

OCCUPATIONAL SEX SEGREGATION: AN INQUIRY INTO INDIAN JOB MARKET

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Occupational sex segregation is an important source of gender differences in labour market outcomes. In a patriarchal society men learned techniques of hierarchical organisation and control those have led to economic inequality in terms of opportunities, choices and accesses. Eighth All India School Educational Survey (8th AISES) reports huge differences in share of female teachers in primary schools across Indian states. While Tamil Nadu has 81 per cent, Kerala 77 per cent and Punjab 64 per cent female teachers; Orissa has 39 per cent, Rajasthan 31 per cent and West Bengal 30 per cent female teachers. This indicates an occupation-specific regional difference in women representation. This paper inquires the issue of occupational sex segregation in the Indian States and intends to find regional factors which may affect such segregation. The study finds that one-third of all occupations are 'female' in nature and hierarchically low-wage occupations are overpopulated by female workers.

INTRODUCTION

Over the past half century the study of gender has emerged as a major research area in economics and sociology.¹ Historically it has been seen that there prevails a gender division of labour in the world. The magnitude, determinants and consequences of gender segregation in occupational structure are of concern to researchers and policymakers. Occupational sex segregation is an important source of gender differences in labour market outcomes. Scholars regard segregation as pervasive and resistant to change (at least) in the short run. Thus the gender division of labour is persistent all over the world (Bielby and Baron, 1986).

“Occupational segregation by sex, that is, inequality in the distribution of male and female workers across occupational groups, exists in almost all countries of the world. Several reasons may be given for this phenomenon. But one of the most important reasons for this is unequal access to jobs. ... Inequality in the distribution of employees in occupations by sex is an important issue in labor market analysis.” (A generalized index of employment segregation, Chakravarty & Silber, 2007: 185,193)

Whereas the ‘supply-side’ explanations generally focus on the men and women workers’ occupational choices (Reskin, 1993: 248), the ‘demand-side’ aspects leading to occupational segregation has been identified by Blau and Jusenius (1976: 195) as they write ‘in many cases a concept of occupational assignment may be more reflective of reality than the accepted notion of occupational choice. The occupational distribution differences between men and women from certain entry-level positions and their associated promotion ladders and/or to promote and upgrade women more slowly than men’. The model of employer behaviour developed by Becker (1971, 2010) tries to establish that employers are prejudiced against certain groups of workers. This leads to a preference for discrimination by age, disability, gender or race (Anker, 1997). Thus according to Becker’s theory, employers behave rationally so that they can avoid disutility cost. In writings

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of neoclassical economists it has been found that occupational segregation by gender is an outcome of the limited access to labour market due to women's family obligations, especially childrearing (e.g. Mincer and Polachek, 1974; Polachek, 1981). Reskin argued that neoclassical economists identified this segregation by 'assuming' women's greater involvement in child rearing, but they did not explain it and she understands that, first – women's (expected) domestic roles creates a disincentive to human capital investments i.e. investments in education, training, and experience which in turn reduces their qualifications comparative to men's for a particular job (Blau et al., 2006; Tam 1997; Mincer 1962); and secondly – childrearing attitudes make them inclined toward occupations which do not penalise skill depreciation (that might occur in case of a leave from the duty), have access to make a re-entry, and all of the above let women conserve their energy and time for their domestic obligations (Reskin, 1993: 257).

Few research studies on gender segregation in Indian job market have been done. Anker (1998) measured segregation with the Duncan and Duncan's index of dissimilarity. Swaminathan and Majumdar (2006) have examined that there is a low level of gender segregation in urban Indian labour market. Chattopadhyay, Chakraborty & Anker (2013) have shown that due to changes in industrial structure the gender segregation in formal manufacturing sector has decreased during 1989-90 – 2000-01 and found that in majority of Indian states female workers are concentrated in just two industries, namely food and apparel. Mukherjee and Majumder (2011) explores that earning disparities are increasing since the last decade due to rising occupational disparity and wage differences, both at spatial and inter-personal levels. Uppal (2007) shows that female labour force participation has increased and gender segregation in unorganised manufacturing sector has declined during 1994-95 – 2000-01. But she also shows that there is a serious problem of over-represented share of women in unpaid and part time jobs in this sector, which causes 'feminisation of poverty'. Supporting Uppal's finding another study shows that majority of women workers still in jobs those are unpaid or ill-paid. This affects occupational segregation. Again, rural and urban areas of India register different segregation pattern and segregation in agriculture sector is less than that in non-agriculture (Chakraborty and Bharati, 2013: 27).

This paper examines the issue of occupational sex segregation in the Indian job market and tries to find regional factors which may affect such segregation. First, the study accounts for brief understanding of Indian job market in recent times in connection with gender inequality. Secondly, for measuring segregation by gender, a *good* index of segregation has been *chosen*. Third, a comparable regional profile of occupational segregation in Indian job market is developed. Finally, the issue of segregation has been analysed with region-/State-specific factors.

DATA SOURCES AND METHODOLOGIES INVOLVED

The National Sample Survey Office (NSSO) reports on 'Employment and Unemployment Situation in India' – the 64th round (2007-2008), the 66th round (2009- 2010), and the 68th round (2011- 2012) and the unit-level data of the 68th round are used. Except the NSSO data, we also have used Census of India 2011 information from its Primary Census Abstract; and Central Statistics Office's (CSO) information, assembled by the Directorate of Economics & Statistics of all Indian States for this study.

The NSSO data is grouped according to the usual activity status (primary *plus* subsidiary activity status) of the workers with reference to National Classification of Occupations (NCO). The

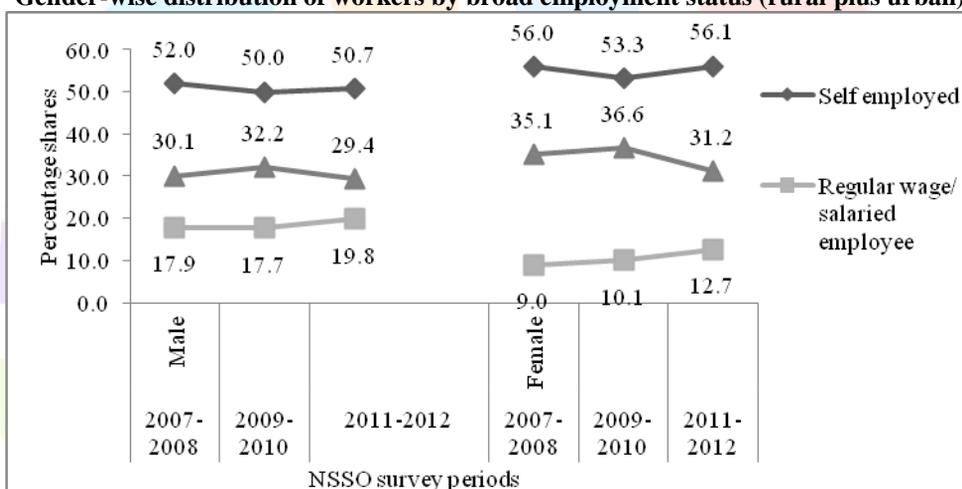
analysis is carried out with the measurement of segregation, after exercising several indices we choose an index of segregation.² The study investigates the probable factors that would explain the occupational segregation by gender in Indian labour market. Three different estimation models for rural, urban and rural plus urban (all India) have been incorporated and regression analysis is done to understand gender segregation in Indian job market in recent times (2011-2012).

GENDER SCENARIO IN INDIAN JOB MARKET

Though a time period of five years is inadequate to see any trend, the last three rounds of NSSO surveys on employment and unemployment reveal few crucial things. First, proportional shares in regular salaried employment for male and female workforce have risen along with self-employment and those in casual labour force have fallen during this period (see figure 1).

Figure - 1

Gender-wise distribution of workers by broad employment status (rural plus urban)



Note: Values are in percentages and rounded up to one decimal
 Source: NSSO 64th, 66th and 68th round published reports

Secondly, proportional share in occupational divisions such as legislators, senior officials, managers; and craft and related trade works has increased over last five years for both men and women in rural as well as in urban areas (see Table 1).

Table 1

Proportional share of workers (in those occupational divisions increased over time)						
Year →	2007-2008		2009-2010		2011-2012	
Occupational divisions ↓	Male	Female	Male	Female	Male	Female
Rural India						
Legislators, senior officials and managers	2.2	1.0	3.4	1.7	4.2	2.0
Craft and related trade workers	8.4	5.2	9.6	6.5	11.0	10.0
Urban India						
Legislators, senior officials and managers	10.9	5.6	14.1	7.3	17.0	10.8
Craft and related trade workers	17.9	17.8	19.1	19.0	19.0	19.9

Note: Values are in percentages and rounded up to one decimal
 Source: NSSO 64th, 66th and 68th round published reports

Table 2

Gender-wise distribution by principal activity status (rural plus urban)

Principal activity status	Male	Female
Self-employed Household Enterprise: Own Account Worker	38.1	17.6
Household Enterprise: Employer	1.8	0.5
Helper in Household enterprise: Unpaid Family Worker	10.5	31.8
Regular Salaried/Wage employee	20.0	16.7
Casual Wage Labour: Public works	0.8	1.3
Casual Wage Labour: in other types of works	28.8	32.2

Note: Values are in percentages and rounded up to one decimal

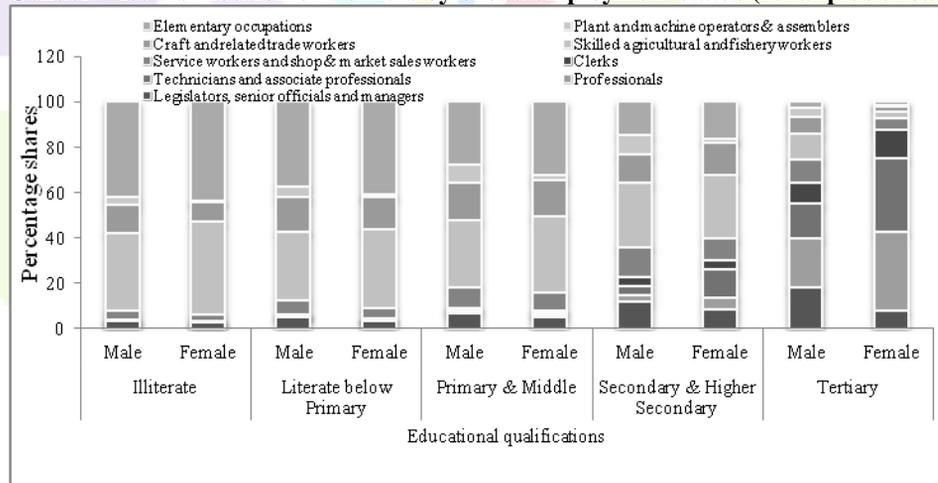
Source: Computed from 68th round unit record NSSO data

Around 30 per cent of each male and female workforce is engaged in non-public casual wage labour, as the 68th round data suggests. In recent times it is seen that the proportional share of women in unpaid family labour is three times higher than that of men labourers (see Table 2).

Human capital has been always a corridor to get employed in different occupations. It is important to see that whether similar proportional shares of male and female workers with the same level of educational qualification are engaged in the same occupational divisions.

Figure - 2

Gender-wise distribution of workers by broad employment status (rural plus urban)



Source: Computed from 68th round unit record NSSO data

Figure 2 suggests that illiterates, literates below primary, and literates of primary & middle-regardless of gender are mostly engaged in skilled agricultural and fishery works, and elementary occupations. But with the secondary and higher secondary qualification, female workers' share in professionals, technicians and associate professionals, and craft and trades works are much higher than that of male workers. On the other side, in occupational divisions like legislators, senior officials and managers; service, shop, market sales works; and plant & machine operators and assembling, male workers have a larger share than female workers have. With tertiary level of educational qualification, except three occupational divisions, male workers are engaged with greater proportional share than female workers. These three divisions where female with tertiary

level education have greater share are: professionals, technicians and associate professionals, and clerks.

The study finds that the highest earning occupational division is *legislators, senior officials and managers*; while the least earning class is *skilled agricultural and fishery workers*. This is true for both male and female. Specifically the highest monthly average earnings for male workers are Rs. 30,388 and Rs. 26,355 for female. On the other hand, the least earning male workers get Rs. 4,070 per month and female workers earn Rs. 2,101 on average. This implies that there is an earning gap between male and female workers, be it the highest paid occupation, or the least earning one.

Table 3
Gender gaps in earnings of workers by Oaxaca decomposition

Types of Gender Gap in Earnings	Between Occupation G-difference	Within Occupation G-difference	Gender Gap (G) in Earnings
Raw Gender Gap	1328.314	2097.499	3425.813
Relative Gender Gap	0.178019	0.281104	0.459123
Percentage of Total Gap	38.77	61.23	100

Source: Computed from 68th round unit record NSSO data

Table 3 shows that the within-occupation gender gap accounts for more than 3/5th of the total gender gap. The analysis of occupational subdivisions suggests that *subsistence agricultural and fishery workers* in rural India earn the least, monthly Rs. 2,756 on average; while in urban areas *agricultural, fishery and related workers* earn an average of Rs. 3,522 per month. Again, the *physical, mathematical and engineering science professionals* in rural India have the highest average monthly earning of Rs. 24,721. On the contrary, *general managers* in urban India are the highest wage earners having an average monthly salary of Rs. 55,377. It is found that be it rural or urban, female workers are more engaged in low-profile (in terms of wage hierarchic) occupations. Thus, the study suggests about an uneven distribution across occupations, by gender.

MEASURING OCCUPATIONAL SEX SEGREGATION IN INDIAN JOB MARKET

The literature on occupational segregation suggests that an empirically implementable index is an important tool to understand the nature and extent of segregation of men and women in different types of occupations. Segregation is usually measured by taking into account the deviation of 'actual' distribution of two types (referring to gender) in groups (occupational groups) from the 'expected' distribution referring to perfect integration. Integration is nothing but equality in the occupational distribution across different types (Hutchens, 2004). Several numerical indices have been suggested in the literature after Duncan and Duncan's (1955) seminal contribution in this area of research and a number of desirable properties for an index of occupational segregation are there, as proposed by James and Taeuber (1985), Siltanen et al. (1993), Chakravarty and Silber (1994), Kakwani (1994), Hutchens (1991, 2001) and Mora and Ruiz Castillo (2005): size invariance, range between '0' and '1', symmetry in groups and types, axiom of transfers, increasing returns to movement between groups, organisational equivalence; and additive decomposability. All additive decomposable measures are aggregative, but not all aggregative measures are additively decomposable (Hutchens, 1991). Hutchens proposed a unique measure of segregation introducing these two related properties. Specifically he used the concepts of aggregation and additive decomposability as presented in Shorrocks'(1980, 1984) research on

income inequality. Hutchens (2004) applies these concepts to develop a measure of segregation. Hutchens' square root index (H) can be introduced as

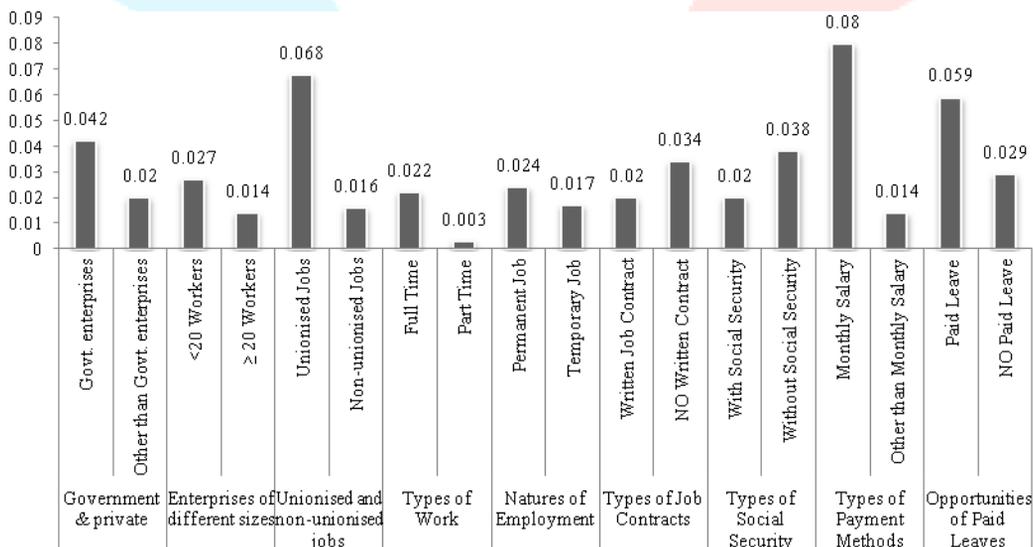
$$H_{c(=0.5)} = 1 - \sum_{j=1}^n \sqrt{\left(\frac{M_j}{M}\right)\left(\frac{F_j}{F}\right)},$$

which is a generalised entropy index with the value of 'c' equal to 0.5 which ensures symmetry in types.³ Hutchens' square root index happens to be the one and only index which satisfies all the desirable properties for a 'good' segregation index (Hutchens, 2004) and the study uses H-index for the rest of analysis.

When nine occupational divisions are taken into account, the segregation index for all India is found to be 0.020 while disaggregation of occupational categories to twenty seven occupational subdivisions leads to an increment in segregation level to 0.061.

Figure 3

H-index variation with different types of enterprises and job characteristics



Source: Computed from 68th round unit record NSSO data

It is found that the urban sector (0.103) registers higher extent of occupational sex segregation than in the rural sector (0.045). The study tries to see whether sex segregation levels differ with types of enterprises and job characteristics (see figure 3). It is seen that the occupational sex segregation for the government enterprises is much higher (0.042) compared to that for the other than government enterprises (0.020). The gender segregation in smaller-size enterprises shows higher extent of segregation than larger-size ones. There is a hypothesis that institutional factors such as labour unions and paid work are 'male' in nature while 'female' or 'feminine' role is mothering. Enterprises with labour unions show greater level of gender segregation. Using the idea of segregation table following Blackburn (Blackburn et al 1995) we found that there are ten 'female occupations' out of twenty seven occupational subdivisions in Indian job market viz. *Life Science and Health Professionals* (NCO-22), *Teaching Professionals* (NCO-23), *Life Science and*

*Health Associate Professionals (NCO-32), Teaching Associate Professionals (NCO-33), Personal and Protective Service Workers (NCO-51), Market Oriented Skilled Agricultural and Fishery Workers (NCO-61), Subsistence Agricultural and Fishery Workers (NCO-62), Other Craft and Related Trades Workers (NCO-74), Sales and Services Elementary Occupations Related (NCO-91), and Agricultural, Fishery and Labourers (NCO-92).*⁴ For rural India there are eight 'female occupations' while the urban areas altogether have thirteen such occupational subdivisions.

Table 4
Female and Male occupations

Types of Occupations	Rural plus urban		Rural		Urban	
	Women	Men	Women	Men	Women	Men
Female occupations	81	55	85	65	67	32
Male occupations	19	45	15	35	33	68

Note: All the figures indicate percentages; rows of each column add up to hundred

Source: NSSO unit-level data for 68th round, computed

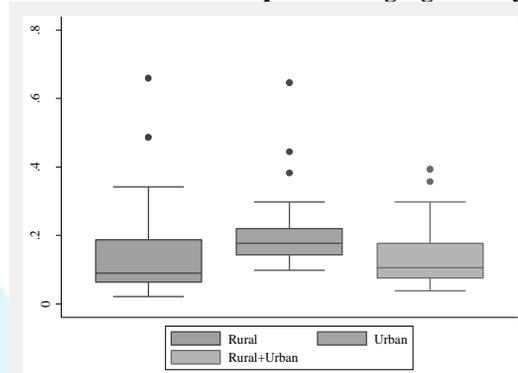
22 per cent of labour force is female in Indian labour market. The share(s) of female labour force are 24 and 18 per cent for rural and urban areas respectively. It is interesting to note that 55 per cent of male workers are engaged in 'female occupations'. Further, rural areas show to have 65 per cent of men to be engaged in 'female occupations', whereas the urban areas 68 per cent men in 'male occupations' (see table 4).

OCCUPATIONAL SEX SEGREGATION IN INDIAN STATES

The study by Anker (1998) has shown that the highest level of segregation is there in the Middle East and North Africa. The OECD countries have an average level of segregation, whereas Asia Pacific countries have the lowest gender segregation. In another work, Blackburn *et. al.* (2000) tried to capture the international gender segregation in occupations with data for 35 countries. This study did not include India, but it was found that in developed countries like Sweden, USA, Canada etc. the segregation by gender is much higher than Asian countries such as China, Rep. of Korea. In fact, the study shows that among the 35 countries China has the lowest gender segregation while Sweden having the highest of it. In this section we shall look at the matter of occupational sex segregation among Indian States with a cross-States analysis. First, a comparative profile of segregation index for all Indian States is developed. Secondly, the study tries to understand different segregation-related issues. And finally, we see how gender segregation is dependent on region-/State-specific factors.

Indian States have a wide range of segregation differences, both in rural and urban areas. Chattisgarh is found to have the minimum gender segregation (0.038) while Daman & Diu has the maximum segregation (0.393). This range broadens when we measure the segregation for rural and urban distinctly. In case of rural India, Chattisgarh (0.021) still holds its segregation at the lowest level while urban areas of Tamil Nadu (0.098) are believed to be the lowest gender segregated work opportunities. On the other hand, Chandigarh (0.659) and Dadra & Nagar Haveli (0.646) are the most gender segregated states, for rural and urban sector respectively.

Figure 4
Box-plot distributions of occupational segregation by gender



Source: NSSO unit-level data for 68th round, computed

Figure 4 and table 5 together provide information about four aspects of the segregation distributions of rural, urban and rural *plus* urban Indian States: centre, spread, symmetry and outliers.

Table 5
Summary statistics of distributions

Distributions	Rural	Urban	Rural plus urban
Maximum	0.659	0.646	0.393
First Quartile (Q ₁)	0.064	0.143	0.076
Median	0.090	0.177	0.106
Third Quartile (Q ₃)	0.187	0.220	0.177
IQR	0.123	0.077	0.101
Mean	0.153	0.205	0.136
Minimum	0.021	0.098	0.038
Standard Deviation	0.145	0.106	0.086
Range	0.638	0.548	0.355

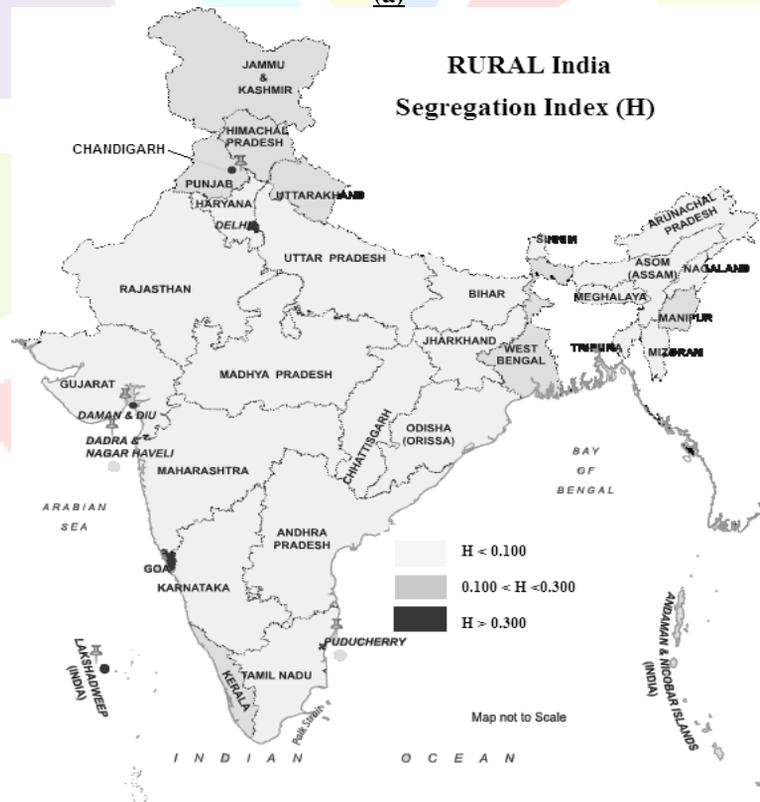
Source: Computed from 68th round unit record NSSO data

The spread can be judged by the interquartile ranges, or by the heights of boxes in the figure 4. The spread or variation is greater in rural (0.123) than urban (0.077) areas. In other words, urban areas of Indian States are more alike and rural areas are less alike, in terms of gender segregation. Again, the standard deviations, which measure variation based on each and every case in the distribution, also tell the same story: rural areas are more variable (0.145) for segregation by gender than the urban. The urban distribution of segregation is more symmetrical than that of rural. The mean-median discrepancy is higher in rural areas. Due to NCT Delhi and UTs, few high outliers are seen to be present in the distributions. In particular, rural Chandigarh is the severe outlier and two mild outliers: Delhi, Daman & Diu are there in rural areas. Again mild outliers are seen in urban areas for two UTs: Lakshadweep and Daman & Diu; and one severe in urban is Dadra & Nagar Haveli.

Based on our findings it is evident that India as a country has a low or medium segregation on a scale from ‘0’ to ‘1’ for the segregation index (H). It is important to categorise the numerical index based on their values. Hence we have categorised these in to three cases: (a) States where segregation index i.e. H is less than 0.1, (b) States where index value is greater than 0.1 but less than 0.3 and (c) States where the Hutchen’s square root index is greater than 0.3.

Figure 5(a) shows that twenty out 35 states have H-value less than 0.1 while 10 States have $0.1 < H < 0.3$ and remaining five have level of segregation greater than 0.3 in their rural areas. Again figure 5(b) indicates that only one state i.e. Tamil Nadu satisfies $H < 0.1$. Segregation levels for 31 States are in between 0.1 and 0.3, and three UTs are there with segregation index valued more than 0.3. Panel (c) of the figure 5 represents the segregation level for all India taking rural and urban sectors together. It is found that fifteen states have first category of segregation level i.e. $H < 0.1$, eighteen having the second category ($0.1 < H < 0.3$) and two UTs are with gender segregation values more than 0.3. Figure 5 clearly shows that most of the States have gender segregation index less than 0.1. Only a few States like West Bengal, Rajasthan, Jharkhand, Punjab, Haryana, Uttarakhand etc. have greater segregation than others.

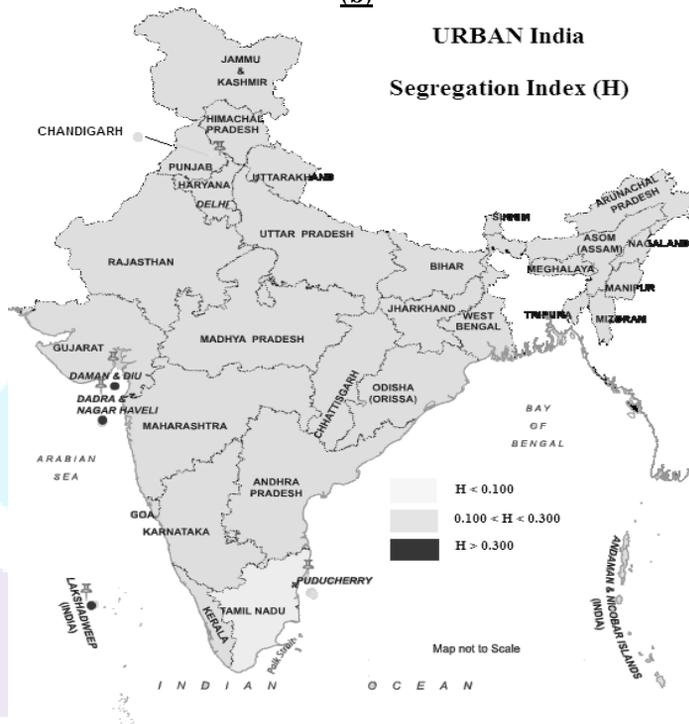
Figure 5
Category-wise gender segregation in Indian States
(a)



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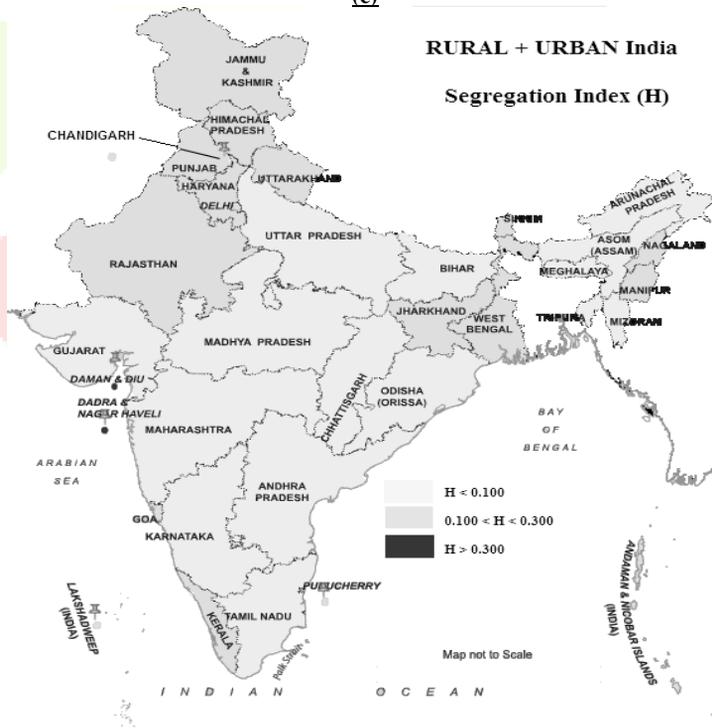
(b)

URBAN India
Segregation Index (H)



(c)

RURAL + URBAN India
Segregation Index (H)



Source: Author's computation

REGIONAL DIMENSIONS OF THE IMPLICATIONS OF SEGREGATION

This paper intends to understand the relationship(s) between the gender segregation and few region-/State-specific factors such as State's wealth, gender discrimination against female, gender difference in education, contribution of female labour force, and gender discrimination in wage/salary earnings. Relevant corresponding indicators for these factors are: per capita Net State Domestic Product (NSDP), child-sex ratio, education disparity, female Labour Force Participation Rate (LFPR), and wage gap. Different combination(s) of each of these indicators and segregation index have been analysed for 28 States excluding the NCT Delhi and the UTs. Our study deals with five bivariate analyses and these yield a cross table (see table 6) for each one. The segregation index (H) is measured and five specific indicators are categorised into high and low according to their mean values.

Table 6
Number of States categorised by level of gender segregation along with indicators

Level of indicators	Level of gender segregation*		High	Low
	High	Low		
Per capita NSDP	High	7	5	
	Low	4	12	
Child sex ratio	High	6	12	
	Low	5	5	
Female LFPR	High	4	9	
	Low	7	8	
Educational attainment disparity	High	3	13	
	Low	8	4	
Rural wage gap	High	6	10	
	Low	2	10	
Urban wage gap	High	9	9	
	Low	3	7	

Note:* For rural/urban wage gap rural/urban gender segregation index have been considered while for other indicators, all India segregation index is taken.

Source: Computed from 68th round unit record NSSO data, Census data 2011 and CSO 2010-11

This section deals with few factors which may play roles in gender segregation in Indian job market. The analysis done here is a cross-state analysis for 28 states of India. For our analysis we have chosen the segregation index to be the dependent variable and five independent variables: child sex ratio: as lower child-sex ratio indicates a clear gender discrimination; educational disparity (in years): because it is believed that educational qualification is one of the entry-level barriers in job market and women invest less in education as compared to men, workers' union membership share (in percentage): as earlier findings suggests that enterprises with labour unions show greater level of gender segregation; female LFPR: because it is important to see engagement of females except childrearing and whether their contribution has any effect on gender segregation; and average MPC_{EMRP} (as a proxy for Per Capita NSDP): because our previous analysis indicates that with rise in per capita NSDP, state-level gender segregation also rises.

Before we proceed to our analysis, let us take note of the descriptive statistics (see table 7) for the variables of regression analysis. It is to be noted here that the H-index, the values of education disparity, workers' union membership shares and female LFPR are computed from our analysis of the 68th round unit record NSSO data on employment and unemployment; while the State-wise average $MPCE_{MMRP}$ has been taken from the 68th round key indicators of household consumer expenditure published by NSSO.⁵ Hence the values of these four variables are for the year 2011-2012. Child-sex ratio is considered for the year 2011 from census of India data.

Table 7
Descriptive statistics

Variables (No. of Observations = 28)	Rural	Urban	Rural <i>plus</i> urban
Segregation Index (H)	0.099 (.06)	0.172 (.05)	0.105 (.05)
Child-Sex Ratio	930.68 (38.6)	917.10 (41.3)	928.03 (38.7)
Educational Disparity (in Years)	2.15 (.82)	1.16 (1.59)	2.05 (1.11)
Workers' Union Membership Share (in percentage)	62.43 (19.4)	76.67 (12.4)	68.85 (14.9)
Female LFPR	295.93 (110.7)	170.14 (60.1)	261.07 (96.1)
Average MPCE	1614.43 (438.1)	2503.50 (545.8)	1858.86 (487.6)

Note: The figures within parentheses are standard deviations (SDs)

Source: NSSO unit-level data for 68th round, NSSO published report for household consumer expenditure in India (68th round), CSO data 2010-2011, Census data 2011, computed

We use three different estimation models for rural, urban and rural *plus* urban (all India); and estimate the effects of the explanatory variables with regression technique. For *rural India*, the estimation model we choose is as follows:⁶

$$\log(H) = \alpha + \beta_1 * (\text{Child-Sex Ratio})^3 + \beta_2 * (\text{Educational Disparity}) + \beta_3 * (\text{Workers' Union Membership Share}) + \beta_4 * (\text{Female LFPR}) + \beta_5 * (\text{Average MPCE})^{-1} + \mu$$

Again for urban India, the estimation model is:

$$\log(H) = \alpha + \beta_1 * (\text{Child-Sex Ratio})^3 + \beta_2 * (\text{Educational Disparity}) + \beta_3 * (\text{Workers' Union Membership Share})^2 + \beta_4 * (\text{Female LFPR}) + \beta_5 * \log(\text{Average MPCE}) + \mu$$

To estimate the effects of the chose explanatory variables on gender segregation index for all India (rural *plus* urban) we use:

$$\log(H) = \alpha + \beta_1 * (\sqrt{\text{Child - Sex Ratio}}) + \beta_2 * (\text{Educational Disparity}) + \beta_3 * (\text{Workers' Union Membership Share}) + \beta_4 * (\text{Female LFPR}) + \beta_5 * \log(\text{Average MPCE}) + \mu; \quad \text{with standard notations.}$$

The result of multiple regression analyses carried out for these are presented in table 8.

Table 8
Gender segregation estimation

Rural		Urban		Rural plus urban	
Explanatory Variables	Coefficients	Explanatory Variables	Coefficients	Explanatory Variables	Coefficients
(Child-Sex Ratio) ³	-1.91E-09	(Child-Sex Ratio) ³	1.966E-11	$\sqrt{\text{Child - sex Ratio}}$	-0.267**
Educational Disparity	-0.0764	Educational Disparity	-0.0757**	Educational Disparity	-0.069
Workers' Union Membership	0.0113**	(Workers' Union Membership) ²	0.0000603**	Workers' Union Membership	0.00997*
Female LFPR	-0.00194**	Female LFPR	-0.000779	Female LFPR	-0.000265
(Average MPCE) ⁻¹	-1,547*	log (Average MPCE)	-0.249	log (Average MPCE)	0.629*
Constant	0.104	Constant	-0.0108	Constant	0.6
R ²	0.51	R ²	0.32	R ²	0.49
Adjusted R ²	0.41	Adjusted R ²	0.16	Adjusted R ²	0.38

Note: *** p < 0.01: *** signifies at 1 per cent level of significance, ** p < 0.05: ** signifies at 5 per cent level of significance, * p < 0.1: * signifies at 10 per cent level of significance. Multicollinearity and heteroscedasticity are absent.

Source: Estimated from NSSO unit-level data for 68th round, NSSO published report for household consumer expenditure in India (68th round), CSO data 2010-2011, and Census data 2011.

The negative sign of the coefficient of child-sex ratio implies that if child-sex ratio increases, log (segregation) and hence segregation index is expected to decrease. Table 8 suggests that segregation index decreases by 7.64 per cent if one year of education disparity rises in favour of male workers while all other variables in the model are held constant. If the percentage share of workers' union membership increases by one unit in rural based enterprises, it will make the segregation index 1.13 per cent higher, *ceteris paribus*. Similarly it can be said that for one unit increase in female LFPR, segregation index (H) would decrease by 0.19 per cent, keeping other variables constant. Again with rise of average rural MPCE, the rural segregation by gender will increase as the inverse-transformed average MPCE shows the negative sign. We can explain 51 per cent of the difference in gender segregation in rural India if we consider these variables. Now it is argued before that child-sex ratio is a clear indication of gender discrimination at societal and household level. The multiple regression analysis also confirms this. Earlier we found that with

rise in educational disparity, workers' union membership and per capita NSDP; the value of segregation index increases. For rural labour market it has been supported by the estimation. In case of urban labour market also, the positive sign for transformed variable such as child-sex ratio indicates the inverse relationship between child-sex ratio and segregation index. On the other hand, increase in one unit of educational disparity implies a 7.57 per cent decrease in the segregation index value, keeping other variables constant. Like rural labour market, the urban segregation also decreases by 0.07 per cent with an increase in one unit of female LFPR. The coefficients for log-transformed urban average MPCE implies that other variables held constant, if it rises by 1 unit, then urban segregation is to be decreased by 0.24 per cent. We can explain only 32 per cent of the differences in gender segregation in urban India if we consider these indicators. From table 7 it is seen that due to one year rise in educational disparity in favour of male workers, the segregation index falls by 6.9 per cent, *ceteris paribus*. For all India, if the workers' union membership share in enterprises rises by 1 per cent, then it leads to rise of segregation index by almost 1 per cent (0.99 %) while other variables remain constant. A unit increase in female LFPR implies a decrease in segregation index by 0.02 per cent, other variables are held constant. If average MPCE increase by one rupee, this will cause 0.62 per cent increase in the value of gender segregation index.

CONCLUDING REMARKS

The present study, mainly based on data from NSSO, seeks to analyse the occupational structure and the nature of segregation in Indian job market. The study also tries to capture the situation of Indian labour market during the last five years. The eleventh five year plan (2007-2012) aims to reduce the inequality by focusing on rural-urban difference and gender differences. A long term equitable development is to be achieved but the gender gaps in wage earnings, as the latest NSSO data reveals, is quite biased against women workers. There prevails a wage difference between men and women workers. Having the idea of segregation measurement, we investigate the regional segregation in workplaces separately for rural and urban. Maharashtra is found to be the only state which maintains high per capita NSDP and low level of gender segregation. Gujarat, Maharashtra, Haryana, and Rajasthan- these four states maintaining poor child sex ratio, still have lower level of segregation than other states such as Punjab, Kerala, Uttarakhand etc. States like Uttarakhand, Punjab, Goa, Jammu & Kashmir, Manipur and Kerala are seen to have high segregation with low female LFPR. Our study concludes with the regression analysis which tries to capture the probable factors behind the gender segregation in India. Urban labour market is found to be more gender segregated and the wage difference is one of the outcomes of such occupational segregation. It has been observed that the proportional share of women in unpaid family labour is three times higher than that of men labourers in recent time. Still now, women are considered as *automatic agent* to bear unpaid domestic duties. With less education, less training they end up with the informal activities which are vulnerable and low-paid. Government needs to consider training inclusive educational policies at the very first, promoting gender equality. It has been seen that post secondary education plays an important role in labour market entry. Increased human capital translates into not only growth, but also accounts for breaking gender stereotypes. Within family gender disparity is a major concern, for which strong anti-discriminatory legislation is much needed. Public enterprises often face the negative impact of family-friendly workplace, which is to be reconsidered. On the other hand, private and/or informal labour markets usually

have a notable tendency to hire workers at below minimum wage, which is to be taken care of with regular monitor and update of minimum wage. Also, policies meant for increasing women labour demand have to be taken by ease of barriers to entry, to some extent. Simply the segregation cannot be blamed fully as gender discrimination starts at the time of birth. Improving child-sex ratio should be each State's agenda. Nonetheless, the role of workers' unions is pivotal as bargaining power and gender disparity in labour markets depend largely on its functioning.

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Notes

- ¹ Scholars use the term *sex* to refer to biological distinction between female and male, whereas use *gender* to refer to social construction of differences between women and men. The distinction between 'sex' and 'gender', originally proposed by John Money (1965) has become important in sociological literature after Ann Oakley's (1972) first formulation of the feminist concept of 'gender'. However, 'sex' is used to classify and treat social issues based on an individual's "sex category" (Reskin, 1988) and we shall use the term 'gender' and 'sex' interchangeably in the paper.
- ² The data analysis is done using STATA 11.1
- ³ The distribution of men among different occupations is denoted by a vector: $\vec{M} = [(M_1/M), \dots, (M_j/M), \dots, (M_n/M)]$; where M_j is the number of male workers in occupation 'j', M the number of men in the labour force, and n the total number of occupations. Analogously, the distribution of women among different occupations be denoted by another vector: $\vec{F} = [(F_1/F), \dots, (F_j/F), \dots, (F_n/F)]$; where F_j is the number of female workers in occupation 'j', and F the number of females in the labour force. And let σ be any segregation index such that $\sigma = \sigma(\vec{F}, \vec{M}, F, M)$.
- ⁴ A 'female occupation' is that one which registers a higher proportion of women employees than the proportion in labour force. Similarly, a 'male occupation' is that which has a higher proportion of men employees than that in labour force.
- ⁵ NSSO publishes the figures of average MPCE separately for rural and urban sectors. Rural *plus* urban average MPCE figures are found by given corresponding weight in each sector of the estimated population for Indian States.
- ⁶ 'Choice' here refers to choosing the transformed variables to fulfill the normality assumption for residuals (predicted minus observed values) in multiple regressions.

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