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Public work programmes and gender-based violence: the case of NREGA in India

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NREGS (Mahatma Gandhi National Rural Employment Guarantee Scheme) is the Indian government's flagship anti-poverty programme and is one of the largest public works programmes in the world which aims to increase employment opportunities for the poor and in particular, improve women's access to the labour market. In this paper we analyse the relationship between female labour participation and violence against women. Using district-time variation in the implementation of this anti-poverty programme we estimate the effect of improved participation and access to employment of women on gender-based violence. We find evidence that increased female labour participation following the NREGS increased total gender-based violence. There are increases in kidnappings, sexual harassment and domestic violence, while dowry deaths decreased.

I.   Introduction

Gender-based violence[4] affects about a third of women in the World (WHO 2013) and this is estimated to be more costly than any other form of interpersonal violence. Violence against women and children, particularly intimate partner violence (IPV), child abuse, female genital mutilation and "honour crimes" are estimated to cost 17% of the world's GDP (Fearon and Hoeffler 2014). The development policy agenda prioritises female empowerment as this has been previously shown to be effective in improving a wide range of micro and macroeconomic outcomes (World Bank 2012). Nevertheless, there is no clear understanding of what exactly causes this type of violence and in particular, what is the relationship between female empowerment and women's security.

In India the gender gap runs across several areas that affect economic development (WEF 2014). Female labour-force participation (FLP henceforth), has been decreasing and ranks among the lowest in comparison to other emerging economies[5] (ILO 2014; Klasen and Pieters 2012). Moreover, the gender wage gap has been increasing. Women's rural labour participation lags behind that of other comparable countries and urban FLP has remained low (Klasen and Pieters 2013). In terms of inter-state differences, FLP is higher in the South and West of India and lower in the Northern states.

India has made considerable progress in terms of legislative gender equality which has been shown to increase political participation, property rights and female access to employment (Chattopadhyay and Duflo 2004; Duflo 2011). Similarly, fertility rates have declined and the educational gender gap has diminished. This pattern is suggestive of an improvement in women's conditions even though there are several barriers to women's access to the labour market. In spite of this, recently violence in India has been increasing (Iyer 2009) with violence against women partially contributing to this trend.

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[4] Gender-based violence is defined as acts of violence committed against a person on the basis of gender. The World Health Organization defines it as all forms of violence (physical, sexual or emotional) performed by a husband or male partner within the common life of the household (WHO, 2013). We use this definition of gender-based violence given the fact that most inflicted violence on the basis of gender is usually committed by men against women and girls. Thus, we use the terms gender-based violence and violence against women interchangeably.

[5] Between 2006-2012 estimates from ILO put the ratio of working age female population at about 30 percent as against 60% in Brazil and China and 50% in Indonesia.

There are various reasons that have been suggested to explain low female employment in India. Paradoxically, women's education and status negatively affects women's enrolment in the labour market, in particular in rural areas. It has been argued that traditional views of gender-roles prevent women, especially from lower caste groups, from working outside the household (Eswaran, Ramaswami and Wadh 2013). This is in line with findings that suggest that culture affects FLP and other female labour market outcomes (Fernández 2013). Furthermore, female occupational choice is typically skewed towards low wages jobs and this may affect the employment decision in the first place. In India, gender discrimination affects women at birth and throughout the life cycle with consequences for education and health spending. In addition, Qian (2008) shows that FLP is positively related to female labour productivity i.e. where women have a comparative advantage to men, FLP is higher and views of gender-roles are more favourable to women. This is likely to be important in explaining the difference in FLP between the South and North of India as in southern states women have a more prominent role in agricultural production than in the northern states (Bardhan 1974; Alesina, Giuliano and Nunn 2013).

While overall FLP may be low in India, it is important to understand whether differences in FLP have any implications for women's welfare reflected in, for instance, gender-based violence. It may be argued that increased participation of women in the labour force would result in financial empowerment. This would emancipate the participating women resulting in lower violence against them at home as argued in Aizer (2010). On the other hand, financial empowerment may also invite a backlash from the extant power structures within the family leading to higher incidents of domestic violence. Further, as women gradually shift from traditional labour roles to non-traditional choices, this may expose them to violence during their commute as well as at the work place as suggested by Gangopadhyay (2015).

In this paper we analyse the extent to which FLP affects women's well-being in India with respect to the violence they face at home and at the work place. We analyse the relationship between violence against women and the implementation of one of the largest public works programmes in the world which aimed to reduce poverty levels and increase employment opportunities for the poor and in particular, improve women's access to the labour market. The Mahatma Gandhi National Rural Employment Guarantee Act (NREGA), 2005 guarantees 100 days in a given year of employment in manual public-sector work paid at the minimum wage to any rural household. One of the main novelties of the Act was it

ensured that at least a third of employees had to be women; it guarantees equal pay and prioritises the demands for labour of women (GOI 2010). This access to labour opportunities is likely to lead to higher FLP with its consequent impact on gender-based violence. We use the staggered implementation of the scheme (called NREGS hereafter) to identify the relationship between increased access to labour opportunities and violence against women.

Using the district and time variation in the implementation of the NREGS we estimate the effect of the programme on gender-based violence in districts where it was first implemented. We follow the vast literature on the NREGS and use a difference-in-difference estimation to obtain the causal effect of increased access and FLP on reported crimes against women. We find that following the implementation of the NREGS total gender-based violence increased. Further, we find that in districts that received the programme two years earlier than control districts, i.e. Phase I districts in comparison to Phase III districts, reported gender-based violence increased while dowry deaths decreased.

This paper is related to the large literature on women's empowerment (both via employment and non-employment related routes). Female employment and their wage may affect women's decision-making within household (Basu 2006) and as a result, it may affect women's well-being as well as that of their children (Qian 2008; Anderson and Eswaran 2009). Aizer (2010) finds that decreases in the gender wage gap, measured by increases in sex-specific labour demand changes, reduces domestic violence. However, the literature is not consensual on what is the relation between women's improved outside options and women's safety. Bobonis, Castro and Gonzalez-Brenes (2013) show that conditional cash transfers targeted to women of the PROGRESSA programme reduce domestic violence but increase the use of threats of violence. Angelucci (2008) finds that large transfers of income to poor women increase aggressive behaviour for low levels of the partner's education. The author argues that challenging gender roles through a decrease in the relative income of the spouses (husband vs. wife) leads to a backlash effect. This latter effect contrasts with household bargaining models (Manser & Brown, 1980; McElroy & Horney, 1981) and instead suggests that violence is an instrumental behaviour used by men in order to increase the relative position within the household (Bloch and Rao 2002).

There is suggestive evidence that households' decisions over the allocation of resources are made based on the weights of the preferences of each member (Chiappori, Fortin and Lacroix 2002). Theoretically, increased FLP could increase the total household

income and in return reduce household conflict. However, increased FLP may have other effects that may impinge on women's well-being. First, it may change the relative bargaining power within the household. As a result, an increase in women's labour market income may increase the weight of her preferences in household resource allocation decisions. The increased bargaining power of women may improve her well-being or instead may increase household conflict as it decreases the husband's decision-making power (Eswaran and Malhotra 2011). Anderson and Eswaran (2009) show that the effect of wage income on female autonomy is greater than that of non-labour income. Moreover, Luke and Munsh (2011) show that in tea plantations in South India increases in female labour income has a positive effect on their children's education but increases marital violence among low castes. This supports the *male backlash* hypothesis argued in the sociology literature. Eswaran and Malhotra (2011) show that domestic violence impinges on female autonomy for husbands with low outside options. Chin (2012) finds that female employment decreases domestic violence among Indian women with this result being explained by the fact that an empowerment effect is larger than a male dominance effect[6]. Second, the risk of violence may increase if relative income position of women within the household threatens the position of the men or the social status of the household within a community (Eswaran, Ramaswami and Wadh 2013; Eswaran and Malhotra 2011).

In the context of the NREGS not only is FLP is expected to increase but also males' labour participation in poorer rural households would increase. We posit that decreases in male unemployment or decreases in temporary negative income shocks to household income (e.g. due to off-season in agriculture or bad crop years) decrease stress associated with income uncertainty and this effect should reduce violence. In fact Engler (2015) finds that measured of well-being as self-reported indicators of mental health as anxiety and tension improved. Similarly, Card and Dahl (2011) find that emotional cues triggered increase intimate partner violence which suggests that gender-based violence is determined also by behavioural aspects. Moreover, in the context of another anti-poverty programme, Chioda (2012) find that the *Bolsa Familia* conditional cash transfer programme in Brazil decreased crime mostly due to its effect on household income.

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[6] Other results on the relation between income and gender-based violence find a positive relation between exogenous income changes and women's health burden (Hsiang 2013) (Sekhri and Storeygard 2015).

The rest of the paper is organised as follows. We first provide a brief overview of the literature on the NREGS. In section II we provide an overview of the data and the empirical strategy followed. In section III we present results. Finally, in section IV we provide a discussion of the results in the context of the status of the NREGS and conclude.

1.1. Overview of the NREGS

Following the enactment of the Act, the NREGS was launched in February 2006. The programme was rolled out in districts in three different phases. In Phase I the NREGS was implemented in the poorest 200 districts. In Phase II the program reached 130 districts in and in Phase III the program was expanded to all the remaining districts. By 2009-10 the program reached all households in the rural areas with 618 districts being under NREGS. The Act guarantees that each rural household is entitled to 100 days of work in a year paid at a minimum wage. Further, the applicant has to be provided work within 15 days of application and in the area of their residence. The main highlights of the program is that by 2009-2010 it provided work to more than 50 million households annually with an average of 42 days per year per household. The program cost about 0.4 percent of GDP (GOI 2010). The work done is unskilled manual work in projects administered by local authorities in areas which typically consist of construction work to improve local infrastructure such as road pavements water security, flood control, etc. Finally, an important feature of the NREGS is that one of its aims is to improve FLP. As a result, it ensures that at least a third of employed individuals have to be women and it guarantees equal pay and prioritizes the labour demand for women.

There is a vast literature analysing the consequences of the NREGS which suggests an overall positive effect of the programme with great heterogeneity in the programme implementation and in its effects. Afridit, Mukhopadhyay and Sahoo (2013) show that FLP increased following the implementation of the NREGS and that increased FLP improved children educational outcomes. Further, the NREGS increased public employment and led to increases in private-sector wages which vary counter-cyclically with agricultural production. Narayanan (2014) finds positive effects for FLP and access which is mostly concentrated in "star states"[7]. Imbert and Papp (2012) find that following the NREGS daily wages rose and this increase is higher in "star states". Zimmerman (2012) finds milder effects and argues that NREGS is mostly used as a safety net in off-seasons in agriculture. The author also

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[7] Star states are Andhra Pradesh, Madhya Pradesh, Tamil Nadu, Rajasthan, and Chhattisgarh.

argues that the Act does not increase household income and that the Act may affect occupational choice of rural households. In a similar vein, Klonner and Oldiges (2014) finds that participation in the programme is seasonal, increasing over the summer months. Using primary data Khera (2009) finds that the NREGS improved women's food security and that FLP is highly heterogeneous. Carswell (2013) uses data from villages in Tamil Nadu and finds that the NREGS improved women's access to employment and that it is particularly relevant in facilitating access to women from vulnerable groups. We take these results on employment as supportive of the hypothesis that after the NREGS, employment increased and in particular, FLP increased.

On the effects of the programme on poverty levels finds large effects on poverty reduction for SC/ST Klonner and Oldiges (2014). Moreover, (Zimmerman 2013) finds that the employment effects provide a safety following bad rainfall seasons. Liu (2010) finds that NREGS has a significant impact in increasing per capita consumption expenditure. Khera (2009) finds that the NREGS reduced extreme poverty and food security for participating households. Regards increasing financial access and security the NREGS increased the probability of a poor household holding some savings. Similarly, Engler (2015) finds that the NREGS reduced poverty and increased food consumption. In addition, the author finds that mental health improved showing that there was a significant reduction of reported depression.

The findings on the relation between productivity shocks and income are important given the recent literature on crime and weather variations. Hsiang (2013) relates violent activities with climatic changes as these affect labour productivity. Specifically, adverse rainfall shocks have been associated with crimes against women and scheduled castes and tribes in India (Sekhri and Storeygard 2015). Blakeslee and Fishman (2014) and Iyer and Topalova (2014) find similar effects on general crime in India. Moreover, Fetzer (2014) show that the fact that the NREGS constitutes a smoothening of household income shocks following negative productivity shocks leading to less social conflict.

II. Data

Tracking incidence of violence against women over the relevant time-period is only possible through the analysis of police-reported cases which are available from the National Crime Record Bureau. Thus, we use district-year reported crimes as the main measure of

crime incidence[8]. We obtained this information from the National Crime Records Bureau annual publications for the years 2001-2010[9]. We obtained this information for several crime categories which are considered crimes against women as per the Indian Penal Code. These are rape, dowry deaths, domestic violence (i.e. cruelty by husband and relatives), kidnapping of women and girls, molestation and sexual harassment.

We observe that there is an increasing trend in reported gender-based crimes in India (see Figure 1) [10] particularly in the years after the NREGS was enacted in 2005. In Figure 2 we plot the decomposition and trend of gender-based violence. Within gender-based violence, domestic violence is the single largest contributor and this crime has been increasing over the years.

Following the crime and labour literature we include several controls variables to explain gender-based violence. We include districts share of marginalized groups i.e., of scheduled caste and scheduled tribe population, literacy rates, percentage of urban population and sex ratio. This data was collected from the Census 2001 and 2011 and is interpolated for the intervening years across the two Census waves.

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[8] Measurement error can affect our results and this has been a major concern in the crime literature. The most commonly used measures of gender-based violence are police-reported crimes (Iyer, Mani, Mishra, & Topalova, 2012), surveyed domestic violence (Bobonis, Castro, & Gonzalez-Brenes, 2012) and hospitalization of household assaults (Aizer 2010). These measures reflect different stages of the household conflict and different levels of empowerment of women. We are using police-reported measures but we cannot rule out the fact that under-reporting is likely to be high and it can possibly be correlated with institutional factors that could also affect how well the NREGS is implemented. Thus, we only refer to any conclusions as regards to police-reported crimes (the main dependent variables in this analysis) as a possible lower-bound for true incidence. (Iyer, Mani, Mishra, & Topalova, 2012), (Sekhri and Storeygard 2015)) argue that deaths are less likely to be under-reported as these are difficult to hide. Following this, dowry deaths can be considered more reliable measures of incidence.

[9] The India Penal Code considers cognizable and non-cognizable crimes. The first relates to offences for which an arrest can be made without a court mandated warrant. The non-cognizable cases are those in which a police officer can only proceed with an arrest after being granted a warrant. Generally, non-cognizable offences are less severe. The NCRB only reports cognizable offences. Finally, the NCRB provides separate information on India Penal Code (IPC) offences and Special Local Laws crimes (SLL). The latter are reported at the state and district-level whereas the former is only available at the state-level and at the district-level for a shorter time period. We only use IPC cognizable offences.

[10] Using other sources of data on gender-based violence reveals an equally striking pattern. Data on intimate-partner violence from the National Family Health Survey (2005) reveals that more than a third of women (34 percent) were victims during the marital lifetime. Emotional violence rates are experienced by 16 percent of women. The Indian Human Development Survey, (2004) finds that 50 percent of women say that it is a customary practice for husbands to beat their wives.

III.   Empirical Strategy

The NREGS was first implemented in 200 districts in February 2006 (Phase I). The scheme was rolled out for another 130 districts in April 2007 (Phase II) and later, in April 2008 it was extended to the remaining 285 rural districts of India (Phase III). In this paper we exploit the district-time variation in the implementation of the NREGS to identify the effect of increased FLP on women's well-being. In order to isolate the effect of the NREGS we use a difference-in-difference estimation strategy whereby we compare police-reported crimes against women in districts before and after Phase I of the NREGS implementation (i.e. 2006) and compare it with the same outcomes in districts in which the implementation was only in Phase III (i.e. 2008). This estimation isolates the mean effect of the NREGS on gender-violence on Phase I districts removing potential biases due to any permanent differences between Phase I and Phase III districts as well as any unobservable differences in trends in Phase I that could affect gender-based violence. We also control for year effects that take into account changes in national legislative improvements to women's rights such as the 2005 Amendment to the Hindu Succession Act or the Domestic Violence Act of 2005. Formally, we employ the following specification:

$$GBV_{dt} = \alpha_0 + \gamma Phase\ I_d \times NREGS_t + \beta'X + \mu_t + \mu_d + \varepsilon_{d,t} \qquad (1)$$

where the dependent variable is the incidents of gender-based violence in district *d* at time *t*, $PhaseI_d$ is a dummy for Phase I districts and $NREGS_t$ a post NREGS implementation year dummy (i.e. t>2006). We estimate (1) using a conditional fixed-effects Poisson model with year fixed-effects denoted by μ_t with α_0 being a constant term and $\varepsilon_{d,t}$ being the idiosyncratic error term. We also include a vector of district-time control variables, X with the factors explained in the previous section. As incidents of violence directly depend on the female population in a district, we also include females per 1000 population as a control variable. The coefficient γ can be interpreted as the effect of NREGS on crimes against women.

The main assumption of the estimation strategy is that the trend in crimes against women between Phase I and Phase III districts does not differ prior to the introduction of the NREGS. This assumption may not be correct if poverty levels are correlated with crime-reporting. In this case the estimation strategy would be weakened. We mitigate this problem

by controlling for time variant socio-demographic characteristics, time-invariant effects and year effects.

To allow for sufficient time for a post-NREGS effect we compare Phase I and Phase III districts rather than use Phase II districts as the control group. One possible caveat of the choice of control group is the fact that late receivers of the programme (i.e. Phase III districts) are different in observable characteristics that could invalidate the main identifying assumption, for instance due to different poverty levels. Further, since the programme was rolled-out non-randomly (GOI 2010), this may imply that other factors such as lower poverty levels in Phase III districts may invalidate the choice of control group. In order to minimize such differences we present estimations using socio-economic factors as controls and including district and year fixed-effects.

IV. Results

First, we present before-after difference tests for all the crime categories considered in the analysis (see Table 1). The average rates of rape, kidnappings, dowry deaths and domestic violence are higher after the NREGS and this difference is significant for all India and for the different Phases. The only exception is dowry deaths in Phase III districts which seem to have declined in the post-NREGS years. The finding of rising crimes after the introduction of NREGS is consistent with the trends presented in Figures 1 and 2.

We now turn to the investigation of the effect of the NREGS in Phase I and Phase III districts. In Table 2 we present the pre-post effect of the NREGS in Phase I and Phase III districts and the respective difference (coefficient β^{DiD}). This is equivalent to estimating a simplified version of (1) with the dependent variable as incidents per 1000 female population but without controlling for time-invariant factors, time-varying factors or year effects. We find that the difference in reported gender-based violence is positive across categories with the exception of dowry deaths for which the coefficient is -0.006 and is significant at the 10 percent level. However among the positive effects, the only category where the effect is significant is rape with a coefficient of 0.003 significant at the 10 percent level.

There are a few concerns with the above estimation strategy that we attempt to mitigate. First, reported crime is likely to be different between rural and urban areas and although approximately 76 percent of the population in our sample lives in rural areas it is likely that

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our measure of district police reported crime may not be capturing only rural reported crimes. We try to resolve this problem by removing the information pertaining to all major urban areas and metropolitan areas from the initial sample. Second, as mentioned above, the programme was implemented in such a way that prioritized the poorer districts. If reported crimes have a different trend prior to the implementation of NREGS due to factors related to poverty levels this would invalidate the estimation strategy. We attempt to address this problem with the inclusion of socio-demographic controls that have been identified in the literature as highly correlated with district-level poverty. However, if Phase I districts differ from Phase III districts in unobservable characteristics that are time-variant or due to other observable characteristics such as poverty on general violence that we do not take into account then our identification strategy may be invalid.

With the above caveat we now describe our main results from estimating the full specification outlined in equation (1). The results are presented in Table 3 and we focus only on the NREGS effect (the first row of the table) for the purpose of discussion. We find that kidnappings went up as an effect of NREGS implementation with a coefficient of 0.117 that is significant at the 10 percent level. This can be explained as a consequence of spending more time outside of home exposing poor women to abductions during the commute as well as due to unsecured workplaces. The other types of crime that could be associated with greater exposure to unsafe work environments are rape, molestation and sexual harassment. While the effects for all of them are positive, it is significant only for sexual harassment with a coefficient of 0.355 that is significant at the 5 percent level.

Table 3 shows that dowry deaths declined which indicates a positive emancipation effect of NREGS employment. Dowry related violence and deaths are a specific form of violence against women prevalent in India (not exclusively, though). Dowry payments often constitute a large share of the bride's parents' income. Violence - even leading to death - may be used by the husband's family to extract the payment. Moreover, as divorce is frowned upon for both husbands and wives, families may have incentives to terminate marriages by killing women to enable a new marriage with a new dowry payment made to the groom's family. However we find that after the introduction of the NREGS dowry deaths decreased (the coefficient is -0.288 which is significant at the 5 percent level). This suggests that participation in NREGS can financially empower women to face pressures from the husband's family. As dowry is an economically motivated crime, lower dowry deaths after

NREGS could also mean that the husband's family now has less need to extract payments from the bride's parents. This is consistent with the arguments put forward in the literature that the NREGS works as a safety net (Zimmerman 2012; Fetzer 2014).

However we find that NREGS led to an increase in domestic violence with an estimated coefficient of 0.205 that is significant at the 1 percent level. While dowry issues come up in the aftermath of marriage (death has to occur within 7 years of marriage to be classified as dowry death), domestic violence is a more long term problem. Sekhri and Storeygard (2015) present a consumption smoothing argument according to which husbands or their families may extract transfers from the wife using violence as a tool. We find evidence for this consumption smoothing in the case of NREGS which appears to cause an increase in domestic violence. This effect could be working in conjunction with the backlash effect (Eswaran and Malhotra, 2011; Chin, 2012) whereby the husband may be using violence to establish his dominance over his financially independent wife.

The rise in domestic violence along with the increases in kidnappings and sexual harassment appears to have contributed to an increase in total violence (the corresponding coefficient is 0.104 significant at the 10 percent level). Therefore while the NREGS may been designed as an anti-poverty programme with economic benefits, our findings imply that the government needs to focus its efforts towards providing legal and police infrastructure to control some of the undesirable consequences that the scheme seems to have on women's well-being.

V.   Discussion and Conclusion

This paper looks at the relation between the NREGS and women's security. Security and in particular women's security in India have been at the forefront of the political agenda. The NREGS has the potential to increase the bargaining power of women in poorer and rural households in which income shocks may increase the risk of incidence of violence towards women. In this context, while we find that dowry deaths decreased following the introduction of the NREGS in Phase I districts in comparison to Phase III districts we do not find such effect for other types of gender-based violence. In fact we find that post-NREGS, kidnappings, sexual harassment and domestic violence increased. Whether or not this represents higher reporting rates corresponding with women's increased empowerment through employment or because of increased workplace violence (given that NREGS also

increased employment for men, sexual harassment may have risen because of increased workplace interaction between men and women) remains a topic for future analysis.

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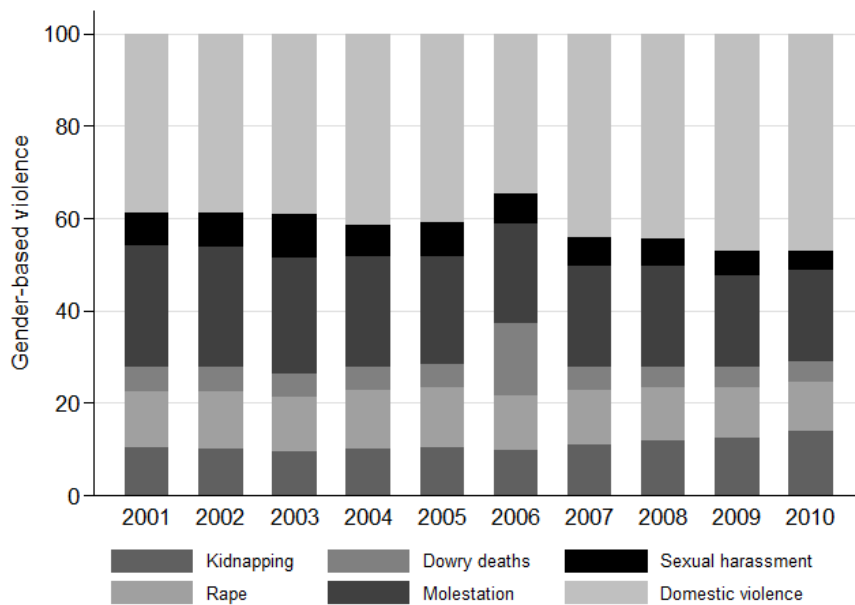
Appendix

Figure 1: Trend in gender-based violence
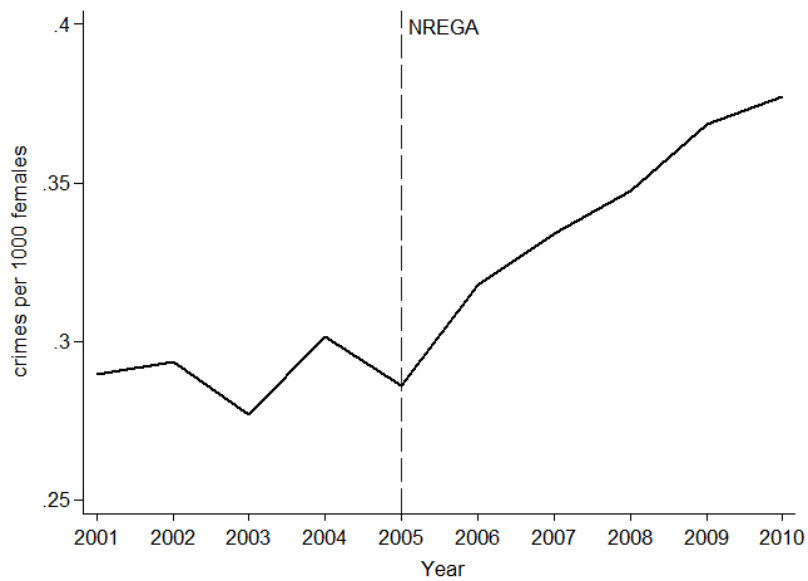
Note: Using information from police-reported IPC offences.

Figure 1: Decomposition of gender-based violence

Note: Yearly percentage contribution to total available IPC cognizable crimes against women

Table 1: Means differences test

	Pre NREGS	Post NREGS	Difference	Pre-Phase I	Post-Phase I	Difference	Pre-Phase II	Post-Phase II	Difference	Pre-Phase III	Post-Phase III	Difference
Rape	0.040	0.044	0.004***	0.042	0.047	0.006***	0.041	0.0448	0.00341	0.0385	0.0417	0.00318***
	(0.002)	(0.002)	(0.001)	(0.003)	(0.003)	(0.002)	(0.004)	(0.00436)	(0.00265)	(0.00257)	(0.00261)	(0.00121)
Kidnapping	0.030	0.042	0.012***	0.025	0.038	0.013***	0.024	0.0390	0.0147***	0.0373	0.0523	0.0150***
	(0.002)	(0.002)	(0.001)	(0.002)	(0.003)	(0.002)	(0.002)	(0.00383)	(0.00222)	(0.00231)	(0.00293)	(0.00173)
Dowry Deaths	0.015	0.0210	0.007***	0.015	0.020	0.005***	0.016	0.0158	-0.000377	0.0200	0.0160	-0.00397***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.002)	(0.00123)	(0.00108)	(0.00138)	(0.00104)	(0.00134)
Molestation	0.080	0.080	0.000	0.084	0.085	0.001	0.077	0.0863	0.00976**	0.0779	0.0756	-0.00224
	(0.004)	(0.004)	(0.002)	(0.007)	(0.008)	(0.003)	(0.008)	(0.00904)	(0.00426)	(0.00595)	(0.00576)	(0.00237)
Sexual Harassment	0.019	0.017	-0.002	0.014	0.015	0.001	0.016	0.0173	0.000990	0.0219	0.0195	-0.00242
	(0.002)	(0.001)	(0.002)	(0.003)	(0.002)	(0.002)	(0.003)	(0.00322)	(0.00228)	(0.00355)	(0.00215)	(0.00311)
Domestic Violence	0.103	0.134	0.030***	0.077	0.112	0.035***	0.087	0.117	0.0290***	0.132	0.172	0.0403***
	(0.004)	(0.006)	(0.003)	(0.006)	(0.011)	(0.007)	(0.008)	(0.0108)	(0.00663)	(0.00706)	(0.00984)	(0.00467)
Total	0.287	0.338	0.051***	0.258	0.318	0.060***	0.262	0.320	0.0574***	0.327	0.377	0.0499***
	(0.009)	(0.010)	(0.006)	(0.015)	(0.019)	(0.012)	(0.017)	(0.0222)	(0.0142)	(0.0139)	(0.0162)	(0.00817)
N			3,419			1,049			804			1,566

Note: Standard errors clustered at the district-level. Gender-based violence measures as incidents in a district-year per 1000 female population. Using district-year data from 2001-2010. Significance levels marked with *** at 1% level, ** for 5% and * if significant at the 10% level.

Table 2: Difference-in-difference estimations between Phase I and Phase III districts

	Pre			Post			
	Phase III	Phase I	Difference	Phase III	Phase I	Difference	β^{DiD}
Rape	0.038	0.042	0.004	0.04	0.047	0.007	0.003*
SE	0.003	0.003	0.004	0.002	0.003	0.004	0.002
Kidnapping	0.036	0.025	-0.011***	0.042	0.032	-0.01***	0.001
SE	0.002	0.002	0.003	0.002	0.002	0.003	0.002
Dowry Deaths	0.015	0.015	0.001	0.028	0.022	-0.006	-0.006*
SE	0.001	0.001	0.001	0.003	0.002	0.003	0.003
Molestation	0.079	0.084	0.005	0.076	0.087	0.011	0.006
SE	0.006	0.007	0.01	0.006	0.008	0.01	0.004
Sexual Harassment	0.023	0.014	-0.009*	0.019	0.016	-0.003	0.006
SE	0.005	0.003	0.005	0.002	0.002	0.003	0.004
Domestic Violence	0.129	0.077	-0.052***	0.147	0.098	-0.048***	0.004
SE	0.007	0.006	0.009	0.008	0.009	0.012	0.006
Total	0.32	0.258	-0.063***	0.351	0.303	-0.049**	0.014
SE	0.015	0.015	0.021	0.013	0.017	0.022	0.012

Note: Standard errors (SE) clustered at the district-level. Using district-year data from 2001-2008. Dependent variables are incidents in a district-year per 1000 female population. Significance levels marked with *** at 1% level, ** for 5% and * if significant at the 10% level.

Table 3: Difference-in-difference estimations between Phase I and Phase III districts

	Rape	Kidnapping	Dowry Deaths	Molestation	Sexual Harassment	Domestic Violence	Total
NREGS × Phase I	0.064	0.117*	-0.288**	0.020	0.355**	0.205***	0.104*
	(0.060)	(0.061)	(0.133)	(0.052)	(0.152)	(0.072)	(0.057)
%SC	-0.041	-0.082	-0.071	-0.007	0.267**	-0.060	-0.031
	(0.056)	(0.065)	(0.045)	(0.036)	(0.117)	(0.068)	(0.053)
% ST	-0.020	-0.022	0.000	0.032	0.334***	-0.020	-0.004
	(0.039)	(0.037)	(0.029)	(0.036)	(0.123)	(0.064)	(0.046)
% Urban	0.009	-0.005	-0.005	0.020***	0.012	-0.001	0.005
	(0.009)	(0.012)	(0.009)	(0.007)	(0.020)	(0.009)	(0.008)
% Literates	0.014	0.072***	0.009	0.011	-0.149***	0.001	0.003
	(0.019)	(0.020)	(0.018)	(0.018)	(0.044)	(0.024)	(0.019)
Sex Ratio	-7.817**	-3.361	-7.676**	-2.151	-34.402***	-3.848	-6.711**
	(3.241)	(2.905)	(3.632)	(4.281)	(12.883)	(3.616)	(2.844)
Female Population	0.001*	0.000	0.000	0.001	0.001	0.001*	0.001**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.000)
N	2,600	2,600	2,590	2,600	2,320	2,600	2,600
Districts	260	260	259	260	232	260	260

Notes: All regressions are estimated using a conditional FE Poisson model with year dummies. Marginal effects reported in the first row. Robust standard-errors clustered at the district-level are reported in parenthesis. Using district-year data from 2001-2008. NREGS is a Post 2006 dummy and Phase I is a dummy for districts for which the NREGS was first implemented. Dependent variables are incidents in a district-year. Significance levels marked with *** at 1% level, ** for 5% and * if significant at the 10% level.

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Abstract:

NREGS (Mahatma Gandhi National Rural Employment Guarantee Scheme) is the Indian government's flagship anti-poverty programme and is one of the largest public works programmes in the world which aims to increase employment opportunities for the poor and in particular, improve women's access to the labour market. In this paper we analyse the relationship between female labour participation and violence against women. Using district-time variation in the implementation of this anti-poverty programme we estimate the effect of improved participation and access to employment of women on gender-based violence. We find evidence that increased female labour participation following the NREGS increased total gender-based violence. There are increases in kidnappings, sexual harassment and domestic violence, while dowry deaths decreased.

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