The University of Manchester
Global Development Institute

Global Development Institute

Working Paper Series

2017-015

July 2017

ISBN: 978-1-909336-50-6

# What factors can explain the rise and inter-state variation in crimes against women in India?

Geetika Dang[1]

[1] Independent researcher

Email: geetika.dang@barcelonagse.eu

Vani S. Kulkarni[2]

[2] Lecturer, Department of Sociology, University of Pennsylvania, USA

Email: vaniskulkarni2001@gmail.com

Raghav Gaiha[3]

[3] Honorary Professorial Fellow, Global Development Institute, The University of Manchester, United Kingdom

Email: raghavdasgaiha@gmail.com

Cite this paper as:

Dang, Geetika, Vani S. Kulkarni and Raghav Gaiha [2017]. What factors can explain the rise and inter-state variation in crimes against women in India? GDI Working Paper 2017-015. Manchester: The University of Manchester.

**Abstract**

This paper focuses on two related questions: (i) What are the factors associated with huge inter-state variation in crimes against women (CAW) in India? (ii) Why have such crimes risen between 2001 and 2015? As answers to these questions lie in the interplay of affluence of a state, religion, demographics (including female/male ratio), employment opportunities for women, their literacy, rural/urban population ratio, size of the pool of potential male perpetrators of such crimes, alcoholism, and other state indicators (such as quality of governance in the state and level of media exposure), we carried out a detailed econometric analysis that allows us to assess their individual and joint contributions to serious crimes against women and rape over time and across states. The present study builds on the literature in important ways, as much of the existing literature is either dated and/or lacks analytical rigour. Our study relies on more recent data from the National Crime Records Bureau for the period 2001–2015 and uses rigorous econometric methodology. While crimes against women occur across different locations and cultures, their forms and frequency vary. Specifically, there are significant differences between rural and urban populations, and between Hindus and Muslims. The higher the sex ratio, the lower is the incidence of both CAW and rape. Alcoholism increases the incidence of rape despite the ban on sale of liquor in certain states. Exposure to media has two effects: one is better reporting of crimes and the other, perhaps more importantly, is a deterrence of crime. Our analysis shows that the better reporting effect dominates crime deterrence effect. Governance – especially enforcement of law and order and legal provisions for protection of women against violence – makes a difference: an inverted U relationship is found, in which the incidence of rape first rises with improvement in governance, and then declines.

**Keywords**

Sexual violence, rape, affluence, sex ratio, rural, urban, media exposure, religion, India

**JEL Codes**

D63, I31, I38, H89

**Acknowledgements**

We are grateful to Katsushi Imai for his meticulous econometric advice, Veena S. Kulkarni and Varsha S. Kulkarni for help with the interpretation of econometric results, and Kumkum Dasgupta, Maya Prabhu and an anonymous reviewer for helping enrich our policy perspective.

## 1. Introduction

According to the United Nations Population Fund and the International Centre for Research on Women (UNPF & ICRW, 2014), one in three women throughout the world experience physical and/or sexual violence from a partner, or sexual violence from a non-partner. The figure is nearly 40% for South Asia. “The sheer prevalence; associated personal, social and economic costs; and repetitive nature of violence against women set it apart from other criminal acts” (Desmarais et al, 2010). It is precisely this feature of violence against women that necessitates its study as a separate social phenomenon with its own set of underlying social and cultural policy solutions. However, it is often argued that heterogeneity across cultural and social groups coupled with the multidimensionality of the crimes themselves do not permit generalisation of policy solutions for crimes against women (CAW).

If we go by the National Crime Records Bureau reports for India, incidence of serious crimes against women rose from 237 per day in 2001 to 313 per day in 2015. These crimes include rape, kidnapping and abduction, dowry deaths, and cruelty by husbands and relatives. Underage girls, adolescent and old women are frequently victims of brutal rapes and murders. Of the 313 crimes committed against women in India each day in 2015, around 30% were instances of rape (including the intent to rape).

The higher incidence of crimes during 2001–2015 coupled with a low conviction rate of 21% of registered cases suggests that women are very vulnerable to serious crimes in India. However, women's vulnerability varies enormously across the states. The incidence of serious crimes was as high as 75 per 100,000 women in Delhi in 2015, compared to approximately 5 per 100,000 women in Andhra Pradesh and Tamil Nadu, as shown in Table 1. Heat Charts in Figure 1 offer a more detailed description.

There are huge gaps in the incidence of crimes between the three worst and three best states, as shown in Table 1. The three worst states in 2001 – Delhi, Haryana and Assam – remained largely unchanged in 2015, with Assam replacing Haryana as the second worst state. The best performers, however, changed during this period. Nagaland, Meghalaya, and Sikkim displayed the lowest incidence of crimes in 2001 but the top two were replaced by Andhra Pradesh and Tamil Nadu in 2015. However, across states, the overall concentration of serious crimes did not change significantly. For example, the three states (Uttar Pradesh, Rajasthan and Maharashtra) that accounted for 37% of the crimes in 2001 were responsible for a slightly lower share of 34% in 2015.

## Table 1: Incidence of CAW

**Lowest Incidence of CAW**

| State | Year | Total serious CAW | Incidence of CAW | Share |
|---|---|---|---|---|
| Nagaland | 2001 | 23 | 2.439296 | 0.027 |
| Meghalaya | 2001 | 41 | 3.587883 | 0.047 |
| Sikkim | 2001 | 10 | 3.962483 | 0.012 |
| | | | Total percentage | 0.085 |
| | | | Total CAW in 2011: | 86585 |

**Highest Incidence of CAW**

| State | Year | Total serious CAW | Incidence of CAW | Share |
|---|---|---|---|---|
| Rajasthan | 2001 | 9122 | 33.67645 | 10.535 |
| Delhi | 2001 | 1596 | 25.56351 | 1.843 |
| Haryana | 2001 | 2493 | 25.4892 | 2.879 |
| | | | Total percentage | 15.258 |
| | | | Total CAW in 2011: | 86585 |

**Lowest Incidence of CAW**

| State | Year | Total serious CAW | Incidence of CAW | Share |
|---|---|---|---|---|
| Tamil Nadu | 2015 | 1859 | 5.401871 | 1.624 |
| Nagaland | 2015 | 68 | 6.071429 | 0.059 |
| Gujarat | 2015 | 2130 | 7.254521 | 1.861 |
| | | | Total percentage | 3.545 |
| | | | Total CAW in 2015: | 114446 |

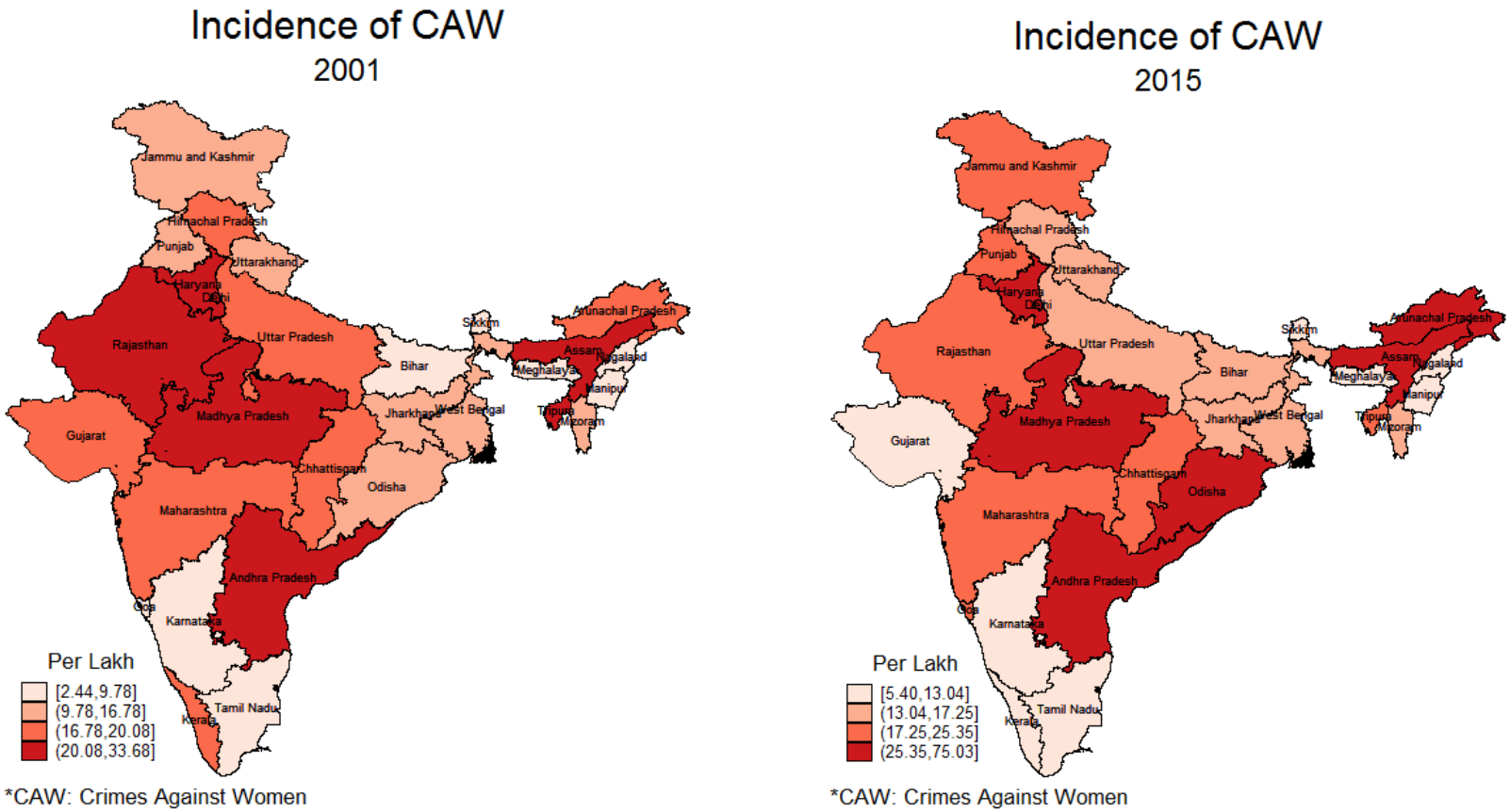
**Highest Incidence of CAW**

| State | Year | Total serious CAW | Incidence of CAW | Share |
|---|---|---|---|---|
| Delhi | 2015 | 6899 | 75.02991 | 6.028 |
| Assam | 2015 | 7487 | 47.89534 | 6.542 |
| North East | 2015 | 8621 | 45.72771 | 7.533 |
| Aruchal Pradesh | 2015 | 219 | 35.60976 | 0.191 |
| | | | Total percentage | 20.294 |
| | | | Total CAW in 2015: | 114446 |

*Notes: CAW denotes crimes against women, specifically: rape; dowry death; kidnapping and abduction; cruelty by husband and his relatives.*

Incidence of CAW is calculated for each state as the ratio of CAW and the total number of women in the state according to the Census Data and the Population projections of the erstwhile Planning Commission.

**Figure 1: Incidence of CAW**




*Source: Based on authors' calculations*

Uttar Pradesh, Gujarat, Kerala, Himachal and Rajasthan improved 2001-2015 while Arunachal Pradesh, Odisha, Jammu and Kashmir and Punjab performed worse than before. Delhi was among the worst and remains so while Haryana has considerably worsened

Table 2 focuses on the distribution of rape across states and over the period 2001–2015. In 2001, states with the lowest incidence of rape were Karnataka, Gujarat and Tamil Nadu. In 2015, these remained among the four best performing states with Tamil Nadu as the best. In 2001, Mizoram, Madhya Pradesh and Chattisgarh were among the four worst states while in 2015 Delhi, Mizoram and Chattisgarh were among the four worst states, with Delhi as the worst. Heat charts in Figure 2 offer a more detailed graphical description.

**Table 2: Incidence of rape**

**Lowest Incidence of Rape in 2001**

| State | Year | Rape incidence | Absolute number of rapes | Share of total number of rapes |
|---|---|---|---|---|
| Karnataka | 2001 | 1.129023 | 293 | 1.827 |
| Gujarat | 2001 | 1.17766 | 286 | 1.783 |
| Tamil Nadu | 2001 | 1.364306 | 423 | 2.637 |
| | | | Total share: | 6.247 |
| | | | Total number of rapes in 2001 | 16039 |

**Highest Incidence of Rape in 2001**

| State | Year | Rape incidence | Absolute number of rapes | Share of total rape |
|---|---|---|---|---|
| Mizoram | 2001 | 12.10812 | 52 | 0.324 |
| Madhya Pradesh | 2001 | 9.86356 | 2851 | 17.775 |
| Chhattisgarh | 2001 | 9.257128 | 959 | 5.979 |
| Assam | 2001 | 6.343911 | 817 | 5.094 |
| | | | Total share: | 24.079 |
| | | | Total number of rapes in 2001 | 16039 |

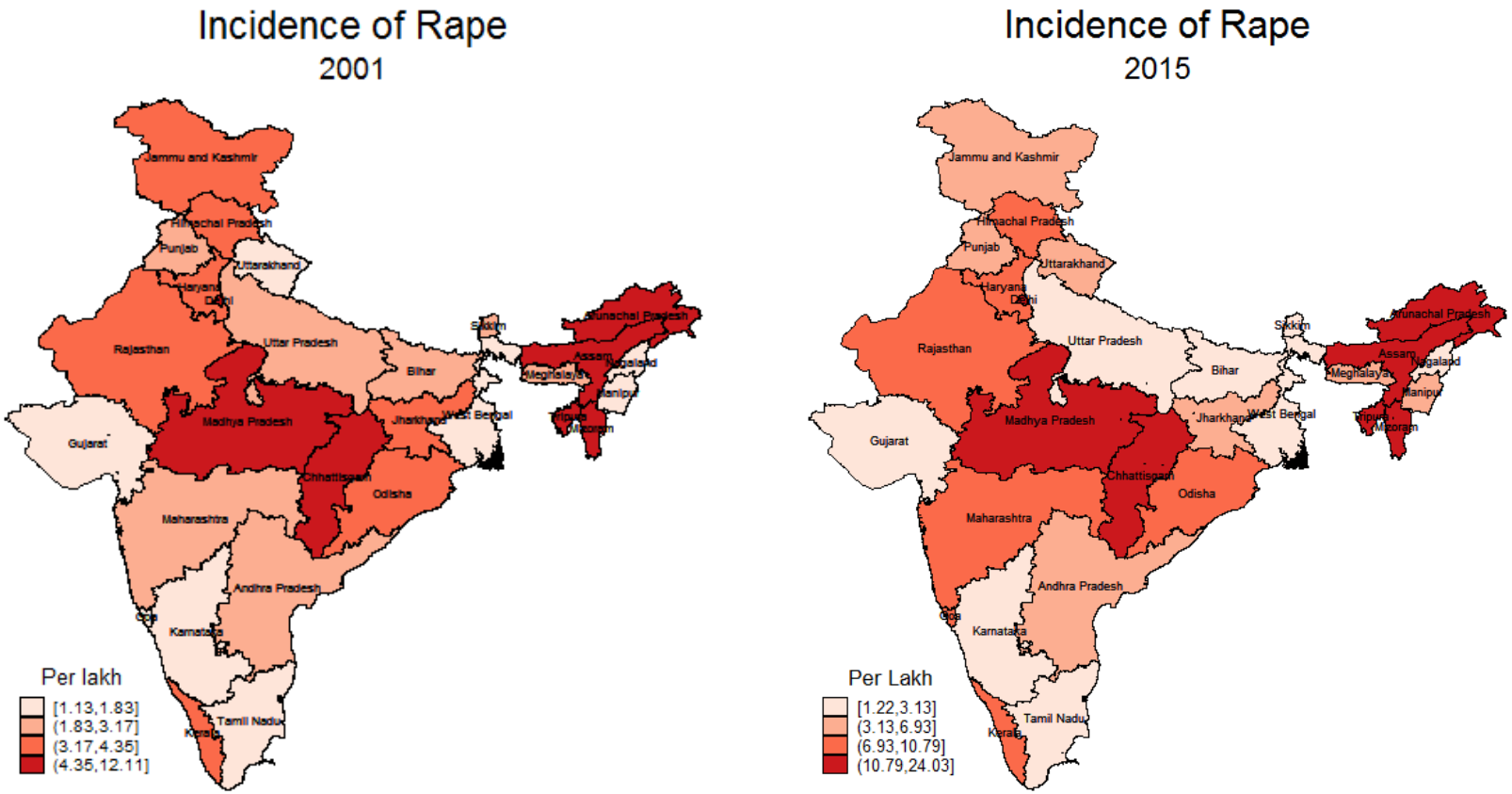
**Lowest Incidence of Rape in 2015**

| State | Year | Rape incidence | Absolute number of rapes | Share of total rape |
|---|---|---|---|---|
| Tamil Nadu | 2015 | 1.223339 | 421 | 1.214 |
| Sikkim | 2015 | 1.666667 | 5 | 0.014 |
| Gujarat | 2015 | 1.713157 | 503 | 1.450 |
| Karnataka | 2015 | 1.932985 | 589 | 1.698 |
| | | | Total share: | 4.361 |
| | | | Total number of rapes in 2015 | 34692 |

**Highest Incidence of Rape in 2015**

| State | Year | Rape Incidence | Absolute number of rapes | Share of total rape |
|---|---|---|---|---|
| Delhi | 2015 | 24.0348 | 2210 | 6.370 |
| North East minus Assam | 2015 | 16.7034 | 538 | 1.551 |
| Mizoram | 2015 | 14.5098 | 74 | 0.213 |
| Chhattisgarh | 2015 | 12.2643 | 1561 | 4.500 |
| | | | Total share: | 12.421 |
| | | | Total number of rapes in 2015 | 34692 |

**Figure 2: Incidence of rape**




*Source: Based on authors' calculations*

Uttar Pradesh, Gujarat, Kerala, Himachal and Rajasthan improved 2001-2015 while Arunachal Pradesh, Odisha, Jammu and Kashmir and Punjab performed worse than before. Delhi was among the worst and remains so, while Haryana has considerably worsened

This paper will focus on two related questions: (i) What are the factors associated with huge inter-state variation in these crimes in 2015? (ii) Why have crimes against women (CAW) risen between 2001 and 2015? As answers to these questions lie in the interplay of affluence of a state, religion, demographics including female/male ratio, employment opportunities for women, their literacy, rural/urban population ratio, and quality of governance in the state and media exposure, we carried out a detailed analysis that allows us to assess their individual and joint contributions to variation in serious crimes against women over time and across states.

As the literature using panel data and appropriate econometric specification for India is paltry, the main contributions of this paper lie in the use of a rigorous econometric methodology and a panel data set covering the period 2001–2015. CAW and rape are analysed separately as the incidence of rape rose at a much faster rate than crimes against women as a whole. In addition, as argued below, rape is an extreme act of violence which leaves a deep scar on the victim and often results in her ostracisation. Cultural, social and other norms together with inefficiency of the police and judicial system result in repeated instances of rape in India. And too often, the brutality of the crime is only matched by the apathy of the investigating agencies - as demonstrated by the 2012 Delhi gang rape case (known also as the “Nirbhaya” case, for the name given by the media to the victim meaning “fearless”). A deeper understanding of the determinants of these virulent crimes is imperative for a better design and implementation of policies that aim to protect women.

The scheme of this study is as follows. Section 1 reviews the literature somewhat selectively to motivate and inform our analysis. This is followed by a review of the data sources used in the present analysis in Section 2. Section 3 gives a short description of changes in the incidence of crimes against women, rape specifically, and associated covariates. Section 4 gives a brief exposition of the panel fixed effects specification used. Section 5 is devoted to interpretation of the results. These results are then discussed from a broader perspective, drawing selectively upon other evidence in Section 6. Concluding observations in Section 7 summarise the main findings and insights from a policy perspective.

## 2. Literature review

In an important expository contribution, Desmarais et al (2010) focus on nested ecological theories of sexual violence: individual characteristics of perpetrators occur against a backdrop of family system, the circumstances in which the abuse occurs, and the larger social context of cultural values. Specifically, individual characteristics (eg psychological dysfunction, psychiatric disorders) interact with situational determinants (intoxication, stress) to create violent outcomes. This occurs at four levels: macrosystem, exosystem, microsystem and ontogenetic. Examples of each level are: macrosystem: patriarchal beliefs; exosystem: workplace; microsystem: marital separation; and ontogenetic: personality dysfunction.

In a more recent contribution, Solotaroff and Pande (2014) combine the ecological model with a lifecycle approach to capture the fact that women and girls in South Asia face the risk of multiple forms of violence throughout their lives, from birth through old age. The authors examine violence faced by girls in infancy and early childhood (excess female child mortality

and physical and sexual abuse), in adolescence before marriage (sexual harassment by non-marital intimate partners), and in adolescence and adulthood once married (dowry-related violence and intimate partner and domestic violence). The study also examines forms of violence that cut across life stages – namely, sexual harassment of adolescent and adult women, trafficking of women and girls, honour killings, and custodial violence[1].

Domestic violence is multidimensional. Physical violence includes any physical act that is intended to injure, harm or disable an intimate partner (eg wife beating); psychological violence and abuse includes emotional or verbal abuse (eg humiliation through derogatory remarks, threats); sexual violence including any genital, oral, or anal penetration by force by the accused and without the victim's consent (eg rape); and financial abuse, controlling finances without the knowledge of, consent, or input from a partner (eg concealment of income and using disproportionate share in gambling and/or drinking).

Some estimates for the prevalence of domestic violence in eastern India are revealing. The overall prevalence of physical, psychological, sexual and any other form of violence among women were 16%, 52%, 25% and 56%, respectively. The corresponding rates reported by men were 22%, 59%, 17% and 59.5%, respectively. Men reported higher prevalence of all forms of violence apart from sexual violence. Husbands were mostly responsible for violence in majority of cases and some women reported the involvement of their husbands' parents. Studies show that various acts of violence continued among a majority of the women who reported violence (Babu and Kar, 2009).

Desmarais et al (2010) identifies risk factors for victimisation and for perpetration. The risk factors for victimisation include: mental and physical problems, economic concerns, and substance abuse; traditional gender role beliefs and trauma history; social isolation (eg living in a rural community); and family/friends not intervening due to cultural, religious or generational beliefs regarding normative spousal behaviour, and sanctity of marriage. The risk factors also include age, substance abuse, mental health problems, dependency and witnessing of violence; and community factors (eg poverty, low social capital and inadequate sanctions); and social factors (traditional gender and social norms).

Whether rape is a crime of hate, revenge or male dominance remains debatable. In a seminal work, Brownmiller (1975) shows how men as men, despite racial and class differences, sustain a common interest in dominating women as women over time and across cultures. Brownmiller argues that rape is "a conscious process of intimidation by which all men keep all women in a state of fear." With this argument, she contests the assumptions that rape is about male sexual desire or cultural imperatives and insists that it is about universally male imperatives of dominance and control. Essentially, this shifts the focus from individual pathologies and moral harms to issues of systemic inequality and justice.

Raj and McDougal (2014) point out that while an 8.5% prevalence of sexual violence in India is among the lowest in the world, it is estimated to affect 27.5 million women in absolute

[1] *The Economist*, 21 January, 2017, observes "… a staggering 45m girls and women are missing from [India]. Some were never born, having been detected by ultrasound scans and aborted. Others died young as a result of being neglected more than boys. Some villages in the north have an alarming surplus of boys and young men". Kulkarni et al (2013) arrive at a similar estimate.

numbers. Only 1% of victims of sexual violence report the crime to the police. Most sexual violence in India occurs in marriage; 10% of married women report sexual violence from husbands. The reporting percentage is thus low in part because marital rape is not a crime in India.

Amartya Sen (2013), however, offers a more nuanced view, “The number of recorded rapes in India is certainly a substantial underestimate, but even if we take five times – or ten times – that figure, the corrected and enlarged estimates of rapes would still be substantially lower in India than in the US, the UK, Sweden, or South Africa. High frequency of rape may not be the real issue in India, but all the evidence suggests that India has a huge problem in seriously monitoring rape and taking steps to reduce it. The failure of the police to help rape victims and to ensure the safety of women is particularly lamentable”.

The consequences of domestic violence are grave and intergenerational: physical trauma, repeated physical assaults result in chronic disease (eg chronic pain); acute neurological (eg fainting) and cardiopulmonary (hypertension) symptoms; lifestyle risk behaviours (substance misuse); psychiatric disorders (depression); and children and adolescents adversely affected by witnessing domestic violence (post-traumatic stress disorder)[2.]

A distinguishing feature of Koenig et al (2006) is that the study analysed data from a large, representative sample of married men in four districts in the north Indian state of Uttar Pradesh and assessed the respective contributions of individual (socioeconomic, demographic, relationship, and intergenerational exposure to domestic violence) and contextual (economic development, gender and wife beating norms, violent crime levels) factors hypothesised as important in conditioning the likelihood of male-to-female physical and sexual domestic violence. The primary data source was the Male Reproductive Health Survey (MHRS), for which eligible men had to be married, aged between 15 and 59 years, and currently residing with their wives.

Two principal domestic violence outcome variables were considered. Physical violence was determined from the response to a single question asking whether the husband had physically hit, slapped, kicked, or tried to hurt his wife during the year preceding the survey. Sexual violence was determined from the response to a single question asking whether the husband had physically forced his wife to have sexual relations during the year preceding the survey.

Separate multilevel logistic models were fitted for each of the two binary outcomes: occurrence of physical violence and of sexual coercion in the year before the survey. The models took a two level form, with men (level 1) nested within the primary sampling units (level 2).

Among individual level risk factors, the divergent effects of socioeconomic status on physical versus sexual violence are of particular interest. Although greater household wealth and higher levels of education among both husbands and wives were found to be highly protective factors against the risk of physical violence, no such associations were evident with respect to sexual violence. In fact, women married to more educated husbands (seven or more years of schooling) experienced significantly higher risks of coercive sexual

[2] Also see Solotaroff and Pande (2014).

intercourse, implying that it is male spouses' "privilege" to engage in coercive sexual intercourse, behaviour not attenuated and perhaps even more pronounced with increased levels of his schooling.

Even after controlling for the effects of other risk factors, husbands who had witnessed their fathers beating their mothers as children were 4.7 times more likely to physically beat their own wives than men who had not witnessed such violence, and they were 3 times more likely to sexually coerce their wives.

There is also a significant relationship between childlessness and both physical and sexual violence, highlighting an additional negative social consequence for Indian women associated with childlessness.

A systematic association is also found between violent crime rates and domestic violence, with residence in areas with higher murder rates characterised by significantly higher likelihoods of perpetration of both physical and sexual violence against wives. Similarly, residence in communities characterised by norms more supportive of the physical punishment of wives was associated with significantly higher risks of physical – but not sexual – violence against wives[3].

Although this is a rich and insightful study, the findings in Koenig et al are not amenable to generalisation outside the four sample districts. Moreover, since the study is based on a cross-section survey, causal inferences are difficult. Also, the use of selected variables in different logits is *ad hoc*. Finally, the analysis is dated as it is based on data collected in 1995.

Campbell (2002) observes that intimate partner violence has been noted in 3–13% of pregnancies in many studies from around the world, and is associated with detrimental outcomes to mothers and infants.

Much of the marital abuse that women suffer frequently occurs in the first few years of marriage. Given the early average age at marriage in much of South Asia, this finding means that a great deal of this violence is experienced by married adolescents, who may be more powerless than older married women to defend themselves (Solotaroff and Pande 2014).

Adolescent wives (13–19 years) are most vulnerable, reporting the highest rates of marital sexual violence of any age group. Adolescent girls also account for 24% of rape cases in the country, although they represent only 9% of the total female population. An estimated 2.5 million adolescent girls (aged 15–19 years) are victims of sexual violence in India (Raj and McDougal, 2014).

Sujatha (2014) documents the interplay of alcoholism and domestic violence among Dalit women in India[4]. While alcoholism by itself cannot fully explain the incidence of crimes against women, it is one of the key variables. Though the causes of domestic violence are far more deep-rooted than simply being an offshoot of intoxication (and men who are not

[3] As reported in WHO (2012), the extent of violence against women is shocking. Research from Sri Lanka and Thailand reveals that more than half the women in low-income neighbourhoods are regularly beaten, while in Bangladesh, it has been found that husbands killing their wives account for 50% of all murders.

[4] The analysis is, however, based on a small sample.

alcoholics also beat their wives), alcoholism does figure as one of the major problems faced by Dalit women. An alcoholic husband does not take care of his family, spends all his earnings on alcohol and demands that his wife supply him with money to buy liquor. If she refuses to do so, she has to face severe violence.

A Dalit woman working night shifts or for long and irregular hours as a domestic worker is also vulnerable to violence. Dalit women are subjected to sexual harassment at their workplaces, they have to do heavy domestic chores during the day after working the night shift, and their small and crowded homes offer hardly any privacy for conjugal life during the day. The men too face stressful and demeaning hard work and turn violent towards their wives.

Domestic violence often results in malnutrition among women and children (Ackerson et al, 2009). Perpetrators of domestic violence often use several types of abuse, such as physical and psychological, to control the behaviour of their family members. The withholding of food is a documented form of abuse in Indian households and is likely correlated with the perpetration of physical violence. Additionally, domestic violence is strongly associated with a woman's inability to make decisions for herself and her family, including the choice of types and quantities of food that a woman prepares as she cares for herself and her children. This indicates that the possible solution could lie in increasing women's bargaining power to enable their economic independence. The sheer extent of associated suffering warrants corrective measures through women's empowerment.

Subramanian et al (2009) report a dose-response relation, with frequent and recent abuse found to be associated with the highest probability of poor nutritional outcomes in India, particularly among women. A review of studies investigating the effect of administration of intestinal anthelmintic drugs on haemoglobin found that mass treatment of communities for intestinal parasites decreases the prevalence of anaemia by 1.1–12.4% in adults, indicating that preventing domestic violence could be just as effective as this pharmaceutical approach in combating anaemia among women.

An important explanation is that the link between domestic violence and nutritional deficiencies may also involve a mediating effect of psychological stress. Women who experience domestic violence tend to have higher levels of psychological stress – a relation that has been documented among South Asian women. Children who have witnessed domestic violence in their homes are also more likely to experience psychological stress.

While there are many positive social implications of increased female labour force participation, employment may also increase a woman's risk of domestic violence. Using data collected from Bangladesh, Heath (2013) documents a positive correlation between work and domestic violence, but only among women with low education or young age at marriage. These results suggest that women with low bargaining power, victims of child marriage specifically, face increased risk of domestic violence upon entering the labour force as their husbands seek to counteract their increased bargaining power. This may have close bearing with the proposition of Gilles (1974) that men living in poverty were unable to live up to their ideas of "successful" manhood and that, in the resulting climate of stress, they would hit women.

In a variation, Jewkes (2002) argues that forms of conflict especially likely to be associated with violence centre on women's transgression of conservative gender roles or challenges to male privilege, as well as matters of finance. If many sources of conflict are analysed, conflicts about transgressions of gender norms and failure to fulfil cultural stereotypes of good womanhood are among the most important variables for risk of intimate partner violence. In South India, for example, pertinent factors include dowry disputes, female sterilisation, and not having sons.

Agarwal and Panda (2007) focus especially on a hitherto unexplored factor – a woman's property status – and demonstrates that owning a house or land significantly reduces her risk of marital violence. Employment, by contrast, unless it is regular, makes little difference. Immovable property provides a woman economic and physical security, enhances her self-esteem, and visibly signals the strength of her fall-back position and tangible exit option. It can both deter violence and provide an escape if violence occurs. Also, unlike employment, property ownership is not found to be associated with perverse outcomes, in that a propertied woman married to a man without property is not subject to greater violence.

The biggest challenge in the Asian context, particularly in the Indian sub-continent, is the abnormality in the sex ratios – an acute paucity of women per 1,000 men – due to reasons such as female foeticide, and the neglect of girls and subsequently women in allocation of household food and other resources. Further, the consequences of this sex imbalance have been socially disastrous – kidnapping and trafficking of women for marriage, and increased numbers of commercial sex workers, with a higher prevalence of HIV/AIDS virus and other sexually transmitted diseases (Kulkarni et al 2013).

Elaborating this concern, Amartya Sen (2013) laments, "A distressing aspect of gender bias in India that shows little sign of going away is the preference for boys over girls. One of the most pernicious manifestations of this pro-male bias is the relatively higher mortality rates of girls compared with boys, not because girls are killed, but mainly because of the quiet violence of the neglect of their health and illness in comparison with the attention that male children receive. Studies have shown that male priority in care continues for adults as well as children, raising the mortality rates of adult women above those of men".

The issue of systematic inequality and injustice would call for a cautious legislation as well as a sensitised judiciary. Although the number of countries with domestic violence legislation has grown exponentially as a result (from 4 to 76 between 1993 and 2013), implementation is a serious problem. Most domestic violence laws are not accompanied by budget allocations and there is often resistance to the laws from male-dominated judiciary and police (Ellsberg et al, 2015). This can be substantiated by the fact that the rate of conviction in such cases in India, for example, is barely 21% (National Crime Record Bureau 2015).

## 3. Data

We construct a rich panel using data from the Census 2001 and 2011; data from various rounds of the National Sample Survey, population projections by the Registrar General of India and India Human Development Survey (IHDS).

We use the data from National Crime Record Bureau (2001 and 2015) on aggregate crimes against women across Indian states. These data are disaggregated by types of crimes, including rape as a separate type of crime.

We use Census data for 2001 and 2011 across the Indian states on variables, including: population, sex ratio, literacy, shares of Schedule Castes and Schedule Tribes (SCs and STs, historically disadvantaged communities), religious groups, age and gender structure of population across states, urbanisation and recent child marriage.

Data on state domestic product (SDP) is released by the Directorate of Economics & Statistics of respective state governments, and for India as a whole by the Central Statistics Office. We use net state domestic product for 2001 and 2015 across all the states at 2011–2012 constant prices.

As the states of Assam, Chhattisgarh, Goa, Gujarat, Haryana, Himachal Pradesh, Jammu and Kashmir, Kerala, Punjab and Rajasthan have not released official 2015 SDP estimates, we extrapolate the same. We do this by computing the difference in the SDP in the preceding years of 2014 and 2013. We then add this difference (SDP2014–SDP2013) to the 2014 official SDP estimates, giving us the 2015 SDP estimates. We compare our extrapolated estimates with the official estimates of the states that had released SDP figures for 2015. Finding our estimates close to the officially released figures, we feel confident using this extrapolation of SDP.

The SDP figures for the state of West Bengal are not available after 2011. To ensure that the richness of our panel is not lost due to this shortcoming, we use the SDP 2015 approximation released by National Institute for Transforming India (Niti Aayog) for West Bengal.

Population figures for the year 2015 are taken from the report of the technical group on population projections constituted by the National Commission on Population in May 2006. We do this to approximate the change in population after the 2011 census. Using these projections, we calculate the new sex ratio and the age distribution structures across the Indian states for 2015. For 2015, we use data from the 71st round of National Sample Survey (NSS) on literacy.

Key indicators of employment and unemployment in India for the year 1999–2000 are from the 55th round of NSS while those for 2011–2012 are obtained from the 68th round of NSS. The estimates of labour force participation rate (LFPR) give numbers of persons in the labour force according to the usual status, that is, by considering usual principal and subsidiary economic activities together.

The new states of Chhattisgarh, Jharkhand and Uttarakhand were created in 2001. Hence, the LFPR estimates are not available for these states for 2001. We use LFPR estimate of their parent states of Madhya Pradesh, Bihar and Uttar Pradesh for these states to ensure data points are not lost in our panel.

We use the number of the total registered newspapers and periodicals to construct a measure of the media exposure from the data released by the Statistical Abstract India 2003, Central Statistical Organization and the Registrar of Newspapers for India, Ministry of

Information and Broadcasting, and Government of India for 2014–2015. Ideally, we would have used number of readers and viewers. Further, the number of registered newspapers and periodicals is normalised by the literate population of the state.

Estimates of alcoholism (proportion of those who consumed alcohol daily) are obtained from India Human Development Survey (IHDS) datasets for 2004–2005 and 2011–2012. The IHDS is conducted jointly by the University of Maryland and the National Council of Applied Economic Research (NCAER). IHDS covered more than 41,000 households residing in rural and urban areas, selected from 33 states in 2011–2012. The sample comprises of 384 districts out of a total of 593 identified in the 2001 population census. Villages and urban blocks constituted the primary sampling unit from which the households were selected. An important feature of IHDS is that it is a panel dataset.

The northeast states of Arunachal Pradesh, Nagaland, Manipur, Meghalaya, Mizoram, Sikkim and Tripura are aggregated into a single unit, “North East minus Assam”. These states have small populations that are not comparable to the rest of India when studied individually. So we cluster these states as one.

We study population normalised figures of crimes against women across the Indian states, with rape as a separate category of crime. The number of crimes against women are normalised by the number of women (in 100,000s).

## 4. Model

The basic unobserved effects model (UEM) can be written, for a randomly drawn cross section observation i, as

$$y_{it} = \boldsymbol{x}_{it}\boldsymbol{\beta} + c_i + u_{it}, \quad t = 1, 2, \ldots \ldots T \tag{1}$$

where $\boldsymbol{x}_{it}$ is 1xK and contains observable variables that change across i and t. In addition to the unobserved effect, there are many other names given to $c_i$ in applications: unobserved component, latent variable, and unobserved heterogeneity are all common. If i indexes individuals, then $c_i$ is sometimes called an individual effect or individual heterogeneity (in the present case, a state effect or state heterogeneity). The $u_{it}$ are called the idiosyncratic errors or idiosyncratic disturbances because these change across t and i.

A distinction is made whether $c_i$ is a random effect or a fixed effect. The key issue is if $c_i$ is correlated with the observed explanatory variables, $\boldsymbol{x}_{it}, t = 1,2, \ldots T$.

Essentially, a ‘‘random effect’’ is synonymous with zero correlation between the observed explanatory variables and the unobserved effect:

Cov $(\boldsymbol{x}_{it}, c_i) = \mathbf{0}, t = 1, 2, \ldots T$[5].

The term ‘‘fixed effect’’ does not usually mean that $c_i$ is being treated as nonrandom; rather, it means that one is allowing for arbitrary correlation between the unobserved effect $c_i$ and the observed explanatory variables $\mathbf{x}_{it}$. So, if $c_i$ is called an ‘‘individual fixed effect’’ then, for practical purposes, this terminology means that $c_i$ is allowed to be correlated with $\mathbf{x}_{it}$.

[5] Actually, a stronger conditional mean independence assumption, $\mathrm{E}(c_i|x_{i1}, \ldots \ldots x_{iT}) = \mathrm{E}(c_i)$, is needed to fully justify statistical inference (Wooldridge, 2010).

Taking advantage of the state panel data for 2001 and 2015 without any time invariant state characteristics, we have used a fixed effects specification which allows us to capture unobserved heterogeneity in the community norms and sanctions against sexual violence in addition to variation in unobserved state characteristics[6]. We hypothesise that crimes against women are a function of state affluence, demographic factors such as female/male sex ratio, share of potential perpetrators of crimes against women, female literacy and their participation in the labour force, cultural characteristics such as religion, proportion of SCs/STs in state populations, underage marriages, rural/urban population ratio[7], convictions for rape, media exposure and quality of state governance. The algebraic form of the specification is same as in equation (1).

In equation (1), $y_{it}$ denotes incidence of crimes against women in state i at time t (normalised by the total female population of the ith state at time t); the explanatory variables subsumed in $\boldsymbol{x}_{it}$ include state affluence measured in terms of (net) state domestic product per capita (NSDP); demographic variables comprising the sex ratio (number of women per 1000 men), female/male literacy ratio, female/male labour force participation ratio, potential sex crime perpetrators (share of males in the age group 15–29 years in state population); cultural variables including SCs/STs population share, underage marriages (<below 13 years), religion (whether Hindu or Muslim), and rural/urban population ratio; other variables include alcoholism (measured as number of persons who consumed alcohol daily), media exposure measured as number of English and regional newspapers, journals, and other print media divided by literate population; convictions in crimes against women; and as governance quality matters in preventing violence against women, we have relied upon a set of indicators from Mundle et al (2016) that cover 19 states and the period 2001–2012[8]. In our estimation we allow for some interactions: for example, between NDSP and the sex ratio and between size of the pool of potential male perpetrators of CAW and sex ratio.

A similar specification is used to analyse the incidence of rape.

Using STATA, we employ demeaned or within fixed effect estimator which is unbiased and consistent if the explanatory variables are strictly exogenous (Wooldridge, 2010).

[6] While the Hausman test is widely used, the choice between the two specifications is not straightforward. Indeed, unobservable effects can be reasonably assumed to be unchanged in the data period and the FE is chosen given that the bias in the coefficient estimates of the random effects may remain even after including a sufficient set of observable variables as explanatory variables.
[7] Rural/urban population ratio could also be considered a demographic variable. Our presumption is that there is a sharp rural/urban divide in cultural norms (eg roles of women, marriage practices). Hence it is classified here as a cultural variable.
[8] As the ranking of states is intriguing primarily because of the failure to take into account corruption in state governments, we use these indicators as illustrative in explaining the residual variation.

## 5. Crimes and covariates

A few comments on changes in some of the key variables used in the analysis are given in Table 3 below.

**Table 3: Descriptive statistics of CAW and covariates**

| Variables | (1) N | (2) Mean 2001 | (3) SD 2001 | (4) N | (5) Mean 2015 | (6) SD 2015 | (7) Diff Means |
|---|---|---|---|---|---|---|---|
| Incidence of crimes against women | 23 | 17.28 | 6.777 | 23 | 22.39 | 15.07 | -5.107 |
| Incidence of rape | 23 | 3.704 | 2.335 | 23 | 7.775 | 5.367 | -4.071 |
| Sex ratio | 23 | 0.936 | 0.0494 | 23 | 0.948 | 0.0474 | -0.0119 |
| NSDP/capita | 23 | 39,600 | 19,578 | 23 | 97,896 | 58,840 | -58296.7 |
| Circulation of newspaper/literate pop | 20 | 0.261 | 0.4023 | 23 | 0.5334 | 0.4888 | 0.2730 |
| Female/male LFPR ratio | 23 | 5.187 | 4.369 | 23 | 3.125 | 3.698 | 2.0632 |
| Female/male literacy ratio | 23 | 1.149 | 0.0659 | 23 | 0.825 | 0.0758 | 0.324 |
| Rural/urban | 23 | 3.364 | 2.271 | 23 | 2.886 | 2.054 | 0.478 |
| Hindu/Muslim population ratio | 23 | 12.08 | 13.62 | 23 | 13.12 | 14.28 | -1.039 |
| SC/ST population | 23 | 25.31 | 11.84 | 23 | 26.47 | 11.01 | -1.161 |
| Potential perpetrator (15–29yrs) | 23 | 14.28 | 0.98 | 23 | 14.31 | 1.04 | -0.03 |
| No toilet (rural) | 23 | 70.46 | 21.13 | 23 | 57.89 | 24.76 | 12.57 |
| Alcoholism | 23 | 0.114 | 0.111 | 23 | 0.0960 | 0.0981 | 0.0176 |
| Marriage under the age of 13 | 23 | 0.00121 | 0.00176 | 23 | 4.27e-05 | 8.19e-05 | 0.00116 |
| Conviction rate of CAW | 23 | 0.3213 | 0.3567 | 23 | 0.2295 | 0.1942 | 0.0919 |
| No of persons convicted of CAW | 23 | 1103.609 | 2126.73 | 23 | 1466 | 2845.021 | -362.391 |
| Conviction rate of rape | 23 | 185.391 | 242.11 | 23 | 308 | 353.57 | -122.6087 |
| No of persons convicted for rape | 23 | 0.3214 | 0.35666 | 23 | 0.2295 | 0.19412 | 0.092 |

The incidence of crimes against women rose during 2001–2015. The incidence of rape rose much faster. The sex ratio rose slightly. The media exposure was low but substantially higher in 2015. Female/male labour force participation rate fell as did the ratio of female/male literacy. Rural/urban population ratio fell moderately. The Hindu/Muslim population ratio rose slightly, as did the share of SCs/STs in total population. The share of potential perpetrators (males 15–29 years) fell more than moderately. The availability of toilets rose. Alcoholism registered a small reduction. Marriages under 13 years fell sharply. The impact of these individual factors and their interaction on crimes against women and rape are studied in the following section.

## 6. Interpretation of regression results

### 6.1. Incidence of CAW

We have presented the fixed effects results on crimes against women (CAW) in Table 4.

**Table 4: Fixed effects results on crimes against women (CAW)**

| Variables | (1) Robust |
|---|---|
| NSDP/capita | 0.00193*** |
| | (0.000509) |
| Sex ratio | 135.7 |
| | (235.3) |
| Sex ratio x NSDP/capita | -0.00195*** |
| | (0.000550) |
| Potential perpetrator (15–29 yrs) | 1.658 |
| | (14.20) |
| Sex ratio x potential age of perpetrator(15–29) | 1.614 |
| | (15.31) |
| Female/male literacy ratio | 30.19*** |
| | (9.013) |
| Female/male LFPR ratio | -1.03e-10** |
| | (0) |
| Circulation of newspapers/literate pop | 13.11*** |
| | (4.162) |
| Sq circulation of newspapers/literate pop | -2.073*** |
| | (0.619) |
| Conviction of persons for rape | 0.0360*** |
| | (0.0115) |
| Sq conviction of persons for rape | -3.11e-05** |
| | (1.34e-05) |
| Hindu/Muslim pop ratio | -0.256** |
| | (0.120) |
| Rural/urban ratio | 2.474** |
| | (0.916) |
| Alcoholic in household | 21.55 |
| | (253.0) |
| Alcoholic in household x potential age of perpetrator (15–29) | -2.496 |
| | (18.44) |
| Constant | -3.257 |
| | (12.58) |
| Observations | 46 |
| R-squared | 0.669 |

*Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1; $^{\Phi}$ p<0.2*

Net state domestic product per capita (NSDP) as a measure of state affluence is positively associated with CAW. In other words, the more affluent a state, the higher is the incidence of CAW. However, while the coefficient is significant, its magnitude is very small or negligible. The sex ratio has a large positive effect on CAW but it is not significant. The interaction of these two variables, however, has a significant negative coefficient. Accordingly, we computed the total effect of NSDP and sex ratio. The total effect of NSDP is positive but negligible while that of the sex ratio is negative but large (in absolute value). This confirms that scarcity of women (relative to men) makes them more vulnerable to crimes against them.

Sen in a series of papers (2001) and Kulkarni (2016) attribute the sex imbalance in India to gender disparity from the womb to old age. This disparity manifests in high female foeticide, low birth weight babies (including girls), high neonatal mortality, high maternal mortality, and inequity in intra-household allocation of food and in medical care. Although there is a slight improvement in the average countrywide sex ratio, there is huge disparity across Indian states (notably Delhi, Haryana and Punjab). These states are also relatively affluent.

It is somewhat surprising that neither the size of the pool of potential male perpetrators nor its interaction with sex ratio possess significant coefficients.

Female/male literacy ratio has a significant positive effect while female/male labour force participation has a negligible but significant negative coefficient. Consistent with Gilles (1974) and Heath (2013), when women's bargaining power is low, their literacy could make matters worse for them. Although work opportunities for women should enable them to resist sexual and physical harassment by men, the negligible negative effect belies it.

We use the number of men convicted for rape instead of crimes against women more broadly for two reasons. First, the absolute number may have a stronger deterrent effect on potential perpetrators of such crimes than the rate of convictions (in which the number of convictions is divided by number of cases registered). Second, as convictions for rape tend to attract greater public attention, we presume it may have greater explanatory power. The number of convictions for rape has a significant positive effect on CAW. The square, however, has a significant negative coefficient. The total effect is positive but small. It is arguable that that this is a plausible result partly because there are so few convictions and the usual lag between registration of a crime and convictions is two to three years. Thus the deterrent effect of convictions is likely to be negligible.

Neither alcoholism nor its interaction with the pool of potential perpetrators of such crimes have significant coefficients.

The higher the ratio of Hindus to Muslims in a state, the lower is the incidence of CAW. Whether there are religious sanctions against CAW and, if so, how stringently these are enforced require further investigation. So nothing definitive can be said about the plausibility of this result.

## 6.2. Incidence of Rape

The fixed effects results on determinants of rape are given in Table 5.

**Table 5: Fixed effects results on incidence of rape**

| Variables | (1) Robust |
|---|---|
| NSDP/capita | 0.000454* |
| | (0.000236) |
| Sex ratio | -208.1 |
| | (168.9) |
| Sex ratio x NSDP/capita | -0.000468* |
| | (0.000250) |
| Potential perpetrator (15–29 yrs) | -15.43 [Φ] |
| | (9.425) |
| Sex Ratio x potential age of perpetrator (15–29) | 17.43 [Φ] |
| | (10.86) |
| Female/male literacy ratio | 2.697 |
| | (2.727) |
| Female/male LFPR ratio | -0*** |
| | (0) |
| Circulation of newspapers/literate pop | 3.936*** |
| | (1.305) |
| Sq circulation of newspapers/literate pop | -0.591*** |
| | (0.194) |
| Conviction of persons for rape | 0.0131*** |
| | (0.00292) |
| Sq conviction of persons for rape | -1.26e-05*** |
| | (3.06e-06) |
| Alcoholic in household[a] | -23.70** |
| | (10.87) |
| Sq Alcoholic in household | 75.30** |
| | (32.45) |
| Percentage with access to toilets (rural) | -0.0608 [Φ] |
| | (0.0430) |
| Sq percentage with access to toilets (rural) | 0.00396* |
| | (0.00204) |
| Constant | 10.90 |
| | (8.693) |
| Observations | 46 |
| R-squared | 0.783 |

*Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1; [Φ]p<0.2*

The coefficient of NSDP is positive and significant. The coefficient of sex ratio is negative but not significant. However, their interaction is negative and significant. So the total effect of NSDP is positive but negligible.

In order to assess the total effect of the sex ratio we must combine the interactions of the sex ratio with NSDP and with size of the pool of potential male perpetrators of crime (ie share of males in the age group 15–29 years). While the interaction of the sex ratio and NSDP is negative but small (in absolute value), the interaction with pool of perpetrators has a (weakly) significant but large positive effect on the incidence of rape. So the total effect of the sex ratio on the occurrence of rape is negative, which further corroborates that the scarcity of women and their vulnerability to rape tend to move together.

The effect of pool of potential perpetrators on the incidence of rape is negative but (weakly) significant while its interaction with the sex ratio is also (weakly) significant but positive. So the overall effect of the size of the pool of potential male perpetrators is negative. However, as these results are (weakly) significant, much credence cannot be placed on them.

While ratio of female/male literacy doesn't possess a significant coefficient, that of female/male labour force participation has a negative but significant coefficient. Since the absolute value is small, it is consistent with the views of Gelles (1974) and Heath (2013) that, in a context of low bargaining power, outside employment opportunities may have limited benefits, if any.

As in the case of CAW, print media exposure has a significant positive coefficient while its square has a negative coefficient. But the overall effect is positive and consistent with our earlier surmise that the reporting effect dominates the deterrent effect.

Convictions for committing rape has a significant positive effect while its square has a significant negative effect. However, the overall effect of convictions is positive but small. As observed earlier, the long delays in obtaining a conviction against heavy odds fail to deter rape.

Alcoholism has a significant negative effect while its square has a significant positive effect (the latter is weakly significant). The overall effect is large, confirming a strong positive association between incidence of rape and alcoholism. That this effect is so large despite the ban on the sale of liquor in several states points to pervasive weakness in enforcement of this policy.

A striking feature of rural areas and slums is open defecation (Coffey et al 2014). However, open defecation in rural areas in the early morning and in wooded and cropped areas renders young women particularly vulnerable to rape by outsiders. The significant negative coefficient of the share of the rural population with access to toilets is more than offset by the significant positive effect of its square. Hence, easy access to toilets reduces the vulnerability of rural women to sexual crimes, especially rape.

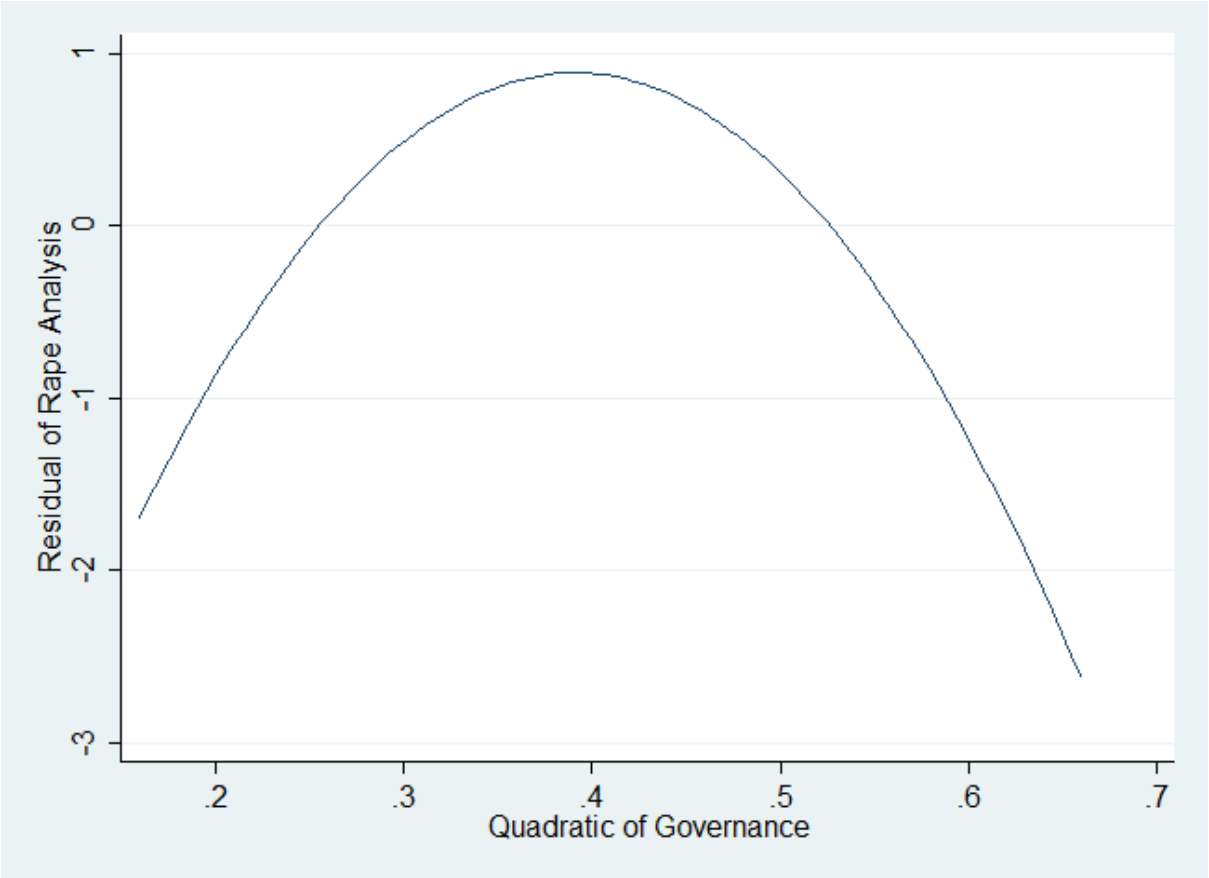
Sen (2015) has emphasised that rape and other serious crimes against women are closely intertwined with inefficient policing and judicial systems, and callousness of society. So the quality of governance in states is key to understanding the huge variation in incidence of serious crimes against women. In a recent but ambitious study by Mundle et al (2016), 19 states were ranked on the basis of a composite indicator of governance in 2001 and 2012. This indicator combines five criteria – infrastructure, social services, fiscal performance, justice, law and order, and quality of the legislature. Even if some of the state rankings are intriguing because of the failure to take into account rampant political corruption, it is significant that the best five and the worst five performers remained largely unchanged during 2001–2012. Subject to this caveat on corruption, and the fact that 2015 is not covered, using this measure of governance, we find that the residuals of fixed effects specification show a quadratic relation to quality of governance – a sharp fall and then a rise (see Table 6 and Figure 3 below); that this could be partly a manifestation of imprecise measurement of quality of governance is not unlikely.

**Table 6: Residuals of rape, CAW and governance**

| Variables | (1)<br>Residual of rape | (2)<br>Residual of CAW |
|---|---|---|
| Governance | 37.85** | 76.51 |
| | (15.74) | (56.73) |
| Sq governance | -48.44** | -95.84 |
| | (18.27) | (65.86) |
| Constant | -6.505** | -13.54 |
| | (3.194) | (11.51) |
| Observations | 38 | 38 |
| R-squared | 0.207 | 0.066 |

*Standard errors in parentheses,*** p<0.01, ** p<0.05, * p<0.1*

**Figure 3: Residuals of rape plotted against governance indicator**



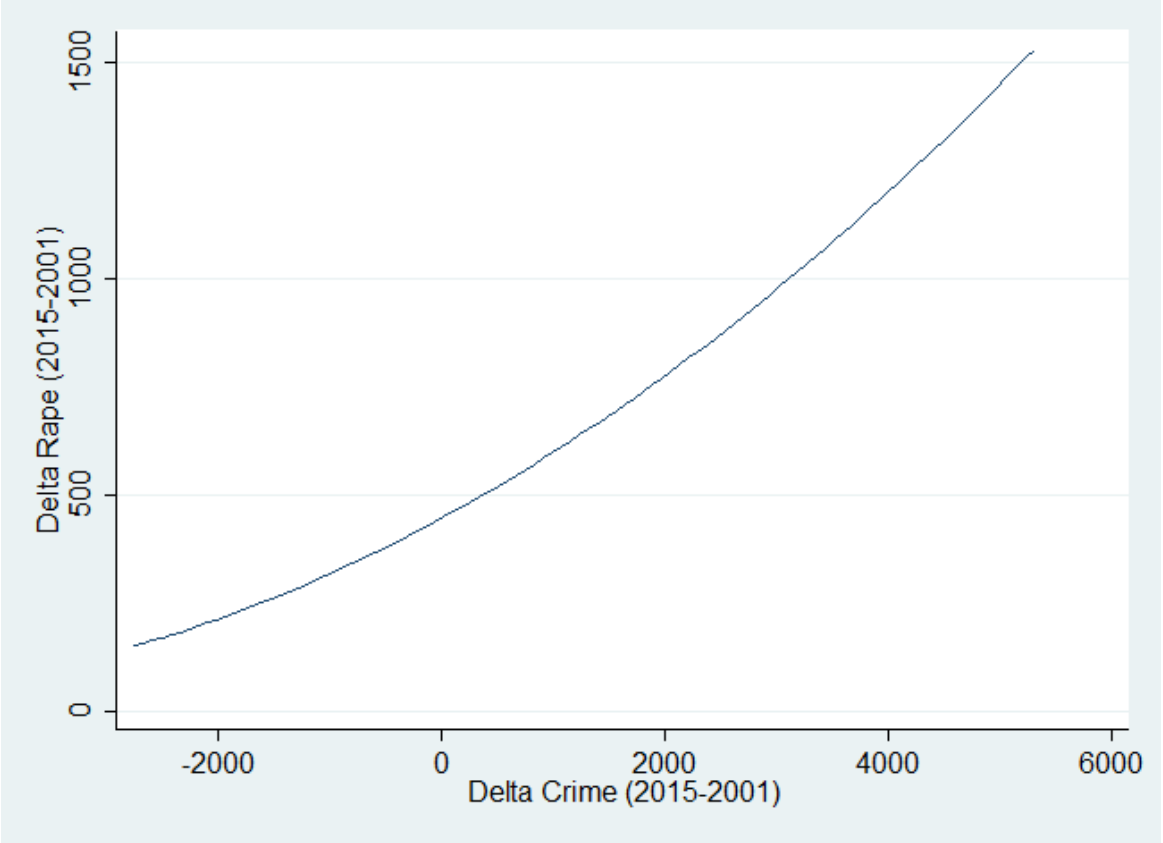
In another supplementary exercise, we analyse the relationship between the change in the incidence of rape and CAW over the period 2001–2015. The regression results are given in Table 7 and Figure 3. The point of this descriptive exercise is to further illustrate that conditions under which crimes against women occur also allow rape to occur. Following Sen's (2015) observations, inefficiency of judicial and police system lie at the heart of such crimes. This is corroborated by the regression results (Table 7, Fig: 4).

**Table 7: Relationship between change in incidence of rape and CAW**

| **Change in occurrence of rape (delta) 2015–2001** | **(1) OLS** |
|---|---|
| Change in occurrence of CAW (delta) 2015–2001 | 0.180*** |
| | (0.0580) |
| Constant | 457.3 |
| | (146.2) |
| Observations | 31 |
| R-squared | 0.191 |

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

**Figure 4: Positive relation between crimes against women and rape**



## 7. Discussion

This study builds on the extant literature in some important ways. First, in view of a sharp increase in the incidence of crimes against women – especially rape – during 2001–2015, appropriate and effective policy design are conditional on a sound understanding of the factors driving such crimes. Much of the existing literature is either dated and /or lacks analytical rigour. Our study relies on more recent data from the National Crime Records Bureau for the period 2001–2015. Second, our analysis uses a panel model with fixed effects to capture unobserved state heterogeneity. Third, we have employed comprehensive specifications that allow for economic, social, religious, and demographic variables and selected interactions between them.

Let us consider some insights from the analysis of crimes against women, supplemented by those obtained from the analysis of the incidence of rape. State affluence slightly increases crimes against women while the sex ratio lowers it, after taking their interaction into account. This helps better understand why states such as Delhi and Haryana are among the worst performing states. They are both affluent and have low sex ratios.

It is often argued that women's fall back options in a marriage depend crucially on their educational and other endowments, and outside employment options. This will then be reflected in a stronger bargaining power and assertions of their autonomy. A caveat is offered by Heath (2013) that at low levels of bargaining assertions of autonomy by women may be weak or counter-productive. Our results on CAW as well as rape are partly in line with this view in so far as either female literacy has a significant positive effect (CAW) or a non-significant effect (rape) while the female labour force participation rate has a negligible negative effect (on both CAW and rape).

While crimes against women may occur across different locations and cultures, their forms and frequency vary. This proposition is corroborated by our analyses: there are significant differences between rural and urban populations, and between Hindus and Muslims.

As noted earlier, the sex ratio is a key determinant. The higher the sex ratio, the lower is the incidence of both CAW and rape.

Alcoholism is found to increase the occurrence of rape despite ban on the sale of liquor in certain states (eg Gujarat, Bihar, Manipur and Nagaland). Yet the effect on the occurrence of rape is very large, indicating weak enforcement of prohibition (as illustrated recently by Bihar).

Exposure to media – captured through number of newspapers, journals, periodicals in English and major Indian languages, divided by the number of literate persons – has two effects: one is better reporting of crimes and, perhaps more importantly, the deterrence of crime. It is difficult to separate the two and so the combined effect is captured. Our results show that better reporting effect dominates the crime deterrence effect. One analytical advantage is that the roles of other determinants are purged of this distortion to some extent, but some issues remain.

Women are unwilling to report even those incidents that fit the legal definition of rape or attempted rape. Sometimes this is due to their successful resistance and the ambiguous

feelings that they have about whether the harm that was inflicted reached the level of a criminal act, as well as their doubts about the integrity of the system to which they have to report.

However, as employment opportunities for women have expanded, they have become slightly more autonomous and assertive, so some increase in reporting rape is not unlikely. Although media coverage of sexual violence and rape has increased significantly after the ghastly Nirbhaya case, reporting biases remain. Massive coverage is frequently given to rape incidents that take place where the channel's bureaus are based, but when the location is a small town, the level of media interest drops. Custodial rape in conflict areas in India (Kashmir, North East and Chhattisgarh) is often ignored, and considered less credible to merit reporting in the larger national interest. So on balance, an increase in the reporting of rape can't be ruled out.

We opted for the use of convictions for rape instead of convictions for crimes against women primarily because the former tend to attract more public attention and may thus have potentially stronger deterrence effects. In relation to both CAW and rape, the deterrence effects of convictions are positive but negligible. This is not surprising as there are long delays in securing a conviction against heavy odds (eg primitive medical tests, falsification of evidence, intimidation).

Governance – especially enforcement of law and order and legal provisions for protection of women against violence – makes a difference. We have used the governance quality indicators available for 2001 and 2011 for 19 states. Given the time lag and limited coverage of states, the graph (Figure 3) suggests a quadratic relation between residuals of rape and quality of governance – an inverted U relationship in which the incidence of rape first rises with improvement in governance, and then declines. Thus governance matters.

Furthermore, states where crimes against women rose were also the states where incidence of rape also increased, further indicating inefficiencies of the judicial and police systems.

As noted earlier, Brownmiller (1975) argues that rape is about universally male imperatives of dominance and control, and thus shifts the focus from individual pathologies and moral harms to issues of systemic inequality and justice. In a more nuanced view based on recent evidence, Kulkarni et al (2014) argue that dominance and control over women are set in male attributes and behaviour ("masculinity"), regarded as a shared social ideal. Violence is not necessarily a part of masculinity, but the two are often closely linked, mediated by class, caste and religion. Masculinity is characterised by two factors – namely, "relationship control" as a behavioural attribute and "attitudes towards gender equality" as an underlying value (United Nations Population Fund, 2014). On average in the developing countries surveyed, more than three-fourths of men expected their partners to agree if they wanted to have sex and more than half of men didn't expect their partners to use contraceptives without their permission. 32% of men demonstrated a more rigid masculinity, as they believed that women and men are inherently unequal.

Caste hierarchy matters. Upper caste men systematically rape women of low castes in north Indian villages. But when lower caste men rape a woman of an upper caste, it becomes a

crime to be prosecuted to the fullest extent of the law, as it violates social norms (Kulkarni and Plys, 2013)

Notions of honour are central to the discourse on rape. The rape of a daughter, sister or wife is a source of dishonour to males within the family structure. When an earlier sexual assault victim of convicted rapist Shiv Kumar Yadav shared her experience with the media, her husband's angry reaction, "Tu kitni naak katayegi? Moonh band nahi rakh sakti?" was typical. (Translated in English, "You have brought dishonour to the family. Why could you not keep your mouth shut?") This deters the reporting of rape to the police, reinforced by a belief in the impunity of perpetrators, the fear of retaliation, and humiliation by the police through physical and verbal abuse (Kulkarni et al 2014).

While family honour matters, there is growing evidence of self-honour in how urban women frame the trauma of their harassment, rape or violence. When such complaints are registered with the police, they are motivated by regaining that self-honour. If, however, family honour matters more, there will be fewer attempts to fight back (Kulkarni and Plys, 2013).

Gang rapes continue to occur in India with strong frequency and brutality. Although the Criminal Law (Amendment) Act, 2013, provides for the death penalty to repeat offenders, often, many are let off the hook or roam free. Whether the self-confessed rapist, Shiv Kumar Yadav, who allegedly raped a woman executive in a cab recently, will get the penalty warranted by these heinous crimes is, however, at the time of writing difficult to surmise (Kulkarni et al 2014).[9]

On May 27, 2014, the (alleged) rape and subsequent lynching of two cousins (aged 14 and 12) in Badaun district of Uttar Pradesh led to the arrest of five individuals, who were released after an investigation by India's Central Bureau of Investigation determined that there was no evidence of rape or murder. The case was dismissed as a double suicide, as the elder cousin had been caught in an "intimate" act with the main accused. Yet, there were no traces of hair or fingerprints on the victim, and doubts thus persist about the exoneration of the accused (including the policeman). Cases involving police are not infrequent: in another, a woman in the same region was gang raped by policemen for refusing to pay a bribe (Kulkarni et al 2014)

Equally grim tales of rape, brutality and murder abound in other regions. In 2014, a girl was gang raped twice and then killed by the same group of men in West Bengal. The second assault took place as the victim walked back from the police station, having filed a criminal complaint by naming the attackers. Justice also eludes an Odisha primary school teacher at the time of writing, more than a year after she was killed.[10] She had been harassed by a powerful local gang for denying sexual favours to one of their members, a sub-inspector of schools. Her dying statement led to his arrest, the suspension of a few state officials and dismissal of two policemen. But the assailant, who set her ablaze, is still absconding (Kulkarni et al 2014).

[9] Shiv Kumar Yadav was sentenced to life imprisonment.
[10] The perpetrator was sentenced to life imprisonment.

So not only do family honour and social norms restrict the reporting of rape and other sexually violent acts, but so does the fact that when a report is filed, the assailants and perpetrators get away.

What are the implications for the future? Are such crimes against women likely to diminish or rise? A likely scenario is sketched below.

As affluence grows, there is likely to be a slight rise in such crimes. The sex ratio has begun to rise and is in turn likely to dampen the rise in these crimes. Whether bestial masculinity can be curbed will depend largely on the efficiency of the judicial and police systems. Going by recent evidence, it may be optimistic to surmise significant improvements in these systems in the near future. However, expansion of education among girls and more remunerative employment opportunities for girls and women may enable them to be more assertive and autonomous. There is also growing awareness of the harm that alcoholism inflicts on the person, their family and people around them. If political and revenue considerations do not impede stringent enforcement of prohibition, the ban on the sale of liquor is likely to dampen heinous crimes, such as rape. The media have to look beyond mere reporting of (some) crimes against women and start playing a more activist role in protecting women. It was the cry in the media over the ghastly and brutal Nirbhaya case that eventually brought the perpetrators to justice.

So, while a rise in crimes against women is not unlikely, our analysis offers some grounds for optimism.

## 8. Concluding observations

We summarise the main findings from a broad policy perspective.

Using state level panel data on crimes against women, and rape as an extreme case of sexual violence, we have carried out detailed econometric analyses.

We build on the extant literature which doesn't investigate in sufficient detail the roles of important explanatory variables such as affluence of a state, sex imbalance, the pool of potential perpetrators of rape and other violent crimes, female literacy, their labour force participation, the rural/urban divide, rape convictions, lack of toilet facilities and open defecation in rural areas, religion, alcoholism, quality of governance, and media exposure. Moreover, we examine the effects of interactions between the affluence of a state and the sex ratio, and alcoholism and the pool of potential perpetrators of crimes against women, including rape.

Some important insights emerge:

State affluence slightly increases the incidence of crimes against women while the sex ratio lowers it, after taking their interaction into account.

Female literacy has a positive effect on CAW while female labour force participation has a negligible negative effect. In a context where women have low levels of bargaining power, women's literacy and work opportunities are unlikely to have desired outcomes.

Alcoholism is also found to increase such crimes – especially rape – despite social taboos and prohibition in some states. Evidently, weak enforcement of prohibition plays a large role.

While crimes against women may occur across different locations and cultures, their forms and frequency vary. This proposition is corroborated by our analysis: there are significant differences between rural/urban populations, and between Hindus and Muslims. While we agree that dominant masculinity is a key factor in explaining crimes against women, we are not persuaded that the cultural context, the environment (how prone the community or region is to crimes) and inefficient policing do not matter.

Not only are rape and other sexual crimes seldom reported but the assailants and perpetrators remain mostly unpunished. So inefficient policing and judicial systems – especially at the local level – are areas in need of reform. Although limited by data constraints and imprecise measurement of governance indicators, our analysis corroborates this concern.

Why sexual crimes against women, particularly rape, have risen during the period 2001–2015 remains unresolved except for suggestive evidence. One is that while these crimes have risen, the conviction rate remains abysmally low. Two (related) key factors are the lackadaisical attitude of the central and state governments and inefficiencies of the judicial and policing systems. In 2014, the launch of Rape Crisis Centres in every district in India was announced. But by 2015, this was reduced to just 36 centres. To date only 18 have been built, but even these centres are not functioning to their full capacity because of lack of personnel, infrastructure and convergence among different departments. This is not all: there has been no utilisation of the Rs 20 billion fund that was set up in memory of the Nirbhaya gang rape victim. That the performance of the Domestic Violence Act of 2005 has been far from impressive is conveyed in the following statistics: over 24,000 people have complained of domestic violence since 2006; domestic incident reports (mandatory following each complaint) were filed in half the cases; final orders were received in just over 1,100 cases; and counsellors at domestic violence cells struck arbitrary compromises between the parties (The Hindu, 1 December, 2013).

A few observations on what needs to be done suffice: while the expansion of education among girls and more rewarding employment opportunities for girls and women are likely to enhance women's bargaining power, in a context where they are highly disadvantaged there could be perverse outcomes. Evidence suggests, for example, that a woman gaining employment while the male spouse is unemployed may cause tension and domestic violence. Together with rewarding employment opportunities, the transfer of property to women (eg landed property) significantly reduces the risk of marital violence. Immovable property provides a woman economic and physical security, enhances her self-esteem, and visibly signals the strength of her fall-back position and tangible exit option. It can both deter violence and provide an escape if violence occurs. Also, unlike employment, property ownership is not found to be associated with perverse outcomes, in that a propertied woman married to a propertyless man is not subject to greater violence (Agarwal and Panda, 2007).

Horrific cases of rape provoke cynical responses. While many are dismissive of the more stringent anti-rape laws (such as the Criminal Law (Amendment) Act, 2013), others remain

divided on the efficacy of a diverse range of interventions involving boys, men and women in violence prevention.

One major problem with anti-rape laws is that their enforcement is feeble and painfully slow, and thus largely inconsequential as a deterrent to sexual violence. The government created fast-track courts in New Delhi to expeditiously deal with such cases, but they are overflowing. As of November 2014, these courts had convicted 178 attackers and acquitted 407; more than 1,700 cases were pending. It is not self-evident that such delays are not remediable.

Campaigns to prevent intimate partner violence show that using community networks, identifying change agents, and disseminating provocative messages through the media can at least bring intimate partner violence out of the private realm into the public eye. Interventions with boys and men demonstrate that addressing unequal gender norms early in life (through approaches similar to girls' life skills programmes addressing early marriage) can influence boys' perceptions of masculinity and gender norms.

Interventions that address masculinity seem to be more effective than those that ignore the powerful influence of gender norms and systems of inequality. Though limited, examples such as Yaari Dosti are encouraging: young men in the programme's intervention groups in Mumbai and Gorakhpur were much less likely to perpetrate physical or sexual violence than others in these sites. The replicability of such results cannot be rejected outright.

Effective women-focused initiatives strengthen resilience against violence by combining economic empowerment, relationship skills and greater awareness of women's rights, as seen, for example, in the Rashtriya Mahila Kosh and Swawlamban programmes.

Research on whether female leaders help reduce violence against women in India shows that having female leaders at the local level lends a strong voice to women, resulting in a sharp increase in the reporting of crimes against women (Iyer, et.al, 2010).

One major concern is the health response to victims of gender-based violence – ranging from sexual assault to acid attacks on women. While measures to prevent these are the focus, the health system must also bear the costs and undertake whatever it takes to access the appropriate services for these victims. At another level, women's access to health care needs to be strengthened by making public hospitals more women friendly and ensuring that the staff are appropriately trained in treating women and victims of sexual and other crimes against women.

In conclusion, while the rapidly growing menace of sexual violence is scary and abhorrent, there are grounds for optimism.

## References


Ackerson, L. K., and Subramanian, S. V.. "Intimate partner violence and death among infants and children in India." Pediatrics 124.5 (2009): e878-e889.

Agarwal, B. and Panda, J. (2007) “Toward Freedom from Domestic Violence: The Neglected Obvious”, Journal of Human Development, Vol. 8, No. 3.

Babu, B. V., and Kar, S. K. (2009). "Domestic violence against women in eastern India: a population-based study on prevalence and related issues." BMC Public Health 9.1

Brownmiller, S. (1975). "Against Our Will: Men, Women and Rape." Simon and Schuster.

Campbell, J. C. (2002): “Health consequences of intimate partner violence." The Lancet 359, 1331-1336.

Coffey, D, Gupta, A, Hathi, P., Khurana, N., Spears, D, Srivastava, N., & Vyas, S. (2014) "Revealed preference for open defecation." Economic & Political Weekly September 20..

Desmarais, S. L., Gibas, A., & Nicholls, T. L. (2010). "Beyond violence against women: Gender-inclusiveness in domestic violence research, policy, and practice." Violent crime: Clinical and social implications : Chapter 9, In: Edited by: Christopher J. Ferguson, Violent Crime: Clinical and Social Implications, Sage.

Ellsberg, M., Arango, D.J., Morton, M., Gennart, F., Kiplesund, S., Conteras, M., & Watts, C. (2015) "Prevention of violence against women and girls: what does the evidence say?." The Lancet 385.9977: 1555-1566.

Gelles RJ. (1974) The violent home. Beverley Hills: Sage.

Heath, R.. (2014), "Women’s access to labor market opportunities, control of household resources, and domestic violence: Evidence from Bangladesh." World Development 57: 32-46.

Iyer, L, Mani, A., Mishra, P. & Topalova, P. (2010) "Political representation and crime: Evidence from India." Draft paper. Washington DC: International Monetary Fund.

R. Jewkes (2002) “Intimate partner violence: causes and prevention”, Lancet, 359: 1423–29.

Koenig, M. A., Stephenson, R., Ahmed, S., Jejeebhoy, S., and Campbell, J. (2006). "Individual and contextual determinants of domestic violence in North India." American journal of public health 96.1: 132-138.

Kulkarni, Vani. S., Pandey, M.K. & Gaiha, R. (2013) “MDGs and Gender Inequality”, Brooks World Poverty Institute Working Paper, Manchester, 188.

Kulkarni, Vani. S. & Kristin Plys (2013) “Prevalence of Rape in Delhi NCR”, Global Review, Volume 3, Issue 3, American Sociological Association.

Kulkarni, Vani S., Pandey, M.K. & Gaiha, R. (2014) “About Men”, The Indian Express,16th December.

Kulkarni, Vani S. (2016) Women’s Empowerment & Rural Development: Reconceptualizing the Linkage, Background Paper For IFAD study: The Dynamics of Transformation in Rural Asia and the Pacific, mimeo.

Mundle, S., Chowdhury, S., & Sikdar, S. (2016) "Governance Performance of Indian States," Economic and Political Weekly, 3 September, 2016.

National Crime Records Bureau (2015) Various Reports, Government of India, New Delhi.

National Sample Survey Organisation (NSSO) 55th, 68th and 71st Rounds of NSS, Government of India.

Raj, A., & McDougal, L. (2014). "Sexual violence and rape in India." The Lancet: 124.

Registrar General of India, Census Reports 2001 and 2011, Government of India, New Delhi.

Sen, Amartya (2001) “The Many Facets of Gender Inequality”, The New Republic, 17 September.

Sen, Amartya (2013) “India’s Women: The Mixed Truth”, New York Review of Books, October 10.

Sen, Amartya (2015) The Country of First Boys And Other Essays, Oxford University Press.

Solotaroff, J. L., and Pande, R.(2014). “Violence against women and girls: lessons from south Asia”. World Bank Publications.

Sujatha, D. (2014) Redefining Domestic Violence Experiences of Dalit Women, Economic and Political Weekly, November 22.

United Nations Population Fund & International Center for Research on Women (UNPF & ICRW) (2014) “Study on Masculinity, Intimate Partner Violence and Son Preference in India, New Delhi.

University of Maryland and National Council of Applied Economic Research (2015) India Human Development Survey.

World Health Organisation (2012) Intimate partner violence, Geneva.

Wooldridge, J.M. (2010) Econometric Analysis of Cross-Section and Panel Data, MIT Press.