

Skill India and Make in India: Can they Empower India's Women?

Executive Summary

Can India's manufacturing initiative – Make in India – and its skilling programs, like the Ministry of Rural Development's DDU-GKY, jump start India's female labor force participation, which at 24%, is dismal compared to India's economic peers?

We present a two-part statistical analysis. Part one, presented below, evaluates trends in labor demand across industries and sectors using National Sample Survey (NSS) data. We find:

- A large gender gap in labor force participation: Average labor force participation for women is 24% versus 81% for men.
- Manufacturing abets female labor force participation:
 - Conditional on being in the labor force, the gender gap in labor force participation is 19% (favors men) in the service sector but is -1% (favors women) in the manufacturing sector.
 - Between 2010 and 2012 employment in manufacturing grew from 5 to 13%, with relative representation of women rising from 15 to 25% of those employed in manufacturing.
- But gender wage gaps are higher in manufacturing:
 - The average gender wage gap suggests men earn 106 Rs./week (48%) more than women. Across sectors, the gender wage gap in manufacturing is much larger (100%) than that in services (5%).
 - Over 40% of the manufacturing gender wage gap is unexplained by gender-specific differences in education, occupation, or age/marital profiles, pointing to potential discrimination. This unexplained gap is highest in the manufacture of beverages, machinery, and furniture and lowest in the manufacture of petroleum, other transportation, and pharmaceuticals. The industries that hire the most women – tobacco (59%) and apparel (54%) – show apparent wage discrimination.

In choosing occupations to train women, skills training programs should be sensitive to the relative ease of job entry for women. Given the growing role of women in manufacturing, but the apparent wage discrimination, programs could consider mandating and monitoring equal wages in manufacturing employment for men and women trained, although they should be mindful of potential workarounds to such a policy.

The 'Make in India' initiative seeks to double India's manufacturing and industry-focused employment potential. This, in turn, increases government-funded training initiatives' mandate to train and place candidates in the growing manufacturing sector. We evaluate recent trends in manufacturing employment and vocational training using National Sample Survey (NSS) data to understand **how skilling programs can capitalize on Make in India and place vulnerable youth, particularly young women, in India's growing manufacturing sector.**

Demand for Labor across Sectors

81% of men and 24% of women aged 15 to 65 are active in the labor force¹.

At present, demand for labor in the service sector remains substantially higher than in manufacturing. In 2012, 48% of India's workforce was employed in agriculture, 39% in services, and only 13% in manufacturing². Yet, the manufacturing labor force exhibits substantial regional variation (see Figure 1). For example, compare Bihar, where less than 6% of the labor force is employed in manufacturing, to Daman and Diu, where more than 63% of the labor force works in manufacturing. The relative success of some states' manufacturing employment stands in stark contrast to states that employ less than 20% of workers in manufacturing even in urban areas, such as

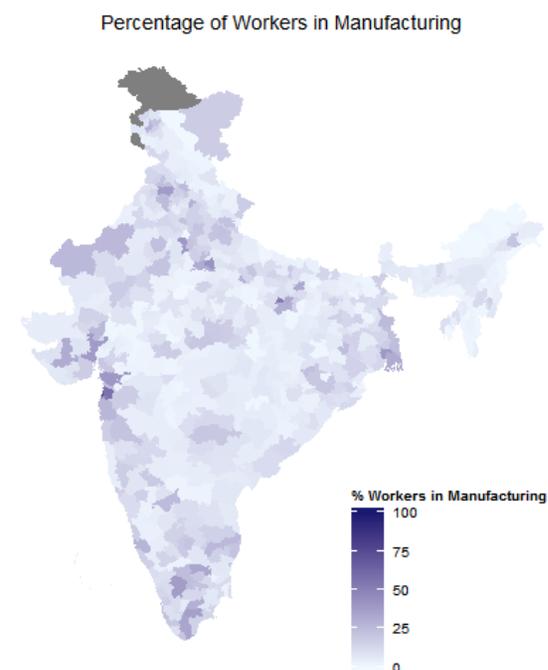


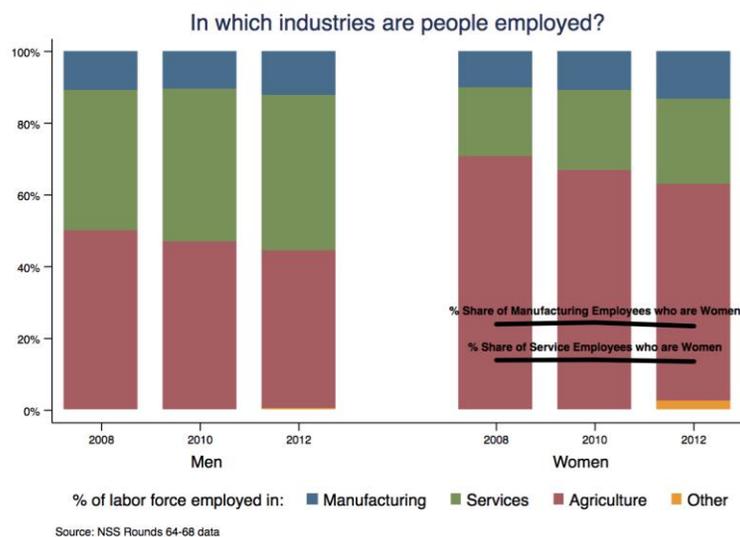
Figure 1: Percentage of Workers Employed in Manufacturing

¹ Labor force participations rates are for men and women aged 15-65 in 2012 using NSS 68 data.

² This is calculated from the sample of the NSS 68th Round (2012) that are actively in the labor force.

Madhya Pradesh (15.4%) and Orissa (10.4%). Figure 1 highlights that even in states considered high-manufacturing areas, the proportion of workers employed in manufacturing varies greatly by district³. For instance, 6 of Gujarat's 25 districts employ less than 4% of their workers in manufacturing, while manufacturing employment in districts including Valsad (57.0%), Surat (39.8%), and Ahmedabad (38.3%) is more consistent with conceptions of the highly industrialized state.

Figure 2: Trends in percentage of the labor force employed across sectors



The Changing Manufacturing Sector

As of 2012, 43% of employed men and 24% of employed women worked in the service sector⁴. In contrast, men (12%) and women (13%) are equally likely to be employed in manufacturing.

Shifts away from agricultural employment have stimulated job growth in the manufacturing sector. Industrial employment in India has surpassed Brazil and is approaching that of China, both countries which have seen little change in the size of the manufacturing labor force in the last five years⁵. In India, however, the share of the labor force employed in manufacturing increased from 2010 to 2012, rising from 10% to 13%. This was accompanied by small job growth in services and a decline in agricultural employment.

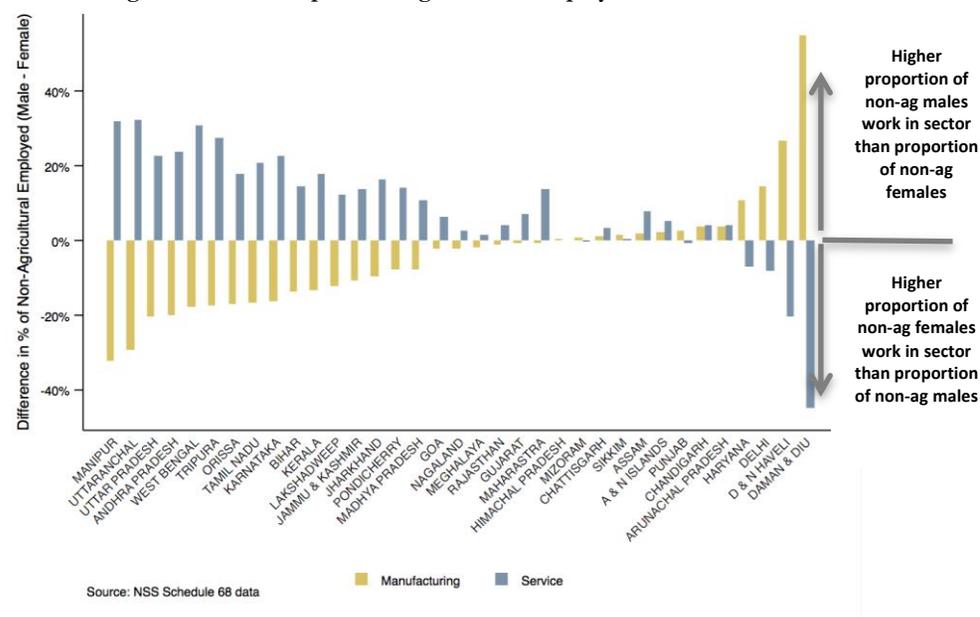
Women are also much better represented in manufacturing, making up 23% of these employees. Only 14% of service sectors employees in 2012 were women (see the line in Figure 2).

Demand for Female Labor in the Manufacturing Sector

Although a higher percentage of the labor force is employed in services relative to manufacturing, Table 1 shows that when those working in agriculture are excluded, women are more likely than men to be employed in manufacturing. Of women employed in non-agricultural work, 34% were employed in manufacturing, compared to only 22% of men.

This higher relative representation of women in manufacturing holds true in nearly every state. Figure 3 presents the difference in male-female representation across the manufacturing and service sectors for non-agricultural workers. A blue (yellow) bar above 0% indicates a higher percentage of male non-agricultural

Figure 3: Gender Gap in non-Agricultural Employment Shares across Sectors



³ It is important to note that the NSS data is not representative at the district level, so these values only show the range of variation but do not necessarily exactly measure the size of the manufacturing industry.

⁴ Sectoral employment statistics are calculated from the sample of employed persons from the NSS 68th round (2012).

⁵ Data from the World Bank indicators estimate industrial employment as a % of total employment at 25% in India, 22% in Brazil, and 30% in China in 2011/2012. Note that industrial employment rates are somewhat higher than rates of manufacturing alone because they include employment in mining and quarrying (including oil production), manufacturing, construction, and public utilities (electricity, gas, and water).

workers are employed in services (manufacturing) than female non-agricultural workers. In most states men are more represented in the service sector and women in manufacturing. In Uttar Pradesh, for example, the percentage of female non-agricultural workers employed in manufacturing is 20 points higher than the percentage of male non-agricultural workers employed in manufacturing. Only in a few relatively small states is a greater percentage of the female, non-agricultural labor force employed in the service sector than men, and in some states, like Chhattisgarh, men are better represented than women in both manufacturing and services, suggesting most women not employed in agriculture are employed as domestic workers.

The Price of Labor

Table 1 shows that a greater share of women employed in non-agricultural work are employed in manufacturing than men and that women make less on average than men in both the manufacturing and service sectors. This wage gap, overall, is substantially larger in manufacturing. Figure 4 plots the difference in average daily wages for men and women in manufacturing and service industries by state. In most states, men earn more on average than women in both manufacturing and service sectors. In 12 states, however, women earn more on average than men in the service industry, including in Delhi, West Bengal, and Punjab. In only two states – Delhi and Chandigarh – do women earn more on average than men in the manufacturing sector⁶. Yet this stands in stark contrast to Figure 2, showing that women are more likely to be employed in manufacturing than men. Despite the greater relative representation of women in manufacturing, men earn on average 100% more than women in this industry.

	Sector Employed (% non-agricultural workers)			Average Daily Wages (Rs.)		
	Male	Female	Difference	Male	Female	Difference
Manufacturing	22%	34%	-11%	279	138	141
Service	77%	60%	17%	338	323	15

Table 1: Non-agricultural workers employed in manufacturing and services

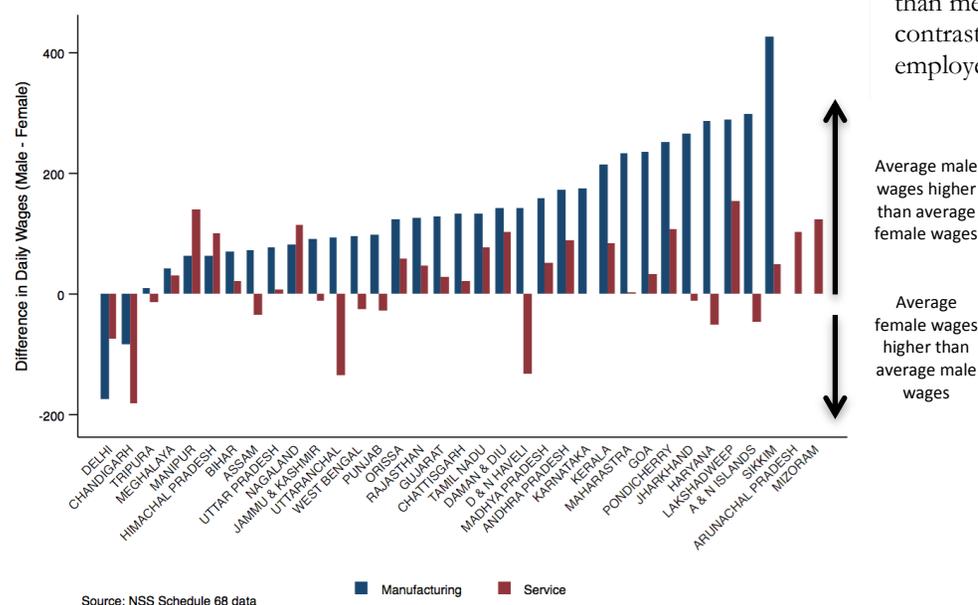


Figure 4: Gender Gap in Average Weekly Wages across Sectors

Using the Blinder-Oaxaca decomposition⁷ (see box on next page), we estimate the portion of the male-female wage gap that is due to differences in the qualifications of men and women and the portion that is unexplained by qualifications and can be attributed to wage discrimination⁸. Table 1 shows that the average gender wage gap in manufacturing is 141 Rs./day. Of this 141 Rs. difference, 42% (59 Rs.) was unexplained by the differing qualifications of men and women (Blinder-Oaxaca Decomposition), and potentially reflects significant wage discrimination in manufacturing.

Figure 5 uses Blinder-Oaxaca wage decomposition to estimate average daily gender wage differences attributed to wage discrimination by manufacturing industry. In industries with a positive value, men on average make more than women in the manufacturing sector due to factors unrelated to their qualifications. The stars at the bottom indicate the industries where the share of employees who were women grew from 2008 to 2012, i.e. industries which became more female-friendly. In a majority of industries, there is evidence of wage discrimination in favor of men. In 5 industries, however, men and women are either paid fairly based on their qualifications or women actually receive higher wages due to wage discrimination. Industries that hired a greater share of women in 2012 still evidenced gender discrimination in wages.

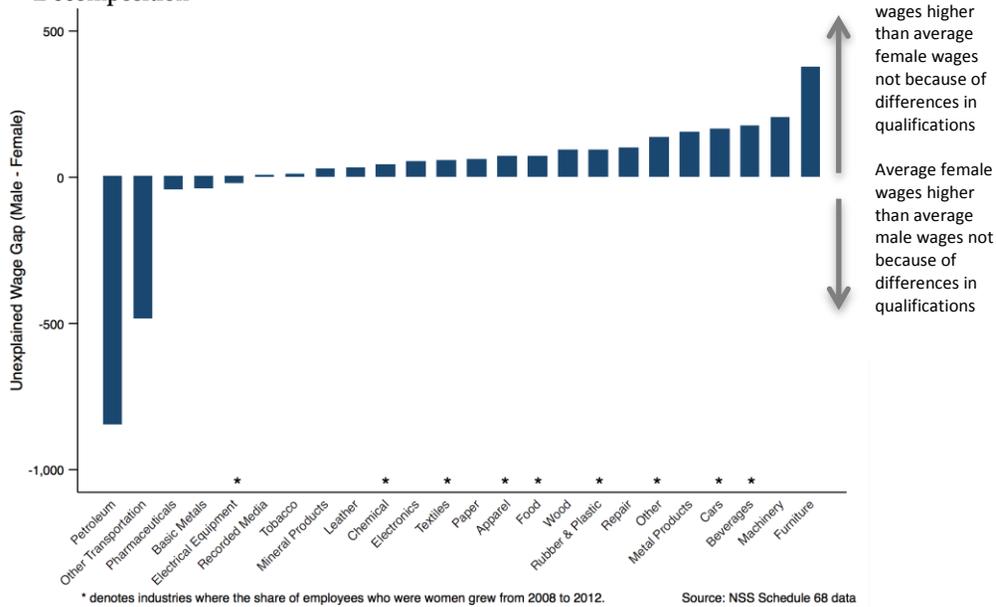
⁶ This negative manufacturing wage gap in Delhi is also supported by data in the Annual Survey of Industries.

⁷ Blinder, A. S. 1973. Wage discrimination: Reduced form and structural estimates. *Journal of Human Resources* 8: 436–455. Oaxaca, R. 1973. Male–female wage differentials in urban labor markets. *International Economic Review* 14: 693–709.

⁸ We model the component of wages due to qualifications with individual’s age, education, experience with vocational training, ST/SC/OBC status, urban/rural location, marital status, religion (Muslim or not), and occupation.



Figure 5: Unexplained Gender Wage Gap in Manufacturing from Blinder-Oaxaca Decomposition



Blinder-Oaxaca Decomposition

The Blinder-Oaxaca decomposition is a statistical technique that was originally used to decompose wage gaps into two components: the portion due to differences between the qualifications of the two groups in the population and the portion due to explicit discrimination. For example, when comparing men and women's wages, this decomposition is accomplished by estimating the relationship between a set of predictors expected to affect wages for men only and then using these estimated correlations are used to see what women's wages should be if they were treated as men. This allows for an estimation of the proportion of the wage gap that is unexplained by the qualifications of the individual.

A quick comparison to the information available about vocational trainees in the recent NSS data suggests most top skilling fields for women are primarily in services (computers, healthcare, and beautician training for women, see Figure 6 below), although one-quarter of female trainees received training to participate in textile employment, a regressive – but not overwhelmingly so – field in terms of the Oaxaca-Blinder decomposition.

Conclusion

With the advent of Make in India and rapid industrial growth expected, India has a unique chance to increase women's formal labor force participation through manufacturing and industrial employment. Our analysis clarifies four important points for policy:

1. Of those employed outside of agriculture, women are more likely than men to be employed in the manufacturing sector.
2. Given recent increases in women's representation in manufacturing, but not services, government-funded skilling programs focused on service sector employment may be less beneficial for women.
3. Yet women earn substantially less than men in manufacturing, and we estimate that up to 42% of this wage gap is due to explicit gender discrimination.
4. Within manufacturing, it is important to understand what drives wage discrimination, and to expand training in sectors that appear to be less affected by potential discriminatory pay regimes.

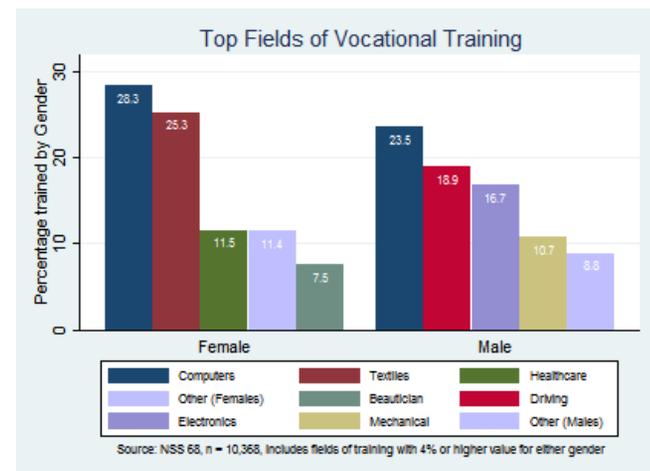


Figure 6: Top Training Fields by Gender

Appendix

Table 4 displays the share of female workers across detailed sector categories and the average salary for males and females in these sectors. While Table 1 showed that the gender wage differential in the service sector is only marginal, Table 4 elucidates that men make substantially more than women in service industries that employ the most women. For example, in education, a sector where 43% of workers are women, men earn on average 50% more than women.

Table 2: Gender Wage Gap in Average Daily Wages by Industry

	% of Workers in Sector that are Females	Average Daily Wages		How much more/less do men earn than women?	Sample Size	
		Male	Female		Male	Female
Agriculture						
Agriculture, forestry, and fishing	28%	158	104	53%	6208	3258
Mining and quarrying	14%	535	249	114%	686	60
Manufacturing						
Manufacturing	23%	282	141	100%	7667	1148
Services						
Education	42%	619	414	50%	5506	3086
Human health and social work activities	41%	586	366	60%	861	871
Other service activities	21%	193	100	94%	709	507
Wholesale and retail trade	10%	209	176	19%	3727	338
Transportation and storage	1%	321	410	-22%	4283	97
Accommodation and food service	14%	238	169	41%	1002	132
Information and communication	15%	686	700	-2%	856	164
Financial and insurance activities	15%	692	630	10%	1138	192
Professional, scientific, and technical activities	12%	615	561	10%	467	76
Administrative and support service activities	9%	357	360	-1%	745	114
Public administration and defense	12%	641	520	23%	5436	746
Electricity, gas, steam, and air conditioning supply	9%	639	583	10%	694	62
Water supply, sewerage, waste management	17%	405	190	113%	307	48
Construction	10%	203	150	36%	11227	1149
Other						
Activities of households as employers	65%	183	87	110%	518	896