Repelling Rape:
Foreign Direct Investment Empowers Women*

Tianshu Li, Sonal S. Pandya, and Sheetal Sekhri †

November 2024

Abstract

For marginalized social groups, global economic integration can offer new economic opportunities but may also trigger backlash by dominant groups that reinforces exclusion. Foreign direct investment (FDI), we argue, can empower women in a manner resilient to male backlash by both raising women's income and exposing them to gender equality norms. India's sudden 2005 FDI liberalization allows us to identify FDI's causal effect on women's empowerment and rape, a violent manifestation of male backlash. In FDI-exposed districts, rape declined, women's relative wage growth doubled, and women voiced stronger support for women's empowerment. Women in these districts exercised household bargaining leverage and political participation in ways that increase their safety and deters rape. FDI from low gender equality countries, which raises income but lacks equality norms, increases rape. We rule out several alternative mechanisms. Our findings establish a new channel through which economic integration advances social equality.

*Support for this research was provided by the University of Virginia's Quantitative Collaborative, Dean of Arts & Sciences, Vice President for Research, Quandt International Fund, and the Batten Institute for Entrepreneurship and Innovation; and the Susan Louise Dyer Peace Fellowship at Stanford University's Hoover Institution. Supplementary material for this article is available in the appendix to this article's online edition. Replication files are available in the JOP Dataverse (https://dataverse.harvard.edu/dataverse/jop). The empirical analysis has been successfully replicated by the JOP replication analyst.

†Li: Assistant Professor, International Business School Suzhou, Xi'an Jiaotong-Liverpool University (Tianshu.Li@xjtlu.edu.cn). Pandya: Associate Professor, Department of Politics, University of Virginia (spandya@virginia.edu). Sekhri: Associate Professor, Department of Economics, University of Virginia (ssekhri@virginia.edu).

Around the world, marginalized social groups confront systematic barriers to their exercise of voice and agency (Sen, 2000). Global economic integration can facilitate economic empowerment but may also provoke backlash by threatening the status of dominant social groups (Norris and Inglehart, 2019; Rodrik, 2021). Existing research analyzes empowerment and backlash as distinct, unrelated consequences of integration. How these mechanisms relate, and their consequences for specific groups remains unexplored.

We analyze empowerment and backlash as they manifest for women in developing countries. Canonical economic models emphasize that earned income strengthens women's autonomy (Becker, 1974) but fail to consider restrictive gender norms that limit women's willingness and ability to earn income and exercise autonomy (Boudet et al., 2013; Jayachandran, 2021). Women who transgress restrictive norms risk violent male backlash (Mansbridge and Shames, 2008; Htun and Weldon, 2012). Women's rising incomes fuels violence against women in developing countries (Bhalotra et al., 2021).

We propose that integration's consequences for women depends on form integration takes. While most new job opportunities for women are in domestic companies producing for export (Goldberg and Pavcnik, 2007), a small subset arise from foreign direct investment (FDI). These investments by multinational companies (MNCs) establish foreign subsidiaries to produce goods and services. MNCs undertake FDI only for their most skill- and technology-intensive production activities, which require firms harmonize production and management practices across subsidiaries. In developing countries, economic integration typically increases labor demand for both genders and narrows the gender wage gap (Winters and Martuscelli, 2014), which holds constant men's economic grievances as a driver of male backlash.

Our conceptual framework centers around FDI's distinctive capacity to challenge restrictive gender norms. MNCs' practices embody their home country's laws and culture (Rosenzweig and Nohria, 1994). MNCs from more gender equal countries become con-

duits for equality norms. FDI empowers women by both increasing their income and exposing them these norms. Women gain experience articulating and asserting their preferences, which, we argue, spills over into women's lives in ways that deter backlash.

Our empirical setting, India, vividly illustrates the tensions between women's empowerment and male backlash arising from economic integration. During 2002-2011, our sample period, India's rapid integration into the global economy created new job opportunities for women, primarily in Indian companies producing for export (Munshi and Rosenzweig, 2006). Women earned higher wages, pursued higher education, delayed marriage and childbearing and expressed long-term career ambition (Jensen, 2012).

During this same period, reported rape in India increased 24 percent.[1] The two trends are widely linked. Following the 2012 New Delhi gang rape that drew global attention, one of the perpetrators articulated backlash motives for rape:

> A decent girl won't roam around at nine o'clock at night. A girl is far more responsible for rape than a boy. Housework and housekeeping is for girls, not roaming in discos and bars at night doing wrong things, wearing wrong clothes. About 20% of girls are good ... [Rapists] had a right to teach them a lesson (BBC News, 2015).[2]

Against the grim backdrop of increasing rape nationwide, we hypothesize that in FDI-exposed areas, Indian women experienced a more robust form of empowerment that helped deter rape. Our research designs center around India's large and sudden FDI liberalization in 2005, which liberalized foreign ownership in 110 industries. Figure 1 shows a large spike in intended FDI in 2006 and a nearly threefold increase foreign firms'

[1]See Figure A.1. Consistent with Indian law, we treat rape as a crime committed by men against women. We refer to reported rape as rape except when addressing accuracy of crime data.

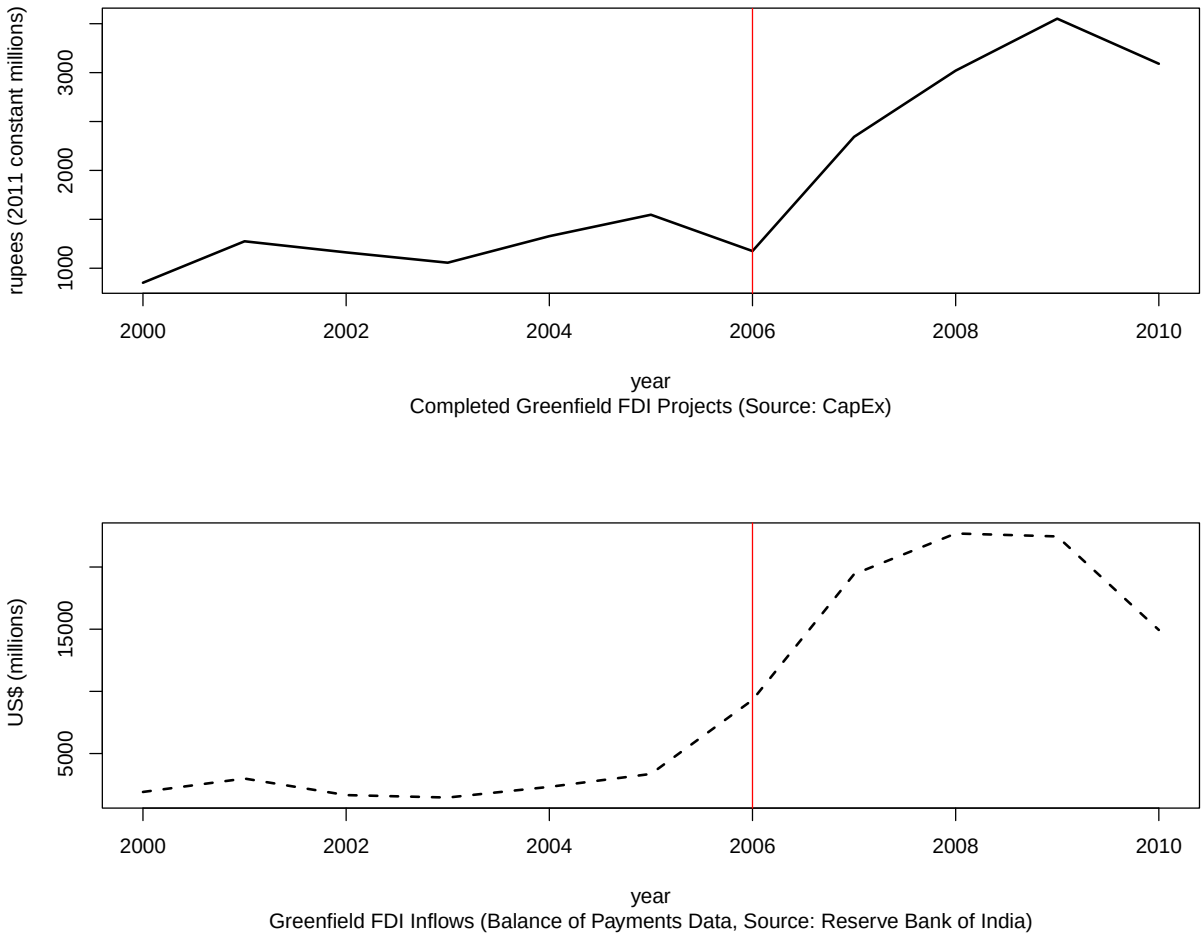
[2]See appendix for further evidence that male backlash against women's empowerment manifests as rape in India.

new capital spending in 2008. Leveraging this shock, we estimate FDI liberalization's effects on rape, wages, attitudes about gender roles, and safety-enhancing measures. We implement two research designs around this shock that build on FDI's strong tendency to geographic agglomeration (Bobonis and Shatz, 2007). Our reduced form analysis exploits temporal and cross-state variation in Indian FDI inflows using a non-linear analog of a differences-in-differences framework. We also estimate a two-stage instrumental variable model that uses annual district exposure to FDI liberalization – measured with original FDI regulation data – to instrument for district-year FDI exposure.

Our analyses focus on a discrete time period, 2002-2011, during which valid inferences about FDI's effects are possible. Although our findings derive from this specific empirical context, we propose that India's experience during this period offers broader insights about globalization's consequences for women's empowerment in developing countries. Our theoretical framework addresses gender norms and labor market dynamics that are prevalent in these countries. The scope of these broader insights may, however, be limited by distinctive features of the Indian case and our sample period. We return to these questions of scope in the conclusion when discussing topics for future research.

Our core finding is that, despite rising incidence of rape nationwide, FDI-exposed districts had 3-10 fewer rapes annually per million people after liberalization. We further show that women's empowerment is the mechanism through which FDI reduced rape. In FDI-exposed districts, both genders saw higher wages but women's wage growth was more than double that of men. Working women also expressed stronger support for women's political participation, consistent with exposure to gender equality norms. Women in exposed districts exercised voice and agency in their non-working lives in ways that deter rape. After liberalization, households in these districts spent more on telephones, a safety-enhancing private good, and working women were more likely to vote, consistent with greater lobbying for safety-enhancing public goods. We reinforce the importance of both income and equality norms by showing that FDI originating

Figure 1: Liberalization Increased India's FDI Inflows



Top panel plots total capital expenditures associated with new FDI projects completed that year. Bottom panel plots new greenfield FDI inflows as reported in official balance of payments data. Capital expenditures lag balance of payments data due to the time necessary for new projects to become operational. Vertical line indicates liberalization.

from low gender equality countries - which raises women's income but lacks equality norms - increases rape. A decline in rape committed by strangers drives our baseline finding, cases for which safety-enhancing goods are arguably a stronger deterrent. We further show that FDI did not reduce men's propensity to rape. Additional analyses rule out several non-empowerment mechanisms through which FDI could have reduced rape, including manipulation of crime statistics and increased law enforcement.

We advance research on economic integration and gender in a few ways. Prior work analyzes integration's effects on female literacy, employment, and summary indexes of equality (Gray et al., 2006; Neumayer and de Soysa, 2011). We highlight male backlash, a distinct negative consequence of women's economic opportunity that co-exists with improvements in standard metrics. We also engage research on social spillovers from global supply chains (Malesky and Mosley, 2018), establishing the standardization of MNC practices across subsidiaries as a distinct spillover mechanism and demonstrating effects beyond the workplace.

Regarding scholarship on globalization backlash (Norris and Inglehart, 2019; Rodrik, 2021), we establish that backlash can occur even when dominate social groups experience economic prosperity. Our findings indicate a novel source of status threat arising from globalization, the empowerment of marginalized groups to challenge restrictive norms. Our emphasis on gender as a dimension of backlash addresses an important but understudied consequence of heightened authoritarianism (Roggeband and Krizsán, 2020).

Finally, we contribute to research on drivers of women's empowerment by establishing FDI as a potential source of gender equality norms (Simmons, 2009; Murdie and Peksen, 2015). FDI is unique in bundling equality norms with jobs and advanced technologies over which developing countries vigorously compete. Without minimizing the costs of this competition, our findings suggest that FDI can be a powerful conduit for equality norms into countries otherwise hostile to women's empowerment.

Conceptual Framework

We define women's empowerment as the exercise of voice and agency, a narrow definition that captures essential elements to most conceptions of empowerment. Earned income improves women's leverage in intrahousehold bargaining (Iversen and Rosenbluth, 2006) and alleviates women's time constraints (Duflo, 2012). Earned income provides material resources that facilitate empowerment, but does not address restrictive norms that limit women's willingness to earn income or use income to advance empowerment. Restrictive norms are culturally prescribed gender roles that stigmatize women's exercise of voice and agency, and legitimate male dominance. Though poverty magnifies these norms (Jayachandran, 2015), disparities persist as incomes rise (Alesina et al., 2011), and matriarchal sub-cultures in developing countries exhibit greater women's empowerment (Brulé and Gaikwad, 2021). Women adhere to restrictive gender norms to boost self-esteem and avoid social sanction (Blaydes and Linzer, 2008).

Restrictive gender norms undercut the empowering potential of earned income. Gender bias limits women's employment opportunities, reduces women's wages, and undermines productivity (Jayachandran, 2021). Employment outside the home conflicts with household and child-rearing tasks, prohibitions on women in public spaces, and gendered stigmas about specific occupations (Goldin, 1995). Women may be unwilling to challenge restrictive norms. Experimental evidence from Jordan shows that earned income improves women's bargaining outcomes vis-á-vis other women but not men, consistent with women's internalized expectations of male dominance (Barnett et al., 2021).

Rape as Violent Male Backlash

Restrictive gender norms persist, in part, because women who challenge them risk violent male backlash. Women's earned income challenges norms around men as household breadwinners, prompting violence to re-establish male dominance (Macmillan and Gart-

ner, 1999). Backlash refers to the actions of dominant social groups to stop or reverse changes that threaten their power, influence, or standing (Lipset and Raab, 1970).

Though a comprehensive discussion of rape's causes is beyond the scope of this work, rape, in all its forms, is fundamentally rooted in the restrictive gender norms at the heart of our framework (Marshall and Barbaree, 1990). As a form of violent backlash, rape is particularly challenging to address. Whereas intimate partner violence (IPV) eventually declines when men benefit enough from women's earned income (Aizer, 2010), men typically do not internalize economic gains to women outside of their household.[3] Pervasive rape myths – beliefs that women invite rape by challenging restrictive norms – legitimate rape as punitive (Hill and Marshall, 2018). Across low-income countries, non-partner rapists assert an entitlement to rape women, and that rape reinforces their masculinity (Jewkes et al., 2013).

In many developing countries, women's employment violates prohibitions on women in public spaces and in mixed-gender settings, norms cast as necessary for women's sexual purity and physical safety (Boudet et al., 2013). Though safety concerns can be exaggerated as a pretext to restrict women's autonomy, women perceive high risks of sexual violence in public spaces and make costly investments in their safety. Borker (2020) finds that female college students in New Delhi choose worse quality colleges that they perceive as safer, a trade-off that costs an estimated 20 percent of their expected post-graduation salaries. In India specifically, the cultural salience of controlling women's sexuality makes rape a prime manifestation of male backlash. Indian politicians commonly perpetuate rape myths.[4] Rape survivors and their families face harsh social sanctions for reporting rape and a judicial system that reflects these cultural biases (Baxi, 2013).

[3]On average, less than five percent of annual reported rape in India occurs within families.

[4]https://www.washingtonpost.com/news/worldviews/wp/2014/07/17/booze-and-chinese-food-indian-politicians-explain-the-causes-of-rape/

FDI Empowers Women Through Income and Equality Norms

In this section, we explain (1) how FDI both increases women's income and introduces gender equality norms, and (2) how FDI's effects spillover into women's non-working lives in ways that help reduce rape. Our detailed discussion of MNCs' motives emphasizes two key points. First, our argument pertains to FDI, not less skill- and technology-intensive forms of global production. Second, FDI's effects on income and equality norms are largely an incidental byproduct of MNCs' production practices rather than any explicit MNCs motives regarding gender equality.

FDI: Source of Earned Income and Equality Norms

Global production is a broad category that encompasses the many ways in which firms spread the production of goods and services across countries. In its simplest form, a firm contracts with a foreign firm to produce on its behalf. This arms-length global production is typical in low-skill and technology industries such as textiles. Because minimizing cost is the singular motive, arms-length production drives poor working conditions and other atrocities sometimes associated with global production (Mosley, 2010). FDI, by contrast, is the most complex form of global production. Firms become multinational by establishing subsidiaries in multiple countries. FDI is costly and therefore the exclusive preserve of the world's most productive firms who undertake FDI for their most skill- and technology-intensive production activities. FDI allows these firms to reduce costs and/or distance from consumers and inputs while maintaining their control over key intellectual property (Guadalupe et al., 2012). Unlike arms-length production, MNCs typically provide better working conditions than otherwise equivalent local firms (Harrison and Rodríguez-Clare, 2010).

MNCs transmit equality norms because they coordinate global production by standardizing practices, "an organization's routine use of knowledge for conducting a particular function that has evolved over time under the influence of the organization's history,

people, interests, and actions" (Kostova and Roth, 2002, p. 216). MNCs' knowledge-intensive production depends on tacit, non-codifable information. MNCs standardize practices across subsidiaries to transmit this information (Taylor et al., 1996) and harmonize norms and attitudes across subsidiaries (DiMaggio and Powell, 1983). These practices embody the culture and laws of the MNC's home country and have been shown to influence subsidiaries' operations (Rosenzweig and Nohria, 1994). One implication is that FDI from more gender equal countries transmits gender equality norms via these practices. Consistent with this claim, Tang and Zhang (2021) show that MNC subsidiaries in China from more gender equal home countries have more female employees.

FDI improves women's opportunities to earn income. Independent of equality norms, MNCs pay higher wages than local firms in developing countries, which reflects their higher relative demand for skilled labor (Helpman et al., 2004), job training (Fosfuri et al., 2001), and global profit sharing (Hjort et al., 2020). MNCs' reliance on advanced technologies increases demand for cognitive skill over physical strength (Alfaro, 2017), which, in developing countries, disproportionately benefits women (Juhn et al., 2014). MNCs may also strategically hire women to leverage undervalued segments of the local workforce (Siegel et al., 2019). Two mechanisms could work against these effects. Where women receive less schooling, FDI's need for skilled labor may disadvantage women. Women could also be unwilling to take jobs in internationally- oriented firms, which may require more travel and non-standard work hours (Bøler et al., 2018).

MNCs from countries with strict employment discrimination laws further boost women's employment opportunities through more gender-equal human resources policies (Budhwar, 2012). They may also receive shareholder pressure to implement home country diversity and inclusion practices.[5] Consistent with gender equal practices, MNCs exhibit less gender bias in job ads (Wu et al., 2008). They also have more policies that help re-

[5]Interview, Senior Vice President for Human Resources, South Asia subsidiary of Fortune 100 US-based MNC. December 6, 2016. Gurgaon, India.

tain women including family leave, child care, and flexible working hours (Kodama et al., 2018); transparent sexual harassment policies, grievances systems, and formal mentoring (Cooke and Saini, 2010).

MNCs' production practices also directly counter restrictive gender norms. MNCs are more likely to have women managers (Tang and Zhang, 2021), who provide role models that foster women's career ambition (Beaman et al., 2012). MNCs generally have more collaborative and deliberative decision-making processes, an artefact of their productivity and knowledge-intensive production tasks (Taylor et al., 1996; Bloom et al., 2012). These processes give women experience articulating and asserting their preferences. For example, Siegel et al. (2019) show that MNC subsidiaries in South Korea hire and promote more women because Korean men, socialized through mandatory military service, function poorly in non-hierarchical work environments.

FDI Reduces Rape: Hypotheses and Mechanisms

We argue that FDI's combination of income and norms empower women in their non-working lives. Earned income reduces women's financial dependence on families and communities and accompanying pressure to abide by restrictive norms (Jayachandran, 2021). Workplace exposure to equality norms equips women to exercise this leverage. Participatory production practices make workers critical of social hierarchies in their personal and political beliefs (Wu and Paluck, 2020). Women mentored in the workplace apply conflict resolution techniques at home and voice their preferences more (Greenhaus and Powell, 2006). Workplace experience also fosters women's political and social engagement by building skills in communication, collaboration, and leadership (Prillaman, 2023).

Our central hypothesis is that FDI reduces rape. The mechanism, we argue, is that FDI empowers women in their non-working lives to take actions that deter rape. All else equal, higher risk of criminal prosecution deters would-be rape perpetrators (Marshall

and Barbaree, 1990). Women exercise voice and agency in ways that make rape a more difficult crime to commitment. Within the household, women have greater leverage to make private investments in their personal safety. The government commission convened after the 2012 Delhi gang rape emphasized the importance of phones and improved infrastructure for women's safety (Verma, 2013, p. 265). Greater political engagement by women can make politicians more responsive to women's public goods preferences (Miller, 2008).

Additionally, empowerment increases women's propensity to report crimes (Iyer et al., 2012), which raises the risk of prosecution. Earned income eases financial burdens of reporting including transportation to police stations and legal assistance. Women may be better equipped to counter family and social pressure to conceal rape and law enforcement's reluctance to investigate alleged rape (Human Rights Watch, 2017). As we discuss further below, our empirical analysis of reported rape is a challenging test. Empowerment helps women deter rape, but it also increases their propensity to report. We observe only the net effect. For us to find that FDI reduces reported rape, the actual incidence of rape must decline sufficiently to offset increased reporting.

Building on these theoretical propositions, our empirical analysis proceeds in three parts. We first establish our baseline claim, that FDI caused a decline in reported rape. Second, we show that FDI empowers women through a combination of higher income and exposure to gender equality norms. Third, we demonstrate that in FDI-exposed areas, women exhibited empowerment in their non-working lives in ways that deter rape. These second and third parts pin down the precise mechanisms underlying our baseline claim.

Empirical Strategy: FDI Liberalization in India

India is an insightful setting to analyze empowerment and backlash. It consistently ranks among the least gender equal countries in the world.[6] Patriarchal norms prevail across most dimensions of Indian women's lives (Derné, 1994). As is typical of many developing countries, Indian women's earned income challenges these norms by conferring greater autonomy (Patel, 2010). Rape myths are pervasive. Hill and Marshall (2018) find that 75 percent of male and female Indian respondents believe that women alone bear responsibility for rape.

India also provides an FDI liberalization episode that allows us to identify FDI's causal effects on women's empowerment and rape. India regulates industry-level FDI inflows on two dimensions: the percent foreign ownership allowed in a single firm, and whether government approval is required ("government route") or not ("automatic route"). These regulations reduce FDI because they force joint ventures, inducing many contractual risks vis-à-vis local partners, and introduce uncertainty about the likelihood and timing of approvals (Pandya, 2014). Prior to 2005, India allowed up to 51 percent foreign ownership through the automatic route in 35 industries. On December 23, 2005, India's Department of Industrial Promotion and Planning (DIPP) announced a legally binding clarification of India's FDI policy that unless stated otherwise, foreign firms can hold 100% ownership without government approval "FDI up to 100% is permitted under the automatic route in most sectors/activities." The note explains that "[i]t has been observed that sometimes proposals are submitted for prior Government approval even though the cases are eligible for the automatic route. The investors are hereby advised to access the automatic route where the policy so permits" (DIPP, 2005).

The note effectively liberalized ownership and entry into 110 industries. We infer from this context that liberalization was not biased towards certain industries and was

[6] https://www.theguardian.com/world/2012/jul/23/why-india-bad-for-women

unrelated to other policy reforms. Figure A.2 disaggregates official Indian FDI inflow data by entry route and shows new ("greenfield") FDI via the automatic route drove post-2005 FDI growth. Extensive changes following the 2012 Delhi gang rape preclude inferences beyond 2011. These include extensive legal changes, more spending on police and safety-enhancing infrastructure, and changing public attitudes.

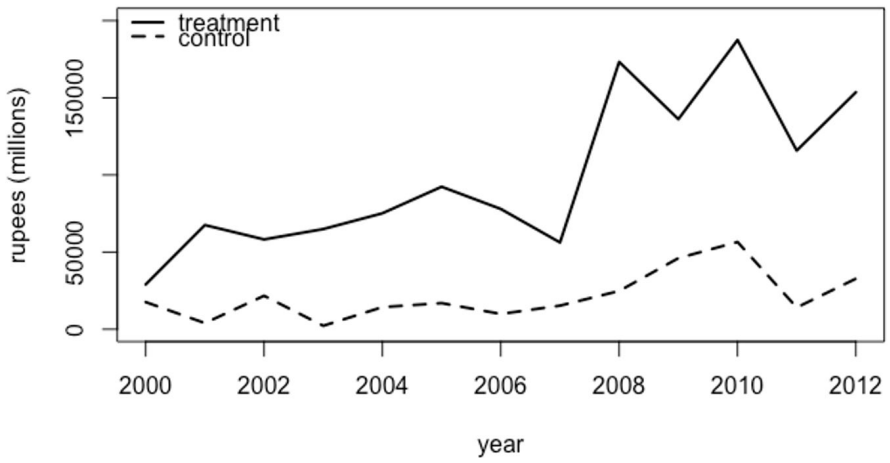
Our two research designs build on FDI's strong tendency to locate in close proximity to existing firms in the same industry (Mukim and Nunnenkamp, 2012). Agglomeration facilitates access to specialized inputs and produces produces knowledge spillovers, especially important for firms operating in a unfamiliar country.

Our reduced form approach compares outcomes across districts in two sets of Indian states. Six "treated" states receive most of India's FDI: Maharashtra, Karnataka, National Capital Region (NCR) Delhi, Tamil Nadu, Andhra Pradesh, and Gujarat. Figure 2 illustrates this concentration post liberalization whereas "control" states saw minimal change. We analyze state- and district-level correlates of treatment status for 1962-2001 and find only modest differences between treatment and control areas.[7] Our use of district fixed effects accounts for unobserved, slow moving district characteristics that may correlate with FDI and our outcomes. We also control for time-varying district characteristics including gender ratio and literacy rates that can correlate with relevant omitted district characteristics.

Our instrumental variable approach uses district-year exposure to FDI liberalization to instrument for FDI exposure. This instrument is novel in the study of FDI though studies of trade liberalization measure use analogous measures of local tariff exposure (Topalova, 2010). This approach rests on the identifying assumption that national FDI regulations influence FDI inflows but are otherwise uncorrelated with district-year rape.

[7]See Tables A.1 and A.2 for full results and discussion.

Figure 2: Post-Liberalization FDI Inflows Concentrated in Treated States



Data Source: CapEx database.

Measurement

Our main unit of analysis is district-year, the most granular level of data consistently available.[8] Our sample spans all 583 Indian districts during 2002-2011.[9]

District-year reported rape data are from India's National Crime Records Bureau (NCRB). During the sample period, Section 375 of the Indian Penal Code defined rape as involuntary penetrative intercourse. The statute excluded marital rape of women older than fifteen and the rape of men. Rape is a federal crime, so the law is uniform across states. We measure district-year reported rape as counts because annual district population data are unavailable. For robustness, we impute annual district population from India's decennial census to construct a population-weighted, but noisier, alternative measure.

FDI can affect reported rape by changing both the actual incidence of rape and women's propensity to report rape to police. Because women's empowerment increases

[8]Table A.3 reports summary statistics.

[9]We address redistricting by restoring all district-level data to 2001 boundaries.

women's propensity to report crime (Iyer et al., 2012), analysis of reported rape data biases against our baseline hypothesis. Actual rape needs to decline enough to offset women's increased propensity to report rape. Below, we rule out reasons why FDI could have reduced women's propensity to report rape. Given our research designs, measurement error introduces bias only if FDI-exposed districts systematically under report rape after liberalization. For example, public officials in exposed districts could manipulate official crime statistics. Our analysis of alternative explanations addresses possible measurement bias correlated with treatment.

District-year FDI data are from CapEx, a project-level database of the Centre for Monitoring of the Indian Economy. Database covers projects that exceed US$250,000.[10] We measure counts of completed greenfield FDI projects because of missingness in CapEx's valuation data.[11] Approximately ten percent of Indian districts received at least one FDI project during the sample period.

We hand collected national industry-year FDI regulations data from DIPP announcements. For each 4-digit industry in the 2008 Indian National Industrial Classification, we measure liberalization as the percent foreign ownership allowed in a single firm through the automatic route.

Data for district-level controls are from India's decennial census. We control for adult gender ratio and literacy by interacting change over 1991-2001 with year fixed effects.[12] We compute the compound rate of population growth during 2001-2011 and derive an annualized rate to impute yearly district population after 2001.

[10]Database covers projects with capital expenditures exceeding US$250,000. Data are collected from media, government disclosures, and firm interviews.

[11]We also omit from our project counts 20 projects that were outliers in valuation, which were mostly in automobile manufacturing and electricity generation.

[12]71 districts are missing from at least one census round. Our findings are robust to omitting these districts from our sample.

Empirical Analysis

Our reduced form analysis use a two-way fixed effects model analogous to difference-in-differences. This approach accounts for unobserved time-varying and -invariant district characteristics that influenced rape. This is our preferred strategy throughout the paper because it allows us to use a wider variety of data to test observable implications. Our second approach, a two-stage least squares (2SLS) model with fixed effects, leverages district-level variation in FDI exposure and accounts for unobserved, time- and district-varying drivers of MNCs' location choices and rape.

Our reduced form analysis employs a Poisson model, which is more efficient for count data:

$$E[Y_{it} \mid X_{it}] = exp(\pi_1 \ \ HighFDI * PostLiberalization) + \pi_2 X'_{it} + \theta_i + \kappa_t \qquad (1)$$

Y_{it} is rape in district i and year t. *High FDI* is an indicator equal to 1 if district i is in one of the six treated states. *Post Liberalization* is an indicator equal to 1 for 2006 and later. X_{it} is a set of district-level time-varying controls. θ_i and κ_t are district and year fixed effects, respectively. Equation (1) cannot be consistently estimated because of the incidental parameters problem (Neyman and Scott, 1948). We follow Hausman et al. (1984) and transform the model to obtain a multinomial distribution for Y_{it}.

$$E[Y_{it}|X_{it}, \widehat{Y}_i] = \frac{exp(\pi_1 HighFDI * PostLiberalization) + \pi_2 X'_{it} + \kappa_t)}{\sum_{\tau=1}^{T} exp(\pi_1 HighFDI * PostLiberalization) + \pi_2 X'_{it} + \kappa_t)} \widehat{Y}_i \qquad (2)$$

where $\widehat{Y}_i = \sum_{\tau=1}^{T} Y_{it}$ is the outcome in district i over all years in our sample. This transformation removes the district dummies, and the coefficient of interest can then be consistently estimated. We use a quasi-maximum likelihood (QML) estimation.

Table 1 summarizes our estimates. Columns 1-3 report quasi-maximum likelihood

Table 1: FDI Reduces Rape, Reduced Form Estimates

Dependent Variable: Counts of Reported Rape

	(1)	(2)	(3)	(4)
High FDI x Post Liberalization	-0.08 (0.05)*	-0.13 (0.05)***	-0.13 (0.04)***	-0.13 (0.06)**
Population	Yes	Yes	Yes	Yes
Demographic Controls	-	Yes	Yes	Yes
State-Specific Trends	-	-	Yes	Yes
Standard Error Clustering	District	District	District	State
Observations	6,395	5,614	5,614	5,614
Number of Districts	583	511	511	511

***p<0.01, **p<0.05, *p<0.1; robust standard errors in parentheses. All specifications include district and year fixed effects. Demographic controls: 2001 district population interacted with year indicators (source: 2001 Census of India), and 1991-2001 change in adult literacy rate and gender ratio, each interacted with year indicators (sources: 1991 & 2001 Census of India).

Poisson estimates with standard errors clustered by district. In our preferred specification, which includes demographic controls and a state-specific linear trend, reported rape declines 13 percent in treated districts after 2006 ($p < 0.01$). Column 4 verifies results are unchanged when estimated with state-clustered standard errors. Our results are robust to including district-specific trends (Columns 2 and 4), and measuring reported rape weighted by estimated population (Columns 3 and 4). Controlling for district-specific trends, we observe an annual decline of 3.72 rapes per million women.[13]

We estimate a year-by-year regression for 2002-2011 to rule out differential pre-trends across treated and control states. As summarized in Figure A.4, FDI does not correlate with rape in all but one year before 2006. Estimates for subsequent years are substantively larger and statistically significant in most years; the post years are jointly significant. Our findings are robust to additional district-year control variables: economic growth, domestic private investment, public infrastructure, electrification; and state-year

[13]We obtain consistent results with linear models (Table A.4).

police force size (district data are unavailable). Table A.5 describes these controls and summarizes results.

We estimate a linear instrumental variable model with fixed effects. Our instrument, district exposure to liberalization, is a function of the district's pre-FDI liberalization industrial composition as measured by industry shares of district employment in 1999.[14] For example, if a district-year has five industries, each accounting for 20 percent of employment in 1999, and one industry is open to 100 percent foreign ownership via the automatic route, the district-year value is 0.2. If, in the following year, a second industry is fully liberalized, the value increases to 0.4. Mean district-year FDI exposure is 29.43 (standard deviation = 17.8).

Figure A.3 plots the relationship between district-year FDI exposure (endogenous variable) and FDI liberalization exposure (instrument) using local linear regression. The relationship is not linear, consistent with MNCs' preference for majority ownership. The first stage of our instrumental variable estimation:

$$N_{it} = \alpha_0 + \alpha_1 R_{it} + \alpha_1 R_{it}^2 + \alpha_3 X_{it} + d_i + \epsilon_{it} \tag{3}$$

where N_{it} is the count of FDI projects in district i and year t. R_{it} is district-year FDI exposure. R_{it}^2 captures the non-linear relationship between FDI liberalization and FDI inflows. X_{it} is a vector of our district demographic controls, and d_i is a district fixed effect. The second stage:

$$C_{it} = \beta_0 + \beta_1 N_{it} + \beta_2 X_{it} + d_i + \epsilon_{it} \tag{4}$$

where C_{it} is rape per million people in district i in year t.

The top panel of Table 2 reports our first stage results. For all specifications, the F-statistic for the joint significance of instruments exceeds 20, indicating the instruments

[14]Data are from the 1999 Indian National Sample Survey (NSS) employment survey.

Table 2: FDI Reduced Rape, Instrumental Variable Estimates

	1st Stage Endogenous Variable : Number of FDI projects		
	(1)	(2)	(3)
FDI Exposure	0.0037464	0.0028741	0.0032424
	(.0027415)	(.0027531)	(.0029227)
FDI Exposure^2	-.0001249**	-.000117 **	-.0001202**
	(.0000501)	(.0000501)	(.0000508)
Control for District Female Pop.	-	Yes	Yes
State Trends	-	-	Yes
F-Statistic for Joint Significance of Instruments	25.81	22.98	22.89
	Dependent Variable: Reported Rape/Million People		
2nd Stage IV Estimate, Rape/Million	-12.8**	-18.4***	-9.91**
	(5.42)	(5.94)	(5.02)
Observations	5,009	5,009	5,009
Districts	501	501	501

***p<0.01, **p<0.05, *p<0.1; standard errors in parentheses. Controls: district fixed effects, 1991-2001 change in adult literacy rate and gender ratio interacted with year indicators. First stage is estimated using a linear model.

are strong predictors of the endogenous variable. Based on Column 3 estimates, which also include state trends, a one percent increase in district-year FDI exposure causes a two percent increase in FDI relative to the sample mean. The bottom panel reports our second stage results. Our estimates reveal 12.81 fewer rapes per million people for each additional FDI project. The standard deviation of the number of FDI projects is 0.851, implying 10.9 fewer rapes for one standard deviation increase in FDI projects. These estimates remain stable as we control for state trends, indicating a decline of nearly 10 rapes per million people.[15]

[15]Results are unchanged using alternate measures of rape or controlling for estimated population. See Table A.6.

Mechanism Part I: FDI Increases Women's Income and Introduces Gender Equality Norms

In this section, we test the first portion of our proposed mechanism, that FDI both increases women's earned income and introduces gender equality norms.

We evaluate FDI's effects on women's earned income using the 1999, 2004, and 2009 NSS employment surveys.[16] The sample includes adults ages 15-65 who earn an hourly wage, salary, or are self-employed. We estimate the reduced form empirical model:

$$Y_{hit} = \alpha_0 + \alpha_1 HighFDI * PostLiberalization + \alpha_2 X_{it} + \alpha_3 H_{ht} + I_i + T_t + \epsilon_{it} \quad (5)$$

Y_{hit} is the log of inflation-adjusted wages for individual h in district i at time t. *High FDI* is an indicator for districts in high FDI states. *Post Liberalization* is an indicator equal to 1 for years 2006 and later. X_{it} are our district-year demographic controls. H_{hit} are controls for individual h demographic characteristics (age, education). We also include district (I_i) and year T_t fixed effects. ϵ_{it} is the error term.

Table 3, Columns 1 and 2 report logit estimates of the probability of employment for men and women, respectively. We find no statistically significant change in either groups' probability of employment. This finding is consistent with Alfaro and Chen (2018) who show that FDI-induced competition forces less productive domestic firms to exit the market while remaining firms adopt productivity-enhancing technologies, reduce employment, and increase wages. Columns 3 and 4 report FDI's effect on reported log wages for employed women and men respectively. Women's wages rise two to three times more than men's wages.[17] This gender difference remains if we impute missing

[16] These are benchmark "thick rounds," which are collected every five years.

[17] A Chow test of the two coefficients rejects statistical equivalence at the ten percent significance level ($\chi^2 = 2.93$, $p = 0.083$).

Table 3: FDI Increases Women's Relative Wages

Dependent Variable:	Employed?(Yes=1)		Log Real Wages (Reported Wages)		Log Real Wages (Imputed Wages)	
	Women (1)	Men (2)	Women (3)	Men (4)	Women (5)	Men (6)
High FDI x Post Liberalization	−0.04 (0.08) [0.12]	0.10 (0.08) [0.11]	0.15 (0.04)*** [0.07]**	0.07 (0.03)*** [0.04]*	0.10 (0.03)*** [0.05]**	0.04 (0.02)** [0.03]
Observations	435,885	430,978	54,552	173,903	88,000	339,198
Number of Districts	557	557	552	558	557	560

***p<0.01, **p<0.05, *p<0.1; standard errors clustered by (district) or [state]. All specifications include district and year fixed effects.

wage data.[18] The coefficient for women (Column 5) is 0.10 ($p < .01$) whereas for men (Column 6) it is 0.04 at the ten percent significance level.[19] Additionally, we estimate a linear regression that shows women's log wages are inversely correlated with district rape. Figure A.5 is a local linear regression graph with confidence intervals. Finally, as a falsification exercise, we hypothetically change the treatment year to 2004 and find no statistically significant change in women's relative wages (Table A.7).

We test FDI's introduction of equality norms by analyzing expressed support for women's political participation. Data are from the 2004 and 2009 Indian National Election Survey (NES), a nationally representative survey administered by the the Centre for the Study of Developing Societies.[20] Presented with the statement "Politics is not

[18]Imputed wages based on ten linear regressions combined following Rubin (1987). Regressions include age, gender, education, district and year fixed effects.

[19]A Chow test rejects statistical equivalence of these coefficients ($p = 0.058$). In a bounding exercise, we estimate an OLS specification employing Lee's Bounds to address possible sample selection in observed wages (Lee, 2009). The estimate for log real wages ranges 0.7-1.1 ($p < .01$). This specification, however, does not include district or year fixed effects.

[20]The survey reports respondents' state assembly constituency. We match constituencies

Table 4: Women's Attitudes Towards Women's Participation in Politics

Dependent Variable: Women Should Participate in Politics?

Panel A: Probit Estimates – Marginal Effects				
	All Women		Working Women	
	Agree (1)	Agree (2)	Agree (3)	Agree (4)
High FDI x Post Liberalization	0.103 (0.037)*** [0.057]*	0.110 (0.037)*** [0.056]**	0.157 (0.048)*** [0.067]**	0.164 (0.049)*** [0.064]**
Controls	No	Yes	No	Yes
Observations	11,959	11,909	5,756	5,729

Panel B: Linear Estimates with District Fixed Effects				
	All Women		Working Women	
	Agree (1)	Agree (2)	Agree (3)	Agree (4)
High FDI x Post Liberalization	0.059 (0.039) [0.055]	0.066 (0.038)* [0.053]	0.117 (0.051)** [0.064]*	0.126 (0.051)** [0.061]*
Controls	No	Yes	No	Yes
Observations	11,959	11,909	5,756	5,729

***p<0.01, **p<0.05, *p<0.1; standard errors clustered by (district) or [state]. Controls: education, scheduled caste/tribe, household size, and dwelling size. Base category is *Disagree*.

meant for women," respondents indicated their support on a four-point scale. We create a consistent measure across rounds by collapsing answers into a binary variable equal to 1 for "fully disagree," indicating strong support for women's participation. We control for respondent's age, education, caste, household size, and dwelling size.

Our probit estimates, Table 4, Panel A, show that women in treated districts became more likely to support women's political participation, and working women especially so. We statistically reject the null that the coefficients for the full and employed samples

to districts using a crosswalk from Debnath et al. (2018).

are equal. Panel B reports linear estimates with district fixed effects. The estimate is for double for working women (12.6 percent, $p < .05$) as compared to all women (6.6 percent, $p < .10$) Men, however, exhibit no statistically significant change in attitudes towards women's political participation (Table A.8).

Data constraints preclude us from disaggregating working women into those employed by MNCs versus domestic firms. We conjecture that women employed by domestic firms can experience spillovers created by heightened competition from MNCs. (Tang and Zhang, 2021) show that FDI into China from more gender equal countries increases women's employment in domestic firms located in the same city. They also find that domestic firms that continued to discriminate against women saw declining profits after MNC entry. Both findings point to competitive pressure that forces Chinese firms to adopt practices that help empower women. Additionally, our interviews with senior MNC managers revealed how FDI intensified competition to hire top college and MBA graduates in India. One consequence was that domestic firms quickly adopted many standard MNC practices that contribute to women's empowerment including family-friendlier human resources policies and mentoring programs to facilitate women's entry into top managerial positions.

Our argument rests on FDI empowering women by combining income and equality norms. We show this by analyzing FDI's effects on rape according to MNCs' country of origin.[21] MNC practices differ by home country gender equality whereas the local labor market drives wages. All else equal, FDI from more gender equal countries should

[21]We establish country of origin by matching CapEx firm names and industry to project data in fDiMarkets, a proprietary database of FDI announcements. Using fastLink, an R package for probabilistic record linkage (Enamorado et al., 2019), we matched seventy percent of Capex firms to an origin country. Online searches matched the remainder. We use origin of firms' ultimate beneficial owner to minimize bias caused by routing investments through low tax jurisdictions.

Table 5: MNC Country of Origin Gender Equality and Rape

	(1)
Low Equality Source Country x Post-Liberalization	0.109
	(0.0563)*
	[0.0445]**
Controls	Yes
State-Specific Trends	Yes
Observations	237

***p<0.01, **p<0.05, *p<0.1; robust standard errors in parentheses clustered by (district) or [state]. Controls are 2001 population and changes in adult literacy rate and gender ratio in 1991-2001 interacted with year indicators, respectively.

transmit stronger norms. Following Tang and Zhang (2021), we use the United Nations Development Program's 2000 Gender Inequality Index for the MNCs' home country to proxy for the strength of gender equality transmitted via FDI (United Nations Development Program, 2018). The index summarizes gender gaps across health, empowerment, and labor markets. Gender equality scores for India's FDI source countries exhibit a stark bimodal distribution. We classify countries in the bottom quartile as low gender equality FDI sources: China, Malaysia, Singapore, United States, and the United Arab Emirates.[22] We adapt our reduced form specification, replacing the treatment indicator with an indicator for district-year FDI from at least one low gender equality country. Rape declined in districts with FDI exclusively from high equality countries but *increased* in districts with FDI from low equality countries (Table 5).[23] These findings reinforce the combined importance of earned income and gender equality norms.

[22]In 2000, the UAE, the least gender equal FDI source, ranked 97th globally; India was 148. Even though low gender equality countries rank higher than India, they do not necessarily have gender equality laws and practices. The stark bimodal distribution of equality scores suggests a threshold after which such norms are more likely to prevail.

[23]An alternative interpretation is that low equality FDI produced modest empowerment such that reporting increased.

Mechanism, Part II: FDI-Driven Empowerment Deters Rape

The second part of our proposed mechanism is that FDI-driven empowerment better equips women to deter rape. Our empirical tests focus on manifestations of women's empowerment that can plausibly deter rape and which we can measure by district over time.

We first consider whether women's economic empowerment manifests in greater spending on phones, a key private safety-enhancing good. We analyze the log of inflation-adjusted household telephone expenditures using the 1999 and 2009 NSS household consumption surveys.[24] Telephone spending includes landlines and mobile phones.[25] We use linear empirical specifications analogous to our analysis of log real wages, including controls for district and year fixed effects. Controls include household size, occupation, religion, and caste of household head. Table A.9, shows a statistically significant increase in spending one phones. As further support, we use data from the Indian Human Development Survey to show that phone ownership correlates with less rape in FDI-exposed districts (Table A.10).

Women's empowerment can also deter backlash through women's increased political engagement. With respect to rape, women's political engagement may increase provision of public goods that increase women's physical safety such as more police and infrastructure improvements, or lower reporting costs including more responsive law enforcement, dedicated health care resources, and survivor support services. We analyze self-reported

[24]Survey does not report women-specific consumption and lacks detailed data on transportation spending, another important safety-enhancing good.

[25]FDI may have prompted infrastructure improvements that increased reliability of phone service, which could have marginally increased phones' safety-enhancing effects in treated areas.

voter turnout in the 2004 and 2009 national parliamentary elections.[26] Data are from the NES, which allows us to incorporate individual-level controls. Table A.11 summarizes our linear probability estimates. Working women in treated districts were 6.5 percent more likely to vote in 2009; no other groups changed.

To varying degrees, both manifestations of empowerment deter rape by increasing women's physical security, implying circumstances in which women are accosted in public spaces. Though official policy recommendations also assume these circumstances, we recognize that this portrayal of rape can reflect patriarchal norms and be a pretext to restrict women's mobility. According to official data, in over 90 percent of reported rapes in India, the perpetrator is known, but not related, to the accuser. Though known perpetrators may still accost women in the manner implied, many rapes with known assailants occur in circumstances where safety-enhancing goods are less effective, such as date rape. An observable implication is that FDI-driven empowerment reduces rape committed by strangers. Data on rape perpetrator type is available at the state level. Estimating a version of our reduced form model, we find that a decline in stranger rape drives our baseline finding (Table A.12). While this finding reinforces our proposed mechanism, it also suggests that women's empowerment may be less effective in countering family/social pressures to conceal rape, and/or that increased reporting offset a decline in known-perpetrator rape.

In order to interpret our findings as deterrence born of women's empowerment, we must show that FDI does not reduce men's propensity to rape. We found no change in men's attitudes towards women's political participation, indicating that FDI did not change men's perceptions of gender norms.[27] Men's wages increased in absolute terms,

[26]Gender-related policies were not salient campaign issues in 2009 and major political parties did not change their outreach to women (Deshpande, 2009).

[27]We conjecture that women more readily adopt equality norms whereas men may take longer to discard patriarchal norms, which confer distinct societal advantages.

but the rising opportunity costs of men's time cannot explain why men are less likely to commit rape against strangers versus known women. Another observable implication of deterrence is the presence of backlash sentiment that does not manifest as rape. We evaluate changes in women's perceptions of their personal safety as a proxy for latent backlash sentiment. We use the 2003 and 2007 waves of the World Health Organization's World Health Survey, which asked adult women how safe they felt in public after dark and at home. In FDI-exposed districts, working women exhibit no change in their perceptions of safety, consistent with their increased capacity to invest in their own safety. Women overall, however, are 17.4 percent more likely to feel unsafe both outside and inside the home (Table A.13).

Alternative Explanations

We perform two sets of sensitivity tests. First, we evaluate FDI's effects on crimes that under Indian law are committed only against women: sexual harassment, sexual assault, and IPV. Expectations for these other crimes are ambiguous. Safety-enhancing goods may be less effective deterrents and empowered women may report more. Thus, empowerment may yield a net increase in crimes. We estimate models of these crimes using both our reduced form and instrumental variable approaches and find no consistent change (Table A.14). IPV estimates are inconsistent across specifications. That we do not find consistent evidence of IPVgrowth likely reflects both a decline in actual IPV incidence offset by empowerment-driven increased reporting. Second, rape is one of multiple types of crimes against women in India, which raises concerns about false positives, or Type I errors. We address this through simultaneous inference with all women-specific crimes. Following Benjamini and Hochberg (1995) and Benjamini et al. (2006), we control for false discovery rate q values. Across multiple specifications, rape exhibits a statistically significant decline (Table A.15).

We rule out a variety of non-empowerment mechanisms through which FDI could reduce reported rape. Public officials courting MNCs may falsify official statistics or pressure police not to file police reports. We, however, find no consistent change in murder, kidnapping, and other serious crimes that would be equally off-putting to MNCs (Table A.16). These findings also show that male backlash did not manifest in other types of crime. Officials may have increased law enforcement in FDI-exposed areas. District-level data are unavailable, but analysis of state-level data suggests no increase in law enforcement. We show that rape arrests decline, consistent with lower incidence of rape, but arrests for other crimes do not change (Table A.17). Likewise, treated states had no change in the number of police officers or share of women officers (Table A.18).

Reported rape could have declined because rising wages increased the opportunity cost of women's time to report rape to police and pursue legal claims. Our findings on stranger versus known perpetrators are inconsistent with this explanation because the opportunity costs of women's time to report rape should not systematically vary by the type of perpetrator.[28] Higher voter turnout among working women is also inconsistent with this explanation.

We rule out other plausible mechanisms. FDI-induced migration could have also changed the gender ratio or otherwise influenced the population's average propensity to rape. We estimate a parsimonious household fixed effects model of the likelihood of migration into treated districts and find no evidence of FDI-induced migration (Table A.19). FDI could have prompted employers to invest in women employees' safety. Customarily, five Indian industries provide female employees with transportation: information technology-enabled services, computer software, textiles, health care, hospitality (National Council on Women, 2006). Though little FDI flows into these industries,

[28]Women may fear that reporting rape might harm their employment prospects. To the extent this is true, MNCs should be the least likely to discriminate against women on this basis.

domestic investments may have concentrated in FDI-exposed areas. Our findings are unchanged when we control for new foreign and domestic investment in these industries (Table A.20). FDI may also increase exposure to trade if MNCs produce for export; controls for district-year trade exposure do not change our findings (Table A.21).

Conclusion

We have shown that in India during 2002-2011, FDI, on average, reduced rape, a violent manifestation of male backlash. Our findings are consistent with FDI empowering women through a combination of earned income and exposure to gender equality norms, and that empowerment deterring rape.

Our empirical findings are most relevant for developing countries that, like India, have extensive trade and investment links with the global economy as well as deeply entrenched restrictive gender norms. India is distinctive for its size and culture, among other features, which may influence our findings in unobserved ways. Future research might investigate how country characteristics facilitate spillovers of equality norms.

We conclude with conjectures about FDI's broader consequences for social equality in developing countries. MNCs may transmit other types of social equality norms from their home countries, and be less likely to discriminate when local divisions lack meaning to foreigners. MNCs' need for skilled labor implies class boundaries on direct exposure to equality norms. FDI can magnify inequalities in access to basic public services if countries divert spending towards subsidies for MNCs. Further research can clarify the optimal mix of policies to attract FDI and harness FDI's potential to empower marginalized groups.

Acknowledgments

We received valuable feedback from Sonia Bhalotra, Kerem Cosar, Taryn Dinkelman, Lisa Fan, Leora Friedberg, Jeff Frieden, Kishore Gawande, Alexandra Guisinger, James Harrigan, Sylvie Lambert, Jen Lawless, Amalia Miller, Prachi Mishra, Vibhu Raj, Denise Walsh, and conference/seminar participants at the American Political Science Association Annual Meeting, American University, Chicago, Columbia, Essex, Fudan, Georgetown, Indian School of Business, Nanjing Audit University, Notre Dame, Paris School of Economics, Princeton, University of Connecticut, UVA, and Yale. The Indian National Crime Records Bureau shared crime data. Chelsea Goforth, Benjamin Helms, Md. Amzad Hussain, Yunsoo Lee, Jiahua Liu, and Brenton Peterson provided excellent research assistance.

References

Aizer, Anna, "The Gender Wage Gap and Domestic Violence," *American Economic Review*, 2010, *100* (4), 1847–1859.

Alesina, Alberto, Paola Giuliano, and Nathan Nunn, "Fertility and the Plough," *American Economic Review*, 2011, *101* (3), 499–503.

Alfaro, Laura, "Gains from Foreign Direct Investment: Macro and Micro Approaches," *The World Bank Economic Review*, 2017, *30* (S1), S2–S15.

_ **and Maggie X. Chen**, "Selection and Market Reallocation: Productivity Gains from Multinational Production," *American Economic Journal: Economic Policy*, 2018, *10* (2).

Barnett, Carolyn, Amaney A. Jamal, and Steve L Monroe, "Earned income and women's segmented empowerment: experimental evidence from Jordan," *American Journal of Political Science*, 2021, *65* (4), 954–970.

Baxi, Pratiksha, *Public Secrets of Law: Rape Trials in India*, Oxford University Press, 2013.

BBC News, "Delhi Rapist Says Victim Shouldn't Have Fought Back," *BBC Magazine*, 2015. Retrieved from: https://www.bbc.com/news/magazine-31698154.

Beaman, Lori, Esther Duflo, Rohini Pande, and Petia Topalova, "Female Leadership Raises Aspirations and Educational Attainment for Girls: A Policy Experiment in India," *Science*, 2012, *335* (6068), 582–586.

Becker, Gary S., *Essays in the Economics of Crime and Punishment*, New York, NY: Columbia University Press, 1974.

Benjamini, Yoav, Abba M. Krieger, and Daniel Yekutieli, "Adaptive Linear Step-up Procedures that Control the False Discovery Rate," *Biometrika*, 2006, *93* (3), 491–507.

_ **and Yosef Hochberg**, "Controlling the False Discovery Rate: A Practical and Powerful Approach to Multiple Testing," *Journal of the Royal Statistical Society. Series B (Methodological)*, 1995, *57* (1), 289–300.

Bhalotra, Sonia, Uma Kambhampati, Samantha Rawlings, and Zahra Siddique, "Intimate Partner Violence: The Influence of Job Opportunities for Men and Women," *The World Bank Economic Review*, 2021, *35* (2), 461–479.

Blaydes, Lisa and Drew A. Linzer, "The Political Economy of Women's Support for Fundamentalist Islam," *World Politics*, 2008, *60* (4).

Bloom, Nicholas, Raffaella Sadun, and John Van Reenen, "The Organization of Firms Across Countries," *Quarterly Journal of Economics*, 2012, *127* (4), 1663–1705.

Bobonis, Gustavo J. and Howard J. Shatz, "Agglomeration, Adjustment, and State Policies in the Location of Foreign Direct Investment in the United States," *Review of Economics and Statistics*, 2007, *89* (1), 30–43.

Borker, Girija, "Safety First: Perceived Risk of Street Harassment and Educational Choices of Women," *Working paper*, 2020.

Boudet, Ana María Muñoz, Patti Petesch, and Carolyn Turk, *On Norms and Agency: Conversations about Gender Equality with Women and Men in 20 Countries*, World Bank, 2013.

Brulé, Rachel and Nikhar Gaikwad, "Culture, Capital, and the Political Economy Gender Gap: Evidence from Meghalaya's Matrilineal Tribes," *Journal of Politics*, 2021, *83* (3).

Budhwar, Pawan, "Management of Human Resources in Foreign Firms Operating in India: The Role of HR in Country-specific Headquarters," *The International Journal of Human Resource Management*, 2012, *23*, 2514–2531.

Bøler, Esther Ann, Beata Javorcik, and Karen Helene Ulltveit-Moe, "Working across time zones: Exporters and the gender wage gap," *Journal of International Economics*, 2018, *111*, 122–133.

Cooke, Fang Lee and Debi S. Saini, "Diversity Management in India: A Study of Organizations in Different Ownership Forms and Industrial Sectors," *Human Resource Management*, 2010, *49* (3), 477–500.

Debnath, Sisir, Mudit Kapoor, and Shamika Ravi, "The Impact of Electronic Voting Machines on Electoral Frauds, Democracy and Development," Working Paper 2018.

Derné, Steve, "Hindu Men Talk about Controlling Women: Cultural Ideas as a Tool of the Powerful," *Sociological Perspectives*, 1994, *37* (2), 203–227.

Deshpande, Rajeshwari, "How Did Women Vote in Lok Sabha Elections 2009?," *Economic and Political Weekly*, 2009, *44* (39), 83–87.

DiMaggio, Paul J. and Walter W. Powell, "The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields," *American Sociological Review*, 1983, *48* (2).

DIPP, "DIPP Press Release Archive, S No. 50, December 23," Technical Report, Government of India, Ministry of Commerce & Industry, 2005.

Duflo, Esther, "Women Empowerment and Economic Development," *Journal of Economic Literature*, 2012, *50* (4), 1051–1079.

Enamorado, Ted, Benjamin Fifield, and Kouske Imai, "Using a Probabilistic Model to Assist Merging of Large-Scale Administrative Records," *American Political Science Review*, 2019, *113* (2), 353–371.

Fosfuri, Andrea, Massimo Motta, and Thomas Rønde, "Foreign Direct Investment and Spillovers through Workers' Mobility," *Journal of International Economics*, 2001, *53* (1), 205–222.

Goldberg, Pinelopi Koujianou and Nina Pavcnik, "Distributional Effects of Globalization in Developing Countries," *Journal of Economic Literature*, 2007, *45* (1), 39–82.

Goldin, Claudia, "The U-Shaped Female Labor Force Function in Economic Development and Economic History," in T. P. Schultz, ed., *Investment in Women's Human Capital and Economic Development*, University of Chicago Press, 1995, pp. 61–90.

Gray, Mark M., Miki Caul Kittilson, and Wayne Sandholtz, "Women and Globalization: A Study of 180 Countries, 1975-2000," *International Organization*, 2006, *International Organization* (2), 293–333.

Greenhaus, Jeffrey H. and Gary N. Powell, "When Work And Family Are Allies: A Theory of Work-Family Enrichment," *Academy of Management Review*, 2006, *31* (1), 72–92.

Guadalupe, Maria, Olga Kuzmina, and Catherine Thomas, "Innovation and Foreign Ownership," *American Economic Review*, 2012, *102* (7), 3594–3627.

Harrison, Ann and Andrés Rodríguez-Clare, "Chapter 63 - Trade, Foreign Investment, and Industrial Policy for Developing Countries," in Dani Rodrik and Mark Rosenzweig, eds., *Handbook of Development Economics*, Vol. 5 of *Handbooks in Economics*, Elsevier, 2010, pp. 4039–4214.

Hausman, Jerry A, Bronwyn H Hall, and Zvi Griliches, "Econometric Models for Count Data with an Application to the Patents-R&D Relationship," *Econometrica*, 1984, *52* (4), 909–938.

Helpman, Elhanan, Marc J. Melitz, and Stephen R. Yeaple, "Export Versus FDI with Heterogeneous Firms," *American Economic Review*, 2004, *94* (1), 300–316.

Hill, Suzanne and Tara C. Marshall, "Beliefs about Sexual Assault in India and Britain are Explained by Attitudes Toward Women and Hostile Sexism," *Sex Roles*, 2018, pp. 1–10.

Hjort, Jonas, Xuan Li, and Heather Sarsons, "Across-Country Wage Compression in Multinationals," Working Paper 26788, National Bureau of Economic Research February 2020. Series: Working Paper Series.

Htun, Mala and S. Laurel Weldon, "The Civic Origins of Progressive Policy Change: Combating Violence against Women in Global Perspective, 1975–2005," *American Political Science Review*, 2012, *American Political Science Review* (3).

Human Rights Watch, "World Report," Technical Report, Human Rights Watch, 2017.

Iversen, Torben and Frances Rosenbluth, "The Political Economy of Gender: Explaining Cross-National Variation in the Gender Division of Labor and the Gender Voting Gap," *American Journal of Political Science*, 2006, *American Journal of Political Science* (1), 1–19.

Iyer, Lakshmi, Anandi Mani, Prachi Mishra, and Petia Topalova, "The Power of Political Voice: Women's Political Representation and Crime in India," *American Economic Journal: Applied Economics*, 2012, *4* (4), 165–93.

Jayachandran, Seema, "The Roots of Gender Inequality in Developing Countries," *Annual Review of Economics*, 2015, *7* (1), 63–88.

_ , "Social Norms as a Barrier to Women's Employment in Developing Countries," *IMF Economic Review*, 2021.

Jensen, Robert, "Do Labor Market Opportunities Affect Young Women's Work and Family Decisions? Experimental Evidence from India," *Quarterly Journal of Economics*, 2012, *127* (2), 753–792.

Jewkes, Rachel, Emma Fulu, Tim Roselli, and Claudia Garcia-Moreno, "Prevalence of and Factors Associated with Non-Partner Rape Perpetration: Findings from the UN Multi-country Cross-sectional Study on Men and Violence in Asia and the Pacific," *The Lancet Global Health*, 2013, *1* (4), e208–e218.

Juhn, Chinhui, Gergely Ujhelyi, and Carolina Villegas-Sanchez, "Men, Women, and Machines: How Trade Impacts Gender Inequality," *Journal of Development Economics*, 2014, *106*, 179–193.

Kodama, Naomi, Beata S. Javorcik, and Yukiko Abe, "Transplanting Corporate Culture Across International Borders: Foreign Direct Investment and Female Employment in Japan," *The World Economy*, 2018, *41* (5), 1148–1165.

Kostova, Tatiana and Kendall Roth, "Adoption of an Organizational Practice by Subsidiaries of Multinational Corporations: Institutional and Relational Effects," *The Academy of Management Journal*, 2002, *45* (1).

Lee, David S., "Training, Wages, and Sample Selection: Estimating Sharp Bounds on Treatment Effects," *The Review of Economic Studies*, July 2009, *76* (3), 1071–1102.

Lipset, Seymour Martin and Earl Raab, *The Politics of Unreason: Right Wing Extremism in America, 1790-1970*, Harper & Row, 1970.

Macmillan, Ross and Rosemary Gartner, "When She Brings Home the Bacon: Labor-Force Participation and the Risk of Spousal Violence against Women," *Journal of Marriage and Family*, 1999, *61* (4).

Malesky, Edmund J. and Layna Mosley, "Chains of Love? Global Production and the Firm-Level Diffusion of Labor Standards," *American Journal of Political Science*, 2018, *American Journal of Political Science* (3), 712–728.

Mansbridge, Jane and Shauna L. Shames, "Toward a Theory of Backlash: Dynamic Resistance and the Central Role of Power," *Politics & Gender*, 2008, *4* (4), 623–634.

Marshall, William L. and Howard E. Barbaree, "An Integrated Theory of the Etiology of Sexual Offending," in William L. Marshall, D. R. Laws, and Howard E. Barbaree, eds., *Handbook of Sexual Assault: Issues, Theories, and Treatment of the Offender*, New York, NY: Plenum Press, 1990, pp. 257–275.

Miller, Grant, "Women's Suffrage, Political Responsiveness, and Child Survival in American History," *The Quarterly Journal of Economics*, 2008, *123* (3).

Mosley, Layna, *Labor Rights and Multinational Production*, Cambridge University Press, 2010.

Mukim, Megha and Peter Nunnenkamp, "The Location Choices of Foreign Investors: A District-level Analysis in India," *The World Economy*, 2012, *35* (7), 886–918.

Munshi, Kaivan and Mark Rosenzweig, "Traditional Institutions Meet the Modern World: Caste, Gender, and Schooling Choice in a Globalizing Economy," *American Economic Review*, 2006, *96* (4), 1225–1252.

Murdie, Amanda and Dursun Peksen, "Women's rights INGO shaming and the government respect for women's rights," *The Review of International Organizations*, March 2015, *10* (1), 1–22.

National Council on Women, "Night Shift for Women: Growth & Opportunities," Technical Report, National Council on Women and Associated Chambers of Commerce & Industry of India, 2006.

Neumayer, Eric and Indra de Soysa, "Globalization and the Empowerment of Women: An Analysis of Spatial Dependence via Trade and Foreign Direct Investment," *World Development*, 2011, *39* (7), 1065–1075.

Neyman, Jerzy and Elizabeth L. Scott, "Consistent Estimates Based on Partially Consistent Observations," *Econometrica*, 1948, *16* (1), 1–32.

Norris, Pippa and Ronald Inglehart, *Cultural Backlash: Trump, Brexit, and Authoritarian Populism*, New York: Cambridge University Press, February 2019.

Pandya, Sonal S., *Trading Spaces: Foreign Direct Investment Regulation, 1970-2000*, New York, NY: Cambridge University Press, 2014.

Patel, Reena, *Working the Night Shift: Women in India's Call Center Industry*, Stanford, CA: Stanford University Press, 2010.

Prillaman, Soledad Artiz, "Strength in numbers: how women's groups close India's political gender gap," *American Journal of Political Science*, 2023, *67* (2), 390–410.

Rodrik, Dani, "Why Does Globalization Fuel Populism? Economics, Culture, and the Rise of Right-Wing Populism," *Annual Review of Economics*, 2021, *13* (1), 133–170.

Roggeband, Conny and Andrea Krizsán, "Democratic Backsliding and the Backlash Against Women's Rights: Understanding the Current Challenges for Feminist Politics," Discussion Paper 35, United Nations July 2020.

Rosenzweig, Philip M. and Nitin Nohria, "Influences on Human Resource Management Practices in Multinational Corporations," *Journal of International Business Studies*, 1994, *25* (2), 229–251.

Rubin, Donald, *Multiple Imputation for Nonresponse in Surveys*, New York, NY: John Wiley & Sons, 1987.

Sen, Amartya, "Social Exclusion: Concept, Application, and Scrutiny," Report, Asian Development Bank June 2000.

Siegel, Jordan, Lynn Pyun, and B. Y. Cheon, "Multinational Firms, Labor Market Discrimination, and the Capture of Outsider's Advantage by Exploiting the Social Divide," *Administrative Science Quarterly*, 2019, *64* (2), 370–397.

Simmons, Beth A., *Mobilizing for Human Rights: International Law in Domestic Politics*, Cambridge University Press, 2009.

Tang, Heiwai and Yifan Zhang, "Do multinationals transfer culture? Evidence on female employment in China," *Journal of International Economics*, 2021.

Taylor, Sully, Schon Beechler, and Nancy Napier, "Toward an Integrative Model of Strategic International Human Resource Management," *Academy of Management Review*, 1996, *21* (4), 959–985.

Topalova, Petia, "Factor Immobility and Regional Impacts of Trade Liberalization: Evidence on Poverty from India," *American Economic Journal: Applied Economics*, 2010, *2* (4), 1–41.

United Nations Development Program, *Human Development Report*, New York: United Nations, 2018.

Verma, Jagdish Sharan, "Report of the Committee on Amendments to Criminal Law," Technical Report, PRS Legislative Research, New Delhi, India, 2013.

Winters, L. Alan and Antonio Martuscelli, "Trade Liberalization and Poverty: What Have We Learned in a Decade?," *Annual Review of Resource Economics*, October 2014, *6* (1), 493–512.

Wu, Cindy, John J Lawler, and Xiang Yi, "Overt employment discrimination in MNC affiliates: home-country cultural and institutional effects," *Journal of International Business Studies*, 2008, *39* (5), 772–794.

Wu, Sherry Jueyu and Elizabeth Levy Paluck, "Participatory practices at work change attitudes and behavior toward societal authority and justice," *Nature Communications*, 2020, *11* (1).

Biographical Statements

Tianshu Li is an Assistant Professor at Xi'an Jiaotong-Liverpool University, Suzhou, China.
Sonal Pandya is an Associate Professor at the University of Virginia, Charlottesville, VA, 22904.
Sheetal Sekhri is an Associate Professor at the University of Virginia, Charlottesville, VA, 22904.

Repelling Rape: FDI Empowers Women – Appendix

List of Figures

List of Tables

Evidence of Male Backlash Manifesting as Rape in India

In July 2012, Mamta Sharma, chairwoman of the National Commission for Women, the government agency tasked with advancing gender equality, said of rape:

> Aping the west blindly is eroding our culture and causing such crimes to happen. Westernization has afflicted our cities the worst. There are no values left.[29]

Several Indian state politicians endorse rape myths, beliefs that women are to blame for being rape, and that women are raped because they adopt Western culture.

Babulal Gaur, home minister (with oversight over law enforcement) in Madhya Pradesh, the Indian state with the highest per capita rape in most years:

> [Rape] is a social crime which depends on the man and the woman. It is sometimes right and sometimes wrong.[30]

Asha Mirje, Nationalist Congress Party leader, Maharashtra:

> Rapes take place also because of a woman's clothes, her behavior and her presence at inappropriate. places.[31]

Mulayam Singh Yadav, chief of Samajwadi Party, Uttar Pradesh:

> If the limit of morality is crossed by women, such cases will happen.[32]

> Should rape cases lead to hanging? Boys are boys, they make mistakes. Two or three have been given the death sentence in Mumbai. We will try and change such laws... We will also ensure punishment of those who report false cases.[33]

---

[29] https://www.theguardian.com/world/2012/jul/23/why-india-bad-for-women

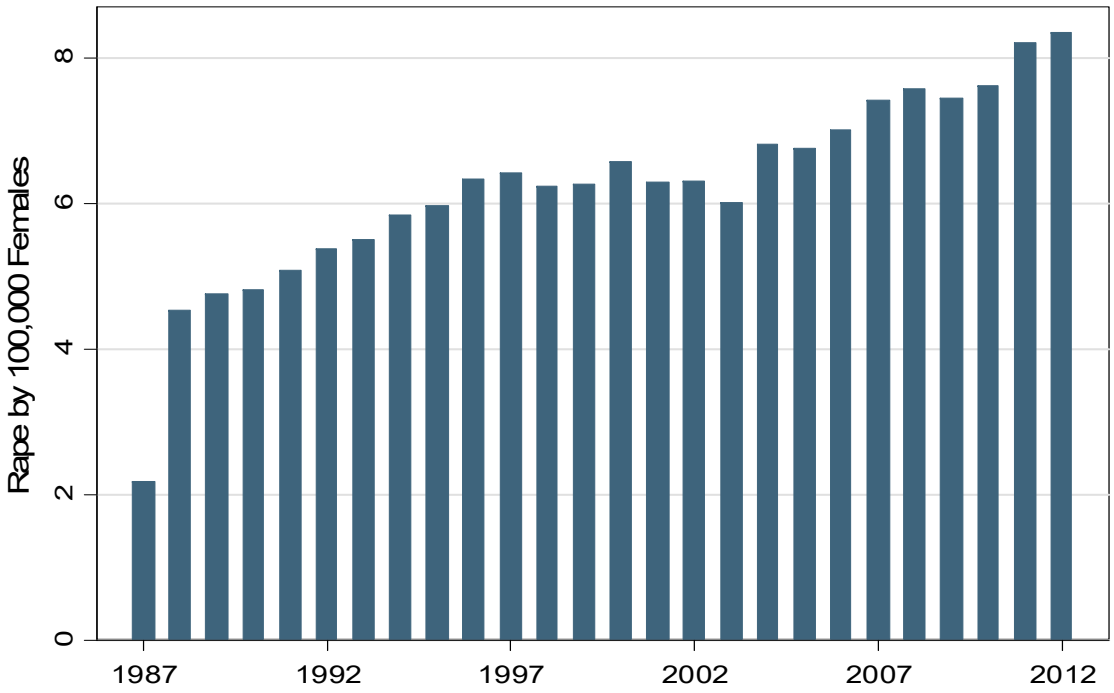
[30] https://www.washingtonpost.com/news/worldviews/wp/2014/07/17/booze-and-chinese-food-indian-politicians-explain-the-causes-of-rape/

[31] https://www.washingtonpost.com/news/worldviews/wp/2014/07/17/booze-and-chinese-food-indian-politicians-explain-the-causes-of-rape/

[32] https://www.bbc.com/news/world-asia-india-27808722

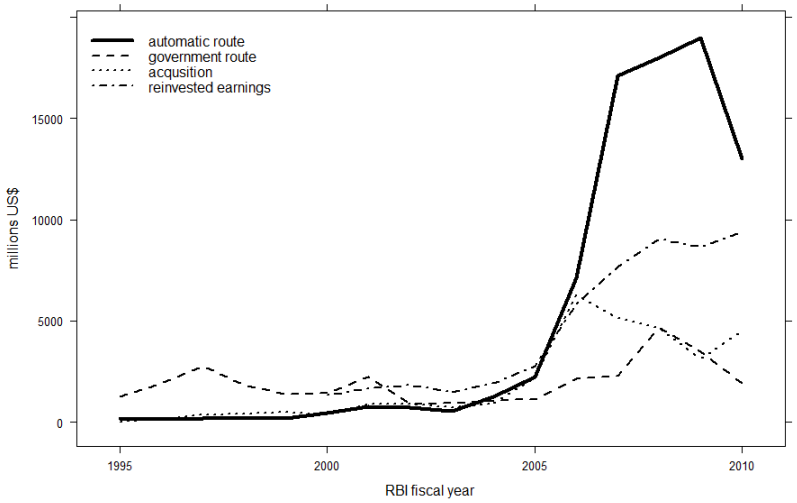
[33] https://timesofindia.indiatimes.com/india/indian-politicians-revolting-comments-about-articleshow/53512298.cms

Appendix Figure A.1: Reported Rape in India, 1987-2012



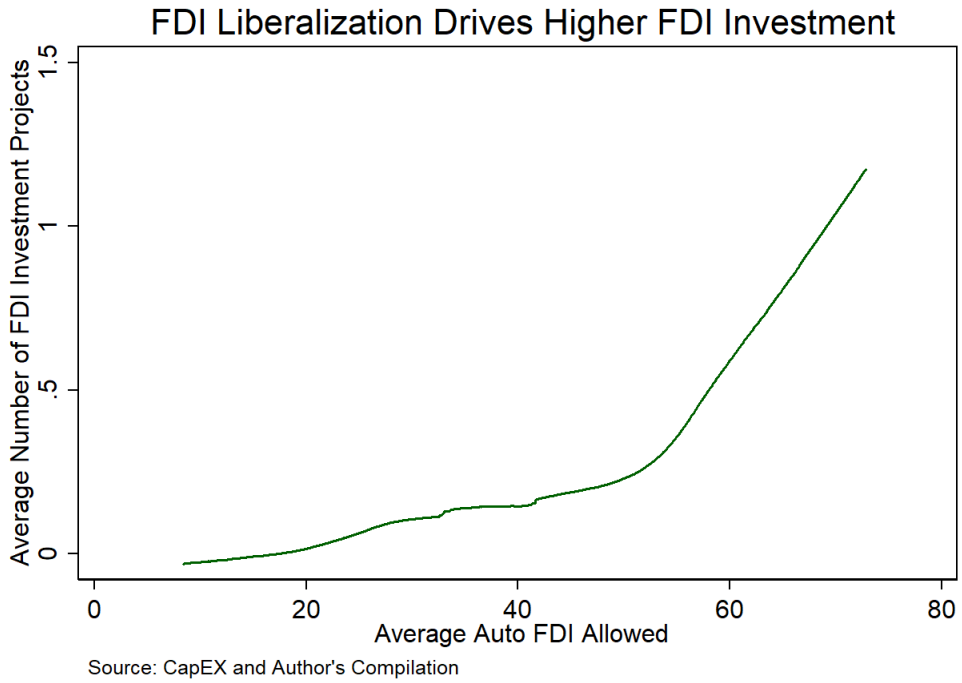
Source: Indian National Crime Records Bureau.

Appendix Figure A.2: Automatic Route Greenfield FDI Growth Post Liberalization



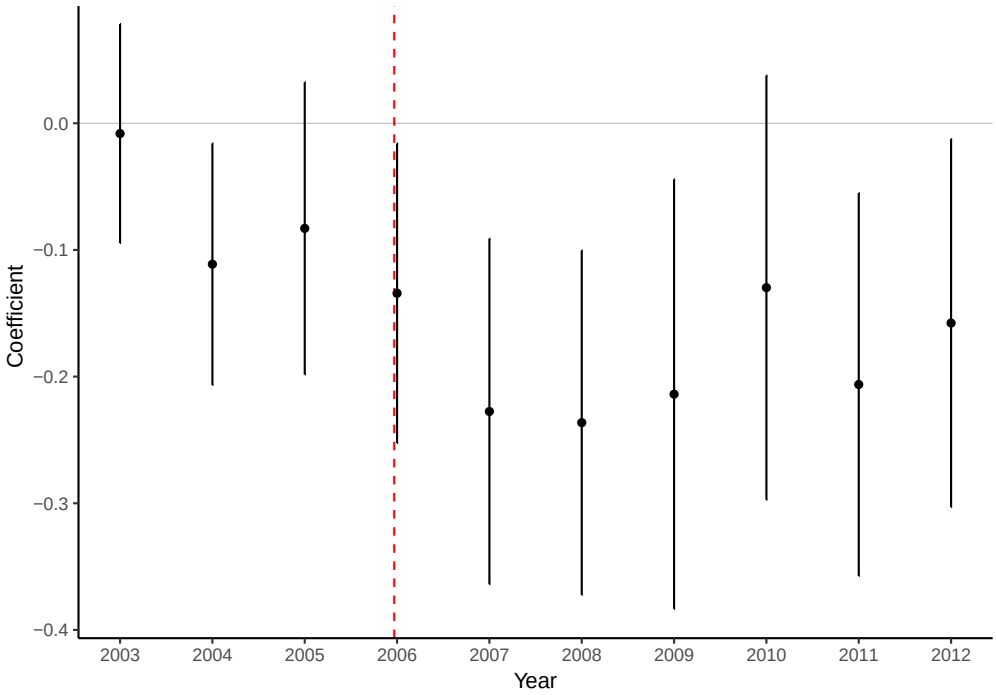
Data Source: 2012 Reserve Bank of India (RBI) Bulletin

Appendix Figure A.3: FDI Liberalization Correlates with FDI Inflows



Plot correlates average district-year exposure to FDI liberalization with the number of FDI projects received.

Appendix Figure A.4: Year-by-Year Estimates of FDI's Effect on Rape



Dashed vertical line indicates beginning of FDI liberalization. Underlying estimates available upon request. Figure illustrates decline in rape in most years after FDI liberalization.

Appendix Figure A.5: Women's Wages Correlate with Less Rape

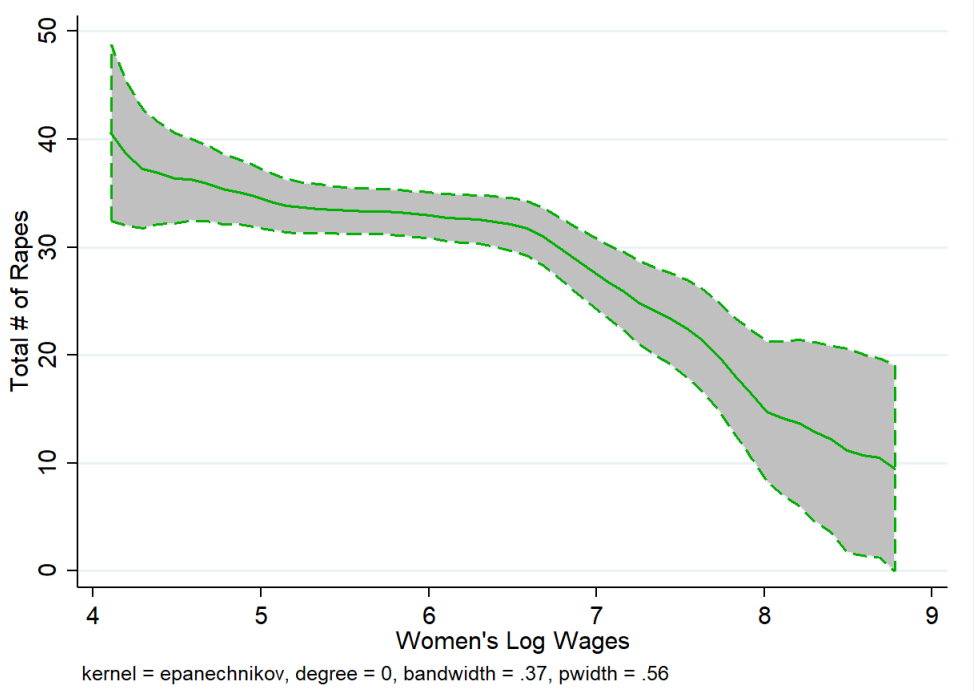


Figure illustrates that in FDI-exposed districts, higher female wages correspond to less rape.

Historical Correlates of FDI Distribution Across Indian States

We analyze the historical roots of this agglomeration using state-level data for 1962-1992 and 1992-2001.[34] These data provide an unbalanced panel of state characteristics including media coverage, labor regulations, industrial base, taxes, and poverty. We estimate a probit model of treatment (e.g. status as high FDI recipient state) based on these state characteristics and state geographic features in 1991; year indicators are also included.[35] Treatment correlates positively with state land area, stamps and registration fees, excise duties on commodities and services, number of registered factories, and number of industrial regulations. Rural poverty, population, and labor regulations are negatively correlated.[36]

In more recent decades (1991-2001) leading up to the FDI liberalization, we assess using a linear model how demographic characteristics, climatic characteristics, and infrastructure expenditure on features such as roads and transportation influence the location of FDI using district level data. The infrastructure data comes from the CapEx data collected by Center for Monitoring the Indian Economy and the demographic data comes from the Population Census of India.[37] Rainfall and temperature data are from the University of Delaware series.[38] Size of transportation infrastructure positively influences location choice whereas investment in transport infrastructure negatively correlates with treatment albeit to a very small extent. Investment in water, electricity, and welfare infrastructure (schools, dispensaries, hospitals) is uncorrelated with treatment but number of water projects is positively correlated. Literacy rates, employment rates, and female population are correlated with treatment. However, important confounders can be trends. We observe a negative correlation with trends. Areas with better emergent trends in literacy, employment, and gender ratio are less likely to receive treatment. Precipitation is negatively and temperature is positively correlated with the treatment status. Results are reported in Table A.2.

---

[34] State data are from the Economic Opportunities and Public Policy Programme, STICERD-LSE. http://sticerd.lse.ac.uk/eopp/_new/data/indian_data/default.asp. We consider state-level FDI correlates because analogous district-level data are unavailable.

[35] Model estimates in Table A.1.

[36] We find no correlation between treatment and total factory workers, newspaper circulation, urban poverty, public expenditures on education/art/culture, scientific services and research.

[37] Data is used for 1991 and 2001.

[38] Spatial tools have been used to extract the data for the Indian districts.

Appendix Table A.1: Historical Correlates of State-Level FDI Agglomeration 1962-1992

Dependent Variable: Treated

Variables	Probit Estimation marginal effects (in %)
Number of total newspapers in all languages	-0.0043
	(0.0064)
Cumulative Regulatory Change	4.96***
	(1.08)
Labor Regulation Index	-14.09***
	(2.69)
No. of Factories covered under Payment of Wages Act 1936	0.0054***
	(0.0005)
Manufacturing Annual Earnings per capita	0.0000
	(0.0017)
Mean per capita expenditure rural (1973-74 prices)	-1.74***
	(0.33)
Mean per capita expenditure urban (1973-74 prices)	-0.2938
	(0.2299)
Stamps and registration fees	0.0206***
	(0.0034)
State Excise duty on commodities and services	0.0013**
	(0.0005)
Education, art and culture, scientific services, and research expenditure	0.0002
	(0.0005)
Population	-1.64e-06***
	(2.48e-07)
Area (sq KM)	0.0001***
	(0.0000)
Observations	494
No. of States	15

Notes: ***p<0.01, **p<0.05, *p<0.1; Year fixed effects controlled. District-clustered standard errors parentheses.

Appendix Table A.2: District-Level Correlates of FDI, 1991-2001

Dependent Variable: Treated

Variables	Linear Probability Estimates
Percentage of Schedule Caste Population 1991	-0.324 (0.248)
Percentage of Literate Population 1991	1.304*** (0.171)
Employment rate 1991	2.959*** (0.259)
Percentage of Female Population 1991	-4.444** (2.124)
Change in Percentage of Schedule Caste Population 1991-2001	-0.940 (0.783)
Change in Percentage Literate Population 1991-2001	-0.886*** (0.291)
Change in Employment Rate 1991-2001	-1.008** (0.501)
Change in Percentage of Female Population 1991-2001	-6.025*** (1.893)
Electricity Infrastructure Investment	-2.49e-06 (4.07e-06)
Number of Electricity Infrastructure projects	0.0541 (0.0340)
Water Infrastructure Investment	-0.000979 (0.000878)
Number of Water Infrastructure Projects	0.392*** (0.102)
Transport Infrastructure Investment	-4.38e-05*** (1.55e-05)
Number of Transport Infrastructure Projects	0.0398*** (0.0120)
Welfare Infrastructure Investment	0.00118 (0.00103)
Number of Welfare Infrastructure Projects	0.0292 (0.252)
Rainfall (average annual in mm)	-0.000143*** (3.99e-05)
Temperature (average annual)	0.0391*** (0.00921)
Constant	0.127 (0.907)
Observations	488
R-squared	0.494

Notes: ***p<0.01, **p<0.05, *p<0.1; standard errors in parentheses are clustered at the district level.

Appendix Table A.3: Summary Statistics for Baseline Analyses

Variable	Obs	Mean	Std. Dev.	Min.	Max.
District-Year Reported Crime Cases:					
Rape	6,395	34.19	35.27	0	568
District-Year FDI Variables:					
FDI Project Counts	5,699	0.154	0.881	0	22
FDI Liberalization Exposure	5,669	29.4	17.8	0.12	72.44
District Demographics:					
2001 District Population	582	1,764,981	1,365,922	33,224	11,978,450
Change in Gender Ratio (1991-2001)	511	0.000	0.015	-0.065	0.037
Change in Literacy Rate (1991-2001)	511	0.121	0.055	-0.155	0.411

Appendix Table A.4: FDI's Effects on Rape, Linear Estimates

	Counts		Rapes/Million	
	(1)	(2)	(3)	(4)
High FDI x Post Liberalization	-3.96 (1.69)**	-3.38 (1.32)**	-2.50 (1.40)*	-3.72 (1.67)**
Population	Yes	-	Yes	-
Other Demographic Controls	Yes	-	Yes	-
State-Specific Trends	Yes	-	Yes	-
District-Specific Trends	-	Yes	-	Yes
Observations	5,614	6,395	5,570	6,340
Number of Districts	511	582	507	577

Notes: ***p< 0.01, **p< 0.05, *p< 0.1; robust standard errors clustered by district in parentheses. Columns (1) and (2): linear regression estimates of number of rape. Columns (3) and (4): linear regression estimates of rapes per 1,000,000 people. All columns include district and year fixed effects.

Appendix Table A.5: Additional District-Year Controls

Dependent Variable: Reported Rape

	(1)	(2)	(3)	(4)	(5)
High FDI x Post Liberalization	-0.15 (0.04)*** [0.06]**	-0.15 (0.04)*** [0.06]**	-0.15 (0.04)*** [0.06]***	-0.14 (0.04)*** [0.06]**	-0.14 (0.04)*** [0.06]**
Population, Literacy Rate, & Gender Ratio	Yes	Yes	Yes	Yes	Yes
State-Specific Trend	Yes	Yes	Yes	Yes	Yes
District GDP Growth Rate 2002-04	Yes	Yes	Yes	Yes	Yes
Domestic Private Investment		Yes	Yes	Yes	Yes
Infrastructure Investments			Yes	Yes	Yes
Night Lights				Yes	Yes
State-level Police Force					Yes
Observations	5,570	5,570	5,570	5,570	5,570
Number of Districts	507	507	507	507	507

Notes: ***p<0.01, **p<0.05, *p<0.1; robust standard errors clustered by (district) or [state]. All specifications include district fixed effects, year fixed effects, state-specific trend, and district annual growth rate (source: Indicus Analytics). Column 2 adds district-level private domestic investment (source: CapEx). Column (3) adds number of district-year publicly-funded infrastructure projects (source: CapEx. Data cover projects funded by federal, state, and municipal governments in roads, bus stations, air transport, shipping, electricity generation and distribution, primary care dispensaries, hospitals, schools, and water infrastructure). Column 4 adds "night lights" (average luminosity calculated from satellite data using spatial tools). Column 5 adds size of state police force. Average district GDP growth is only available for 2002-2004. Average during this period is interacted with a year dummy.

Appendix Table A.6: FDI's Effect on Rape, IV Estimates with Alternate Measures of Rape

Dependent Variable: Number of Rapes			
Panel A	-40 ***	-40***	-18*
	(13.31)	(12.27)	(9.6)
Dependent Variable: Rape/Million			
Panel B	-25**	-35***	-18*
	(11)	(12)	(10.1)
District Fixed Effects	-	Yes	Yes
District Population	-	Yes	Yes
State Trends	-	-	Yes

Notes: ***p<0.01, **p<0.05, *p<0.1; robust standard errors in parentheses. First stage is estimated using a linear model.

Appendix Table A.7: Falsification: No Effects of FDI on Wage if Treatment=2004

Dependent Variable:	Employed?(Yes=1)		Log Real Wages (Reported Wages Sample)		Log Real Wages (Full Sample – Imputed Wages)	
	Women	Men	Women	Men	Women	Men
	(1)	(2)	(3)	(4)	(5)	(6)
High FDI x Post Liberalization	0.05	0.04	-0.04	-0.00	-0.04	-0.01
	(0.07)	(0.07)	(0.04)	(0.02)	(0.03)	(0.02)
	[0.06]	[0.07]	[0.03]	[0.04]	[0.03]	[0.02]
Observations	318,593	315,363	40,245	124,249	65,954	245,608
Number of Districts	555	554	551	556	555	558

Notes: ***p<0.01, **p<0.05, *p<0.1; robust standard errors clustered by (district) or [state]. Data Sources: 1999 and 2004 National Sample Survey of India Employment and Unemployment Survey.

Appendix Table A.8: FDI's Effects on Men's Attitudes Towards Women's Political Participation

Dependent Variable: Women Should Participate in Politics?

	All Men			Working Men	
	Agree (1)	Agree (2)		Agree (3)	Agree (4)
High FDI x Post Liberalization	0.016	0.027	-	0.016	0.024
	(0.028)	(0.029)	-	(0.029)	(0.029)
	[0.030]	[0.030]	-	[0.029]	[0.029]
Controls	No	Yes		No	Yes
Observations	14,478	14,395		13,568	13,490

Notes: ***p<0.01, **p<0.05, *p<0.1; robust standard errors clustered by (district) or [state]. These findings rule out the possibility that FDI changed men's attitudes towards women's empowerment. Controls include education, scheduled caste/tribe, household size, and rooms in dwelling. Base category is *Disagree*.

Appendix Table A.9: FDI and Household Expenditure On Safety Enhancing Goods

Dependent Variable:	Log(Real Household Expenditure on Telephones)		
	(1)	(2)	(3)
High FDI x Post Liberalization	0.40 (0.06)*** [0.13]***	0.33 (0.07)*** [0.14]**	0.33 (0.08)*** [0.14]**
Population	Yes	Yes	Yes
District Demographic Controls	-	Yes	Yes
Household Characteristics	-	-	Yes
Observations	220,212	208,202	194,351
Number of Districts	581	563	563

Notes: ***p<0.01, **p<0.05, *p<0.1; Robust standard errors clustered by (district) or [state]. Household survey weights used. Phone costs include landlines and mobile phones. 'Household Characteristics" include religion, caste, and land ownership, and type of employment (self-employed non-agriculture, agricultural or wage labor, other non-agricultural or casual labor, and others). All models include district and year fixed effects. These findings show that households in FDI-exposed districts increased spending on telephones, a safety-enhancing private good.

Appendix Table A.10: Telephone Access Reduces Rape

Dependent Variable: Count of Reported Rapes

	(1)	(2)
Own a Telephone	-0.36	-0.33
	(0.16)**	(1.63)**
Land Owned	No	Yes
Highest Adult Education	No	Yes
Below Poverty Line	No	Yes
Observations	76,156	76,165
Number of Districts	363	363
R-Squared	0.89	0.90

Notes: ***p<0.01, **p<0.05, *p<0.1; robust standard errors in parentheses. Each specification controls for district and year fixed effects. Rape data is from the NCRB. Telephone data is from the 2005 and 2012 India Human Development Survey. These findings reinforce that telephones are a safety-enhancing good.

Appendix Table A.11: FDI Increased Working Women's Voter Turnout

Dependent Variable: Indicator for Voted in Last National Election

	All Men & Women	Women	Working Men & Women	Working Women
	(1)	(2)	(3)	(4)
High FDI x Post Liberalization	0.015	0.022	0.021	0.065
	(0.021)	(0.024)	(0.022)	(0.031)**
	[0.032]	[0.033]	[0.03]	[0.037]*
Observations	52,751	24,671	37,846	11,616
Number of Districts	479	479	479	472
Controls	Yes	Yes	Yes	Yes
R-squared	0.07	0.09	0.07	0.12

***p<0.01, **p<0.05, *p<0.1; robust standard errors clustered by (district) or [state]. District fixed effects. Columns 2, 5, 8, and 10 include controls for education. Education values: 0=No education, 1=Below Primary, 2=Primary pass/Middle fail, 3=Middle pass/Matric Fail, 4=Matric, 5=College, 6=Graduate, 7=Post Graduate. These findings are consistent with working women in FDI-exposed districts becoming more politically engaged.

Appendix Table A.12: Stranger Rape Drives Rape Decline

Dependent Variable: Known Perpetrator Rape/Total Rape

	(1)	(2)	(3)
High FDI x Post Liberalization	-0.037	-0.05	0.046
	(0.04)	(0.05)	(0.06)
Demographic Controls	-	Yes	Yes
State-Specific Trends	-	-	Yes
Observations	352	275	275
R-Squared	0.545	0.600	0.704

Notes: ***p<0.01, **p<0.05, *p<0.1; linear estimates with robust standard errors clustered by state in parentheses. Each specification controls for year and state fixed effects. These findings reinforce the women's empowerment mechanism by showing that reduced rape is concentrated in the subset of rape most influenced by women's safety-enhancing measures.

Appendix Table A.13: FDI Increases Latent Backlash Sentiment

Dependent Variable:	Perceived Unsafe: All Women					Perceived Unsafe: Working Women				
	In Dark Public Areas			Home Alone		In Dark Public Areas			Home Alone	
	(1)	(2)		(3)	(4)	(5)	(6)		(7)	(8)
High FDI x Post Liberalization	0.174	0.194	-	0.175	0.172	0.090	0.120	-	0.106	0.120
	(0.071)**	(0.077)**	-	(0.068)**	(0.072)**	(0.073)	(0.075)	-	(0.074)	(0.076)
	[0.181]	[0.200]	-	[0.196]	[0.211]	[0.158]	[0.179]	-	[0.194]	[0.208]
Demographics Controls	No	Yes		No	Yes	No	Yes		No	Yes
Observations	11,230	10,742		11,355	10,838	5,411	5,018		5,518	5,101
R-squared	0.190	0.173		0.174	0.168	0.221	0.191		0.187	0.165

Notes: ***p<0.01, **p<0.05, *p<0.1; robust standard errors in parentheses clustered by (district) or [state]. Demographic controls: age, education, household income, and household composition. Data: 2003 and 2007 World Health Organization World Health Survey. These findings are consistent with increased latent backlash sentiment in FDI-exposed districts.

Appendix Table A.14: FDI's Effects on Other Women-Specific Crimes Inconsistent

Dependent Variable:	Sexual Harassment		Sexual Assault		Intimate Partner Violence	
		IV(Rate)		IV(Rate)		IV(Rate)
	(1)	(2)	(3)	(4)	(5)	(6)
High FDI x Post Liberalization	High FDI x Post Liberalization	-0.38	-	-0.01	-	0.13
		(0.14)***	-	(0.04)	-	(0.05)***
		[0.32]	-	[0.08]	-	[0.06]**
Number of FDI Projects		1.37		-32		-82
		(6.74)		(11.1)***		(25.7)***
Observations	4,978	5,009	5,614	5,009	5,537	5,009
Number of Districts	453	501	511	501	504	501

Notes: ***p<0.01, **p<0.05, *p<0.1; robust standard errors in parentheses are clustered by district while those in square brackets are clustered by state. Quasi-maximum likelihood estimates. Each specification includes district fixed effects, year fixed effects, and state-specific trends. Columns (2), (4), (6) use the linear instrumental variable estimation and these specifications also control for female population of a district. Rate is crime count per million district-year population. Data: NCRB.

Appendix Table A.15: Multiple Hypothesis Testing: Women-Specific Crimes

Panel A: Quasi Maximum Likelihood with State-Specific Trends				
Outcome	Effect (Coefficient)	Naïve p-Value	FDR q Value	n
Rape	-0.131	0.003	0.012	5,614
Intimate Partner Violence	0.129	0.007	0.012	5,537
Sexual Assault	-0.007	0.874	0.875	5,614
Sexual Harassment	-0.376	0.009	0.012	4,978

Panel B: Linear Fixed Effects with State-Specific Trends				
Outcome	Effect (Coefficient)	Naïve p-Value	FDR q Value	n
Rape	-3.958	0.020	0.040	5,614
Intimate Partner Violence	28.596	0.003	0.012	5,537
Sexual Assault	1.649	0.646	0.862	5,614
Sexual Harassment	-0.381	0.932	0.932	4,978

Notes: Panel A reports the preferred quasi-maximum likelihood specification estimates and panel B reports the linear estimates from an analogous specification. In addition to reporting the coefficient (column 1), we report the p-values in column 2, and false discovery rate (FDR) q values in column 3. Column 4 specifies the number of observations for each regression. Data: NCRB.

Appendix Table A.16: No Change in Other Serious Crimes

Dependent Variable:	Dacoity			Murder			Theft			Kidnapping		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
High FDI x Post Liberalization	0.30	0.12	0.04	0.04	-0.03	0.03	-0.10	-0.11	-0.09	-0.05	-0.05	0.03
	(0.08)***	(0.08)	(0.07)	(0.03)	(0.03)	(0.03)	(0.05)*	(0.05)*	(0.04)**	(0.06)	(0.06)	(0.06)
	[0.21]	[0.17]	[0.08]	[0.07]	[0.07]	[0.03]	[0.10]	[0.11]	[0.06]	[0.13]	[0.13]	[0.11]
Population	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Demographic Controls	-	Yes	Yes	-	Yes	Yes	-	Yes	Yes	-	Yes	Yes
State-specific Trends	-	-	Yes	-	-	Yes	-	-	Yes	-	-	Yes
Observations	6,274	5,603	5,603	6,395	5,614	5,614	6,395	5,614	5,614	6,395	5,614	5,614
Number of Districts	571	510	510	582	511	511	582	511	511	582	511	511

Notes: ***p<0.01, **p<0.05, *p<0.1; robust standard errors clustered by (district) or [state]. Each specification includes district fixed effects and year fixed effects. Dacoity roughly translates to organized crime. Data: NCRB. These findings rule three alternative mechanisms: manipulation of crime statistics, increased law enforcement, and male backlash manifesting in other types of crime. District demographics include 2001 district population size interacted with year indicators (Source: 2001 Census of India) and changes in adult literacy rate and gender ratio from 1991 to 2001 interacted with year indicators (Source: 1991 & 2001 Census of India).

Appendix Table A.17: Rape Arrests Decline

Dependent Variable:	Rape	Other Crimes Against Women		
		Intimate Partner Violence	Harassment	Assault
	(1)	(2)	(3)	(4)
High FDI x Post Liberalization	-166.5 (72.8)**	-356.6 (1175.6)	415.0 (305.4)	-120.4 (310.7)
N	275	275	275	275
R-Squared	0.98	0.96	0.88	0.97

Notes: ***p<0.01, **p<0.05, *p<0.1; robust standard errors clustered by state in parentheses. Each specification also controls for year and state fixed effects. State-level data from NCRB. These results show that rape-related arrests increased in high FDI states but arrests for other types of series crimes did not. These results rule out strengthened law enforcement as an alternative mechanism through which FDI reduced rape.

Appendix Table A.18: No Change in Policing

Dependent Variable:	Log(Officer Counts)		Share of Women Officers	
	(1)	(2)	(3)	(4)
High FDI x Post Liberalization	-0.065 (0.058)	0.046 (0.048)	-0.006 (0.007)	-0.007 (0.009)
Demographic Controls	No	Yes	No	Yes
N	352	275	352	275
R-squared	0.99	0.98	0.74	0.79

Notes: ***p<0.01, **p<0.05, *p<0.1; robust standard errors clustered by state in parentheses. Each specification also controls for year and state fixed effects. Demographic controls are 2001 population and changes in adult literacy rate and gender ratio in 1991-2001 interacted with year indicators, respectively. State-level data are from the Indian National Crime Record Bureau. These results show that high FDI states did not experience changes in the level and gender composition of law enforcement. These results rule out law enforcement changes as an alternative mechanism though which FDI reduced rape.

Appendix Table A.19: No FDI-Induced Migration

	(1)	(2)
High FDI x Post Liberalization	-0.0095 (0.0052)* [0.0050]*	-0.0078 (0.0052) [0.0049]
Controls	No	Yes
Observations	76,086	76,086
R-Squared	0.507	0.509

Notes: ***p<0.01, **p<0.05, *p<0.1; robust standard errors in parentheses are clustered by district while those in brackets are clustered by state. Each specification includes household fixed effects. Outcome: household migrated in last five years? Controls include for below poverty line status; household consumption per capita; land owned; access to kisan credit and electricity; own color TV, motorcycle, telephone; member of mahila mandal, union; number of household members; and highest education attained by any member. Data: 2005 and 2012 Indian Human Development Survey. These findings show that FDI did not trigger migration, ruling out the possibility that rape declined because of local demographic changes.

Appendix Table A.20: Controls for Industries with Employer-Provided Transportation

Dependent Variable: Reported Rape

	Quasi Maximum Likelihood Estimates				Linear Estimates		
	(1)	(2)	(3)		(4)	(5)	(6)
High FDI x Post Liberalization	-0.086	-0.14	-0.14	-	-6.26	-7.70	-4.04
	(0.045)*	(0.048)***	(0.045)***	-	(1.96)***	(2.05)***	(1.7)**
	[0.068]	[0.069]**	[0.069]**	-	[3.57]*	[3.62]**	[2.78]
Number of Foreign Projects in Industries Providing Transportation to Women Employees	-0.010	-0.014	-0.03	-	-1.11	-1.37	-1.65
	(0.026)	(0.025)	(0.023)	-	(1.74)	(1.78)	(1.70)
	[0.024]	[0.025]	[0.023]	-	[1.97]	[2.09]	[1.65]
Number of Domestic Projects in Industries Providing Transportation to Women Employees	-0.002	-0.004	-0.004	-	-0.34	-0.46	-0.41
	(0.007)	(0.007)	(0.006)	-	(0.48)	(0.50)	(0.49)
	[0.008]	[0.008]	[0.006]	-	[0.57]	[0.59]	[0.53]
Observations	6,395	5,614	5,614		6,406	6,395	6,395
Number of Districts	582	511	511		583	582	582

Notes: ***p<0.01, **p<0.05, *p<0.1; robust standard errors clustered by (district) and [state]. These findings rule out the alternative mechanism that FDI-exposed districts had new investments into industries that traditionally provide women with transportation to and from work.

Appendix Table A.21: Controls for Trade Liberalization

Dependent Variable: Reported Rape

	(1)	(2)
High FDI x Post Liberalization	-0.13	-0.13
	$(0.04)^{***}$	$(0.04)^{***}$
	$[0.06]^{**}$	$[0.06]^{**}$
Tariff Exposure	-	-0.011
	-	(0.008)
	-	[0.014]
Observations	5,614	5,614
Number of Districts	511	511

Notes: ***p<0.01, **p<0.05, *p<0.1; robust standard errors clustered by (district) or [state]. Each specification includes district and year fixed effects. Tariff data are from the World Bank's WITS database and converted to Indian industrial classification (NIC) using Debroy and Santhanam concordance. The results show that district exposure to trade liberalization, a possible correlate of FDI liberalization, does not account for the decline in reported rape.

Debroy, Bibek and A. T. Santhanam. 1993. "Matching Trade Codes with Industrial Codes," *Foreign Trade Bulletin*, 24(1).