wealth, household size, urbanity, nuclear or stem family, and alcoholism of the husband. At the community level, the social norms are controlled through a vector of Q_i, that captures the traditional marriage institutions, separation norms, lineage norms, agro-pastoral practices, land ownership and settlement patterns. The detailed definitions of these social norms are presented in Annexure A1. The unobservable factors are represented with ε, where the assumption of independent and identically distributed (IID) is flexible.

The prior discussion points out endogeneity issues in this regression. There can be three threats of endogeneity present here, namely, measurement error, simultaneous causality, and omitted variable bias. The measurement error in the dependent variable is a common concern, as domestic violence is usually under-reported. Since this analysis relies on secondary data that follows a standard protocol of interviewing at most one woman from a household by a woman interviewer with strict observance of confidentiality, at best it can be guesswork to what extent the measurement error occurs in the reported domestic violence responses taken as dependent variable. The omitted variable bias can originate from several unobserved factors that affect both the independent variable of interest (working status of women) as well as, separately affects the dependent variable (domestic violence). Depending on the covariance between omitted variables and female employment or the error term, the estimated effect of female employment on domestic violence can be biased. If such uncontrolled confounders are correlated with the dependent variable (domestic violence) as well as separately correlated with the independent variable (working status of women), the resultant coefficient from regression equation (1) can be even spurious. The inclusion of social norms (Qs) in the multiple regression equation can only partially address this concern. The extent of simultaneous causality between domestic violence and female employment is another source of endogeneity. In support of a causal link from domestic violence to female employment, in literature, it is suggested that due to physical and mental consequences of domestic violence women are less and less inclined to take up employment. Also, women who are subjected to domestic violence are more likely to seek paid employment than women who are not subjected to domestic violence. Therefore, women who are subjected to domestic violence can be either more prone to take up paid employment or retarded from working outside their homes. This mixed and ambiguous relationship between domestic violence and female employment can generate a biased coefficient if the multiple regression (1) is estimated.

In order to address the issue of endogeneity originating in the form of omitted variable or simultaneous causality, a two-stage least square technique is employed, where the first-stage reduced form estimation is carried out as,

$$W_{ie}=\Pi_0 + \Pi_1 z_1 + \Pi_2 X_{ie} + \Pi_3 Q_{ie} + \eta_i \quad (2)$$

Where W_i is working status of women estimated using the exogenous instruments and Xs and Qs remains identical to equation (1) above. The η_i is the error term that captures the unexplained by the Xs, Qs and instruments z_1. The estimated W (denoted by W^)from equation (2) is then used back in the equation (1) that yields the two-stage least square estimates, as

$$V_{ie} = \alpha + \beta W_{ie}\hat{} + \gamma X_{ie} + \delta Q_{ie} + \nu_i \quad (3)$$

The estimated effect of the working status of women (W^)can be interpreted as causal provided the instruments used in equation (2) are valid. For an instrument to be valid, (a) it should be strongly correlated with the endogenous variable, that is the working status of women, and (b) it should be exogenous to the basic model mentioned in equation (1). To reiterate, the instruments must not be directly correlated with domestic violence. In order to instrument the women's working status, the traditional gender role in each community has been used. These are tribal norms regarding female participation in politics, hunting and fuel gathering[3]. The traditional acceptance of such productive roles of women signifies the dominant belief in the society that women should be allowed freely to take up and seek paid employment outside the ambit of their households. Such social norms are enablers of female employment, the rationale that supports the validity of the instruments. On the other hand, other than through its impact on female employment, the instruments do not directly affect the husband's violent behavior. Therefore, all the three instruments can be considered valid since both the conditions of relevance and exclusion of instruments along with the economic rationale are fulfilled.

DESCRIPTIVE STATISTICS AND VARIABLES

The data combined NFHS-3-POI for eight north-eastern states of India has both the indicators of domestic violence and women's working status (Table 2). In this sample, about 15 per cent women who did not take part in any economic activity reported the incidence of domestic violence. For women who take part in jobs, the incidence is higher at about 17 per cent. Cases reported with incidence of emotional violence, physical and emotional violence are consistently higher in the case of working women. There are a large proportion of women reporting to have ever had experienced emotional, physical and sexual violence. The possibilities of underreporting and underestimation of the incidence of domestic violence cannot be ruled out in the survey setting used in NFHS-3. Therefore, these high proportion of working women experiencing domestic violence underscores a possibility of underestimation of domestic violence.

Table 2 Incidence of domestic violence by wife's working status (%)

Types of violence	*Not working (Wife's working status=0)*	*Working (Wife's working status=1)*
Ever any emotional violence	*6.27*	*6.62*
spouse has humiliated respondent	3.89	4.15
spouse has threatened respondent with harm	2.43	2.29
spouse has insulted or make respondent feel bad	3.66	4.48
Ever any physical violence	*12.46*	*14.58*
spouse ever pushed, shook or threw something	4.01	5.05
spouse ever slapped	11.36	13.18
spouse ever punched with fist or something harmful	3.35	3.47
spouse ever kicked or dragged	3.42	3.78
spouse ever tried to strangle or burn	0.84	0.82
spouse ever threatened or attacked with knife/gun or other weapon	0.74	1.13
spouse ever twisted her arm or pull her hair	3.81	4.49
Ever any sexual violence	*3.68*	*4.73*
spouse ever physically forced sex when not wanted	3.54	4.43
spouse ever forced other sexual acts when not wanted	1.59	2.22
Ever any domestic violence (at least one of the above)	*15.33*	*17.07*

Sample =6758

Independent variables

The working status of wives is a binary variable that takes the value of 1 if the wife took up paid employment outside their homes. If a woman is unemployed, working without payments, or working at their homes, this variable takes the value zero. Both women's age and education might have an effect on the incidence of domestic violence. The wealth index is used as available in the data, from a list of possession of the households that places individuals on a continuous scale of relative wealth. This wealth index captures the economic status of the household relative to all other households in the representative sample. Household size is a variable that takes discrete values reporting the number of persons living in the household which were present during the last night before the interview. The rural and urban locations are measured by the variable urban which is a binary variable that takes the value 1 if the household is located in urban areas. The variable termed household structure denotes a nuclear family if it takes the value 1 and zero for stem family where parents of either of the couple also live together. Alcoholism indicates if the husband drinks alcohol regularly and it takes the value 1. The family history of violence in the husbands family is inferred from the question about whether her husband's father used to beat his mother. If a child grows up witnessing that his father beating his mother, he may build up a mental trait that it is acceptable to beat his wife and in his marital life he continues inflicting violence on his wife. This is how domestic violence is transmitted across generations (See, for example, Sandra L Martin, Kathryn E Moracco, Julian Garro, Amy Ong Tsui, Lawrence L Kupper, Jennifer L Chase, Jacquelyn C Campbell 2002 on domestic violence across generation in north Indian context).

In addition to these individual level control variables, I use several control variables at the ethnicity level. Regarding agro-climatic conditions of a community, I capture the prevalence of ploughing in agriculture, the subsistence patterns of the community (i.e. whether they

subsist on agriculture, gathering, hunting, fishing, husbandry or pastoralism). For the marriage practices, I use marriage payments, exogamy (a norm of marrying outside one's own community), consanguinity, patterns of matching for marriage (love marriage or arranged marriage), the prevalence of polygyny, and patterns of post-marital residence arrangements, as ethnicity-level controls. Under the separation norms, I use the norms of divorce (by mutual consent, through society's/family's approval), women's entitlement to alimony, the child custody norms (who among the divorced parents gets to keep the children), and acceptability of remarriage of divorced women are used to capture the women's social feasibility to exercise the 'outside-options' to end a violent and abusive marital relationship. The lineage norms have two indicators, the descent norms and the norms of inheritance and the extent to which it allows women to get the inheritance and descent. The settlement patterns capture whether the community is semi-nomadic or follows permanent settlements. The land ownership norms indicate whether individual ownership of land is socially admissible or land is community owned. The detailed definitions of all these ethnicity-level control variables are presented in Appendix A1.

Instruments

I include three instruments in this analysis. These are the traditional social norms and beliefs that are more conducive to the female participation in activities outside their homes. Such social norms and beliefs gets internalized and ingrained into the individual mindsets. As a result, the ethnicity-level acceptance of political and economic roles that women are permitted to pursue gives rise to the social acceptability of women's outside mobility as well as social enabler of pursuing outside employment, without being subjected to backlash. Despite changes in external environments, these social norms and beliefs that evolved historically remain static and sticky to the human mindset. Therefore, norms regarding gender roles and women-specific economic and political roles can be taken as exogenously determined. These three social norms are, tribal acceptance of (a) female political engagement , (b) female participation in hunting, and (c) female participation in collection of food, fodder and fuel. All of these social norms proxy women's political and economic roles that presets their normative boundaries. These reflect societal attitude towards female participation in politics, workplace, subsistence (See for example, Alberto Alesina, Paola Guiliano, and Nathan Nunn 2013). Therefore, these instruments are expected to carry a significant impact on female employment. But the instruments are independent to men's attitude towards domestic violence. In Africa, Alesina Alberto, Benedetta Brioschi and Eliana La Ferrara (2016) (pp.35) find none of the subsistence patterns are significantly associated with men's attitude towards domestic violence. Therefore, these instruments are enablers of female employment and are unlikely to directly affect male attitude towards domestic violence or incidence of domestic violence.

ESTIMATION RESULTS

Linear probability model estimation

In table 3, I present a baseline OLS estimation of equation (1). These estimates are meaningful consistent with previous literature. The dependent variable in equation (1) measures the probability of a woman experiencing any kind of domestic violence (in column 1), and then the probability of each kind of violence, namely, emotional, physical and sexual

violence are presented in columns 2-4. I focus on the effect of female employment status on the probability of incidence of domestic violence while controlling for observed individual-level characteristics of the women as well as ethnicity-level social norms. These estimates however, does not address the issues of reverse causality between female employment and domestic violence. Most of the social norms that surrounds a married couple has been controlled for. The estimated coefficient shows that female employment has a small but significant positive effect on the probability of domestic violence. For example, in terms of the aggregate measure of domestic violence increases by 0.043, or 4.3 percent (statistically significant at 1 % level) if a woman is engaged in paid employment, holding everything else constant. The estimated positive effects of women's employment on physical violence is 4.9 percent ($p<0.01$) and on sexual violence is 2.4 percent ($p<0.05$). The estimated effect of female employment on probabilities of emotional violence is tiny and not statistically significant. These estimated coefficients are consistent in both direction and levels of significance with the linear probability model estimates of Jana Lenze and Stephan Klasen (2017) and seemingly support the 'male-backlash' theory. Increase in women's education leads to a decrease in the probability of domestic violence, although the coefficients are small in magnitude they bear expected sign and statistically significant at the 1% level. The similar violence reduction effects are observed in the coefficients for wealth, since in wealthier household the economic stress is reduced which causes a reduction in the incidence of domestic violence. In urban areas, the aggregate domestic violence occurs more frequently as for emotional and sexual violence, but the effects are not statistically significant in the case of physical violence. However, there can be reporting bias, as the urban women are more open to revealing the incidence emotional and sexual violence whereas they may not come out openly regarding the incidence of physical violence.

Table 3 Domestic Violence against Working wives

Dependent variables :	(1) Violence Ever	(2) Emotional Violence	(3) Physical Violence	(4) Sexual Violence
	OLS	OLS	OLS	OLS
working status of women	0.043***	0.009	0.049***	0.024**
	(0.015)	(0.008)	(0.014)	(0.010)
Women's age (years)	-0.000	0.000	-0.000	-0.001
	(0.001)	(0.000)	(0.001)	(0.000)
Women's education (years)	-0.007***	-0.004***	-0.007***	-0.003***
	(0.002)	(0.001)	(0.001)	(0.001)
Household size	0.003	0.000	0.003	0.002
	(0.003)	(0.003)	(0.003)	(0.002)
Wealth	-0.021**	-0.008	-0.019**	-0.017***
	(0.009)	(0.006)	(0.008)	(0.005)
Urban	0.030**	0.038***	0.015	0.031***
	(0.014)	(0.014)	(0.013)	(0.007)
Witnessed father beating mother	0.199***	0.073***	0.196***	0.074***
	(0.015)	(0.015)	(0.012)	(0.012)
Household structure	0.012	-0.014*	0.019	-0.001
	(0.016)	(0.008)	(0.014)	(0.006)
Alcoholic husband	0.166***	0.087***	0.157***	0.047***
	(0.014)	(0.014)	(0.011)	(0.009)
Marriage payments norms included	Yes	Yes	Yes	Yes
Marriage rules norms included	Yes	Yes	Yes	Yes
Separation norms included	Yes	Yes	Yes	Yes
Lineage norms included	Yes	Yes	Yes	Yes
Agro-pastoral practices included	Yes	Yes	Yes	Yes
Settlement patterns included	Yes	Yes	Yes	Yes
State Fixed Effects	Yes	Yes	Yes	Yes
Number of tribal clusters	118	118	118	118
Number of observations	6,756	6,756	6,758	6,758
R^2	0.44	0.177	0.402	0.171

Notes: Cluster robust standard errors are reported in the parenthesis. ***, **, * denote statistical significance at the 1, 5 and 10 per cent levels, respectively. Linear Probability Model coefficients are shown in columns (1) to (4). The community-level control variables are not reported in this abridged version, but are available in the online appendix. These community-level controls include (i) marriage payments (No marriage payments, only brideprice, only dowry, both brideprice and dowry), (ii) endogamy, types of exogamy, (iii) types of consanguinity, (iv), types of marriage types (love marriage, arranged marriage, or both), (v), polygyny, (vi) post-marital residency patterns, (vii) divorce norms, (viii) alimony customs, (ix) child custody norms, (x) remarriage norms, (xi) descent rules, (xii) inheritance norms, (xiii) practice of plough traditionally used in agriculture, (xiv) subsistence dependence on agriculture, gathering, hunting, fishing, animal husbandry, and pastoralism, (xv) settlement patterns, (xvi) land ownership patterns.

Consistent with prior expectations as per preceding discussions, we find a positive association of husband witnessing his father beating his mother and alcoholism of husbands

with the occurrence of domestic violence. These effects are statistically significant at 1% level. Table 3 does not present the estimated marginal effects of domestic violence for ethnicity-level controls in the interest of space but are available upon request. The overall fit of the regression model is reasonably sound. The R^2 of 0.44 seems acceptable and much higher compared to other such recent cross-sectional studies where R^2 reported is typically low (For example, R^2 of 0.03 in Jana Lenze and Stephan Klasen 2017, R^2 ranging between 0.09 and 0.22 across different specifications reported in Sohini Paul 2016). The estimation technique used to derive these results (Table 3) has not addressed the potential reverse causality issues. Since the regression results might be biased in the presence of reverse causality between female employment and domestic violence, let us focus more on detailed interpretation and causal inference of the IV estimates that are presented in Table 4.

Instrumental variable estimation

To take care of reverse causality, the endogenous variable working status of women is instrumented with three variables as discussed before, the results of this IV regression model is presented in Table 4. The first stage of IV estimation is presented at the bottom of Table 4. As anticipated, all three instruments are valid and relevant since all three instruments, namely tribal acceptance of women's participation in hunting, gathering and political representation increases the probability that the women takes up employment. All these effects are statistically significant at 1% level. For the first instrument, i.e. women's traditional economic role as hunters increases the probability of women's working status by 0.658, or 65 per cent, holding everything else constant. This positive effect on women's employment increases by 13 percent and 16 percent if women's traditional economic role is to contest political representation and fuel gathering, respectively. In the second stage of the IV estimation, presented in column 1 of table 4 for the aggregate measure of domestic violence turns negative and not carrying ant statistically significant effect on domestic violence. The high negative value of point estimate (-0.226) ascertains the claim that previously estimated (column 1, Table 3)low but positive and highly significant (0.043) effect of women's employment on domestic violence, possibly interpretable with the male-backlash theory is unfounded and a biased estimate. Therefore, with the IV estimates, it is probably safe to conclude that after controlling for both reverse causality and omitted variable bias, there is no scope of evidence left admissible to support the male-backlash theory. In essence, leaving aside all the statistically insignificant effects of women's employment on domestic violence, I focus on the large, negative and statistically significant of women's working status on domestic violence. Presented in column 3, the large point estimate of -0.38 implies as 38 percent reduction in probabilities of incidence of physical violence against women who take part in paid employment. For the remaining categories of violence, namely, emotional and sexual violence the marginal effects in the second stage of IV estimation show that women's employment is not statistically significantly associated with domestic violence, albeit all the point estimates are consistently negative and larger than their linear probability model estimates. This implies, the estimates in the linear probability model presented in Table 3 were misleading and none of those effects survives the statistical significance after the estimation technique address the endogeneity issues.

After controlling for endogeneity, wife's education bears similar protective effects on domestic violence, the statistical significance erodes from earlier 1% level (in Table 3) to 10 % level in the second stage IV results presented in Table 4. What remains robust from linear probability model (Table 3) to second stage IV estimates (Table 4) are the preventive effects

Table 4 Domestic Violence against Working wives

Dependent variables :	(1) Violence Ever	(2) Emotional Violence	(3) Physical Violence	(4) Sexual Violence
	2SLS	2SLS	2SLS	2SLS
working status of women	-0.226	-0.149	-0.383***	-0.044
	(0.148)	(0.098)	(0.140)	(0.072)
Women's age (years)	0.003	0.003*	0.006***	0.000
	(0.002)	(0.001)	(0.002)	(0.001)
Women's education (years)	-0.004*	-0.002	-0.002	-0.002*
	(0.002)	(0.002)	(0.002)	(0.001)
Household size	0.001	-0.001	-0.001	0.001
	(0.003)	(0.003)	(0.003)	(0.002)
Wealth	-0.037***	-0.018**	-0.044***	-0.021***
	(0.012)	(0.009)	(0.011)	(0.007)
Urban	0.010	0.027*	-0.017	0.026***
	(0.019)	(0.016)	(0.019)	(0.008)
Witnessed father beating mother	0.209***	0.079***	0.213***	0.077***
	(0.017)	(0.016)	(0.016)	(0.012)
Household structure	0.004	-0.018*	0.006	-0.003
	(0.019)	(0.010)	(0.018)	(0.007)
Alcoholic husband	0.184***	0.097***	0.186***	0.051***
	(0.017)	(0.015)	(0.017)	(0.010)
Marriage payments norms included	Yes	Yes	Yes	Yes
Marriage rules norms included	Yes	Yes	Yes	Yes
Separation norms included	Yes	Yes	Yes	Yes
Lineage norms included	Yes	Yes	Yes	Yes
Agro-pastoral practices included	Yes	Yes	Yes	Yes
Settlement patterns included	Yes	Yes	Yes	Yes
	First -stage results-instruments			
First stage estimate for the Instrumental Variables				
Tribal acceptance norm of women's participating in hunting	0.658***	0.658***	0.658***	0.658***
Tribal acceptance norm of women's political activities	0.133***	0.133***	0.133***	0.133***
Tribal acceptance norm of women's fuel collection	0.161***	0.161***	0.161***	0.161***
F-test of Joint significance	51.26***	51.26***	51.31***	51.31***
Hansen's J Statistics	2.718	4.056	2.063	2.112
Chi-sq(1) P-value	0.2569	0.1316	0.2025	0.3479
Number of tribal clusters	118	118	118	118
Observations	6,756	6,756	6,758	6,758
R-squared	0.392	0.135	0.254	0.159

Notes: Cluster robust standard errors are reported in the parenthesis. ***, **, * denote statistical significance at the 1, 5 and 10 per cent levels, respectively. Linear Probability Model coefficients are shown in columns (1) to (4). The community-level control variables are not reported in this abridged version, but are available in the online appendix. These community-level controls include (i) marriage payments (No marriage payments, only brideprice, only dowry, both brideprice and dowry), (ii) endogamy, types of exogamy, (iii) types of consanguinity, (iv), types of marriage types (love marriage, arranged marriage, or both), (v), polygyny, (vi) post-marital residency patterns, (vii) divorce norms, (viii) alimony customs, (ix) child custody norms, (x) remarriage norms, (xi) descent rules, (xii) inheritance norms, (xiii) practice of plough traditionally used in agriculture, (xiv) subsistence dependence on agriculture, gathering, hunting, fishing, animal husbandry, and pastoralism, (xv) settlement patterns, (xvi) land ownership patterns.

of wealth on domestic violence and accentuating effects of husband witnessing his father beating his mother and alcoholism of husband. On both these counts, the effects on domestic violence accentuate for the aggregate measure, as well as, for its constituent categories of violence. Both leave a large point estimates which are statistically significant at 1% level. In support of these estimation results, formal statistical tests have been conducted to ascertain the validity and strength of the instruments, since I considered three instruments and present an overidentified case to instrument one endogenous variable. The predictive power or relevance of these three instruments are tested by using the firth stage regression F-statistics to test the joint significance of the instruments. The F-statistics is derived at 51.26 for an aggregate measure of domestic violence and emotional violence. For physical violence and sexual violence, the F-statistics records a value of 51.31. The statistical significance at 1% level for all these high magnitudes of F-statistics indicates a strong correlation of the instruments with women's employment. For the validity of an instrument, the F-statistics should be greater than 10 (James H. Stock, Jonathan H. Wright, and Motohiro Yogo 2002). Since the first stage F-statistic, for all the three instruments are far larger than the conventional benchmark, on the basis of this test and theoretical justification, it can be concluded that all three instruments are valid instruments.

endogeneity test

It must be tested whether the allegedly endogenous regressor, the working status of women, can be treated as exogenous. I perform an endogeneity test under the null hypothesis that the working status of women can actually be treated as exogenous. This test statistic is distributed as Chi-squared with 1 degree of freedom (Christopher F. Baum, Mark E. Schaffer, and Steven Stillman 2003) corresponding to the number of allegedly endogenous regressors being tested, which is just one in my case. The p-value corresponding to Chi-squared(1) is less than 0.001 in all four regressions in Table 4. The null that 'working status of women' may be treated as exogenous can be rejected. Therefore, the endogeneity of the regressor 'working status of women' is endogenous.

I instrument the endogenous regressor 'working status of women' with the tribal norms of acceptance of female participation in gathering of food and fuels, hunting and contesting politically for public visibility. These variables are measured by using the reported gender role attitudes and female participation in gathering, hunting and politics. These are traditional gender norms persistent historically and therefore exogenous to the individual behaviors. It might create a conducive and encouraging environment which can directly affect society's attitude towards acceptance or indulgence towards women's freedom of mobility, and therefore female employment. Women's participation in economic activities is unlikely to directly affect male violence against women. Although, indirectly such attitudes may affect women's acceptability of violence and men's endorsement of violence both of which may indirectly affect the incidence of actual domestic violence. This fulfills the exclusion restrictions, that social norms regarding political and economic roles for women do not directly affect indicators of domestic violence.

Over-identification diagnostics

Since I have an over-identified specification, it is appropriate to test whether the excluded instruments are appropriately independent of the error process. Under the null hypothesis that all instruments are uncorrelated with the error process, a test for overidentifying restrictions

has a large-sample Chi-squared distribution with 3 degrees of freedom corresponding to the three overidentifying restrictions I have. For the cluster-dependent error process, I report Hansen's J statistic in Table 4. In all the four regressions in Table 4, this statistic is far from a rejection of its null, which gives us greater confidence that our instrument set is appropriate.

Under-identification diagnostics

For a greater level of comfort on the adequacy of identification, an under-identification test is necessary. I have already allowed flexibility from the i.i.d assumption by allowing for cluster-dependent error process. Under such a flexible assumption about the error process, the LM version of the Kleibergen-Paap rk statistic can be considered as a general case which is correspondingly robust to clustering. The Kleibergen-Paap rk LM statistic follows a chi-squared distribution with 3 degrees of freedom (Frank Kleibergen and Richard Paap 2006) since I have three instruments. The p-value of this statistic is less than 0.001. Therefore, we reject the null hypothesis implies full rank and identification. Thereby data enables me to reject the null hypothesis that the equation is under-identified.

Redundancy diagnostics

In the over-identified context, it is now essential to test if some of the instruments are redundant. If redundancy is supported by evidence, then large-sample efficiency is not improved by including them (Christopher F. Baum, Mark E. Schaffer, and Steven Stillman 2007). Furthermore, using several instruments, some of which could be redundant, might cause the estimator to perform poorly in a finite sample. A more reliable point estimate can, therefore, be achieved by dropping redundant instruments. I employ the Kleibergen-Paap rk LM test of rank of a matrix (Frank Kleibergen and Mark Schaffer 2017) that follows chi-squared distribution with 3 degrees of freedom equal to the specified redundancy of any or all of the three instruments. The null hypotheses that the rank of the variance-covariance matrix is zero. I have considered the LM redundant test for all of the three instruments. The reported rk statistics has a p-value less than 0.001. Therefore, collectively, we reject the null which indicates that none of the instruments are redundant.

Weak instrument Diagnostics

The weak instrument problem arises when instruments are weakly correlated with the endogenous variable that is to be instrumented. Statistically speaking, the correlations between the endogenous regressor and the instruments are small and near-zero. There are two types of weak identification test, as proposed by James Stock and Motohiro Yogo (2005). There are two types: maximal relative bias and maximal size. The null hypothesis is that the instrument does not suffer from a specific bias. The test statistic reported are Cragg-Donald Wald F-statistic and Kleibergen-Paap rk Wald F-statistic. Both need to be separately compared with the Stock-Yogo weak ID test critical values. The critical values are specified at 5%, 10%, 20% and 30 % maximal IV relative bias; as well as for 10%, 15%, 20%, and 25% maximal IV size. Rejection of the null hypothesis indicates the absence of the weak-instruments problem. The reported Cragg-Donald Wald F-statistic and Kleibergen-Paap rk Wald F statistic both exceeds the Stock-Yogo critical values and the null hypothesis is rejected. Therefore, it can be concluded that the weak-instrument problem is absent in my analysis.

In summary, the issues of endogeneity, both in terms of reverse causality between the female employment and domestic violence and omitted variable bias has to be addressed. Unless the reverse causality is addressed the estimates suffer from a large bias which prompts the researcher to conclude a direct and positive effect of working status of women on domestic violence. For example, the possibly biased estimates of Sohini Paul (2016) and Cruz Caridad Bueno and Errol A. Henderson (2017) can mislead us to a misplaced male-backlash theory. Such misplaced confidence in male-backlash theory can also make policymakers think in terms of the futility of women's empowerment through women's employment as it might endanger them in the hands of their husbands at home through increased incidence domestic violence and consequential ill-effects on women's health. Leveraging an unusual and rare coincidence of a large variety of social norms in an administratively homogenous, geographically contagious and yet culturally diverse context (which is a stark contrast to the rest of India's predominant patriarchy) these results have seemingly addressed both the estimation and overcome the data limitation issues.

CONCLUSION

Augmenting ethnographic characteristics to a nationally representative household survey, I explore the ambiguous and unclear nexus between women's work status and incidence of domestic violence. After controlling for endogeneity both on account of reverse causality and omitted variable bias, there is a large, statistically significant and negative impact of working status of women on the incidence of physical violence. About 38 percent reduction in physical violence can be predicted for a woman who takes up paid employment. This implies about 5.65 percent reduced likelihood of physical violence. Given the incidence of physical violence for working wives are at 14.58 percent, a 38 percent reduction translates into 5.65 percent reduction in likelihood of physical violence, if she takes up paid employment outside their households. Therefore, in a real-life sense this causal effect is meaningful. For the aggregate measure of domestic violence as well as for emotional and sexual violence not statistically significant effects can be derived. However, for the most heinous form of domestic violence--physical violence, this large negative and statistically significant point estimate supports the theories that predict an enhancement intra-household bargaining power through their engagement in paid employment can actually protect them from the vagaries of physical violence inflicted by their husbands. As a corollary, the policy consequences (United Nations 2013) of promoting employment opportunities among and for women to reduce or eliminate the incidence of violence against women appears far more promising, at least for physical violence. Supplementary policy measures can well be empowering women through interventions that promote education can also bear desirable impacts in reducing violence against women, at least at their marital homes-where they are perceived to be the safest.

This study in its limited scale demonstrates that it is important to control for both unobserved social norms as well as the issues of reverse causality. In cross-section analysis of data, it is not possible to identify ethnicity-level fixed effects in ideal sense. The geographical identifiers are not available in NFHS-3. Therefore, I am constrained to use state fixed effects, which are coarse and not granular. The bias can emerge from not including ideal ethnicity-level fixed effects due to data limitation. Therefore, external validity remains an issue in this analysis. Possibilities of future research include tackling the measurement errors and the remaining methodological issues. It is challenging to test the heterogeneous effects with respect to each social norms given female employment itself is an endogenous variable to be instrumented with. The remaining data availability issues can be addressed in the nationally

representative surveys, such that future researchers can extend their studies by controlling for hitherto unobserved social norms and arrive at policy-relevant causal findings.

***

All personal information that would allow the identification of any person or person(s) described in the article has been removed.

REFERENCES

Aizer, Anna. 2007. “Wages, violence and health in the household”, Technical report, National Bureau of Economic Research.

Alesina Alberto, Giuliano, Paola. and Nunn, Nunn. 2013. “On the origins of gender roles: Women and the plough.” *The Quarterly Journal of Economics*,128(2), pp.469–530.

Alesina, Alberto, Brioschi, Benedetta, and Ferrara, Eliana La. 2016. “Violence against women: a cross-cultural analysis for Africa”, Technical report, National Bureau of Economic Research.

Barnard, Alan. and Spencer, Jonathan. 2009. The Routledge encyclopedia of social and cultural anthropology. New York: Routledge.

Baum, Christopher F., Schaffer, Mark E., and Stillman, Steven. 2003. “Instrumental variables and GMM: Estimation and testing”, *Stata journal* 3(1), 1–31.

_____.2007. “Enhanced routines for instrumental variables/GMM estimation and testing”, *Stata Journal* 7(4), 465– 506.

Bhattacharyya, Haimanti. 2015. “Spousal violence and women’s employment in India”, *Feminist Economics* 21(2), 30–52.

Bhattacharyya, Manasi, Bedi, Arjun S.,and Chhachhi, Amrita. 2011. “Marital violence and women’s employment and property status: Evidence from north indian villages”,*World Development* 39(9), 1676–1689.

Caridad Bueno, Cruz. & Henderson, Errol A. 2017. “Bargaining or backlash? evidence on intimate partner violence from the dominican republic”, *Feminist Economics* 23(4), 90–116.

Chin, Yoo-Mi. 2012. “Male backlash, bargaining, or exposure reduction?: women’s working status and physical spousal violence in India” *Journal of population Economics* 25(1), 175–200.

Farmer, Amy, and Tiefenthaler, Jill. 1996. “Domestic violence: the value of services as signals”, *The American Economic Review* 86(2), 274–279.

_____.1997. “An economic analysis of domestic violence”, *Review of Social Economy* 55(3), 337–358.

Gelles, Richard J. 1987. Family violence, Sage Newbury Park, CA.

Hadi, Abdullahel. 2005. “Women’s productive role and marital violence in Bangladesh”, *Journal of family violence* 20(3), 181–189.

Kish, L. 1965. 'Survey sampling’. New York, London: John Wiley & Sons, Inc.

Kishor, Sunita, and Johnson, Kiersten. 2004. ‘Profiling domestic violence: A multi-country study.’ Calverton Maryland ORC Macro MEASURE DHS+.

Kleibergen, Frank, and Paap, Richard. 2006. “Generalized reduced rank tests using the singular value decomposition”, *Journal of econometrics* 133(1), 97–126.

Kleibergen, Frank. & Schaffer, Mark. 2017. ‘RankTest: Stata module to test the rank of a matrix using the Kleibergen-Paap rk statistic’.

Lenze, Jana. & Klasen, Stephan.2017. "Does women's labor force participation reduce domestic violence? evidence from Jordan", *Feminist Economics* 23(1), 1–29.

Macmillan, Ross, and Gartner, Rosemary.1999. "When she brings home the bacon: Labor-force participation and the risk of spousal violence against women", *Journal of Marriage and the Family* pp. 947–958.

Martin, Sandra L., Moracco, Kathryn E., Garro, Julian, Tsui, Amy Ong,Kupper, Lawrence L., Chase, Jennifer L., and Campbell, Jacquelyn C. 2002. 'Domestic violence across generations: findings from northern India', *International journal of epidemiology* 31(3), 560–572.

Michalopoulos, Stelios, Putterman, Louis, and Weil, David N. 2016. The influence of ancestral life ways on individual economic outcomes in sub-saharan Africa, Technical report, National Bureau of Economic Research.

Murdock, George Peter. 1967. 'Ethnographic atlas: a summary', *Ethnology* 6(2), 109–236.

Naved, Ruchira Tabassum, and Persson, Lars Åke. 2005. 'Factors associated with spousal physical violence against women in Bangladesh', *Studies in family planning* **36**(4), 289–300.

Paul, Sohini. 2016. 'Women's labour force participation and domestic violence:Evidence from India', *Journal of South Asian Development* **11**(2), 224–250.

Ritzer,George.2007. The Blackwell encyclopedia of sociology.Singapore. Blackwell Publishing Limited.

Singh, Kumar Suresh, Pakem, B., Roy, Shibani, and Basu, Arabinda. 1994. 'People of india: (volI.-XXXII)'. Calcutta.

Stock, J. H., Wright, Jonathan H. and Yogo, Motohiro. 2002. "A survey of weak instruments and weak identification in generalized method of moments", *Journal of Business & Economic Statistics* 20(4), 518–529.

Stock, James H., Yogo, Motohiro, Andrews, Donald W., and Stock, J.H. 2005. 'Identification and inference for econometric models: Essays in honor of Thomas Rothenberg', Cambridge Univ Press.

Tauchen, Helen V., Witte, Ann Dryden, and Long, Sharon K. 1991. 'Domestic violence: A nonrandom affair', *International Economic Review* pp. 491–511.

United Nations. 2013. The Elimination and prevention of all forms of violence against women and girls', 2013 Commission on the Status of Women.

Vyas, Seema, and Watts, Charlotte. 2009. 'How does economic empowerment affect women's risk of intimate partner violence in low and middle income countries? a systematic review of published evidence', *Journal of international Development* 21(5), 577–602.

Annexure A1 Definition and description of cultural norms

1 **Marriage Payments** is a categorical variable coded as 0 if neither brideprice nor dowry is practiced, suggesting the absence of any significant consideration of goods, money or any kind in a marriage. In societies where a transfer of substantial consideration in the form of livestock, goods or money from the groom to the kins of the bride is coded as only brideprice or 1 (Alan Barnard and Jonathan Spencer 2009). Transfer of substantial consideration in the form of livestock, goods or money from bride's family to the kins of the groom takes place in dowry paying societies coded as 2. This variable is coded 3 where exchange of both dowry and brideprice are practiced.

2 **Types of Exogamy** is a categorical variable. It is coded 0 if endogamy is practiced, where the match for marriage is to be found from within the same clan/community; 1 is clan exogamy, where marriage is an observed partner is selected from outside of the clan. (George Peter Murdock 1967, George Ritzer 2007); 2 is community exogamy where marriage is observed when the partner is selected, from outside of the community. (Alan Barnard and Jonathan Spencer 2009); 3 is multiple exogamy, where more than one type of exogamy, that is, village-exogamy together with community or clan-exogamy is practiced.

3 **Intrafamily Marriage** is a dummy variable. Here 0 stands for no consanguinity, where the selection of marriage partner is avoided within the blood relations; 1 is cross-cousin marriage, also observed as the unilateral marriage pattern within either father's or mother's lineage but not their affines and affinity (Alan Barnard and Jonathan Spencer 2009). For example, Marriage with Father's Sister Daughter or Mother's brother's daughter etc. Alternatively, Sororate/levirate marriage is also practiced where a widower can marry the sister of his deceased wife and where a widow can marry the brother of her deceased husband respectively.

4 **System of Marriage** is a binary variable that captures traditional marriage patterns. It is coded as 0 for monogamy, where only one partner/wife is selected. In simple terms, it is the marriage of one male to one female at a time (George Peter Murdock 1967); 1 is polygyny lying under polygamy where a single man can marry more than one woman and may occupy the household with co-wives (Alan Barnard and Jonathan Spencer 2009). Sororal polygyny and polyandry are not observed in our sample.

5 **Marriage Symbol** is a dummy variable that captures the following customs. It is coded as 0 where *no symbol for marriag*e is observed during or after marriage; In societies where jewellery worn by either gender to symbolize marriage or a red powder is used on the

forehead by females is coded with 1 to represent *ornaments or vermillion or veil.*

6 **Marriage Types** is a categorical variable that captures the codes. Here, 0 is *Arranged Marriage.* It a selection process of a marriage partner which is done generally by the consent of parents and their mutual negotiation. The bride and groom have a very less say in it; 1 is *Intimate Marriage.* In this, the marriage partner is selected by the individuals, both males and females select the co-partner with their own consent, through affection, mutual consent etc.; Further, 2 is *Both Arranged and Intimate Marriages.* Such marriage patterns are observed within a society where it allows both, marriage by familial consent as well as gives freedom to individuals to select their own marriage partner.

7 **Post-Marital Residency** is a categorical variable. Patrilocal residence implies residence in a patrilineal group where bride goes and lives with his husband's kins, loosely referred to as Virilocal (Barnard and Spencer 2009) and is coded as 0. The next category is coded as 1 which is *Matrilocal or Uxorilocal.* Such practices observe the couple to reside with or near the female matrilineal kinsmen of the wife. It can be also suggested that the Marriage norm in the mother's place of residence. It is generally observed in a matrilineal society. In some loose sense, it is also referred to as Uxorilocal. (Murdock 1967, Barnard and Spencer 2009). The a*mbilocal/ bilocal/ neolocal /duolocal* societies are coded as 2. It is the practice where the marital residence is established optionally with or near the parents of either the husband or wife; depending upon circumstances or personal choice. The duolocal residence suggests both bride and groom can reside in their own respective natal home. (Barnard and Spencer 2009).

8 **Divorce Rules** is a categorical variable that captures the following social norms observed in different societies for granting divorce among couples. Here 0 is c*ivil proceedings*, where married couples approach legal body for divorce filings legally. *Mutual Consent* when couples decide to divorce by mutually which is coded as 1. In certain societies, divorce is permitted by the *Society of the Family Approval/*agreement, which is coded as 2. The last category is where divorce rules are rigid and doesn't permit the couples to divorce with code 3.

9 **Alimony Rights** is a dummy variable that captures a social norm that is coded as 1 if a wife is entitled to receive compensation from her husband after divorce, and 0 otherwise.

10 **Child Custody Rights** is a categorical variable that decides with whom of the separating parents the legal custody of the child is assigned, and is coded as 0 if custody is given to father. It is coded 1 if child's custodial rights goes with the mother. Where the child stays with

either parent with social/legal consent, it is categorized with 2.

11 **Remarriage** norms is a dummy variable that is coded as 1 where a wife is allowed to remarry after divorce or even death of the husband. It is coded 0 otherwise, where such remarriages are not allowed or not acceptable in society.

12 **Descent** is a binary variable that is coded as 1 if the *matrilineal descent* is practised, where a person can be traced through the female line or female ancestors, i.e. Mother, mother's mother, mother's mother's mother and so forth. Generally, female kins are selected to become a descendant after the mother. (Murdock 1967). Otherwise, the variable takes a value of 0 if the *patrilineal descent* is followed which can be traced through the male line, i.e. Father, grandfather, great-grandfather etc. Male kins are selected to become a descent after the father.

13 **Inheritance** norm is a categorical variable that is coded as 0 if equigeniture inheritance is observed. In this, each kin inherits equal distribution of the inherited property and kind. Such inheritance does not bias on the gender basis and thus both male and female are eligible for the inheritance. (Murdock 1967, Ritzer 2007). If it is male primogeniture that is where predominant inheritance is received by the senior male member. It implies he inheritance by the first-born son or eldest son. These categories come under male inheritance patterns and coded as 1 (Murdock 1967, Barnard and Spencer 2009). For female inheritance pattern it is coded as 2, where the distribution of wealth and property is passed on through mother's line to next female kin of the category or if the female share is less than male share.

14 **Plough** is a binary variable that is coded as 0 if plough is absent and 1 if the plough is traditionally used in agriculture.

15 **Agro-pastoral practices** is a set of subsistence patterns that capture in the form of five dummy variables. These variables are *agriculture*, *gathering* of wild plants and small land fauna and the gathering of agricultural products as well; *hunting*, including trapping and fowling; *fishing*, including large aquatic animals and shell-fishing; *animal husbandry,* and *pastoralism* (Murdock 1967). In comparison to the Murdock's Atlas (1967), the data in the People of India (1994) is not granular as the latter does not indicate the extent to which people's livelihood is dependent on each subsistence categories.

16 **Women's role in subsistence** is a set of five dummy variables that signifies whether women in a society takes part in agricultural, gathering, hunting, fishing, husbandry, pastoralism, weaving, basketry, and politics or not.

17 **Land ownership** is a categorical variable that is coded as 0 if private ownership of land is

permissible. In this, each family has its own control over a certain area of land. Further, it is coded as 1 if the ownership of land lies with the society or the community and coded as 2 if communities are landless, where they do not possess any land.

18 **Settlement patterns** is a categorical variable that captures settlement types among the societies. It is coded as 0 if compact or relatively permanent settlement patterns are observed, that is where the societies have nucleated villages or towns. The separated hamlets/semi-permanent/neighborhoods dispersed households are coded as 1, where it is observed that several dispersed societies which form a permanent single community. The last category is coded as 2 where *semi-nomadic or semi-sedentary* patterns are followed by tribes who wander at least half a year and occupy more or less a permanently settled space.

[2] The eight ethnicities covered by both Murdock (1967) and People of India (1994) are Ao, Angami, Chakma, Garo, Khasi, Lhota, Mogh and Sema. The traditional norms have been compared which are largely unchanged over there decades.

[3] The correlation between these social norms with female labour-force participation rate (FLFPR) draws support from the analysis of Alesina, Giuliano, and Nunn (2013).

4 The Kish grid in the household questionnaire has 8 columns numbered 1 to 8 that represents number of eligible women aged 15-49 in the household. There are 10 rows numbered 0 to 9 representing the last digit of the questionnaire number. Suppose there are 3 eligible women in a household and the questionnaire number happens to be '7786', the 2nd woman is selected for household relations questions as the digit 2 can be found at the intersection of column 3 and row 6 of the Kish grid.