Girls for Sale? Child Sex Ratio and Girls Trafficking in India

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June 2014‡

Abstract

Illegal trafficking of women is a result of their disadvantageous position in the society that is often reflected in increasing preference for son and neglect for daughters. Multiple reports point to India as country confronted with both higher levels of illegal trafficking of girls and abnormal child sex ratios in favor of boys. In this paper we examine if a skewed sex ratio and shortage of girls is associated with their illegal trafficking in India. Using panel data of 29 Indian states from 1980-2011, we find that 100 unit increase in child sex ratio is associated with 0.635% increase in illegal trafficking of girls. We find the association to be heterogeneous by female empowerment, crime against women and party rule in the state. We find that association between child sex ratio and illegal trafficking of girls is stronger and larger in magnitude in states with greater female empowerment. Overall, it appears that the results are driven by both greater reporting and greater incidence of illegal girls trafficking. Contrary to popular belief, the results do not vary differentially by states with larger share of schedule tribe population or states bordering Nepal and Bangladesh. Our results survive variety of robustness checks.

JEL Classification: J10, O12, R23, Z12
Keywords: Girls trafficking, Child sex ratio, India

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‡We thank S Anukriti, Mehtabul Azam, Arnab Basu, Arjun Bedi, Hanson Betty, Arusha Cooray, Manisha Desai, Shareen Hertel, Edward Hoang, Laxmi Iyer, Santosh Kumar, Nisha Malhotra, Susan Randolph, Artur Tamazian and seminar participants at Human Rights Institute at the University of Connecticut for helpful comments and suggestions. We are responsible for any errors that may remain.

"The falling child sex ratio is an indictment of our social values. Improving this ratio is not merely a question of stricter compliance with the existing laws. What is more important is how we view and value the girl child in our society. It is a national shame for us that despite this, female feticide and infanticide continue in many parts of our country." - Manmohan Singh (Ex-Prime Minister of India)

1 Introduction

India has a long tradition of strong preference for son which results in an imbalanced child sex ratio. What are the societal consequences of an imbalanced child sex ratio? More specifically, does a strong preference for son, one of the most disturbing trends in India as illustrated in the opening quote, explain illegal trafficking of girls? While considerable volume of research in the past focused more on understanding the causes of child sex ratio imbalances in India (see Pande and Astone 2007, Klasen and Wink 2003, Angrist 2002, Premi 2001, Sen 1992), very little is known about its perverse consequences - particularly on violence against women.

In this paper we attempt to fill this gap in the existing literature. More specifically, in this paper we examine the relationship between child sex ratio imbalances and illegal trafficking of girls in India over a period of 32 years. India's skewed sex ratio which is unusually in favor of men, combined with higher levels of violence against women, presents a great opportunity to investigate this research question. Our paper is the first to examine the consequences of a very disturbing trend (unevenness in child sex ratio) on one of the most neglected outcomes of crime against women-illegal trafficking of girls. In doing so, we contribute to the two strands of literature on crime and development. Previous studies did examine the determinants of crime against women in India (see Bloch and Rao 2002, Mayer 2003, Panda and Agarwal 2005, Sekhri and Storeygard 2010, Mukesh and Malhotra 2011, Iyer et al 2012, Anderson and Genicot 2012). However, none of these studies explored in detail the factors which can

explain the illegal trafficking of girls in India and more particularly the role of child sex ratio imbalances on specific crime outcomes against women. A second stream of literature has examined the causes of child sex ratio imbalances in India. For instance, Das Gupta (1987), Bardhan (1988), Clark (2000), Griffiths, Zoĺe Matthews and Hinde (2000), George (2002), Arnold, Kishor, and Roy (2002), Siddhanta and Agnihotri (2003), Jayaraj and Subramanian (2004), Panda and Agarwal (2005), Dasgupta (2005), Oster (2005), Chakraborty, Lekha and Sinha (2006), Chamarbagwala and Ranger (2006), Kulkarni (2007), Pande and Astone (2007), Robitaille (2013) have all studied the causes of sex ratio disparities in India at the state and district level from various angles. Our study, in contrast, focuses on the fallout of this skewed sex ratio. In the process, we also explore various channels through which child sex ratio discrepancies can explain variations in illegal trafficking of girls across Indian states.

According to the United Nations gender discrimination report (2008), an estimated 700 thousand girls a year are 'missing' in India as a result of strong preference for son (also see Sen 1990). The government of India 2011 census documents reveals that the child sex ratio (girls per 1000 boys) in the age group of 0-6 years is at its lowest since 1947.[1] For instance, the child sex ratio in 2011 is 914 girls for every 1,000 boys compared to the child sex ratio of 927 in the previous 2001 census, indicating a strong and continuing preference for boys over girls. It is noteworthy that increasing son preference and neglect of daughters is occurring in a large number of states in India despite the rapid economic growth, rise in prosperity and progress in education, literacy, and health care (Drèze and Sen 2013).

A primary reason for son preference in India is associated with the supposed economic utility of having sons (Mutharayappa et al. 1997). It is expected that sons take care of parents during old age and illness in the absence of old age pension and social security (Bardhan 1988), have higher earning potential due to greater prospects of being employed in the labour

[1]It is noteworthy that India does not compute sex ratio at birth. Thus, child sex ratio in the age group of 0-6 years is the best proxy available for preference for son.

market and take care of family business. For instance, Bardhan (1988) argues that decline in sex ratio in Northern part of India can be attributed to lower participation of women in economic and agricultural activities, however in South India the lower female mortality rates can be partly explained by the greater female labor force participation. Another is the perceived cultural and social utility of having a son. In patrilineal societies like India only sons can continue the family lineage, and inherit family wealth (Das Gupta 2003, Mutharayappa et al. 1997). Third, the utility derived from religious rituals that can be performed only by a son for parents in the event of death (Mutharayappa et al. 1997). The perceived benefits of having girls are low due to the high costs incurred in taking care of a girl and the need for a dowry at marriage. If the role of a girl or woman is no more than to bear children to continue the lineage, and the rights of a woman are transferred to the husband's family at the time of marriage (Das Gupta and Shuzhuo 1999), then the perceived benefits of having a girl are low. Finally, it is also noteworthy that the very neglect of daughters' health and nutritional values is also one of the causes that could explain skewed sex ratio in favour of boys (Oster 2009, Pande 2003).

The consequence of gender imbalance of the scale witnessed in India is likely to have enormous societal consequences in the long run. One possible consequence of a skewed sex ratio characterized by a surplus of males is the prevalence of illegal trafficking of girls. Note that trafficking of girls occurs for a number of reasons including, demand for prostitution, child labor, child brides and adoption. However, severe shortage of women in the adult population as a result of preference for son at birth could be associated with a marriage squeeze and accompanying consequences such as trafficking of girls. In fact, economic theory predicts that all else being equal, shortage of girls should actually increase the value or worth of girls socially and economically in the society. The value of the girls did increase in India, albeit negatively. Shortage of women in India increased the demand for brides in the marriage market. This demand according to Blanchet (2005) has resulted in bride trafficking from states within India which enjoy excess supply of girls and also from neighboring countries

such as Nepal and Bangladesh. Several such cases have also come to light in the recent years which have been documented by the Indian media. For instance, Kapoor (2012) reports that the large disparity in the sex ratio in favour of males in Haryana led to the trafficking of brides from Bihar, Assam and West Bengal. It is also noteworthy that India is ranked second in the US state department's list of the most concerned countries for human trafficking (Geetanjali 2011, p. 163). It is estimated that roughly 500,000 girls under the age of 18 are victims of trafficking in India every year (Geetanjali 2011, p. 19). Also, shortage of young girls could also lead to increase in demand for prostitution thereby pushing the prices up dramatically in the prostitution market (Cho, Dreher and Neumayer 2013). This provides incentives for people involved in the prostitution business leading to trafficking of young girls into flesh trade. On the supply side, if investment in girl child is perceived as a burden without any return for the parents, they could become easy prey for illegal trafficking by luring them with higher income job offers in big metropolis (Gläser 2012). Finally, shortage of girls can also give rise to the sale of girl child for the purposes of child labor or servant maids.

In the recent years, attention has been paid to understand the negative consequences of son preference particularly on illegal trafficking of young girls. However, despite much anecdotal evidence in the form of case studies, newspaper articles and documentaries in the media, empirical evidence on this topic remains scant. This paper fills this gap in the literature to examine the impact of son preference on illegal trafficking of girls in India. To examine this question, we use panel data on the child sex ratio in the age group 0- 6 years lagged by 10 years which will proxy for the availability of young girls vis-a-vis boys in the adult population in current period, and illegal trafficking incidents (per capita) involving girls under the age group of 21 years (we describe data in section 2), covering 29 states in India for the 1980-2011 period.[2] Our main finding is that an increase in imbalance in the child sex ratio is associated with an increase in girls trafficking in India. Additionally, we

[2]We use this as a proxy for availability of girls under 20 years because the government of India does not collect the sex ratio data by different age category groups.

find that in states with greater female empowerment (measured by female literacy, share of female legislators in the state assemblies, and implementation of women's reservation at the local level), imbalances in child sex ratio is associated with greater illegal girls trafficking. These results survive a wide-variety of robustness checks (discussed in Section 6).

The rest of this paper is organized as follows. Section 2 describes the data; section 3 describes the empirical strategy; section 4 presents the main results; section 5 discusses various heterogeneity and presents the main results; section 6 discusses robustness; and section 7 concludes.

2 Data

We use various data sources to construct the state-year panel data set. The data on illegal trafficking of girls comes from the National Crime Record Bureau of India (NCRB). The key dependent variable is recorded as illegal trafficking incidents per 10,000 capita. These incidents involve trafficking of girls under 21 years of age from other states to state s in year t.[3] The incidents of importation of girls up to 21 years of age are recorded under the Immoral Traffic (Prevention) Act of 1956. Accordingly, the Immoral Traffic (Prevention) Act of 1956 defines trafficking as a group of crimes involving the exploitation of men, women and children for financial gains which is violation of fundamental human rights. Unfortunately, the data reported on incidence of illegal trafficking of girls do not provide information on destination, origin, and transit, respectively. This is a problem for the empirical analysis, however, we are not aware of any data set in India that reports destination, origin, and transit. The Act penalizes specific activities related to commercial sex which are deemed to be illegal in India

[3]In India, apart from the general crime affecting both men and women (e.g., murders, robbery and cheating) which are covered under the Indian Penal Code (IPC), crimes directed specifically against women come under the purview of the IPC and Special Local Laws (SLL). While the IPC covers incidents of rape, kidnapping and abduction, dowry deaths, mental and physical torture, molestation, and sexual harassment, the SLL on the other hand contain gender specific laws covering incidents of importation of girls up to 21 years of age, child marriage, and Sati (Sati, the feminine of sat "true"; also called suttee refers to a funeral practice within some Asian communities in which a recently widowed woman immolates herself, typical on the husband's funeral pyre.).

such as brothel keeping, living on earnings of sex work, trafficking, including or detaining girls for prostitution and sex work, importation of girls, soliciting and prostitution in public places and areas identified by the police. It is noteworthy that penalties and punishments are higher where offences involve girls under the 18 years of age. The police in these cases do not require a warrant from the district court Magistrate for search, raids and arrests and are entrusted with the responsibility of implementation of the Act locally, thus qualifying under Special Local Laws (SLL) category. Incidents under the Immoral Traffic (Prevention) Act of 1956 are recorded by the local police which are then collected annually and reported in the crime statistics by the NCRB for the 29 states and seven union territories from 1953 to 2012.[4,5]

One of the biggest challenges of empirical research on illegal trafficking of girls is often the lack of reliable and comparable data. Illegal trafficking, according to Cho, Dreher and Neumayer (2013: 69) is a "clandestine, criminal activity, with those being trafficked and involved in such activities being part of hidden populations". Therefore, the actual number of incidents involving illegal trafficking of girls is always unknown and disputed if they are available (Belser et al. 2005). Thus, the issue of under reporting is always a potential challenge when examining such topics. Such reporting biases are likely to underestimate the incidence of illegal trafficking across states in India. That said, the NCRB dataset is fairly reliable as coding of each components under various criminal activities for each state-year combination is evaluated by a set of trained coders at the NCRB and is then cross checked by the Crime and Criminal Network Tracking System (CCNTS) project of the Ministry of

[4]The NCRB was constituted in 1986, with headquarters in New Delhi under the Ministry of Home Affairs. The major task of the NCRB, among others, is to function as a clearing house of information on crime and criminals operating at national and state levels. They coordinate with the respective States Crime Records Bureaus (SCRBs) in collecting and processing crime statistics at the state and national level. Along with all other crime data, the data on importation of girls up to 21 years of age are collected every year by state police and are made available to the NCRB at the end of the calendar year, which then publishes these numbers in its annual reports.

[5]The following states are covered in our study: Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chhattisgarh, Delhi, Goa, Gujarat, Haryana, Himachal Pradesh, Jammu & Kashmir, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Orissa, Punjab, Rajasthan, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh, Uttarakhand, and West Bengal.

Home Affairs, Government of India. Nevertheless, our results should be interpreted with caution. On an average, we find 5826 cases being registered in the Indian state of Tamil Nadu while Tripura registered about one case during our study period. The sample mean is about 375 incidents per state during the 1980-2011 period (see Table 1).

Our key independent variable is child sex ratio which is lagged by 10 years using child sex ratio in the age group 0-6 years. This is again a drawback, as ideally we would have preferred the data on sex ratio by various age groups across all states in India. However, India does not collect the data on sex ratio at birth and hence, we use the data on child sex ratio in the age group of 0-6 years. Secondly, because the data on sex ratio is not available by different age groups across the states, we lag the child sex ratio 0-6 years by 10 years. We use this as a proxy for availability of girls in the age group of around 16 years. We use the sex ratio data made available by Government of India for the 29 Indian states for the following census years viz., 1981, 1991, 2001 and 2011.[6] We interpolate the child sex ratio before lagging it by 10 years. Since the child sex ratio changes slowly between the 10-years periods measured, the interpolated values should not be problematic. It is also noteworthy that sex ratio in India is computed as number of females available for every 1000 males. For easy interpretation of the empirical results, we reverse code our sex ratio variable reflecting the number of males available for every 1000 females.

Figure 1 captures the child sex ratio (0-6 years) covering the 29 states in India for the year 1981 and 2011. As seen, there has been a steady increase in the child sex ratio in favor of boys across all the states in India between 1981 and 2011. In fact no state in India has registered a negative growth rate in child sex ratio in 2011 in comparison to 1981 numbers. Not only has the child sex ratio in the age group 0-6 years increased from 1030 to 1079 in a span of three decades (1981-2011) at the national level, but also skewed child sex ratios in favor of boys are more severe in certain states within India. For instance, the sharpest increase in

[6]The sex ratio data in India is computed by the Office of the Registrar General and Census Commissioner under Ministry of Home Affairs, Government of India for every 10 years.

the child sex ratio was found in Jammu and Kashmir, Delhi and Haryana. According to the 2011 census data, the lowest child sex ratio is recorded by Kerala and highest in the state of Haryana. In recent decades, a sharp increase of child sex ratio is recorded in state of Jammu and Kashmir, Delhi, Haryana, Maharashtra, Goa, Rajasthan, Madhya Pradesh, Himachal Pradesh and Punjab.

Data on state income per capita comes from the Reserve Bank of India's (RBI henceforth) annual macroeconomic data set, while the data on civil police per 100 square meters comes from NCRB. The data on state population, rural population share and female literacy rates comes from Government of Indian census documents. Note that we interpolate the gaps between the census years' data on population and female literacy rate. The information on 73rd Constitutional Amendment dummy variable comes from from Iyer et al. (2012).[7] We rely on the information published by the Election Commission of India on state legislative assembly results to compute the female share in state legislative assemblies. Finally, the data on circulation of newspapers in English, Hindi comes from the Press Registrar of India.

3 Empirical Strategy

Using a state-year panel data from 29 Indian states for the time period 1980-2011, we analyze the effect of child sex ratio on incidents of illegal girls trafficking.[8] The relationship between child sex ratio and incidents of illegal girls trafficking might be approximated by the following equation:

$$Log(y)_{st} = \alpha_s + \beta_t + \gamma_1 Child\ Sex\ Ratio_{st} + \delta X_{st} + e_{st} \quad (1)$$

[7] In April 1993, the 73rd Amendments to the Indian Constitution came into effect, which formalized local government institutions and devolved more power from the state to local governments. These reforms also stipulate that one-third of local elected offices be reserved for women.

[8] We exclude union territories from our analysis directly ruled by the central government through appointed administrators. However, our analysis includes Delhi which has an elected legislatures and government.

The dependent variable $Log(y)_{st}$ is the log of illegal trafficking incidents per 10,000 capita in state s in year t. Since 20% of all state-year observations in our data have zero illegal trafficking incidents, we add the lowest value 0.0001 before making log transformation to avoid dropping these observations.[9] Our main variable of interest is the $Child\ Sex\ Ratio_{st}$, which is a 10 year lag of child sex in the age group 0-6 years. Equation (1) also includes state fixed effects α_s and year fixed effects β_t while e_{st} is the error term.[10] The coefficient γ_1 will give us the relationship between child sex ratio and incidents of illegal girls trafficking in India.

Though we believe Equation 1 addresses the main sources of bias, nonetheless there could be concerns about remaining omitted variables. The vector of control variables (X_{st}) includes other potential determinants of illegal trafficking of girls, also supported from the extant literature on this topic. Following the studies of Cho, Dreher and Neumayer (2013), Akee et al. (2010a), and Akee et al. (2010b) and other comprehensive evaluations of studies on the determinants of trafficking of girls (Cho and Vadlamannati, 2012), we control for the following set of omitted variables. We first control for economic development of a state which is a key pull factor in determining illegal trafficking of girls by including state per capita income (logged) in Indian Rupees in 2005 constant prices. Second, we also include state population (logged) as more populous states can experience higher levels of trafficking incidents. Third, we include state's rural population share. It is possible that girls from poor socioeconomic background in rural areas become easy prey for illegal trafficking by luring them with higher income job offers in big metropolis (Gläser 2012), thus making it necessary to control for this second pull factor in our analysis. Fourth, we include women

[9]Note that our results do not depend on whether or not we add 0.0001 before log transforming these data. In other words, our results are robust to dropping observations with zero illegal trafficking incidents.

[10]Note that the Hausman (1978) test favors fixed effects estimation specifications over random effect models. We present results after including a lagged dependent variable in the preferred estimating equation (Table 2, column 4). The advantage of including a lagged dependent variable is that it captures any autocorrelation that is likely to be present in the estimating equation. However, including a lagged dependent variable, according to Achen (2000) can drastically reduce the explanatory power of the independent variables. Also, in a panel fixed effects specification, inclusion of a lagged dependent variable might result in a downward bias for the coefficient, known as the 'Nickell bias' (Nickell 1981).

empowerment variables which are expected to be correlated with higher reporting of crime against women (see Iyer et al 2012). We thus include female literacy rate at the state level as a proxy of economic empowerment of women.[11] Following Iyer et al. (2012), we also include a dummy variable which take the value of 1 for the year in which a state has mandated reservations (quotas) for women at local level elections as a part of 73rd Amendment to Indian Constitution which came into effect from 1993, and 0 otherwise. According to the Amendment, about one-third of the total seats in all elected offices in local bodies whether in rural areas or urban areas must be reserved for women candidates. Chattopadhyay and Duflo (2004) show that female political representatives tend to be more concerned about women's issues and are thus more likely, according to Bartilow (2010) pursue anti-trafficking policies. We thus include the female share in state legislative assemblies as a proxy for gender representation. Fifth, we control for quality of institutions by including civil police per 100 square meters (logged) in state s in year t. This measure is also a proxy for the ability of the state to protect victims, prevent such crime and prosecute criminals involved in illegal trafficking of girls. Lastly, we also include a measure of media penetration using circulation of newspapers in English, Hindi and the respective states local languages per-capita (logged).

4 Main Results

4.1 Child Sex Ratio and Girls Trafficking in India

Economic theory predicts that all else being equal, shortage of girls should increase the value or worth of girls socially and economically in the society. Angrist (2002) uses variation in immigrant flows as a natural experiment to study the effect of sex ratios on the children and grandchildren of immigrants in United States. The empirical results suggest that high sex ratios had a large positive effect on the likelihood of female marriage, and a large negative effect on female labor force participation. However, in India, it is argued that the shortage of

[11]Note that we interpolate the gaps between the census years data on female literacy rate.

women increased the demand for brides in the marriage market, resulting in bride trafficking, and prostitution. However, it is remains an empirical question to test the association between child sex and girls trafficking in India.

Using a sample of 29 Indian states from 1981–2011, we estimate equation (1), where the coefficient γ_1 will give us the association between child sex ratio and girls trafficking. The results are presented in Table 2, where in each column we add additional controls. The standard errors are clustered at the state level following Bertrand et al. (2004) to account for possible correlated shocks to state-level girls trafficking over time. Column 1 presents the raw estimates of child sex ratio on girls trafficking in India without the state and year fixed effects. The point estimate suggests that a 100 unit increase in child sex ratio is associated with 0.98% increase in girls trafficking in India. This estimate is large, but likely to overstate the true association because child sex ratio is likely to be correlated with numerous variables, such as state GDP, state population share, and female empowerment. These variables are also likely to be correlated with the outcome variable, girls trafficking. Therefore, in Column 2 of Table 2, we control for three important state level variables, like state GDP, state population share, and state rural population share which are likely to be correlated with the child sex ratio variable and the outcome and the lag of dependent variable.[12] After controlling for state level variables, the point estimate increases and suggest that a 100 unit increase in child sex ratio is associated with 0.85% increase in girls trafficking in India which is significantly different from zero at the 5% level.

In Column 3, we further control for female empowerment variables, viz., female literacy rate, share of female legislators in the state assembly, and 73rd Constitutional Amendment in India. It is important to control for female empowerment variables as they are not just correlated with our main independent variable, but most importantly Iyer et al. (2012) shows that political voice is an important determinant of access to justice for socially disadvan-

[12]Per capita income has also been found to be associated with higher probabilities of reporting crime (Soares, 2004).

taged groups. In particular they show that having female political representation at the local government level (73rd Constitutional Amendment) induces string positive and significant effects on reporting of crime by women. In Column 4, we control for police per 100 square meters and newspaper per capita. It is important to include a measure of the size of the state police per 100 square meters for varying levels of police commitment to crime deterrence across states in India. Additionally, availability and strength of police force in a state in directly correlated with crime while access to newspaper indicates access to information. From Column 2 to Column 4, we find an approximately 2.5% decline in the coefficient of interest. After controlling for plausible omitted variables that are correlated with child sex ratio and our dependent variable in Column 4, we find that a 100 unit increase in child sex ratio is associated with 0.635% increase in girls trafficking in India. It is important to mention that with our empirical strategy we cannot distinguish whether this increase is an actual increase in girls trafficking incidents or reporting or a combination of both.[13] To the best of our knowledge, this is the first paper that rigorously examines this association, and establishes that there is a strong positive association between child sex ratio and girls trafficking in India after isolating the effects of key omitted variables from our main independent variable, child sex ratio. However, we cannot establish the causal relation between these two variables, but our results survive after inclusion of numerous omitted variables.

State governments in India have been spending millions of dollars on policies to check the adverse sex ratio with mixed results. The majority of the policies are financial or monetary incentives targeted towards parents who have daughters. Examples of such policies include, Devirupak, Apni Beti, Apna Dhan, Balri Rakshak Yojana and Ladli.[14] There are few papers

[13]Our estimates are much smaller as compared to Iyer (2012), where they find a 44% increase in reported crimes against women after the implementation of political reservation in Indian states.

[14]Anukriti (2013) investigates whether financial incentives can overcome this trade-off in the context of an Indian scheme, Devirupak, that seeks to decrease both fertility and the sex ratio at birth. Devirupak successfully lowers the number of children by 0.9 percent, but mainly through a 1.9 percent decrease in the number of daughters. Faced with a choice between a son and only daughters, couples choose a son despite lower monetary benefits, and thus the sex ratio at birth unintentionally increases. A subsidy worth 10 months of average household consumption expenditure is insufficient to induce parents to give up sons entirely. Instead, Devirupak increases the proportion of one-boy couples by 5 percent. Only the most

that estimate the impact of child sex ratio on socio-economic outcomes, including impact on marriage prospect, labor force participation, and demographic imbalance. However, majority of these papers study developed countries. In this paper, we contribute to the existing literature by establishing an additional effect of child sex ratio on girls trafficking in a developing country context. Our findings are both statistically significant and economically meaningful. One related paper studies the consequences of "Missing Girls" on prevalence of prostitution and sexually transmitted infections, the economic and physical well-being of men who fail to marry, and China's ability to care for its elderly, with a particular focus on elderly males who fail to marry (Ebenstein and Sharygin, 2009). It will be interesting for future research to look at similar impact of child sex ratio in the context of India.

5 Heterogeneity in the Association Between Child Sex ratio and Girls Trafficking in India

In this section we explore the heterogeneity between child sex ratio and female empowerment variables. We expect female empowerment in economic and political spheres to be associated with greater reporting of crime incidents such as illegal trafficking specifically targeted against women. First, increasing participation of women in politics at the local level could influence the functioning of police and other law enforcement agencies to be more sensitive and responsive towards the complaints of women. Second, women in politics at local level could also provide the confidence for the victims of trafficking to come forward to register complaints against such activities. Third, economic empowerment thesis argues that economic deprivation is the major root cause of the crime against women in general. Thus women who are more economically empowered (in terms of education and employment opportunities) are more likely to fight back against crime by reporting than those who are dependent on their families for economic support. Economically empowered women are also

financially disadvantaged groups exhibit an increase in the proportion of one-girl couples.

more likely to overcome collective actions problem when it comes to reporting the crime with the police. However, it is also plausible as argued by Iyer et al. (2012) that greater participation of women in economic and political spheres could lead to further backlash as men in patriarchal societies see women empowerment as challenging their dominance. We therefore estimate specification (2):

$$Log(y)_{st} = \alpha_s + \beta_t + \gamma_1 Child\ Sex\ Ratio_{st} + \gamma_2 Child\ Sex\ Ratio_{st} * Emp_{st} + \gamma_3 Emp_{st} + \delta X_{st} + e_{st} \quad (2)$$

Where, $Child\ Sex\ Ratio_{st} * Emp_{st}$ is the interaction term between child sex ratio and our various measures capturing female empowerment namely, female literacy rate, female legislator share, and 73rd Amendment to Constitution regarding reservations for women at local elections. Note that we estimate all our interaction effect models with and without the inclusion of a lagged dependent variable.[15]

Finally, we also estimate an interaction model between child sex ratio and rapes against women to examine the fact whether illegal trafficking incidents are concentrated in regions where crime against women in general is perceived to be higher. We therefore estimate specification (3):

$$Log(y)_{is} = \alpha_s + \beta_t + \gamma_1 Child\ Sex\ Ratio_{st} + \gamma_2 Child\ Sex\ Ratio_{st} * Crime_{st} + \gamma_3 Crime_{st} + \delta X_{st} + e_{st} \quad (3)$$

Where, $Child\ Sex\ Ratio_{st} * Crime_{st}$ is the interaction term between child sex ratio and crime against women in general. Note that the data on various criminal acts against women such as murder, kidnapping, dowry crimes, molestation, physical harassment by husband and relatives are not available from 1980 onwards. Only incidents on rapes against women are available in public domain with the NCRB from 1980 to 2011. We thus use rapes against women per head (log) as our proxy for crime against women. We also estimate an interaction

[15]The results with a lagged dependent variable are not show here due to brevity and are available upon request.

model with child sex ratio and total crime incidents per head (log) to capture whether illegal trafficking incidents are concentrated in regions which are notorious for criminal activities. All specifications include state and time fixed effects.

5.1 Results on Heterogeneity in the Association Between Child Sex ratio and Girls Trafficking in India

In this section, we attempt to investigate if the association between child sex ratio and girls trafficking in India varies by female empowerment, crime against women, and party rule in the state. In Table 3, we interact child sex ratio with three variables that capture female empowerment at the state level. In Column 1, we interact child sex ratio with female literacy rates. The advantage of using female literacy rates is not only its availability but also its consistent measurement across all states in India over the period 1980-2011. Literacy rates could also affect awareness of victims' legal rights and influence reporting of trafficking crimes. The interaction term is positive but statistically insignificant. In order to explore the relationship further between child sex ratio and trafficking of girls in states with greater female literacy rates, we also plot the marginal effects of female literacy rate on child sex ratio in Figure 1. To calculate the marginal effect of an additional increase in the child sex ratio, we take into account both the conditioning variable (female literacy rate) and the interaction term, and show the total marginal effect conditional on female literacy graphically. The y-axis of Figure 1 displays the marginal effect of an additional unit of child sex ratio, and on the x-axis the female literacy rate at which the marginal effect is evaluated. In addition, we include the 90% confidence interval in the figure. The result suggests that female literacy does matter but not at the very low and high levels. The marginal effects are statistically significant at a level greater than 32% but less than 68%. This is an interesting result in our paper, because it suggests that less trafficking incidents are reported in states with very low and high level of female literacy. One interpretation is that, at low levels of female literacy,

either costs of reporting far exceeds the benefits or there is information asymmetry leading to under reporting of trafficking incidents.

In Column 2, we interact child sex ratio with share of female legislators in the state assemblies. In addition, we also plot the marginal effects of share of female legislators on child sex ratio. Like before, the y-axis of Figure 2 displays the marginal effect of an additional unit of child sex ratio, and on the x-axis the female legislature share at which the marginal effect is evaluated. Moreover, we include the 90% confidence interval in the figure. The marginal effects are statistically significant at all levels. In India, there exists political reservation policies for scheduled castes and scheduled tribes, the two disadvantaged minorities, at the federal and state level, but not for females. However, the 73rd Amendment Act was introduced in the Indian parliament in 1991, and the women's reservation at the local level was passed in 1992 which finally came into effect in April 1993. Instead of controlling for female politicians at the local level, we investigate whether girls trafficking varies by share of female politicians in the state legislative assemblies.[16] Share of female legislators in state assemblies is low in India with a mean of only 4.54 legislators. This is because females usually do not run for elections with unreserved seats in India.[17] Therefore, we should consider the variable share of female legislators in state assemblies to be a strong proxy for female empowerment. Lastly, in Column 3, we interact child sex ratio to 73rd Amendment dummy. In Columns 2-3, the interaction term is positive and statistically significant, reflecting more reporting of girls trafficking incidents with greater female empowerment. The interpretation of the coefficient on the interaction term in Columns 1-3 is that greater female empowerment (either through greater female literacy rates, greater share of female legislators in state assemblies, or implementation of women reservation bill in the state) makes police more responsive to trafficking of girls, i.e. they are more likely to record and investigate girls

[16]Despite the women reservation bill came in effect in 1993, many states did not implement it until late 1990's. This leaves us with very little variation because our sample runs from 1980 till 2011. Additionally, Iyer et al. (2012) have estimated the impact of political reservation for women and crime in India.

[17]See Duflo, 2005 for review on political reservation in India.

trafficking incidents in the state. It is possible that greater female empowerment induces police to be more approachable by females or be more sympathetic towards trafficked victims. The change in police behavior or attitude towards girls trafficking incidents is because female politicians have the ability to highlight the casual attitude or behavior by police to higher officials or the local press. Also, in the hierarchy, local police officials report to the politicians at the state level, also known as the Member of Legislative Assemblies (MLA). In many cases, MLAs bring their favorite police officers to their constituencies. In sum, it is possible that greater child sex ratio (or shortage of girls at age 10-16) is leading to more incidents of girls trafficking as well as more reporting of such incidents in India. It is beyond the scope of this paper to disentangle the two.

In Table 4, we investigate if trafficking of girls is greater in states with greater crimes against females. We interact our key independent variable with rapes per head, rapes under age 30 per head, and total crimes per head. We consider the three variables to proxy for crimes against women.[18] In column 1, we interact child sex ratio with rapes per head and find that child sex ratio is leading to more girls trafficking in states with greater crimes against women. Estimates from Column 2 and 3 also indicate a similar story. The coefficient on the interaction term is in Column 3 is positive but not statistically significant. However it is precisely estimated as the standard errors are low. This is consistent with the idea that in states where there is shortage of women, there seems to be a backlash against women.

In Table 5, we interact child sex ratio to states rules by the major political parties (The Hindu Party, also called the Bharatiya Janata Party (BJP), and the Indian National Congress (INC)), the Left, and the Regional Parties. The conventional wisdom is that, the Left and the Regional Parties are more responsive to local issues at the state level. In Column 1 we interact the child sex ration with the BJP, INC, and the regional Parties, while the Left

[18]Iyer et al. (2012) finds that the introduction of mandated political representation for women lead to a large and statistically significant increase in the number of reported crimes against women. Across all categories, documented crimes against women rose by 44%, while rapes per capita rose by 23% and kidnapping of women showed a 13% increase.

Party is the omitted category. We find that child sex ratio is associated with more illegal girls trafficking or reporting or both in states ruled by the BJP and the INC as compared to the Left Party. However, we do not find similar effects for states ruled by the Regional Parties. We tested the point estimates for the BJP vs. the INC and found that the coefficient on the BJP is statistically significant.[19]

To sum up, we find that child sex ratio is leading to more girls trafficking in states with more female empowerment, more crime against women and states ruled by the BJP. However, we cannot rule out whether this is actual increase in the incident of girls trafficking or greater reporting, or both.

6 Robustness

In this section we perform a variety of robustness checks and discuss the validity of our main results. We will discuss each of the robustness below.

First, we only consider the Indian states of Bihar, Uttar Pradesh, Orissa and West Bengal for the robustness check. Among NGO's in India, it is often argued that incidence of girls trafficking is significantly more in states bordering to Nepal, Bhutan and Bangladesh. According to Sen, S (2004) a majority of cases reported of importation of girls to other states came from Bihar. Similarly, it was reported that Orissa witnessed an increase in trafficking after the super cyclone of 1999. West Bengal shares borders to Nepal, Bangladesh and Bhutan. West Bengal also serves as a hub for international trafficking in persons, inter and intra-state trafficking in persons.[20] In order to validate our results, in Table 6 Column 1, we interact the child sex ratio with these states. The coefficient is positive but statistically insignificant at the conventional levels. However the point estimates are precisely estimated with low standard errors, thus indicating zero effect.

[19]The F-test for BJP vs INC is 4.64 (p-value: 0.031).

[20]NGOs in India report that the large figures associated with trafficking in West Bengal are understated, as it remains a state where reporting of crime is far lower than in other states.

Second, we test if girls trafficking are more in states with greater share of scheduled tribes' population. Several studies including a study by the National Commission for Women found that 62% of women in commercial sex work were from scheduled castes and 32% from scheduled tribes, thereby indicating that trafficking is negatively skewed towards the historically disadvantaged groups in India.[21] Thus in Column 2, we test if girls trafficking is more in states with greater share of scheduled tribes population and we do not find the estimate to be statistically significant.

Third, we interact child sex ratio with log of police per 100 sq meters. It is possible that the size of state police has differential impacts on girls trafficking through the child sex ratio variable. The differential size of the state police per 100 square meters also indicates levels of police commitment to crime deterrence across states in India. Thus, in Column 4, we interact child sex ratio with log of police per 100 sq meters. The point estimates are statistically insignificant. It is important to mention that the coefficients of the interaction term in Columns 1, 2 and 4 are precisely estimated and have small standard errors, thus the results can be interpreted as having zero or no effect.

Fourth, we replicate our main results from Table 2 by adding a linear time trend to our specification 1. The results are presented in Table 7 where the coefficient on the child sex ratio variable remains positive and statistically significant, except in Column 4. It is not surprising that the coefficient in Table 7 Column 4 is statistically insignificant. By introducing liner time trend we are absorbing the time variation thus reducing the overall variation in the estimation strategy. Most importantly, the point estimates are nearly identical as in Table 2, thus ruling out concerns that the main results are driven by omitted variables.

Fifth, we replicate our main results from Table 2 with only census years, i.e. 1981, 1991,

[21]The problem among the disadvantaged groups is made worse by the age-old customs and traditions that reinforce gender discrimination based on caste and ethnicity. the most visible and common example is the *Devadasi* tradition in Karnataka, Andhra Pradesh, and Maharashtra, in which parents from scheduled tribes marry their daughters before puberty to a deity or temple where they are then forced to provide sexual services to upper caste community members. Such cultural practices are mainly associated with the scheduled castes and scheduled tribes in any given state in India (Hameed, Hlatshway, Tanner, Turker, and Yang (2010)).

2001 and 2011. In our empirical strategy we use the four Census rounds, and we linearly interpolated the between census years, thus using the time series from 1981–2011. The main disadvantage of restricting the analysis to the four Census years is fewer observations with less statistical power. However, the main result as presented in Table 8 remains the same. Additionally, the point estimates is positive and statistically significant.

Finally, in Table 9 we replicate the Column 4 of Table 2 using three additional control variables from Iyer et al. (2012). In particular, we add women chief minister dummy that takes the value 1 when the State is headed by a women Chief Minister in year t, log of crime against women, and log of kidnap and murder per head. The association between child sex ratio and girls trafficking might be overstated if we do not include the possibility that states who implemented the 73rd Amendment Act earlier were also those where the Chief Minister was a woman. After adding the three control variables, the sample size decreases significantly. However the main result remains to be positive and statistically significant. The data used for our empirical strategy has a longer time series than Iyer at al. (2012).

To conclude, we undertake a variety of robustness checks to ensure that our results are not driven by omitted variables. We find that there exists strong and positive association between child sex ratio and girls trafficking in India.

7 Conclusion

To the best of our knowledge, we are the first to establish the association between shortage of girls as proxied by child sex ratio and girls trafficking in India. We provide a systematic analysis of the association between child sex ratio and girls trafficking after controlling the impact of variety of omitted factors. In particular, we find that a 100 unit increase in child sex ratio is associated with 0.635% increase in girls trafficking in India. Estimated results seems to indicative of both greater reporting and greater incidence of girls trafficking in India.

The estimated association between child sex ratio and girls trafficking varies differentially by share of female empowerment, crime against women, and party rule in the state. We find that in states with greater female empowerment as measured by female literacy, share of female legislators in the state assemblies, and implementation of women reservation at the local level, there is a greater reporting of girls trafficking incidents. Overall, we find that in states with greater female empowerment, child sex ratio is associated with more girls trafficking. Similarly, we find that the association between child sex ratio and girls trafficking is more in states with greater crime against women. Finally, we find that in states ruled by the BJP and the INC, child sex ratio is associated with greater girls trafficking in India. In this paper, we contribute to the existing literature by establishing an additional effect of child sex ratio on girls trafficking in a developing country. Our findings are both statistically significant and economically meaningful. To sum up, the mere fact that there is greater reporting also indicates acknowledging of the crime (i.e. illegal girls trafficking).

It is important to caution the readers about caveats. First, our results are not causal and we cannot disentangle whether the increase in girls trafficking is driven by actual increase or reporting of such incidents. Furthermore, our trafficking data does not distinguish between the source and destination, something that is considered to be important. Nonetheless, the central takeaway from this paper is the strong association between child sex ratio and girls trafficking in India. This is an association that has been merely discussed in media but was not established in a rigorous way. For future research, it will be interesting to study the impact of child sex ratio on marriage, especially inter-caste marriage, bargaining power of women, prevalence of prostitution and sexually transmitted infections, the economic and physical well-being of men who fail to marry.

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TABLE 1
Descriptive Statistics

	Full Sample
PANEL A: *Dependent variable*	
Illegal trafficking incidents per 10,000	374.62
	(1319.72)
PANEL B: *Key independent variables*	
Child sex ratio 0–6 years	1040.91
	(37.93)
PANEL C: *Control variables*	
Log(state population)	16.39
	(1.68)
Log(state rural population)	75.52
	(16.33)
Lag(State GDP)	17060.08
	(10235.46)
State female literacy rate	51.56
	(17.83)
State female legislator share	4.54
	(3.09)
73rd Constitutional amendment dummy	0.43
	(0.49)
Police per 100 sq meters	263.51
	(2912.73)
Newspaper per capita	0.58
	(0.87)
Rapes per head	0.19
	(0.15)
Rapes $<$ 30 years per head	0.16
	(0.03)
Total crime per head	18.93
	(8.83)
No of observations	865

Notes: State-year data for the 29 Indian states from 1980-2011 as described in Section 2.

TABLE 2

Impact of Son Preference on Girls Trafficking in India

	Dependent variable=Log of illegal trafficking incidents			
	(1)	(2)	(3)	(4)
Lag(Child sex ratio 0-6 years)	**0.00968***	**0.00837****	**0.00851****	**0.00635***
	(0.00559)	**(0.00369)**	**(0.00352)**	**(0.00361)**
Log(State population)		0.648	0.866	0.954
		(1.070)	(1.141)	(0.959)
State rural population share		0.00869	0.0111	0.0127
		(0.0361)	(0.0377)	(0.0384)
Log(State income per capita last year)		-0.651	-0.421	-0.638
		(0.696)	(0.714)	(0.731)
State female literacy rate			-0.00182	-0.0161
			(0.0287)	(0.0241)
State female legislators share			0.0447	0.0503*
			(0.0302)	(0.0280)
73rd Amendment dummy			-0.485**	-0.519*
			(0.230)	(0.259)
Log(Police per 100 sq meters)				-0.0805
				(0.146)
Log(Newspapers per capita)				0.513**
				(0.233)
Lag(Dependent variable)		0.457***	0.437***	0.424***
		(0.0788)	(0.0820)	(0.0834)
Constant	-15.28**	-15.65	-22.16	-18.35
	(6.003)	(22.45)	(21.78)	(19.03)
State Fixed Effects	NO	YES	YES	YES
Time Fixed Effects	NO	YES	YES	YES
No of Observations	857	828	816	816
R-squared	0.019	0.763	0.764	0.765

Notes: Standard errors clustered by state are in parentheses.

Asterisks denote significance levels (*=.10, **=.05, ***=.01)

TABLE 3

Differential Impact of Son Preference on Girls Trafficking in India by Female Empowerment

Dependent variable=Log of illegal trafficking incidents	(1)	(2)	(3)
Lag(Child sex ratio 0-6 years)×State female literacy rate	**0.000149**		
	(0.000164)		
Lag(Child sex ratio 0-6 years)×State female legislators share		**0.00109***	
		(0.000611)	
Lag(Child sex ratio 0-6 years)×73rd Amendment dummy			**0.00960***
			(0.00537)
State female literacy rate	-0.167	-0.0207	-0.0146
	(0.172)	(0.0276)	(0.0288)
State female legislators share	0.0513*	-1.082*	0.0544*
	(0.0292)	(0.628)	(0.0304)
73rd Amendment dummy	-0.563**	-0.564**	-10.58*
	(0.247)	(0.269)	(5.605)
Lag(Child sex ratio 0-6 years)	0.000529	0.00132	0.00408
	(0.00618)	(0.00326)	(0.00352)
Constant	-10.31	-13.95	-13.57
	(21.27)	(19.38)	(20.56)
State level controls	YES	YES	YES
Female empowerment controls	YES	YES	YES
Other controls	YES	YES	YES
State Fixed Effects	YES	YES	YES
Time Fixed Effects	YES	YES	YES
No of Observations	816	816	816
R-Squared	0.768	0.768	0.770

Notes: Standard errors clustered by state are in parentheses.

Asterisks denote significance levels (*=.10, **=.05, ***=.01)

TABLE 4

Differential Impact of Son Preference on Girls Trafficking in India by Crime

Dependent variable=Log of illegal trafficking incidents	(1)	(2)	(3)
Lag(Child sex ratio 0-6 years)×Log(Rapes per head)	0.00711**		
	(0.00264)		
Lag(Child sex ratio 0-6 years)×Log(Rapes<30 yrs per head)		0.00742**	
		(0.00272)	
Lag(Child sex ratio 0-6 years)×Log(Total crimes per head)			0.00449
			(0.00637)
Log(Rapes per head)	-6.983**		
	(2.764)		
Log(Rapes<30 years per head)		-7.369**	
		(2.856)	
Log(Total crimes per head)			-3.956
			(6.653)
Lag(Child sex ratio 0-6 years)	0.0219**	0.0240***	-0.00724
	(0.00793)	(0.00847)	(0.0169)
Constant	-38.66*	-40.46*	-18.61
	(21.98)	(22.74)	(24.15)
State level controls	YES	YES	YES
Female empowerment controls	YES	YES	YES
Other controls	YES	YES	YES
State Fixed Effects	YES	YES	YES
Time Fixed Effects	YES	YES	YES
No of Observations	816	816	816
R-squared	0.771	0.771	0.770

Notes: Standard errors clustered by state are in parentheses.
Asterisks denote significance levels (*=.10, **=.05, ***=.01)

TABLE 5

Differential Impact of Son Preference on Girls Trafficking in India by Party Rule

Dependent variable=Log of illegal trafficking incidents	(1)
Lag(Child sex ratio 0-6 years)×INC & Allies Government	0.00845**
	(0.00385)
Lag(Child sex ratio 0-6 years)×BJP & Allies Government	0.0188***
	(0.00531)
Lag(Child sex ratio 0-6 years)×Regional Parties Government	-0.00414
	(0.00397)
INC & Allies Government	-8.736**
	(4.032)
BJP & Allies Government	-19.45***
	(5.572)
Regional Parties Government	4.271
	(4.131)
Lag(Child sex ratio 0-6 years)	-0.00416
	(0.00487)
Constant	-11.69
	(18.78)
State level controls	YES
Female empowerment controls	YES
Other controls	YES
State Fixed Effects	YES
Time Fixed Effects	YES
No of Observations	816
R-squared	0.773

Notes: Standard errors clustered by state are in parentheses.
Asterisks denote significance levels (*=.10, **=.05, ***=.01)

TABLE 6

Robustness 1: Impact of Son Preference on Girls Trafficking in India

Dependent variable=Log of illegal trafficking incidents			
	(1)	(2)	(3)
Lag(Child sex ratio 0-6 years)×Borders States	0.00122		
	(0.00739)		
Lag(Child sex ratio 0-6 years)×ST Population share		-0.000212	
		(0.000277)	
Lag(Child sex ratio 0-6 years)×Log(Police per 100 sq meters)			0.000819
			(0.00428)
Borders States	-2.775		
	(7.386)		
ST Population share		0.212	
		(0.281)	
Log(Police per 100 sq meters)	-0.0835	-0.0646	-0.929
	(0.148)	(0.161)	(4.423)
Lag(Child sex ratio 0-6 years)	0.00625	0.0103	0.00344
	(0.00368)	(0.00682)	(0.0138)
Constant	-17.23	-23.43	-13.40
	(20.15)	(26.05)	(24.46)
State level controls	YES	YES	YES
Female empowerment controls	YES	YES	YES
Other controls	YES	YES	YES
State Fixed Effects	YES	YES	YES
Time Fixed Effects	YES	YES	YES
No of Observations	816	816	816
R-Squared	0.767	0.768	0.767

Notes: Standard errors clustered by state are in parentheses.

Asterisks denote significance levels (*=.10, **=.05, ***=.01)

TABLE 7

Robustness 2: Impact of Son Preference on Girls Trafficking in India

Dependent variable=Log of illegal trafficking incidents				
	(1)	(2)	(3)	(4)
Lag(Child sex ratio 0-6 years)	0.00870**	0.00933**	0.00897**	0.00720
	(0.00365)	(0.00420)	(0.00416)	(0.00425)
Log(State population)		0.467	0.927	0.978
		(1.008)	(1.099)	(0.957)
State rural population share		0.00609	0.00659	0.00734
		(0.0375)	(0.0396)	(0.0410)
Log(State income per capita last year)		-0.612	-0.542	-0.701
		(0.632)	(0.622)	(0.655)
State female literacy rate			0.00140	-0.0103
			(0.0292)	(0.0260)
State female legislators share			0.0398	0.0440
			(0.0294)	(0.0281)
73rd Amendment dummy			-0.208	-0.232
			(0.209)	(0.224)
Log(Police per 100 sq meters)				-0.0586
				(0.168)
Log(Newspapers per capita)				0.444*
				(0.235)
Lag(Dependent variable)	0.466***	0.458***	0.444***	0.435***
	(0.0791)	(0.0776)	(0.0813)	(0.0814)
Time Trend	-0.00831	0.00566	-0.000853	0.00961
	(0.0127)	(0.0347)	(0.0420)	(0.0352)
Constant	6.549	-25.04	-20.90	-38.26
	(23.32)	(56.39)	(76.26)	(66.66)
State Fixed Effects	YES	YES	YES	YES
Time Fixed Effects	NO	NO	NO	NO
Time Trend	YES	YES	YES	YES
No of Observations	828	828	816	816
R-squared	0.754	0.756	0.755	0.756

Notes: Standard errors clustered by state are in parentheses.

Asterisks denote significance levels (*=.10, **=.05, ***=.01)

TABLE 8

Robustness 3: Impact of Son Preference on Girls Trafficking in India

Dependent variable=Log of illegal trafficking incidents				
	(1)	(2)	(3)	(4)
Lag(Child sex ratio 0-6 years)	0.0189*	0.0201*	0.0181*	0.0150
	(0.0101)	(0.0108)	(0.00928)	(0.0102)
Log(State population)		1.050	1.404	1.584
		(2.356)	(2.307)	(1.982)
State rural population share		-0.0254	-0.0595	-0.0459
		(0.0730)	(0.0801)	(0.0818)
Log(State income per capita last year)		-0.899	-1.034	-1.145
		(1.613)	(1.381)	(1.558)
State female literacy rate			0.0507	0.0293
			(0.0599)	(0.0771)
State female legislators share			0.169*	0.174**
			(0.0826)	(0.0722)
73rd Amendment dummy			-1.113	-1.250
			(0.791)	(0.864)
Log(Police per 100 sq meters)				0.0130
				(0.206)
Log(Newspapers per capita)				0.715
				(0.644)
Constant	-21.32**	-31.01	-33.77	-32.25
	(10.10)	(52.02)	(48.76)	(43.73)
State Fixed Effects	YES	YES	YES	YES
Time Fixed Effects	YES	YES	YES	YES
No of Observations	109	109	107	107
R-squared	0.810	0.814	0.840	0.845

Notes: Standard errors clustered by state are in parentheses.
Each column uses only census years, i.e. 1981, 1991, 2001 and 2011.
Asterisks denote significance levels (*=.10, **=.05, ***=.01)

TABLE 9

Robustness 4: Impact of Son Preference on Girls Trafficking in India

Dependent variable=Log of illegal trafficking incidents	(1)
Lag(Child sex ratio 0-6 years)	0.0189**
	(0.00783)
Log(State population)	-0.0727
	(1.155)
State Rural Population share	-0.0720**
	(0.0326)
Log(State income per capita last year)	-0.887
	(0.650)
State female literacy rate	-0.0410
	(0.0334)
State female legislators share	0.00835
	(0.0184)
73rd Amendment dummy	-0.116
	(0.122)
Log(Police per 100 sq meters)	0.716***
	(0.230)
Log(Newspapers per capita)	0.323
	(0.547)
Women Chief Minister dummy	-0.272*
	(0.143)
Log(Crime against women per head)	0.641***
	(0.163)
Log(Kidnap & Murders per head)	-0.389
	(0.278)
Lag(Dependent variable)	0.462***
	(0.0622)
Constant	-5.615
	(23.03)
State Fixed Effects	YES
Time Fixed Effects	YES
No of Observations	338
R-squared	0.892

Notes: Standard errors clustered by state are in parentheses.
We replicate the Column 4 of Table 2 using three additional control variables from Iyer et al. (2012)
Asterisks denote significance levels (*=.10, **=.05, ***=.01)

Figure 1


Figure 1: Sex Ratio (0-6), Female Literacy & Marginal Effect on Traffiking Incidents per head (log)
Marginal Effect on Sex Ratio (0-6 years)
-.01
0
.01
.02
.03
12
17
22
27
32
37
42
47
52
57
62
67
72
77
82
87
92
Female Literacy Rate

Figure 2

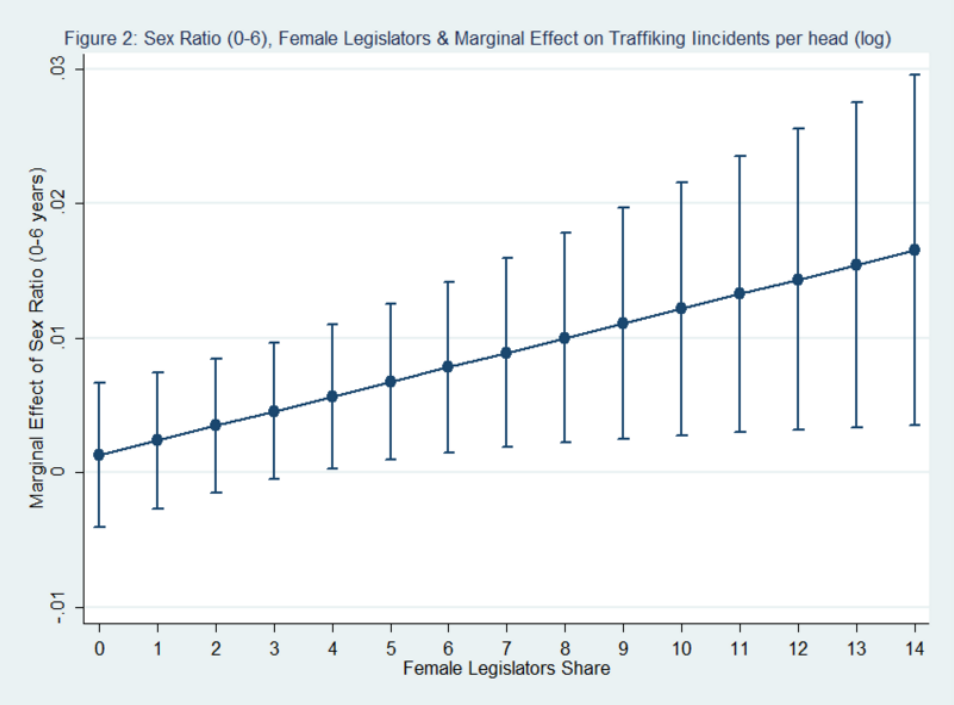
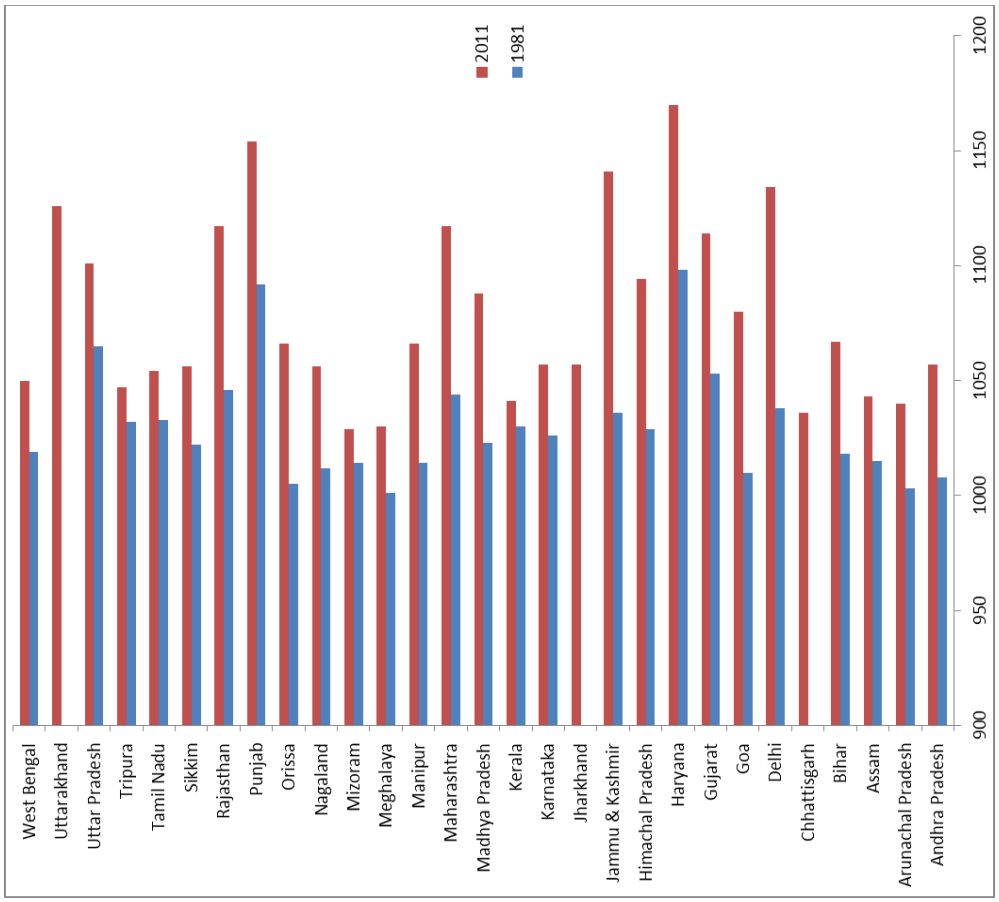


Figure 2: Sex Ratio (0-6), Female Legislators & Marginal Effect on Traffiking Iincidents per head (log)
Marginal Effect of Sex Ratio (0-6 years)
-.01
0
.01
.02
.03
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
Female Legislators Share

Figure 3


2011
1981
900
950
1000
1050
1100
1150
1200
West Bengal
Uttarakhand
Uttar Pradesh
Tripura
Tamil Nadu
Sikkim
Rajasthan
Punjab
Orissa
Nagaland
Mizoram
Meghalaya
Manipur
Maharashtra
Madhya Pradesh
Kerala
Karnataka
Jharkhand
Jammu & Kashmir
Himachal Pradesh
Haryana
Gujarat
Goa
Delhi
Chhattisgarh
Bihar
Assam
Arunachal Pradesh
Andhra Pradesh