Women and Work in India: Descriptive Evidence and a Review of Potential Policies

Faculty Research Working Paper Series

Erin K. Fletcher
Harvard Kennedy School

Rohini Pande
Harvard Kennedy School

Charity Troyer Moore
Harvard Kennedy School

January 2018

RWP18-004

Women and Work in India: Descriptive Evidence and a Review of Potential Policies

Erin K. Fletcher * Rohini Pande† Charity Troyer Moore‡

December 30, 2017

Abstract

Sustained high economic growth since the early 1990s has brought significant change to the lives of Indian women, and yet female labor force participation has stagnated at under 30%, and recent labor surveys even suggest some decline since 2005. Using a nationally representative household survey, we lay out five descriptive facts about female labor force participation in India that help identify constraints to higher participation. First, there is significant demand for jobs by women currently not in the labor force. Second, willing female non-workers have difficulty matching to jobs. Third, obtaining vocational training is correlated with a higher likelihood of working among women. Fourth, women are more likely to be working in sectors where the gender wage gap and unexplained wage gap, commonly attributed to discrimination, is higher. Finally, female-friendly policies, including quotas, are correlated with higher female participation in some key sectors. Combining these facts with a review of the literature, we map out important areas for future investigation and highlight how policies such as employment quotas and government initiatives focused on skilling and manufacturing should be better investigated and leveraged to increase women's economic activity.

*erinkfletcher@gmail.com

†Evidence for Policy Design, Harvard Kennedy School, 79 JFK St., Cambridge, MA 02138, rohini_pande@hks.harvard.edu

‡charity_troyer_moore@hks.harvard.edu

1 Introduction

Over the past four decades, India has experienced rapid population and economic growth, urbanization, and demographic change. Between 1990 and 2013, GDP growth averaged 6.4% (Figure 1); the share of agriculture in GDP roughly halved (from 33 to 18%), while that of services increased from 24 to 31%. Urbanization has also increased, from 26% to 32%, (The World Bank, 2015). At the same time, women's education and childbearing patterns have changed: over the same period, total fertility fell from 4.0 to 2.5 children per woman (The World Bank, 2014a)). Girls' primary school enrollment has reached parity at boys, and universal enrollment [1] was achieved in 2015 (Neff et al., 2012; Kapsos et al., 2014). Between 1994 and 2010, the fraction of women aged 15-24 attending any educational institution more than doubled (from 16.1% to 36% (Kapsos et al., 2014)).

However, despite this rapid economic growth, educational gains, and fertility decline, India's women are conspicuously absent from the labor force. Female labor force participation (FLFP) rates remain low and have even fallen in recent years.[2]. This perceived decline persists even when we account for increased schooling, which delays entry into the labor force (Klasen and Pieters, 2015). Figure 2 shows that FLFP in India is well below its economic peers, and the mismatch between economic growth and FLFP presents a puzzle that researchers are only beginning to better understand. In this paper, we examine possible constraints on participation and potential policy interventions that could increase it, highlighting five descriptive facts relating to patterns of FLFP in India and incorporating a literature review of policy evaluations to identify promising policies worth further investigation.

Implementing effective, evidence-based policy to increase FLFP and increase women's economic activity could have a large impact on economic growth. Recent evidence from the United States suggests that misallocation of talent in the labor market, whereby high-ability women are in low-skilled, low-return occupations, presents a significant hindrance to growth (Hsieh et al., 2013).[3] Specifically in the Indian context, Esteve-Volart (2004) shows that a 10% increase in the female-to-male ratio of workers would increase per capita net domestic product by 8%.

From an individual woman's perspective, wage work delays age of marriage and age at first childbirth (Sivasankaran, 2014), increases her decision-making power in the household and increases child schooling (Qian, 2008).[4] Figure 3, based on India's National Family Health Survey (NFHS), shows that women who work, regardless of education level, have more say in house-

[1] as a fraction of the school-age population

[2] While estimates based on household surveys vary, from a low of 24% using the National Sample Survey (for 2011-12) to a high of 31% using the Indian Human Development Survey (for 2004), it is widely acknowledged that FLFP growth has been stagnant, and that some earlier gains have been reversed.

[3] Hsieh et al. (2013) find that alleviating gender and race-based talent misallocation accounted for 16 to 20 percent of US growth over the years 1960-2008.

[4] Relatedly, several observational studies find that women with more control over resources such as land report greater mobility, have children with better nutritional outcomes (Swaminathan et al., 2012), and are less likely to experience violence (Panda and Agarwal, 2005). In addition, access to and information regarding female-specific labor

hold decisions. Women in waged work also report higher levels of joint and individual decision-making.[5] Women's work also has positive spillovers: Sivasankaran (2014) shows that sisters of women with longer work tenures marry later, and villages that are exposed to more female leaders show lower rates of sex selection (Kalsi, 2017).

The recent trends in India's FLFP are increasingly seen as a challenge that requires policy intervention to ensure that these changes do not result in deterioration in women's well-being and already low empowerment. While the justification for a policy focus on FLFP is clear, the fact that observed FLFP rates reflect both supply and demand factors makes determining causation, and thus the range of appropriate policy responses, difficult. To better understand these potential factors, we use household surveys to document key descriptive facts highlighting both the role of social and economic factors that affect labor supply, demand, and outcomes. Then we discuss the implications for further investigation tied to existing high-profile policies and government programs.

On the supply side, Indian households often require that women prioritize housework and may even explicitly constrain work by married women (Bose and Das, 2014a; Sudarshan, 2014; Sudarshan and Bhattacharya, 2009). Societal expectation of women's role as caregivers and caretakers of the household often mean that women who seek work encounter opposition from their peers and families, leading to lower participation. These views are also frequently internalized by women and may therefore suppress labor supply even in the absence of such constraints. Rustagi (2010) provides evidence that these norms per se have not significantly changed over the last two decades. There is also evidence these norms are typically more binding among wealthier, upper caste households, suggesting that economic growth alone may not alter their influence.[6] Low urban FLFP is consistent with this possibility.

On the demand side, women face legal, normative, and economic constraints to work. Indian women are still subject to laws governing when (i.e. which shifts) and in which industries they can work. These rules can disproportionately affect women even as the economy grows: for example, female participation in export-oriented manufacturing jobs fell despite increased trade and reduced trade barriers during the 1990s, likely due to legal constraints on women's working hours through the factory laws (Gupta, 2014). Though these laws may change soon, employers may be less apt to hire a woman over an equally qualified man. As long as there exist norms against women's market engagement, we expect to see gender-based discrimination in hiring, legal or otherwise, and gender wage gaps that cannot be explained by common sources of observable

market opportunities improves female educational attainment and delays age of marriage and childbearing (Heath and Mobarak, 2014; Jensen, 2012).

[5]The accompanying graph was made using principle components analysis on a series of questions from the NFHS on household decision making. Details on its construction are available in Appendix 6.

[6]Here and elsewhere we define social norms to be a set of beliefs or perceptions of what one's community holds to be true or acceptable (Ball Cooper et al., 2012).

variation in wages persist. The lack of jobs that can absorb women transitioning out of agriculture further depress demand for potential female labor (Chatterjee, 2015).

Furthermore, high, sustained economic growth in India has not necessarily brought more jobs (Bhalotra, 1998; Papola and Sahu, 2012; Kannen and Raveendran, 2009; Chowdhury, 2011). Jobless growth in sectors that employ more women or seem more friendly to women necessarily limits-growth in FLFP. In the 1980s, jobless growth was evident in manufacturing (Bhalotra, 1998), and there is some reason to believe women may have suffered from this relatively more acutely than males.

Norms around women and work clearly affect both supply of, and demand for, female labor. Data from the World Values Survey (WVS) gives insight into how norms in India may constrain women's labor force outcomes, while also highlighting that norms alone can only partially explain India's low FLFP. Figure 4 shows responses that highlight the prominence of gender-biased views on women's roles in the economic and political landscape in countries comparable to India. These statistics suggest that norms against women holding an equal footing in the classroom and market still persist in India and elsewhere, even among women (albeit to a more limited extent than in males). Interestingly, while India's FLFP looks most similar to Pakistan, its norms-related responses look more in line with countries that have a significantly higher FLFP, suggesting variation in these views on women and work cannot fully explain India's lagging FLFP.

Our descriptive analysis, focused on the most recent round of National Sample Survey (NSS) data, highlights five features of Indian women's market engagement important for understanding the constraints to higher FLFP and potential policy solutions. First, a large proportion of Indian women express willingness to take on work despite being counted outside of the labor force. There is a strong rural-urban divide in this statistic, as others have noted (Kapsos et al., 2014). Second, women have more trouble matching to jobs than men. They report seeking or being available for jobs longer than men when unemployed, and women who did work reported spending more time unemployed than males. Third, at all levels of education, women with vocational training are more likely to work than those without training. Fourth, wage gaps and unexplained wage gaps - typically interpreted as at least partially reflecting gender-based discrimination in the labor market - are relatively higher in fields with greater female representation. Finally, women are doing relatively well in terms of representation in specific jobs, namely education and work provided by the government's job guarantee program, MGNREGA; factors potentially driving this success should be investigated further.

Alongside these basic descriptive features, we examine evidence from recent high-quality academic research that seeks to provide causal estimates of policies and other factors affecting FLFP in India. The review of this evidence again underscores the importance of access to jobs, networks, social norms, and the potential importance of policy interventions in women's labor force decisions. Taken together, the descriptive analysis and evidence review suggest several key areas

on which to focus research inquiry, some of which converge with the Government of India's policy priorities.

The government has already put in place several programs and policies to increase women's access to labor market opportunities; namely, increased funding to skills and vocational training programs and gender-based employment quotas. There is some diagnostic evidence and literature that supports the implementation of these policies, but the immediate pressing need is for more rigorous research to better understand the causal mechanisms for how these policies might affect female employment. Rigorous testing would also allow for better targeting of policies, both in who is most affected and how they are applied to different groups.

An area requiring urgent attention is that of improving data and evidence to better understand the constraints and solutions to India's low FLFP. We outline specific steps related to data collection that can raise women's visibility in the labor force and serve as a potential impetus for important dialogue and initiatives aimed to engage them more effectively in the economy.

2 Data and Diagnostics Methodology

2.1 Data

We conduct an examination of data on female employment and related indicators using large household surveys with the aim of diagnosing constraints and providing first-pass evidence on potential constraints to women's higher LFP. Our primary data source is the employment module of the Indian National Sample Survey (NSS) for 2011-2012 (round 68). Our analysis sample consists of 136,465 women and 131,542 men aged 15 to 70 who are not currently enrolled in school.[7] We define and examine labor force participation using the survey question on usual principal activity of each household member who meets our inclusion criteria, unless otherwise noted.[8] The LFP rate is calculated using the sum of all individuals employed in wage labor, own-account work, casual labor, unpaid labor, self-employment,[9] or as an employer, plus those who are unemployed and seeking work, divided by the working-age population (15-70) not currently enrolled in school.[10]

We supplement the NSS descriptive analysis with the 2005-2006 round of the National Family Health Survey (NFHS), a nationally representative sample of more than 230,000 women aged 15-

[7] This nationwide survey includes 459,784 individuals from 100,957 households. We drop individuals who do not report marital status or employment type.

[8] We use the question on "principal usual activity status" from Block 5.2 of NSS Schedule 10.

[9] Own-account workers are self-employed individuals operating their own enterprises, largely without hiring labor. Self-employment generally refers to persons who work in their own enterprises, often with the help of hired labor or employees. Unpaid refers to unpaid family workers. Regular employees receive salary or wages on a regular basis. Casual workers receive a wage according to the terms of a daily or periodic work contract.

[10] Though some analyses of labor force participation in India include secondary activity statuses (e.g. Kapsos et al. (2014)), we limit the definition of labor force participation to usual principal activity.

49. We also provide background information using the World Values Survey (WVS), whose much smaller sample is not nationally representative but allows for additional analysis of norms around work. See Pande et al. (2015) for a fuller discussion of analysis based on these surveys.[11] Unless otherwise specified, we use national survey weights as provided by each individual survey to provide population-level statistics.

2.2 Descriptive Summary of FLFP in India

Basic descriptives statistics on FLFP show there to be a significant difference in how men and women interact with the labor market, as well as regional and within-caste differences among women. Male LFP averages 96% while FLFP averages only 27%, and, as documented elsewhere (Klasen and Pieters, 2015), FLFP is lower in urban areas relative to rural areas. Further, 76% of women in urban areas report their primary activity as domestic duties compared to 67% in rural areas. Women in rural areas are more likely than their urban counterparts to work in unpaid family labor. Rates of wage work and self-employment for women are similar, but low, in rural and urban areas. Table 1 provides basic summary statistics related to FLFP in India, and Figure 5 highlights the diversity in district-level FLFP patterns.

These urban-rural differences in FLFP are striking, given the much higher education levels among urban women: over 60% of women in rural areas have at best a primary education, while this is only true for 30% of urban women. Yet, higher education does not predict higher FLFP rates. Instead, we observe a U-shaped relationship between education and FLFP (Figure 6), much like income and FLFP (Figure 2). The U-shape for women stands in contrast to male LFP, which increases with education and is nearly universal, excluding those currently enrolled. Women at very low levels of education are more likely to be in the labor force, with 20% of low-educated women in the labor force in urban areas and 28% in rural areas. Women with some secondary education have the lowest levels of participation (around 22%) and highly educated women again post higher levels of FLFP. The U-shaped relationship is the clearest for urban women and likely reflects an income effect, whereby women opt out of the work force and into greater household production and leisure as household incomes rise, and then opt back into market work as the opportunity cost of remaining out of the labor force increases.

Figure 7 shows that the age profile for FLFP differs across rural and urban areas. Young urban and rural women are similarly likely to enter the labor market, but FLFP across rural and urban areas for women in their mid-twenties and older diverge; the higher rural FLFP primarily reflects these women's participation in agricultural activities. The cross-section does not allow us to separate cohort and secular trends, limiting the conclusions that can be drawn, but the relatively low FLFP among both rural and urban young women is particularly disturbing since these young

[11] WVS covers about 2,000 respondents from across India and includes questions related to attitudes and beliefs on topics such as gender roles and work.

women are not enrolled in school. It is also suggestive of a lack of opportunities (or acceptable opportunities) for young women in rural areas, in comparison to less educated older rural women, in general.

Social norms surrounding female work are an important constraint on FLFP in India, as they may dictate that women are primarily caregivers and thus belong in the home. Although we do not observe a sharp M-shaped relationship between age and FLFP–exit at child-bearing and reentry as children get older–as in Japan or Korea (Kawata and Naganuma, 2010; Lee et al., 2013), FLFP does show a dropoff among women in their early to mid-twenties in urban areas, suggesting that marriage and family-related responsibilities may specifically limit women's LFP. Household surveys show that 13% and 50% of women are not allowed to visit village markets or stores alone, so imagining that women face constraints on working outside the home is not a large jump (India, 2007). These social norms are linked to the caste system; upper caste women are more likely to face restrictive norms (Field et al., 2013) [12].

Figure 8, using the NSS, shows FLFP age profiles by whether the household is identified as Scheduled Caste (SC), Scheduled Tribe (ST), Other Backwards Classes (OBC) or other Hindus and Muslims. Those identified as SC are the most likely to be working at all ages. All other social groups are much less likely to be working, but particularly for the youngest cohorts. High caste Hindus and Muslims post the lowest rates of FLFP at all ages, consistent with other research.

Household responsibilities and childrearing duties are often cited as key constraints to women's participation in the labor force. Figure 9 illustrates how FLFP varies for married and unmarried women with and without children in the household over the cross-sectional age profile. The biggest takeaway from this figure is that women who marry have low LFP across all ages, suggesting that older cohorts have not entered the labor force even as children grow up. A second insight is that the largest differences in labor force participation are reflected in marital status rather than the presence of children in the household, particularly during prime working ages. As approximately 95% of Indian women age 25 and older are married (or formerly married), lower FLFP dominates.

[12]Social norms may also affect whether survey questions can adequately measure the full extent of female participation in the labor market. If women identify strongly with a non-labor market role, such as caregiver or mother, or feel they are expected to identify with that role, they may designate that as their primary activity, even if they spend time in remunerated activities. Other nationally representative data sets from India also show slightly different levels of overall FLFP. The first round of the IHDS, a survey undertaken in 2004-2005, estimated overall FLFP in India at 31% (14.6% in urban areas and 39% in rural areas), compared to 35% as reported by the ILO for 2004 (The World Bank, 2014b). The difference in overall levels of participation may reflect that women do not necessarily identify with work as their primary activity, and the use of more probing questions and time-use data would result in more available information on the productive and even income-generating activities of women.

Further analysis of the IHDS shows similar patterns to the NSS in the relationships between key variables such as age, urban/rural location, and social group, even while the levels of participation for these subgroups tend to be higher in the IHDS. Trends over time shown in the NSS data and statistics collected by the ILO and World Bank are likely real, even if we are concerned that the actual level of participation is obscured by reporting biases.

Below we highlight additional key descriptive facts about India's FLFP to build on some of these more well-established features.

I. A significant portion of out-of-labor-force women express willingness to work.

While socially constrained labor supply may explain part of low FLFP, women do express willingness or desire to work. Among both rural and urban women, particularly of certain demographic groups, a significant portion would be willing to take on work if it were offered. More than 30% of the group of women engaged primarily in domestic activities- and counted outside the labor force - would like to work and thus constitute a potential addition to the labor force or latent labor supply[13]. If all these women who stated they would take work actually did, we would see a 21 percentage point (78%) rise in the female labor force participation rate, substantial given the low rates of participation overall.

Women currently out of the labor force who are willing to take a job tend to be more educated, slightly more likely to live in rural areas, and not SC or ST. Figure 10 summarizes how education, geography, and social group (scheduled caste, scheduled tribe, other backward castes, and general categories) correlate with willingness to work. The percentage willing to work is slightly higher in rural areas (32% of respondents) than in urban areas (28%). Among rural women, latent labor supply is generally higher among those with more education. Almost 45% of rural, highly educated women who report their primary activity as domestic duties also report that they would accept work.

Within-caste differences in reported willingness to take on work point to the importance of norms in latent labor supply, particularly in urban areas, as suggested by Klasen and Pieters (2015). Figure 10 shows women from "Other" and "OBC" categories consistently express lower willingness to work than SC and ST women of the same education levels and geographic sector. Among urban women in the OBC/Other categories, willingness to work does not increase with education. In contrast, urban SC and ST women have a relatively U-shaped expressed willingness to work, reflecting the typical income and substitution effects. Rural women's willingness to work, in contrast, generally increases within caste as education increases, pointing again to the lack of jobs for women at higher education levels in rural areas.

Unsurprisingly, of women who did not work, over 90% were primarily occupied with domestic duties in the previous year. 92% of these women said domestic duties were their principal activity in the previous year because they were required (needed) to do so, with 60% of these women reporting there is no other household member available to carry out these tasks. Only

[13]The NSS question covering latent labor supply reads, "In spite of your pre-occupation in domestic duties, are you willing to accept work if work is made available at your household?" It is asked of individuals who say they are primarily occupied with domestic duties only or domestic duties and the free collection of goods.

15% report social or religious constraints as the predominant reason they are required to spend their time focused on domestic duties.

II. Job matching is more difficult for females than males.

Analysis of available data on job-seeking suggests women experience greater difficulty matching to jobs that suit them than men. If women have preferences for non-agricultural jobs in rural and peri-urban areas, the lack of non-agricultural jobs for women may explain low FLFP in general and the decline in rural women's labor force participation specifically (Chatterjee, 2015).

The types of jobs women report wanting vary by age, but are primarily of a part-time nature, reflecting the demands of other household responsibilities, particularly in the context of marriage and childbearing. 73% of women willing to take a job prefer regular, part-time work while 22% report want regular, full-time work; the remaining 5% want a mixture of only occasional full or part-time work. The youngest women are most likely to report wanting a full-time job, while those in the middle age ranges are most likely to prefer regular part-time work (Figure 11).

Yet preferences of those outside the labor force do not align with jobs women have. Figure 12 compares the type of work undertaken by female workers to the type of work preferred by women out of the labor force who report being willing to take on a job. Of women who do work, just under 17% percent report working part-time, over 6 times the rate that males report but less than a quarter the rate expressed as preferred by willing women workers - again pointing to a potential lack of jobs that may suit women's preferences or obligations. Although only 5% of women out of the labor force who report being willing to take on work say they would prefer occasional work, 16% of women who did work were not working regularly - nearly twice the rate reported by males. While women who work may prefer different types of work than those that remain at home occupied with domestic duties, the fact that employed women are overwhelmingly situated in full-time work while those who would like to enter the labor force prefer part-time work points to important supply-demand mismatches relevant to low FLFP rates.

Finally, the process of job search itself is gendered: Among those counted in the labor force, women who did not work the entire previous year spent more time seeking a job or available for a job than men. Women who did work report being without work slightly longer than men as well. And even a subset of women reporting they were solely occupied with domestic duties report this was because there was not work available for them[14]. Taken together, these statistics point to a market less closely aligned with female job seekers than males.

However, despite their stated willingness to work, women reported searching for jobs with less intensity than men. One-third of women report not seeking a job when they were unemployed,

[14]Of the 8% of women primarily occupied with domestic duties who said they were not required to be occupied with these tasks, just under 20% reported they continued working on domestic activities because there was no other work available to them.

compared to 18% of men. It is difficult to disentangle the reasons for this differential search. Social desirability bias, whereby respondents are unable or unwilling to report true answers on sensitive subjects due to their perception of what is right or acceptable, against women's work may lead to underreporting of women's willingness to take a job or - probably more consequentially - actual activities undertaken in a job search (Fisher, 1993). Lower expected success in job searches may also result in women searching for jobs with less intensity than men, and - again - norms may constrain labor supply even when women prefer to work.

III. Women with vocational training are more likely to work at all levels of education.

Conditional on reporting they were willing to accept a job, the NSS asked a sample of women whether they have the requisite skills to take on the type of work they preferred. More than half of these out-of-labor-force women who are primarily occupied with domestic duties and stated they were willing to take on work said they did not have the skills required to undertake work in their desired fields (Figure 13).

Interestingly, women who have attended skills or vocational training, whether formal or informal, are more likely to be working. Women who have participated in skills (vocational) training have higher levels of FLFP, regardless of educational levels (Figure 14) - although the U-shaped relationship between education and FLFP persists. While noteworthy, skills trainees are likely positively selected on a variety of dimensions and this relationship should therefore simply draw attention to the need for additional investigation and testing.

IV. Wage gaps and unexplained wage gaps are higher in fields with greater female representation.

How do women tend to fare in sectors in which they are most likely to work? We examine this question looking at the first (primary) field women report undertaking in the previous week and the daily wages they report for this activity. Activities are classified using India's National Industrial Classification (NIC) codes from 2008[15]. The graph on the left hand side of Figure 15 highlights how economic activities in which women represent a larger proportion of the workforce are also those in which gender wage gaps are larger, as measured by the female wage as the proportion of male wages.

Overall, women tend to be less represented in the service sector, and manufacturing is an important employer of women. In other work, we have shown how the gender gap in labor force participation in the services sector is 19% in favor of men, but 1% in favor of women in manu-

[15]NIC codes, produced by the Central Statistical Organisation in India, classify economic activities at the group, class, and subclass level. We collapse the two digit numeric codes, known as divisions, further among similar types of activities without fully condensing to the much broader section categorization. A detailed mapping of the NIC codes to the collapsed codes is available in the appendix

facturing, and women's relative representation in manufacturing grew from 15% to 25% between 2010 and 2012 (Artiz Prillaman and Troyer Moore, 2016). These facts alone raise important questions about the future of female employment, given the often cited narrative on the role of service sector jobs in women's increased employment, particularly as countries continue to develop economically (Goldin, 1994).

Wage gaps alone, however, may simply reflect differences in the labor force composition across genders based on easily observable characteristics, such as education. Oaxaca-Blinder decompositions can highlight the extent to which the gender wage gap is driven by these observable differences across genders (Blinder, 1973; Oaxaca, 1973). The right hand side graph in Figure 15 plots the unexplained wage gap that remain within each NIC category after netting out observable differences in marital status, age, social group (SC, ST, OBC, Other), education (secondary and tertiary education), and state fixed effects across workers by gender on the natural log of wages by gender. Importantly, the unexplained component of the wage gap also tends to be larger for sectors in which females represent a larger proportion of all employed in that sector (Figure 15).

Stated differently, the sectors in which females tend to fare relatively better in terms of wage gaps are often those in which they are least represented. Sectors with the lowest unexplained wage gap tend to be in the service sector, although a good number of service sector jobs also perform relatively poorly on this measure.

V. Fields with female-friendly policies have higher female representation.

Despite their overall low labor force participation, certain fields and occupations employ many women, and in some cases more women than men. Figure 16 highlights fields with high numbers of women employed, by rural/urban status. As expected, agriculture is the most common employer of working women, with approximately 55.6 million women working in agriculture in rural areas alone. Next most common is manufacturing of textiles, food, and other products, which is a significant employer of women in both rural and urban areas. Women are also frequently employed in construction across both geographies. Other common fields employing women across urban and rural areas in the service sector include education, retail trade, and home-based services.

Fields with the highest proportion of female workers are not necessarily those with the highest numbers of female workers, and only a few fields exceed 50% representation. These fields include human health service workers in urban areas, and domestic workers and some limited manufacturing in rural areas. Notably, female representation and overall employment numbers are relatively high in education, some manufacturing, and domestic/home services across both rural and urban areas.

The Government of India has worked to implement gender-sensitive policies in certain industries and occupations to increase gender parity. Primarily, these have worked through quotas,

which we discuss further in the policy section, but here highlight the sectors in which there are quotas and women have relatively high participation.

MGNREGS (the Mahatma Gandhi National Rural Employment Guarantee Scheme) provides up to 100 days of paid unskilled work per rural household annually. In contrast to the national labor market, which is comprised of only 22% women overall, 52% of MGRNEGS workers were female in 2016[16]. MGNREGS uses a gender quota, requiring that at least one-third of person-days are worked by females - but the 33% requirement is clearly exceeded, and therefore cannot fully explain such high levels of female participation. Other potential reasons MGNREGS attracts women include its wage parity policy, which may be particularly appealing for unskilled rural women accustomed to large gender wage gaps, and because it provides work for women near their households.

The education sector is also a large employer of women in both rural and urban areas, as mentioned above, and the share of female teachers has risen over the past four decades (Chin, 2005). One possible explanation for this rise is the implementation of Operation Blackboard in 1990, a government initiative to increase educational attainments, which included a de jure quota for the proportion of female teachers at 50%. This quota has not been rigorously analyzed, and female representation continues to fall short of the 50% mark. However, the fact that education is an important sector for female employment suggests that gender-sensitive policies directed at the education sector may be features relevant to women's relatively high participation.

3 Evidence Review

Against the background of descriptive facts, we review the recent academic literature to examine evidence on potential policy levers for increasing FLFP. India has been host to a number of rigorous academic studies that seek to tackle causality concerns; several of these exploit the varied conditions and policies in India's states. We perform a selective review of rigorous papers with a strong causal identification strategy (i.e. quasi-experimental, RCT, experimental) from a list of top academic journals and working paper series over the years 2004 to 2017 from India, with select papers of particularly high relevance included from other countries in the region. The review methodology and included papers are summarized in Table 5.

The literature confirms findings from the descriptive evidence above that women have limited access to the labor force. Norms, declining FLFP in rural areas due to a lack of access to part-time work and work outside of agriculture, job mismatch, and more are important constraints that we examine in more detail in this section. Randomized and quasi-experimental evaluations show

[16] According to the MGNREGA Report Dashboard, available at http://mnregaweb4.nic.in/netnrega/nrega-reportdashboard

that there are proven methods to alleviate these constraints and encourage more women to join the labor force, also described below.

3.0.1 Information

Women often lack information about returns to work and access to adequate job opportunities. When coupled with restrictive social norms, lack of information may depress how and when a woman may work, but research shows that these norms are not immutable. Information, obtained via active recruitment or through family ties, can affect women's work and family outcomes. Active recruitment of women by the business processing outsourcing sector increased FLFP in that sector and by 2.4 percentage points overall (Jensen, 2012) and sisters of factory workers were more likely to delay marriage and childbearing (Sivasankaran, 2014). In the Philippines, women who were encouraged to attend a job fair were more likely to be in formal and informal employment, though less likely to be self-employed (Beam, 2016).

3.0.2 Job Location

Where travel is difficult, costly, or constrained due to norms linked to mobility, proximity to jobs is an important constraint. While evidence of the importance of job proximity in India is low, in nearby Bangladesh, factory placement is predictive of who works. Women living in close proximity to garment factories were 6.5 to 15.4 percentage points more likely to be employed than women far away from them (Heath and Mobarak, 2014). In Pakistan, the presence of a government school was significantly associated with more private schools, which increased female employment as women primarily staff such schools (Andrabi et al., 2013).

3.0.3 Peer Effects

Like information, role model or peer effects can have an impact on women's participation. In areas where jobs that women prefer are not available, self-employment may provide opportunity and flexibility for women to enter the labor market, and having contacts and role models can lead women to take steps to grow their businesses. Business training on its own increases the likelihood that women will take out loans for self-employment (Field et al., 2013, 2014), but inviting a friend to business training has a positive differential impact in encouraging women to take out loans over and above business training itself, particularly for women most constrained by norms (Field et al., 2014).

3.0.4 Economic Returns and Norms Formation

Environmental and institutional features can shape female labor force participation and have lasting effects. Comparing districts with soils in need of significant hard labor to areas with soil that

is more easily worked, Carranza (2014) shows that high FLFP is persistent across time; a 10 percentage point higher fraction of loamy to clayey soils (proxies for areas in which females would be less likely to provide agricultural labor) is associated with a 5.1% decrease in FLFP in India. Similarly, plough use, which is associated with soil type, is connected to historical female labor force participation in agriculture, which contributed to the formation of norms around women's work (Alesina et al., 2011).

3.0.5 Discriminatory Laws

Legal barriers to female employment–restrictions on working hours or differential skill levels–are key to understanding how a discriminatory policy may affect overall participation. These restrictions interact with other policies. Notably, Gupta (2014) shows that reductions in trade barriers in India actually reduced female employment. Though the author cannot show that these effects are directly linked to discriminatory policies, the factory laws, which prohibit women from working certain shifts, are a likely culprit.

3.0.6 Targeted Policies

Equality enhancing laws may also exert effects on FLFP. The Hindu Succession Act, which granted women in parts of India equal inheritance rights, differentially affected geographic, religious, and ethnic groups. Heath and Tan (2014) exploit this natural experiment to show that women in the affected groups were 9.7 percentage points more likely to be working and 5 percentage points more likely to be working outside the home.

Cash and asset transfers to female-headed households where recipients often survive on less than two dollars per day have also been shown to increase welfare for women. Banerjee et al. (2011) show that productive asset transfers (namely, livestock) to very poor women in West Bengal, when paired with training and savings, resulted in increased consumption, at least in part through increases in small business activity as well as an increase in labor supply on the intensive margin. Other findings from Bandiera et al. (2009) show that such asset transfers lead to increased business skills and increased time spent working. These intensive margin effects on labor force participation could improve outcomes for self-employed women by increasing self-employment income or profits. In nearby Sri Lanka, business training plus cash grants were more effective at increasing profitability of female-owned businesses (De Mel et al., 2014).

Finally, research also show how transfers of MGNREGS wages into a woman's own bank account, rather than that of the household head, in an RCT in Madhya Pradesh, increased women's work under MGNREGS. Beyond this expected impact, the intervention also highlighted the potential importance of gender-specific norms related to women's work in the household: women who were granted access to their workfare wages also worked more in the private sector and

undertook more economic activities overall. The authors attribute these changes to increases in women's intrahousehold bargaining power that indiuced them to work despite the social costs incurred to men whose wives worked (Field et al., 2016). The study points both to the role that social norms can play in restricting women's work and the potential of targeted policies to help overcome these constraints.

3.1 Quotas

India has a long history of implementing quotas. Since 1982, a certain percentage of public sector jobs have been reserved for scheduled tribes and castes. Starting in 1987, as discussed, Operation Blackboard required that 50% of teachers be women. Further quotas have been proposed; the Women's Reservation Bill would reserve 33% of seats in India's lower house of parliament for women - but has been awaiting passage in the Lok Sabha since 2010. Few of these gender-based quotas have been rigorously evaluated, but perhaps the greatest wealth of knowledge we have on causal evidence to increase female labor force participation comes from the Indian government's experiment with quotas for female leadership at the local level.

A 1993 law mandated that one-third of seats on village councils (Gram Panchayats) be reserved for women. In many Indian states the choice of which councils would be reserved was in effect random, which allowed for a rigorous examination of the effects of quotas on various outcomes. Quotas were implemented on a village-by-village basis and a village reserved for a female head in one election was not reserved in the next.

Several papers exploit the as-good-as-random variation in the rotating system of implementation to show the effects of gender-based electoral quotas on female participation in politcs. Bhavnani (2009) shows that wards in Maharashtra that had been reserved for female heads once saw a 120% increase in the average number of female candidates in the subsequent election. In West Bengal, women living in villages that were twice reserved were 2.8 to 3.2 percentage points more likely to stand for office and 4.5 to 5.5 percentage points more likely to win (Beaman et al., 2009).

The electoral program quotas exerted effects on FLFP, female time use, and entrepreneurship, in addition to their direct participation in politics. Women in areas with female leaders were 39 to 52% more likely to start businesses than those in areas without leaders (Ghani et al., 2014). Beaman et al. (2009) showed the gender gap in career aspirations of adolescents closed by 32% in villages that had been reserved for two election cycles. The gender gap in adolescent educational attainment was completely erased in villages with a reserved female head, while girls spent less time on household chores. Female participation in the MGNREGS national workfare program increased following the election of female leaders. Female person-days worked in the program were higher by 6% in areas that were exposed to quotas (Bose and Das, 2014b).

4 High-potential Research Areas

Given the descriptive evidence and existing research, and in light of India's current policy priorities, what are the most important avenues for investigation and testing to increase FLFP? We highlight several important areas that merit additional investigation, building on our core characterizations of FLFP in India, below.

4.1 Access to Suitable Jobs

As shown above, there is a significant mismatch in the composition of female jobs and the job preferences of out-of-labor-force women who are willing to work. In addition, out-of-labor-force women express a willingness to participate in market work, but women spend a longer time searching for jobs. These women prefer regular work - particularly regular part-time work- but few women working are in part-time jobs. Several areas of research could shed light on how to help women access jobs they are willing to undertake.

First, job search costs are likely higher for women than for men, but more research is needed to understand the dimensions of that search. The literature suggests that access to information about jobs is a constraint and social norms often dictate that women spend much of their time engaged in domestic duties rather than looking for work. Norms may also restrict network size for women. More efficient search could be achieved through increased information about job opportunities. Further research should focus on understanding how to ensure women have information about jobs that helps them more efficiently match to jobs.

Second, women out of the labor force who want work overwhelmingly say they would prefer regular part-time work. More research is needed to understand how policies or market forces that increase the availability of part-time or flexible work arrangements could incentivize greater female participation. More work is needed to connect the desire for part-time work to women's time use, and subsequently how to promote socially acceptable, flexible child care arrangements for working women to allow for labor market participation.

Finally, age and marital status are important predictors of labor force attachment. Our analysis suggests that marriage is a more significant correlate of women's lower labor force participation than childbearing, and younger, out-of-labor-force women with expressed willingness to work are more likely to prefer full-time work. Work opportunities have been shown to delay marriage, but there is little evidence on how to incentivize labor market attachment to persist post-marriage. Incentivizing full-time opportunities for younger, unmarried women is one testable solution; further research should explore how pre-marriage career experience affects post-marriage labor market decisions.

4.2 Government Priorities: Quotas and Investments in Skills and Manufacturing

The Government of India has recently committed to increased investments in skills training, to promoting manufacturing employment, and to additional gender-based quotas in areas from police forces to corporate boards. These commitments, combined with our diagnostics and literature review, suggest they are fruitful areas for rigorous pilots and evaluations to better understand how they can support women's economic activities.

The scope for improving skills and vocational training is significant. Many skills and vocational programs have been shown to be relatively ineffective (McKenzie, 2017; Blattman and Ralston., 2015); in India, some of us found that only one-fifth of trainees are employed one year after training in a major skillis scheme in India (Artiz Prillaman et al., 2017). That said, the potential for such programs to support women, in particular, is high: many government-funded programs have gender quotas, and some programs incentivize placement and retention in a first job after training, which could serve as a crucial linkage connecting women to jobs. Our diagnostics show that women with skills training are more likely to be employed, so research focused on how these programs can overcome search frictions may be most relevant. A desire for more training by out-of-labor-force women also suggests that supporting training for women seeking non-traditional (part-time, and potentially home-based) work is an important area for further study.

In addition, manufacturing employment for women has grown over the past ten years despite its generally slow overall employment growth (Nayyar, 2009; Artiz Prillaman and Troyer Moore, 2016), with women occupying 25% of manufacturing positions by 2012. An expansion of manufacturing employment may be particularly important in rural areas. As employment in agriculture is declining and an increasingly educated workforce lacks access to jobs, sector-specific investments to improve job quality and availability could benefit women. Here, research to better understand the factors driving wage gaps, and potential ways to level the playing field, are warranted.

While the literature on quotas provides solid evidence on how increasing women's representation can benefit women and girls, and it suggests how employment quotas might help women, many questions remain on this issue. For instance, should they be applied universally or only to certain fields, are there associated negative externalities, and are quotas strictly better than other policies aimed to increase FLFP? We suggest better evaluation of gender-based employment quotas that are already in place, such as those associated with the national welfare scheme, MGNREGS, and Operation Blackboard[17] as well as more rigorous comparisons to alternate policies. Finally, since discrimination may also play a significant role in women's labor force participation - both in discouraging women from applying for jobs, and from obtaining jobs they apply to - quo-

[17]To our knowledge, there has only been one evaluation of Operation Blackboard's policies, but it did not specifically address the quota. Chin (2005) shows that primary school completion rates improved for girls under Operation Blackboard, despite no significant changes in class size or number of teachers. While we cannot attribute the effect on schooling directly to the quota and Chin offers no estimation of effects on female employment, we can take this as prima facie evidence that the program–including the quota–was important and should be evaluated in more depth.

tas have the potential to put more women in visible positions and possibly change social norms around women and work.

4.3 Data Collection and Transparency

A major limiting factor to better understanding the reasons for India's low FLFP is lack of up-to-date data. Additional data collection through more regular employment surveys would be particularly valuable. An employment survey is conducted every several years, allowing for very little real-time analysis and understanding of current labor market constraints. More regular surveys would help policy makers adjust programs and policies quickly in response to economic shocks. In addition, it would allow for a greater understanding of anomalies in the data, such as the uptick in India's FLFP in 2004 and its subsequent decline, the cause for which remains unresolved in the literature.

In addition, time-use surveys would identify how India's 200 million women engaged primarily in domestic activities spend their days and clarify the extent to which they may already be involved in labor market activities. They would also help reconcile large discrepancies in FLFP as measured by different household surveys and would prove constructive to analysis of gender dynamics in household activities, if collected for several members of the same household. India is positioned to collect quality time use data due to the lessons from a 1998 pilot of six Indian states and recent announcements by the government to implement such time-use surveys.

States and the central government can also play a role in coordinating data collection by trainers and employers involved in major employment-oriented initiatives mentioned above. Ensuring both requisite technological infrastructure, as well as appropriate incentives, are in place to collect high-quality data is an important step toward better understanding female labor force participation and how women can fit into Skill India and Make in India.

The government can also do more to systematically collect and track both short-term economic migration and contract labor, both of which involve women (and - possibly - increasingly so), but around which data collection is extremely limited, particularly in terms of gender disaggregation. Finally, in cases when data is collected - both through surveys and through administrative data systems - promoting and incentivizing data sharing and transparency will facilitate study of these important topics.

5 Conclusion

Despite increases in education, declines in fertility, and strong economic growth, India's FLFP has declined over recent years, suggesting action is necessary to increase women's labor market participation and attachment. The micro and macroeconomic implications of India's low and declining FLFP are at once adverse and consequential, and must be better understood and addressed.

Our simple descriptive analysis of NSS data point to significant constraints on women's labor force participation driven by both social and economic factors on the supply and demand side. Many women counted out of the labor force and primarily occupied with domestic duties say they want not simply to work, but to work in a regular job. Further evidence suggests women search less, or less efficiently, for jobs even as they face greater discrimination in the marketplace. Many women additionally lack the skills required to undertake work they would like. While skills training may be able to address this constraint, more research is needed to better understand how women can best benefit from the government's current investments in skilling.

Indian women also tend to opt out of the labor market at marriage, losing high potential early career earnings and experience that may be important for their socioeconomic trajectories. Once in jobs, women are also often at a disadvantage: in fields where women enjoy higher relative representation, pay is less equitable across men and women. Yet some fields with important female-friendly measures, including quotas, equal pay, and work close to women's homes, have successfully attracted female workers. The specific features driving this relative success in FLFP need to be better understood.

In addition to undertaking research focused on the challenges outlined here, a key next step to improve our understanding of how to increase women's economic engagement is to increase the frequency of data collected about Indian women's economic activities and time use, and to improve data collected relevant to government initiatives that can influence FLFP. Over the past several years, a growing set of researchers have turned their attention to India's low, and apparently declining, FLFP. This trend is promising, but much more needs to be done to spur rigorous innovations in both the public and private sector to increase women's economic engagement.

References

Afridi, F., T. Dinkelman, and K. Mahajan (2016). Why Are Fewer Married Women Joining the Work Force in India? A Decomposition Analysis over Two Decades. Technical report, Institute for the Study of Labor (IZA).

Alesina, A. F., P. Giuliano, and N. Nunn (2011, May). On the Origins of Gender Roles: Women and the Plough.

Andrabi, T., J. Das, and A. I. Khwaja (2013, April). Students Today, Teachers Tomorrow: Identifying Constraints on the Provision of Education. *Journal of Public Economics 100*, 1–14.

Artiz Prillaman, S., R. Pande, V. Singh, and C. Troyer Moore (2017). What constrains young indian women's labor force participation? evidence from a survey of vocational trainees. Technical report, JPAL and Evidence for Policy Design.

Artiz Prillaman, S. and C. Troyer Moore (2016, February). Skill india and make in india: Can they empower india's women? Evidence for Policy Design Policy Brief.

Ball Cooper, L., E. L. Paluck, and E. K. Fletcher (2012). Reducing gender-based violence. In M. Ryan and N. Branscombe (Eds.), *Sage Handbook on Gender and Psychology*. London Sage Publications 2012.

Bandiera, O., R. Burgess, S. Gulesci, and I. Rasul (2009). Community Networks and Poverty Reduction Programmes: Evidence from Bangladesh.

Banerjee, A., E. Duflo, R. Chattopadhyay, and J. Shapiro (2011). Targeting the Hard-Core Poor: An Impact Assessent.

Beam, E. (2016). Do job fairs matter? experimental evidence on the impact of job-fair attendance. *Journal of Development Economics 120*, 32–40.

Beaman, L., R. Chattopadhyay, E. Duflo, R. Pande, and P. Topalova (2009). Powerful Women: Does Exposure Reduce Bias? *Quarterly Journal of Economics 124*(4), 1497–1540.

Bhalotra, S. R. (1998, February). The Puzzle of Jobless Growth in Indian Manufacturing. *Oxford Bulletin of Economics and Statistics 60*(1), 5–32.

Bhavnani, R. R. (2009, March). Do Electoral Quotas Work after They Are Withdrawn? Evidence from a Natural Experiment in India. *American Political Science Review 103*(01), 23.

Blattman, C. and L. Ralston. (2015). Generating employment in poor and fragile states: Evidence from labor market and entrepreneurship programs.

Blinder, A. S. (1973). Wage discrimination: Reduced form and structural estimates. *The Journal of Human Resources 8*(4), 436–455.

Bose, N. and S. Das (2014a). WomenâĂŹs Reservation and IndiaâĂŹs National Rural Employment Guarantee Scheme.

Bose, N. and S. Das (2014b). Women's Reservation and India's National Rural Employment Guarantee Scheme.

Carranza, E. (2014). Soil Endowments, Female Labor Force Participation, and the Demographic Deficit of Women in India. *American Economic Journal: Applied Economics 6*(4), 197–225.

Chatterjee, Urmila; Murgai, R. R. M. G. (2015). Job opportunities along the rural-urban gradation and female labor force participation in india. Technical Report 7412, World Bank, Washington, DC. Policy Research Working Paper.

Chin, A. (2005). Can redistributing teachers across schools raise educational attainment? evidence from operation blackboard in india. *Journal of Development Economics 78*(2), 384–405.

Chowdhury, S. (2011). Employment in India: What does the latest data show? *Economic and Political Weekly 44*(32).

De Mel, S., D. McKenzie, and C. Woodruff (2014). Business training and female enterprise start-up, growth, and dynamics: Experimental evidence from sri lanka. *Journal of Development Economics 106*, 199–210.

Deininger, K., H. K. Nagarajan, S. K. Singh, et al. (2016). *Short-term effects of India's employment guarantee program on labor markets and agricultural productivity*. World Bank.

Esteve-Volart, B. (2004, January). Gender discrimination and growth: theory and evidence from India. *DEDPS 42*.

Field, E., S. Jayachandran, R. Pande, D. Mel, and D. Mckenzie (2013). Do Traditional Institutions Constrain Female Entrepreneurship? A Field Experiment on Business Training in India. *American Economic Review 103*(6), 2196–2226.

Field, E., S. Jayachandran, R. Pande, and N. Rigol (2014). Friends at Work: Can Peer Support Stimulate Female Entrepreneurship?

Field, E., R. Pande, N. Rigol, S. Schaner, and C. Troyer Moore (2016). On her account: Can strengthening women'ï£¡ï£¡s financial control boost female labor supply? *Working Paper.*.

Fisher, R. J. (1993). Social desirability bias and the validity of indirect questioning. *Journal of consumer research 20*(2), 303–315.

Ghani, E., W. R. Kerr, and S. D. O'Connell (2014, May). Political reservations and women's entrepreneurship in India. *Journal of Development Economics 108*, 138–153.

Goldin, C. (1994, April). The U-Shaped Female Labor Force Function in Economic Development and Economic History.

Gupta, A. (2014). Effect of Trade Liberalization on Gender Inequality: The Case of India.

Heath, R. and A. M. Mobarak (2014). Manufacturing Growth and the Lives of Bangladesh Women.

Heath, R. and X. Tan (2014). Intrahousehold Bargaining, Female Autonomy, and Labor Supply: Theory and Evidence from India.

Hsieh, C.-t., E. Hurst, C. I. Jones, and P. J. Klenow (2013). The Allocation of Talent and U.S. Economic Growth.

India, D. (2007). 06-final report. *Mumbai: International Institute for Population Sciences and Macro International Inc*.

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

Kalsi, P. (2017). Seeing is believing-can increasing the number of female leaders reduce sex selection in rural india? *Journal of Development Economics 126*, 1–18.

Kannen, K. and G. Raveendran (2009). Growth Sans Employment: A Quarter Century of Jobless Growth in India's Organised Manufacturing. *Economic and Political Weekly 44*(10).

Kapsos, S., A. Silberman, and E. Bourmpala (2014). Why is female labour force participation declining so sharply in India? Technical report.

Kawata, H. and S. Naganuma (2010). Labor Force Participation Rate in Japan. *Bank of Japan Review 7*.

Klasen, S. and J. Pieters (2015). What explains the stagnation of female labor force participation in urban india? *The World Bank Economic Review*, lhv003.

Lee, S.-a., J.-e. Cho, S. Park, and S. S.-y. Lee (2013). It's more than an m-shape: The political economy of female non-standard workers in the republic of korea. *Asian Social Work and Policy Review 7*(1), 1–17.

McKenzie, D. (2017, March). How effective are active labor market policies in developing countries? a critical review of recent evidence. *IZA Discussion Paper Series*(10655).

Nayyar, G. (2009, September). The Nature of Employment in India's Services Sector: Exploring the Heterogeneity.

Neff, D., K. Sen, and V. Kling (2012). Puzzling decline in rural women's labor force participation in India: A reexamination.

Oaxaca, R. (1973). Male-female wage differentials in urban labor markets. *International Economic Review 14*(3), 693–709.

Panda, P. and B. Agarwal (2005, May). Marital violence, human development and womenâĂŹs property status in India. *World Development 33*(5), 823–850.

Pande, R., D. Ford, and E. K. Fletcher (2015). Female Labor Force Participation in Asia.

Papola, T. and P. P. Sahu (2012). Growth and Structure of Employment in India: Long-term and post-reform Performance and the emerging challenge.

Qian, N. (2008, August). Missing Women and the Price of Tea in China: The Effect of Sex-Specific Earnings on Sex Imbalance. *Quarterly Journal of Economics 123*(3), 1251–1285.

Rustagi, P. (2010). Changing Patterns of Labour Force Participation and Employment of Women in India. *The Indian Journal of Labor Economics*.

Sivasankaran, A. (2014). Work and Women's Marriage, Fertility and Empowerment: Evidence from Textile Mill Employment.

Sudarshan, R. M. (2014). Enabling Women's Work.

Sudarshan, R. M. and S. Bhattacharya (2009). Through the Magnifying Glas: WomenâĂŹs Work and Labour Force Participation in Urban Delhi. *xliv*(48), 59–66.

Swaminathan, H., R. Lahoti, and J. Suchitra (2012). Women's Property, Mobility, and Decision-making: Evidence from Rural Karnataka, India. *IFPRI Discussion Paper 01188*(June).

The World Bank (2014a). Fertility rate, total (births per woman) | Data | Table.

The World Bank (2014b). Labor force participation rate, female (% of female population ages 15+) (modeled ILO estimate) | Data | Table.

The World Bank (2015). Urban population % of total) | Data | Table.

Tables and Figures

Table 1: Summary Statistics

Variable	Males	Females	Rural Females	Urban Females	In Labor Force: Rural Females	In Labor Force: Urban Females	Out of Labor Force, Willing to Work: Rural Females	Out of Labor Force, Willing to Work: Urban Females	Out of Labor Force, Not Willing to Work: Rural Females	Out of Labor Force, Not Willing to Work: Urban Females
Age	38.5908	38.2493	38.0565	38.5575	37.8381	36.7199	31.3244	32.1698	39.8936	40.7151
	(13.170)	(13.535)	(13.723)	(13.224)	(12.499)	(11.889)	(10.129)	(9.834)	(13.817)	(13.155)
Married	0.7739	0.8053	0.8152	0.7894	0.7441	0.5942	0.8599	0.8527	0.877	0.8746
	(0.418)	(0.396)	(0.388)	(0.408)	(0.436)	(0.491)	(0.347)	(0.354)	(0.328)	(0.331)
In Labor Force	0.9598	0.2634	0.2888	0.2228	1.000	1.000	-	-	-	-
	(0.196)	(0.441)	(0.453)	(0.416)	-	-	-	-	-	-
Less than Primary Education	0.2592	0.4353	0.5092	0.3172	0.5213	0.3081	0.4029	0.2624	0.5256	0.3181
	(0.438)	(0.496)	(0.500)	(0.465)	(0.500)	(0.462)	(0.491)	(0.440)	(0.499)	(0.466)
Primary Education	0.318	0.2783	0.2829	0.2711	0.26	0.2195	0.346	0.3295	0.2809	0.2763
	(0.466)	(0.448)	(0.450)	(0.445)	(0.439)	(0.414)	(0.476)	(0.470)	(0.450)	(0.447)
Secondary Education	0.1565	0.1184	0.1011	0.1461	0.0883	0.0959	0.1296	0.1655	0.1019	0.1649
	(0.363)	(0.323)	(0.302)	(0.353)	(0.284)	(0.294)	(0.336)	(0.372)	(0.303)	(0.371)
Certificate/Sr. Secondary Education	0.1229	0.0841	0.0661	0.1128	0.0703	0.1133	0.0812	0.1243	0.0603	0.113
	(0.328)	(0.278)	(0.248)	(0.316)	(0.256)	(0.317)	(0.273)	(0.330)	(0.238)	(0.317)
Tertiary Education	0.1433	0.0839	0.0407	0.1529	0.060	0.2633	0.0403	0.1182	0.0313	0.1278
	(0.350)	(0.277)	(0.198)	(0.360)	(0.238)	(0.440)	(0.197)	(0.323)	(0.174)	(0.334)
Self-employed	0.3935	0.061	0.0685	0.0491	0.2371	0.2204	-	-	-	-
	(0.489)	(0.239)	(0.253)	(0.216)	(0.425)	(0.415)	-	-	-	-
Unpaid Family Worker	0.098	0.0751	0.103	0.0305	0.3566	0.137	-	-	-	-
	(0.297)	(0.264)	(0.304)	(0.172)	(0.479)	(0.344)	-	-	-	-
Wage Worker	0.4386	0.111	0.1036	0.1228	0.3588	0.551	-	-	-	-
	(0.496)	(0.314)	(0.305)	(0.328)	(0.480)	(0.497)	-	-	-	-
Domestic Duties/ Collection of Goods	0.0062	0.7029	0.6765	0.7451	-	-	1.000	1.000	1.000	1.000
	(0.079)	(0.457)	(0.468)	(0.436)	-	-	-	-	-	-
Unemployed/Other	0.0637	0.05	0.0485	0.0525	0.0474	0.0915	-	-	-	-
	(0.244)	(0.218)	(0.215)	(0.223)	(0.213)	(0.288)	-	-	-	-
Observations	131,542	136,465	83,936	52,529	24,238	11,705	18,462	11,088	38,319	28,049

Source: 2011-12 NSS. Standard errors in parentheses. Sample restricted to individuals aged 15 to 70 not currently enrolled in school. height

Figure 1: GDP per capita and FLFP in India over time.

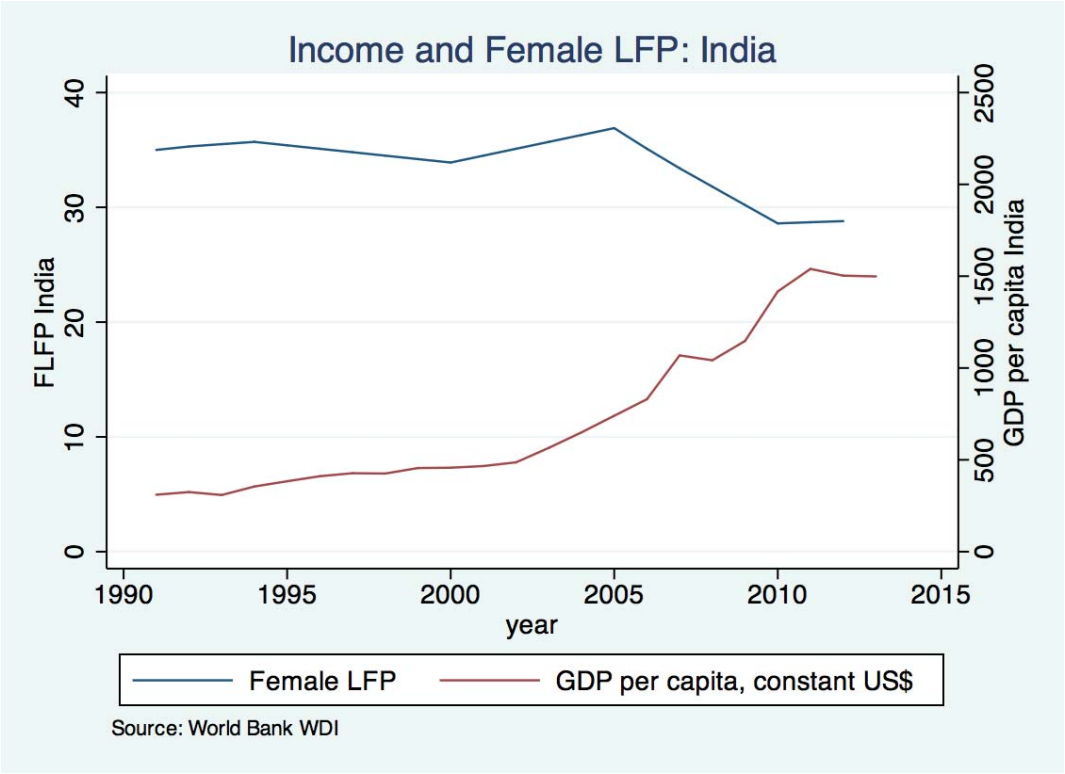


Figure 2: The cross-country relationship between income and female labor force participation is U-shaped, but India is a major outlier.

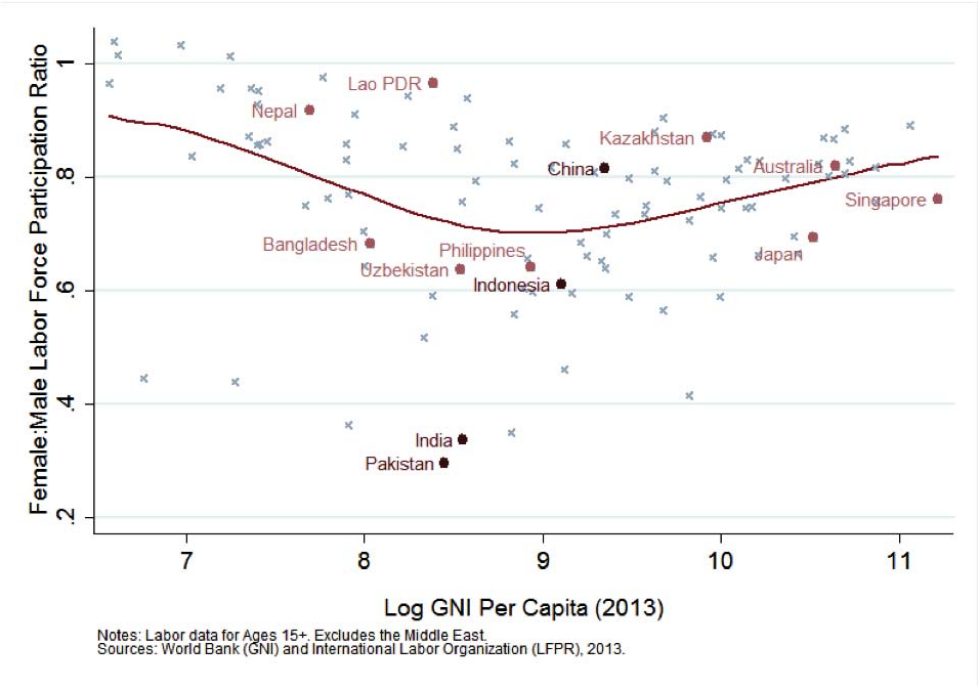
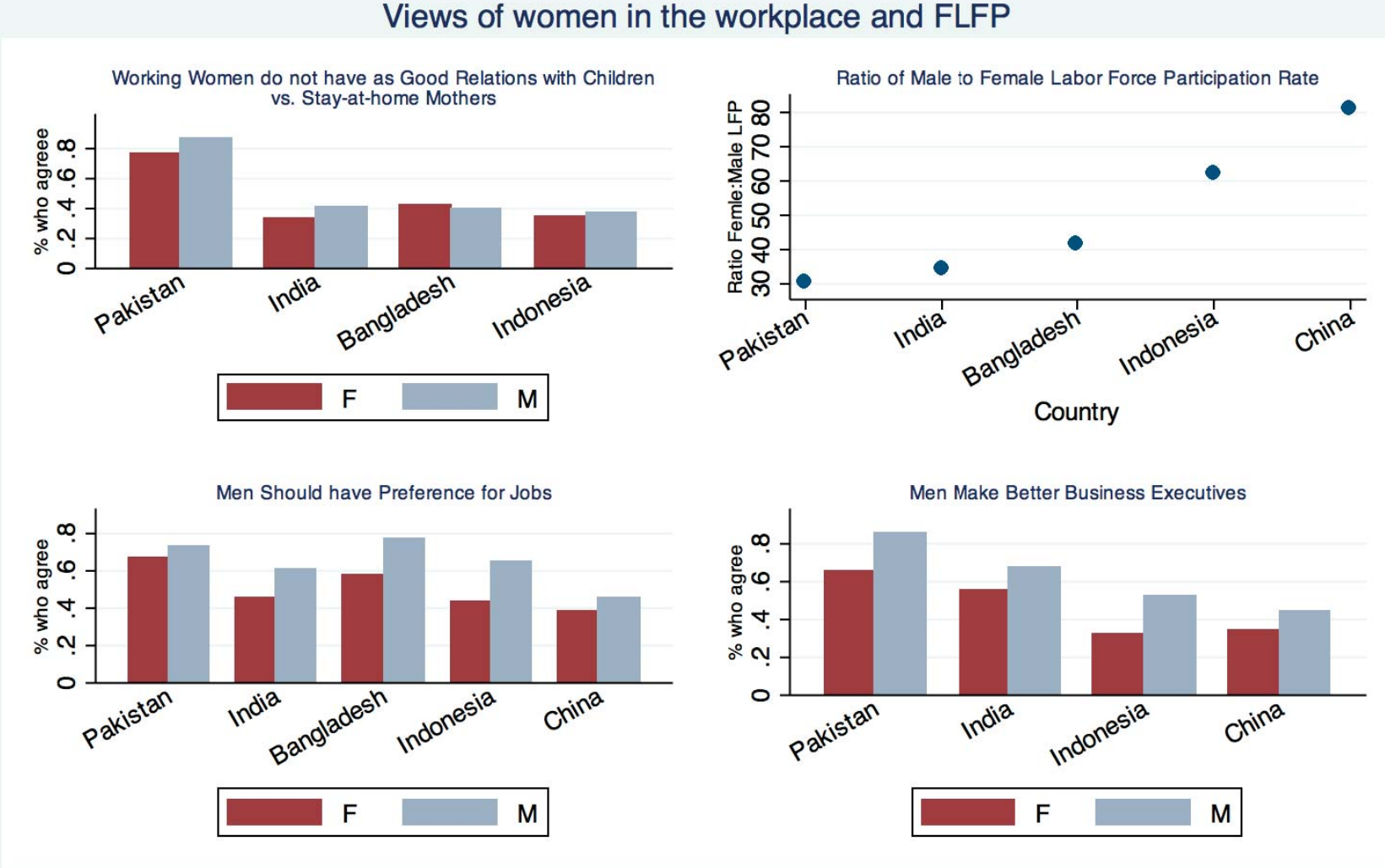


Figure 3: Empowerment index using women's report of autonomy in decision-making on various expenditures.

Notes: Includes ever−married women aged 15−49.
Source: 2005−2006 NFHS.

Figure 4: FLFP and WVS Attitudes on Work



Source: Attitudes from most recent World Values Survey for each country. F:M LFP ratios are 2016 ILO estimates

Figure 5: FLFP by District

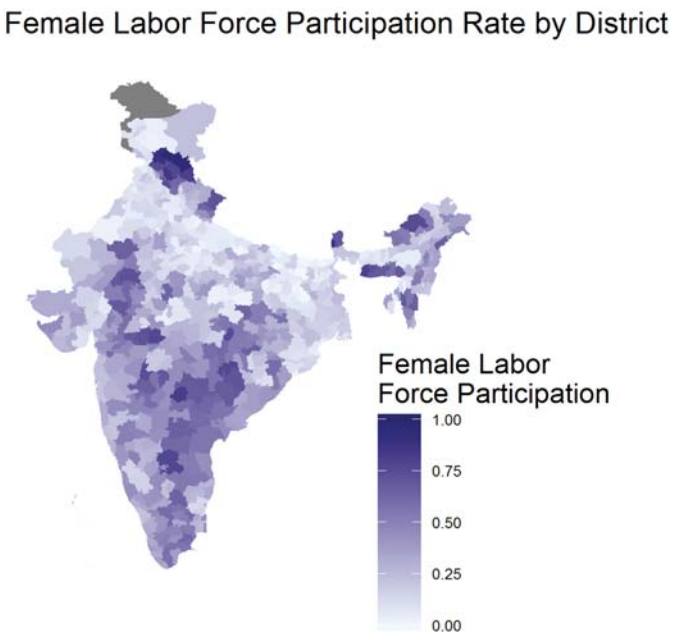
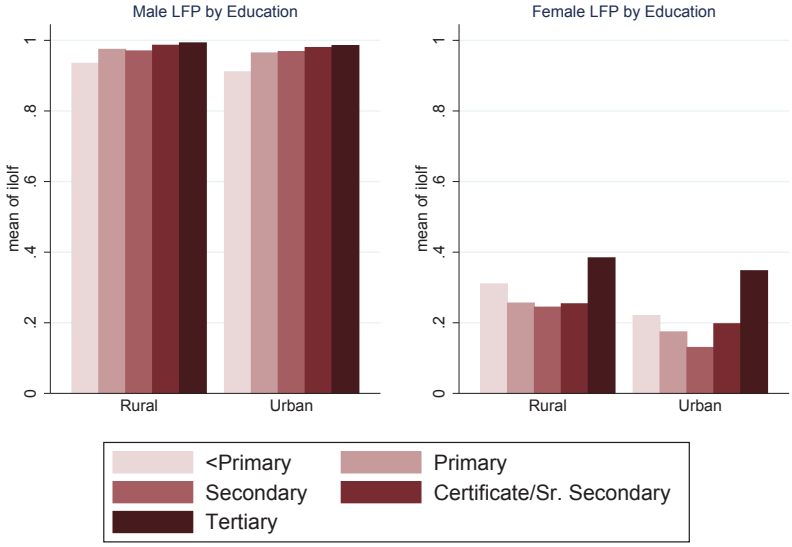
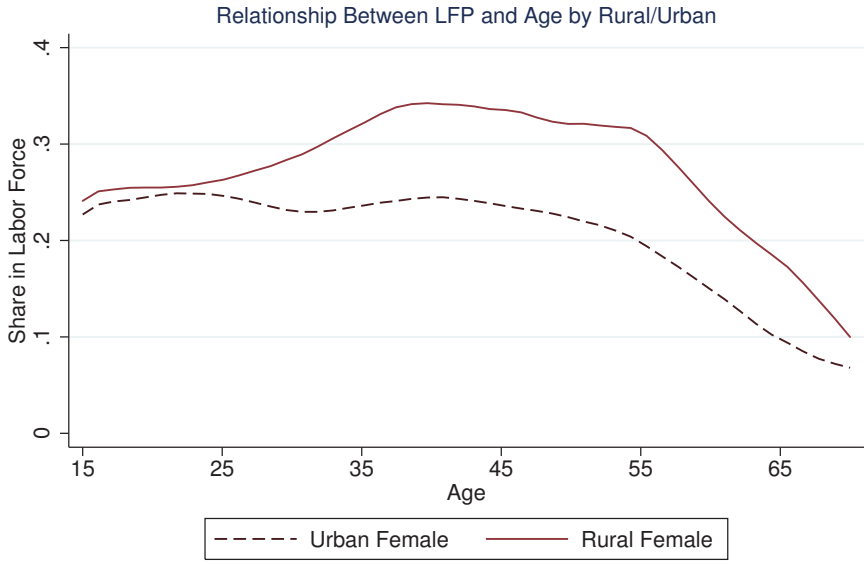


Figure 6: Educational profile of labor force participation for men and women.



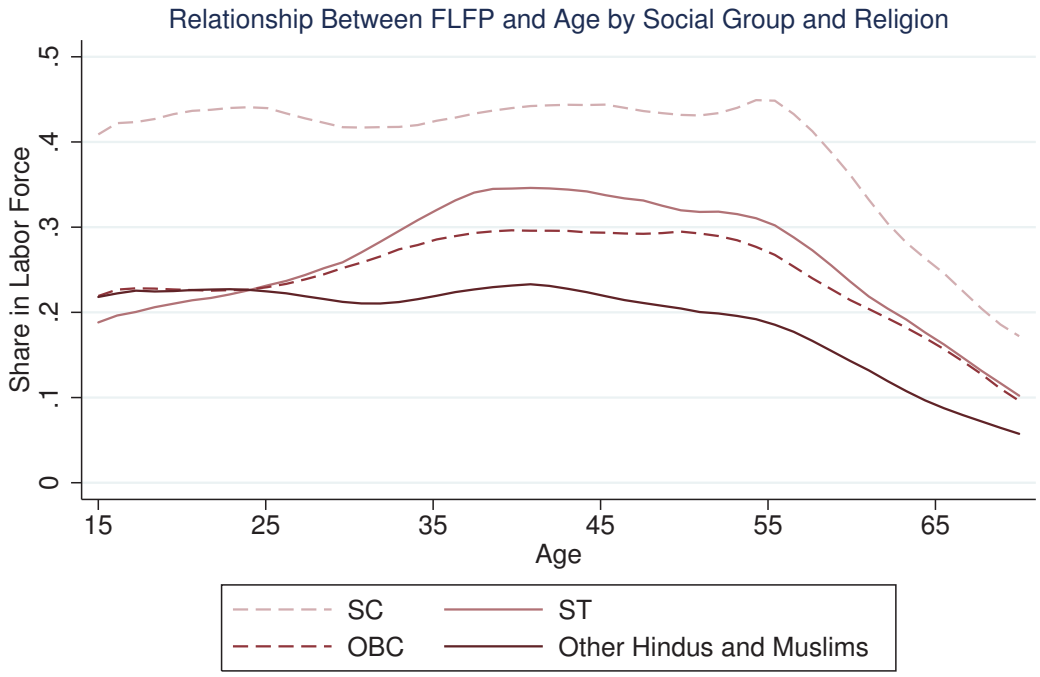
Notes: Includes individuals aged 15−70 not enrolled in school. Source: 2011−12 NSS.

Figure 7: Age profile of labor force participation among women by geographic location.



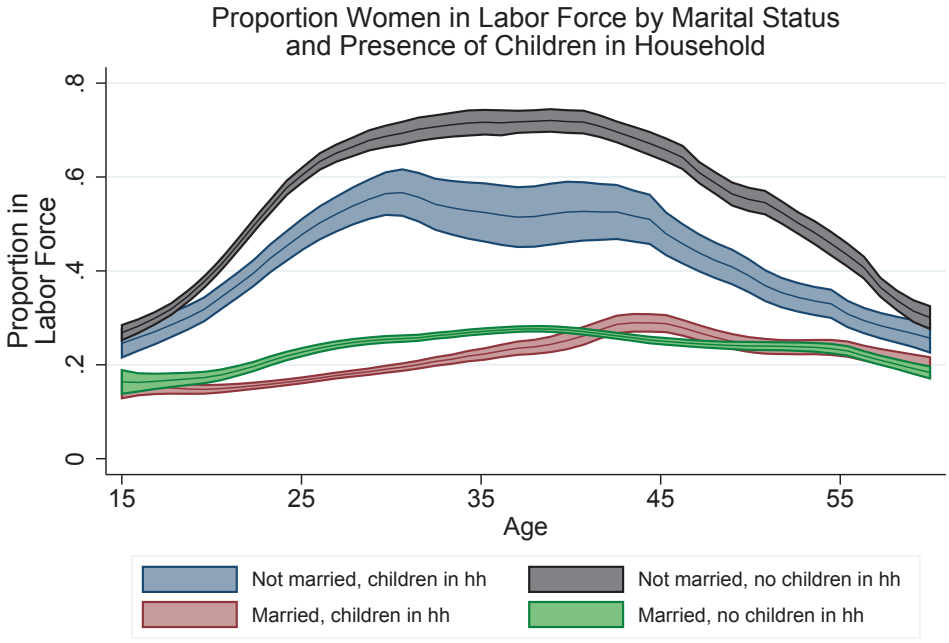
Notes: Includes women aged 15–70 not enrolled in school. Source: 2011–12 NSS.

Figure 8: Labor force participation by age, disaggregated by social group.



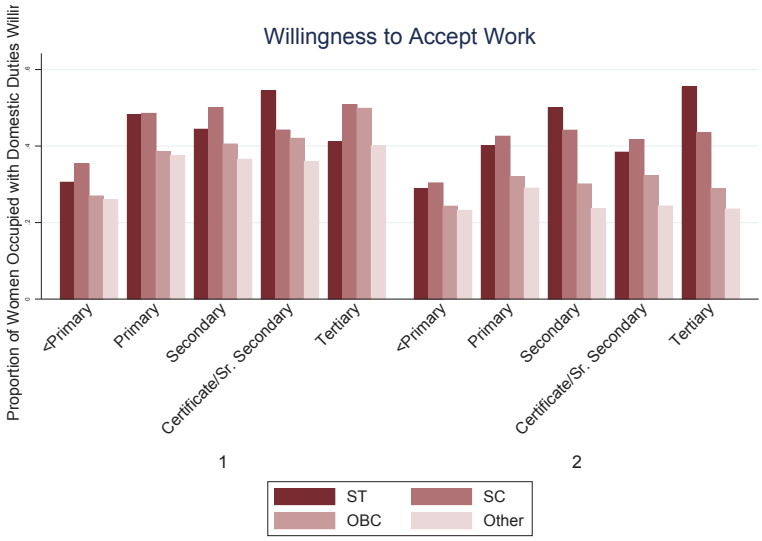
Notes: Includes individuals aged 15–70 not enrolled in school. Source: 2011–12 NSS.

Figure 9: Labor force participation low for all married women, regardless of presence of children in the household.



Source: NSS 68, 2011−12.

Figure 10: Women's willingness to take work by education level and social group (those occupied with domestic duties only)



Notes: Includes women aged 15−70 not enrolled in school. Source: 2011−12 NSS.

Figure 11: Women counted out of the labor force want regular work.

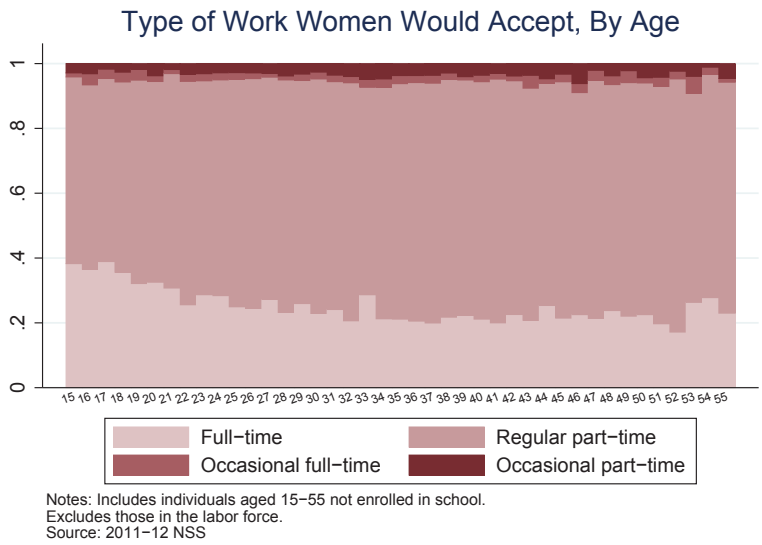
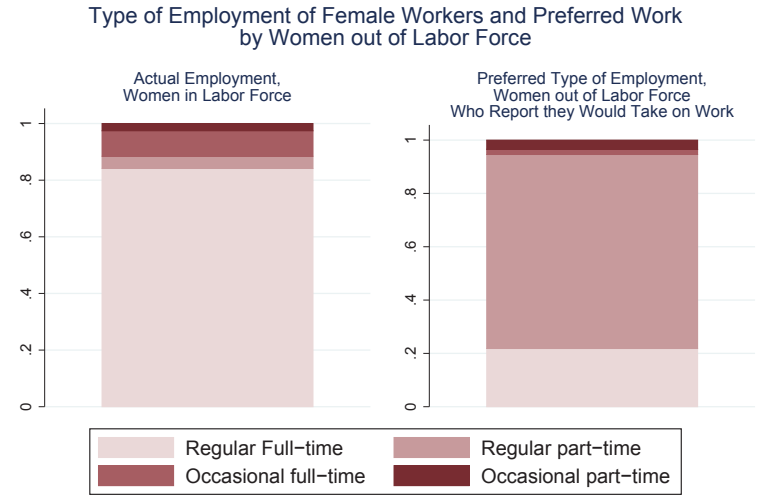
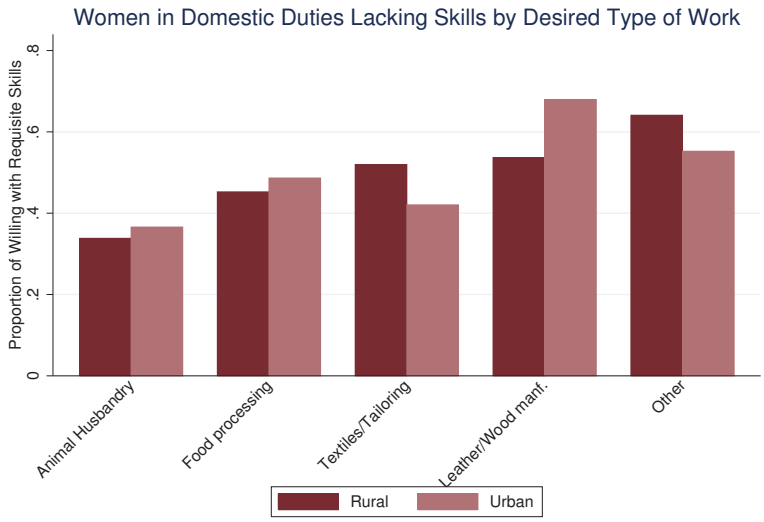


Figure 12: Current female employment distribution different from type of work preferred by women domestic workers who say they want jobs.



Notes: Includes women aged 15−45 not enrolled in school. Women asked question for graph on right are those occupied with domestic duties and counted out of the labor force but say they would take on work made available to their household. Source: 2011−12 NSS

Figure 13: Women's stated skill deficits



Notes: Includes women aged 15–70 not enrolled in school. Source: 2011–12 NSS.

Figure 14: Labor force participation by educational attainment of respondents based on participation in skills training.

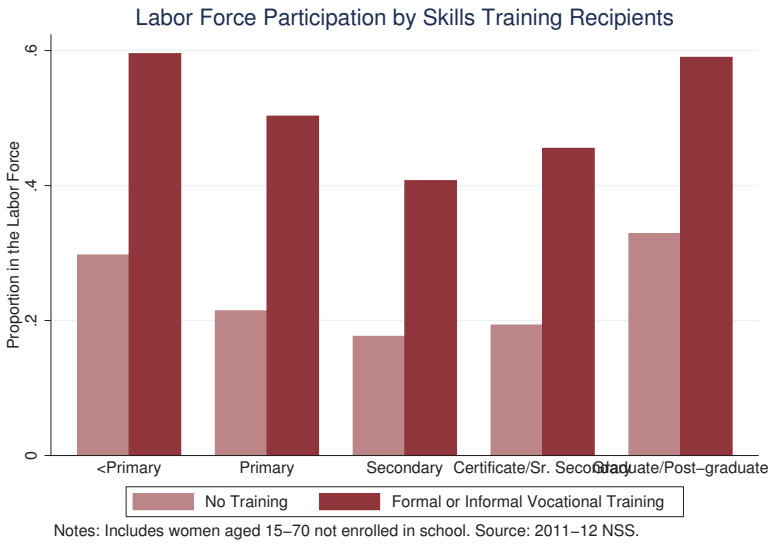
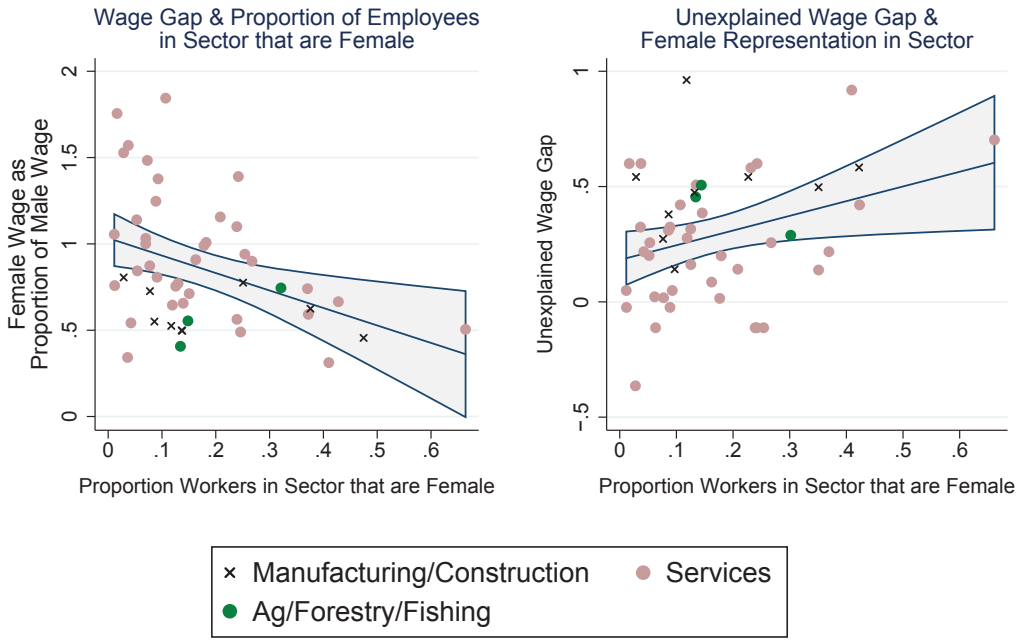
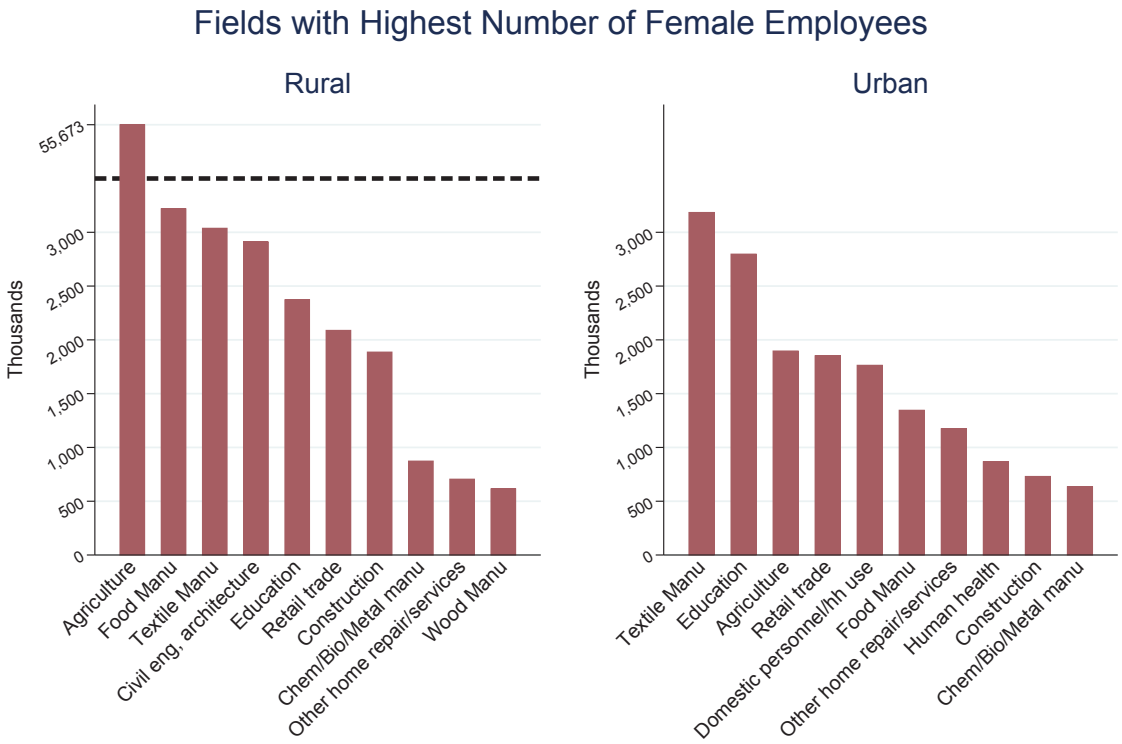


Figure 15: Gender wage gaps, and unexplained wage gaps, are generally better in service sector.



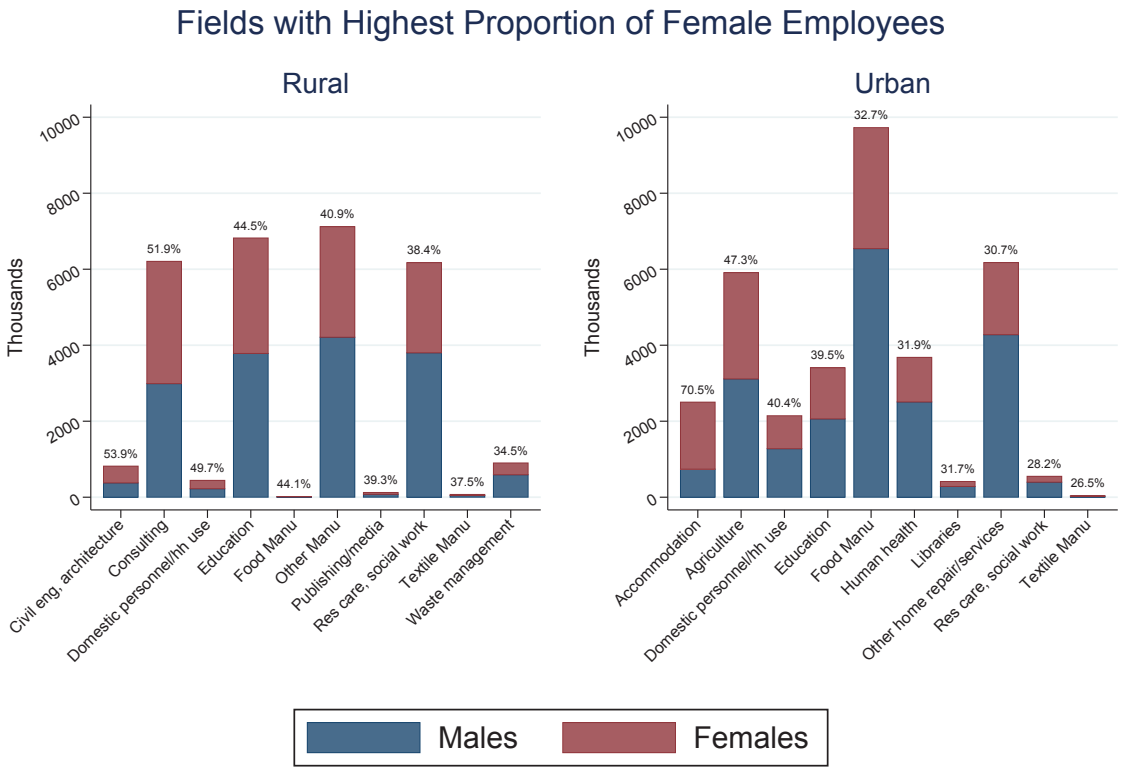
Notes: Daily wages calculated based on pay for main activity reported in previous week.
Y−axis on right hand graph shows unexplained component of male−female wage gap after controlling for worker marital status age, social group, education (secondary, tertiary) and, state using Oaxaca−Blinder decomposition for each NIC sector of work. Source: 2011−12 NSS.

Figure 16: Number of females employed outside of agriculture is relatively low.



Source: NSS 68, 2011−12. Type of employment is that listed as first activity in weekly time use module for sector.

Figure 17: Female representation in some sectors relatively high.



Source: NSS 68, 2011−12. Numbers above bars show percentage employees in the sector that are female. Type of employment is that listed as first activity in time use module for sector.

Appendix

Table 2: This table maps the original NIC codes to the condensed codes used in the paper analysis.

Condensed version	Original NIC code
Accommodation	Accommodation
Advertising, Market Research	Advertising & Market Research
Agriculture	Crop & Animal Prod., Hunting & Related Service Activities
Arts/Entertainment/Sports	Sports Act. & Amusement & Recreation Act.
	Creative Arts & Entertinment Activities
Chemical/Biological/Metal Manufacturing	Manufacture Of Other Non-Metallic Mineral Products
	Manufacture Of Coke & Refined Petrol. Products
	Manufacture Of Pharmaceuticals, Medicinal Chemical & Botanical Products
	Manufacture Of Rubber & Plastic Products
	Manufacture Of Chemical And Chemical Products
	Manufacture Of Basic Metals
	Manufacture Of Paper & Paper Products
	Manufacture Of Metal Products, Except Machinery & Equipment
Civil Engineering, Architecture, Tech Testing, Analysis	Architecture & Engineering Act., Tech. Testing & Analysis
	Civil Engineering
Computer Programming	Computer Prog., Consultancy & Related Act.
Construction	Specialized Const. Activities
	Construction Of Buildings
Consulting	Act. Of Head Offices Mgt. Consultancy Act.
Domestic Personnel/Household Use	Act. Of Households As Employers Of Domestic Personnel
Education	Education
Electricity, Gas, AC Supply	Electricity,Gas,Steam & Air Condition Supply
Eletronic Manufacturing	Manufacture Of Computers, Electronic & Optical Products
	Manufacture Of Electrical Equipment
Employment Acts/Office Support	Employment Activities
	Office Administrative, Office Support & Other Business Support Act.
Equipment Repair	Repair & Isntallation Of Machinery Equipment
Equipment/vehicle Manufacturing	Manufacture Of Motor Vehicles, Trailers & Semi-Trailers
	Manufacturing Of Other Transport Equipment
	Manufacture Of Machinery & Equipment N.E.C.
Financial/Info Services	Other Financial Activities
	Information Service Activites
	Financial Service Act. Except Insurance & Pension Funding
Food Manufacturing	Manufacture Of Food Products
	Manufacture Of Beverages
	Manufacture Of Tobacco Products
Food Service	Food & Beverage Service Activities
Forestry/Fishing	Fishing & Aquaculture
	Forestry & Logging
Gambling	Gambling & Betting Act.
Human Health Activities	Human Health Act.
Insurance, Pensions	Insurance, Reinsurance & Pension Funding Except Compulsory Social Security
Legal, Accounting	Legal & Accounting Activities
Libraries	Libraries, Archives Museums & Other Cultural Act.
Media production	Printing & Reproduction Of Recorded Media

Condensed version	Original NIC code
Mining	Mining Of Coal & Lignite
	Mining Of Metal Ores
	Extraction Of Crude Petrol. & Natural Gas
	Other Mining & Quarrying
	Mining Support Service Activities
Other	Act. Of Extra Territorial Org. & Bodies
	Activities Of Memebership Org.
Other Home Repair/Services	Other Personal Service Act.
	Repair Of Computers & Personal & Hosuehold Goods
Other Manufacturing	Other Manufacturing
Other Science/Tech	Other Prof. Scientific & Tech. Activities
Postal/Courier	Postal & Courier Activities
Public Administration/Defense	Public Admin. & Defense, Compulsory Social Security
Publishing/Media	Program & Broadcasting Activities
	Publishing Activities
	Motion Picture/Video & Tv Prog. Prod And Related Activities
Real Estate	Rental & Leasing Act.
	Real Estate Act.
Research	Scientific Research Development
Residential Care, Social Work	Residential Care Activities
	Social Work Act. Without Accommodation
Retail Trade	Retail Trade, Except Of Motor Vehicles & Motorcycles
Security/Building Services	Services To Buildings & Landscape Act.
	Security & Investigation Activities
Telecoms	Telecommunications
Textile Manufacturing	Tanning & Dressing Of Leather And Manufacturing Of Related Stuffs
	Manufacture Of Wearing Apparel
	Manufacture Of Textiles
Trade/repair Vehicles	Wholesale & Retail Trade, Repair Of Motor Vehicles & Motorcycles
Transport	Air Transport
	Land Transport & Transport Via Pipelines
	Warehousing & Support Activities For Transportation
	Water Transport
Travel/Tours	Travel Agency, Tour Operator & Other Reservation Service Act.
Veterinary	Veterinary Act.
Waste Management	Remediation Act. & Other Waste Management Services
	Waste Collection, Treatment & Disposal Act. Material Recovery
	Sewerage
Water Collection/Supply/Treatment	Watercollection, Treatment And Supply
Wholesale Trade	Wholesale Trade, Except Of Motor Vehicles & Motor Cycles
Wood Manufacturing	Manufacturing & Prod. Of Wood Except Furniture And Other Related Items
	Manufacturing Of Furniture

Table 5: This table presents the results of a review of top-tier journals in economics, including both general interest and field journals, and academic working papers over the years 2004-2017. We include only papers with strong causal identification strategies such as a natural experiment caused by a policy change or a randomized control trial.

Paper	Area of study	Context	Strategy for Assessing Impact	Labor force participation estimate
A. Information and Job Location				
Jensen (2012)	North India (Haryana)	Information provision on job opportunities	RCT: Compare FLFP in villages exposed to recruiters for business process outsourcing jobs	Women in villages visited by recruiters were 4.6 ppt more likely to be employed in BPO sector and 2.4 ppt higher overall
Heath and Mobarak (2014)	Bangladesh	Location of textile manufacturing firms	Natural experiment: Compare women based on proximity to garment factories	Women in close proximity to garment factories were 6.5 to 15.4 ppts more likely to be employed
Sivasankaran (2014)	South India (Tamil Nadu)	The role of longer duration work contracts	Natural experiment: Compare outcomes based on exposure to wage and contract policies	An additional month of contract length increased length of employment by 0.5 months
Andrabi et al. (2013)	Pakistan	The role of primary and secondary education in determining skill profiles	Natural experiment: Compare teacher jobs in areas where schools were built to where they were not built to see effects on job opportunities for women	Areas with government schools were 20 to 27 ppt more likely to have a private school, which employ on average 4 women

Continuation of Table 5				
Paper	**Area of study**	**Context**	**Strategy for Assessing Impact**	**Labor force participation estimate**
Afridi et al. (2016)	India	Increasing education level in rural areas	Parametric and Non-parametric Decomposition using Blinder (1973) and Oaxaca (1973) technique to decompose the change in employment rates of women over time based on the data from Employment and Unemployment rounds of India?s National Sample Surveys(NSS) in 1987-88, 1999-00 and 2009-10	Changes in women?s education over time explain about 21.8 percent of the total decline in FLFP. Women?s own education and that of the men in their household accounts for between 87-95 percent of the overall decline in FLFP in 1987-1999 In the 1999-2009 decade, they explain 25-37 percent of the total decline in women?s LFPR. In both decades, education is the largest contributor to the decline in women?s LFPR.
Beam (2016)	Philippines (Sorsogon Province)	Job Fair	Randomized Encouragement Design: Measure the impact of attending a job fair on employment outcomes	Attending the job fair causes a 10.6pp increase in being employed in formal sector(pooled men and women) Attending the job fair increases likelihood of female being employed in informal sector by 11.4pp and decreases likelihood of female being self-employed by 16.0pp

Continuation of Table 5				
Paper	**Area of study**	**Context**	**Strategy for Assessing Impact**	**Labor force participation estimate**
B. Information via Quotas				
Beaman et al. (2009)	East India (West Bengal)	Gender electoral quotas	Natural experiment: Compare number of women in elected positions in villages exposed to female leader quotas	Women in villages that were twice reserved were 2.8-3.2 ppt more likely to stand for office and 4.5-5.5 ppt more likely to win
Bhavnani (2009)	West India (Mumbai)	Gender electoral quotas	Natural experiment: Compare number of women in elected positions in villages exposed to female leader quotas	Number of women standing for election was 120% (0.5 candidates to 1.1 candidates) higher in wards that were once reserved compared to never reserved.
Ghani et al. (2014)	India	Gender electoral quotas	Natural experiment: Compare number of women-owned small enterprises in states exposed to female leader quotas at different times	Women in exposed states were 39-52% more likely to start own businesses.
Bose and Das (2014a)	Northern Indian (Uttar Pradesh)	Workfare program gender quotas	Natural experiment: Compare women's employment in areas with political positions reserved for female leaders	Number of female person-days worked under NGREGA 6% higher in administrative units with female leaders
Deininger et al. (2016)	India	Workfare program gender quotas	Panel Data Analysis: 4,000 panel households in 232 villages from 17 Indian states	Program increases wages both for male and female participants and also brings a shift from farm to non-farm and salaried employment in female labor supply

Continuation of Table 5

Paper	Area of study	Context	Strategy for Assessing Impact	Labor force participation estimate
C. Control of Resources and the Ultra-Poor				
Heath and Tan (2014)	India	Property and lifetime unearned income	Natural experiment: Rollout of Hindu Succession Act varied exposure to female control of assets by state and time	Women in treated group (Hindu and affected by HSA) 9.7 ppt more likely to be working, 5 ppt more like to work outside the home
Banerjee et al. (2011)	East India (West Bengal)	Asset transfers and small enterprise activity	RCT: Compare small enterprise activity in households given productive asset transfers to those not receiving transfers	Recipient households increased work by 1 hour per day.
Bandiera et al. (2009)	Bangladesh	Asset transfers to ultra-poor	RCT: Compare labor force activity by women given asset transfers to those not receiving transfers	Increase in self-employment and quality of jobs among those women receiving transfers; 1% increase in hours worked.

Continuation of Table 5				
Paper	**Area of study**	**Context**	**Strategy for Assessing Impact**	**Labor force participation estimate**
D. Peer Effects				
Field et al. (2013)	Western India (Ahmedabad)	Business training and microcredit	RCT: Evaluate interaction between randomized business training and social norms	Women who received business training were 13 ppt more likely to take out loans
Field et al. (2014)	Western India (Ahmedabad)	Business training, microcredit, peer networks	RCT: Evaluate effectiveness of business training when combined with existing social networks	Women who received business training with a friend increased working hours by 17% and were 5.3 ppt more likely to take out a loan from SEWA
Carranza (2014)	India	Soil type	Natural experiment: soil types vary by district	Women in areas with a 10 percentage point higher fraction of loamy to clayey soils is associated with a 5.1 % decrease in FLFP as agricultural workers (1.5 ppt of rural FLFP average)
De Mel et al. (2014)	Sri Lanka	Business training versus Business training+Cash grant	RCT : Evalute the impact of business traing solely and business training coupled with cash grant on existing business female owners and potential startups	1. Existing Business Owners -Management practices improved in both interventions but slightly higher in training+cash -Training only doesn't improve business outcomes but training+cash increase capital stock by 10,000 Rs and profits temporarily. 2. Potential Startups -Training only increases business ownership rate by 12pp and training+cash increases it by 29pp in the short run, both no long-term impact -Training only increases in work income of 1494 Rs(significant) and training+cash increases 697 Rs(not significant)"

Continuation of Table 5				
Paper	**Area of study**	**Context**	**Strategy for Assessing Impact**	**Labor force participation estimate**

Carranza (2014) FLFP percentage estimate is determined by taking the percentage change in FLFP and dividing by total FLFP in rural areas from the NSS.

6 NFHS and Construction of Empowerment Index

As noted in the introduction, we utilize the National Family Health Survey (NFHS) to examine norms around work and the intra-household bargaining that may inform women's decisions to work. We turn to NFHS because it allows us to examine dimensions of "empowerment" other than just female labor force participation itself. Empowerment has become a common term in the literature on women's outcomes and while it can take on may different meanings, we appeal here to a definition of empowerment that is complex, multi-faceted and quite rich, including female decision-making power, access to resources and information, freedom of movement and more.[18]

The NFHS sample is not directly comparable to the NSS sample: overall labor force participation is higher than in the NSS, with 37 percent of female respondents working.[19] Of those working, 22 percent are unpaid and 19 percent receive at least part of their earnings in kind.

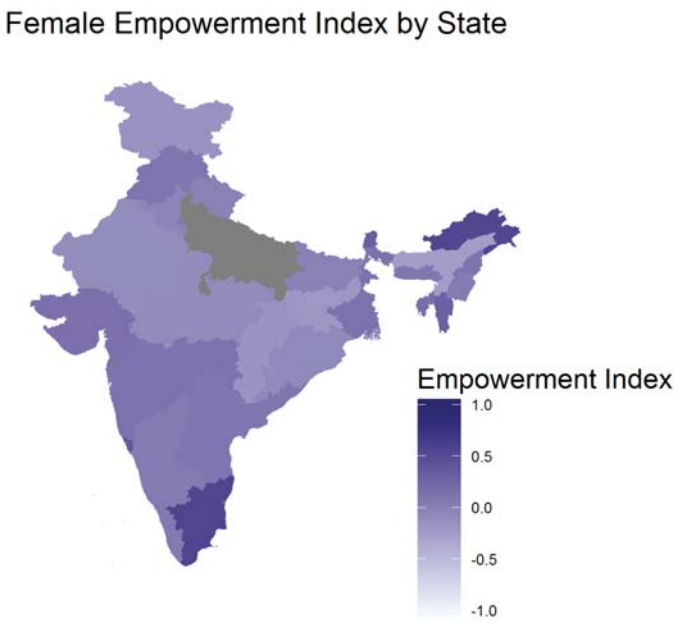
The survey includes a set of questions regarding whether the respondent believes beating is not justified in each of the given situations. Thirty-seven percent of ever-married women in the NFHS report having experienced domestic violence, with high rates in rural areas. In rural locations, 40 percent of ever-married women report having been victims while 30 percent of women in urban areas do.

The NFHS also surveys respondents about the level of autonomy they experience in their homes. These include questions regarding who reports having the final say in decisions about various household and personal decisions including health and expenditure, either alone or jointly with her husband. Using questions about autonomy, we create an "empowerment" index through principal components analysis, standardized to be equal to zero with a standard deviation of one.

[18]The United Nations Guidelines on Women's Empowerment defines empowerment as a general term including five key criteria: "women's sense of self-worth; their right to have and determine choices; their right to have access to opportunities and resources; their right to have power and control over their own lives, both within and outside the home; and their ability to influence the direction of social change to create a more just social and economic order, nationally and internationally."

[19]Some of this difference is attributable to the sample as it does not interview women over 49. The National Family Health Survey (NFHS) surveys women aged 15-49 about their birth histories, work and family experiences, and more. The 2005-2006 round covered more than 120,000 households in 29 Indian states. We use a sample of women who are currently married or have been married.

Figure A1: Distribution of empowerment index by state



In Figure 3, we show the mean level of empowerment index for each of the education/employment category groups. Education is significant predictor of this measure of empowerment. Women with only primary education or less appear to be less empowered than women with secondary or post-secondary education, but there is little pattern by type of employment.

Unsurprisingly, this empowerment index is also highly variable by region (Figure A1). Though solely correlational, it is notable that states with high levels of empowerment, as estimated by our index, are also states with high levels of female labor force participation.