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FEMALE WORK PARTICIPATION AND GENDER DIFFERENTIAL IN EARNING IN WEST BENGAL, INDIA

INDRANI CHAKRABORTY[1]
ACHIN CHAKRABORTY

Abstract

Female work participation in West Bengal is one of the lowest in India, and varies inversely with female literacy and percentage of Muslim population in a block. However, there are areas with high percentage of Muslims where female work participation is high due to predominance of home-based work. Surveys were conducted in two such areas and a probit model was applied to explain work participation. The earning functions estimated for men and women show earning differential to be low, and decomposition shows moderate 'discrimination'. Thus, even in areas where women are over-represented in home-based work, men do not seem to enjoy better work opportunities

Keywords: Female work participation, earning differential, gender, India

JEL Classifications: C10, J21, J31, J71

1. Introduction

Women's participation in the labor force has long been central to research on gender inequalities. Much of this research has sought to find out how and to what extent labor force participation contributes to women's empowerment and well-being and reduction of gender inequalities. Even in the best of circumstances, outside work usually implies a dual burden for wives and mothers, which forces them to balance the responsibilities as homemaker and outside work. Work participation under severe economic stress may lead to girls being withdrawn from school and put to such work as domestic chores and sibling care; the burden of work imposed on girls early in their life may restrict their schooling, which widens the gender gap in basic education and further widens the gap in labor market opportunities. None of these linkages is inevitable, though. Nevertheless, the pattern of female work participation across India provides a cautionary message and reminds us of the multidimensionality of gender stratification.

[1] Institute of Development Studies Kolkata, 1, Reformatory Street, Fifth Floor, Calcutta University Alipore Campus, Kolkata 700027, E-mail: indrani.c61@gmail.com,
Ph: (33) 2448-8178, Fax: +91 (33) 2448-1364

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In this paper we make an attempt to understand participation of women in paid work and the related aspect of disparity in earnings of men and women. Labor force participation by women is generally low in India. In this paper we focus on West Bengal, where the female labor force participation rate is one of the lowest. In rural West Bengal, women who are either working or actively seeking work constitute only 26.8 per cent of the women of age 15 years and above. In urban areas they are even fewer – only 21.0 per cent.

The Census of India classifies workers into a few broad categories. While 'cultivator' refers to those who work either on their own land or on the land leased in on rent, an 'agricultural worker' is a wage worker (most likely landless) working under an employer. For West Bengal, if we combine the fact that almost 10 lakh additional women joined the rank of agricultural workers over a period of ten years between 1991 and 2001, with the fact that the real wage for agricultural work has remained stagnant for quite some time, we can reasonably argue that a large number of women who are new entrants to the work force are not doing it out of choice. They are rather compelled by economic circumstances to accept the drudgery of working in the field. The other remarkable feature of the change is the growth in 'household industry' workers. The number of female workers in household industries in West Bengal increased three-fold from 4.1 lakh in 1991 to 12.5 lakh in 2001. Given the generally weak employment situation many women took up low-paying household industry work as a survival strategy.

The rest of the paper is organized as follows. In Section 2 we analyze the block level data on work participation by women and identify the correlates such as literacy, the percentage of Muslim population, and so on, the data on which are available from the Census. The analysis of the secondary data motivated us to focus on certain aspects of female work participation for which we conducted field surveys in two districts of West Bengal. The field survey objectives, survey areas chosen and sample characteristics are discussed in Section 3. The econometric methods that we applied are discussed in Section 4. In Section 5 we discuss the results from the estimation of a Probit model for work participation by women. In Section 6 the findings on the earning differentials between women and men are reported and interpreted. The earning differentials were then decomposed into the part that could be attributed to individual 'characteristics' and the one that could be attributed to 'pure discrimination', which are discussed in Section 7. In Section 8 we conclude.

2. Determinants of work participation from block level Census data

Given the limited availability of data, we could hypothesize that female work participation would depend on education, job market opportunities, economic condition of the household, among other things. We could also answer the question: does female work participation vary across religious groups? We took the data – all at the level of *Development Blocks* – on female work participation, female literacy, percentage of men engaged in either main or marginal work (as a proxy for general opportunity in the job market), percentage of households who possess at least one of the assets like bicycle, TV, telephone, etc., and percentage of population who are Muslim. To explain female work participation, we take as the dependant variable the percentage of women in a block who are reported to be working either as 'main' or as 'marginal' worker. For education variable we have taken the percentage of women in a block who are literate. Low work participation by women may be due to social norms and traditions or to the generally limited job opportunities for both men and women. To capture the effect of general lack of opportunity, we

have taken the percentage of men in a block who are working. Since the Census does not collect information on household/individual income, we consider possession of certain durable goods/assets as a proxy for the economic status of the household. Our focus on the percentage of Muslims in the block's population is justified by the fact that this particular community is believed to suffer certain disadvantages in the labor market, and with the limited set of opportunities they try to circumvent those disadvantages.

There are 341 Blocks in West Bengal. We ran an OLS regression on the Census 2001 data and the following estimated coefficients were obtained. The model fits well with the data, as it is evident from the R-bar square value (0.47).

$$\text{Femw} = 13.31 - 0.6\ \text{femlit} + 0.005\ \text{asset} - 0.23\ \text{muslim} + 0.85\ \text{malew} \qquad R^2 = 0.47$$

(1.72)*** (-13.41)* (0.09) (- 9.99)* (5.99)*

It turns out that all the variables except asset ownership have significant effect on female work participation. Females tend to have lower work participation in blocks where men too have lower participation. Blocks with low female literacy have high work participation, and those with high concentration of Muslim population tend to show relatively lower work participation by women.

The commonplace view is that for traditions and societal norms Muslim women tend to participate less in work that requires them to go outside their home. Alternatively, an equally reasonable argument could be that the areas with high concentration of Muslims are also the areas with fewer job opportunities. However, the relative importance of the two hypotheses seems to vary across space in West Bengal. The partial regression plot not only reveals the strength of the general correlation between female work participation and concentration of Muslim population, more importantly it also throws up a number of outliers. In these blocks female work participation rates are very high despite high percentages of Muslim population. A good number of such blocks are in Murshidabad district where household-based industries, such as beedi-rolling and embroidery work are predominant.

The analysis of the secondary data thus provides the broad contours of the issues which throw up further questions that can only be answered through a detailed inquiry into the variety of processes underlying the outcome that we have briefly indicated above. Motivated by this, we conducted detailed sample surveys in two districts of West Bengal taking two blocks from each district, which have high concentration of Muslims and predominantly based on household-based industries.

3. Field Survey Objectives, Survey Areas and Sample Characteristics

We have just noted that there are a few blocks with very high percentage of Muslim population where female work participation is rather high. These are the blocks where women are engaged in home-based work in large numbers. We conducted surveys of households in one such block – Samserganj in the district of Murshidabad. We took from the same district another block, viz. Murshidabad-Jiaganj, which showed lower female work participation with high concentration of Muslims. In order to bring in some diversity in terms of different work participation rates and varying concentration of Muslims we selected from South 24 Parganas two blocks – Budge Budge I where female work participation is low and concentration of Muslim population is high, and Thakurpukur-Maheshtala, where female work participation is high but

concentration of Muslim population is not too high. While in Murshidabad blocks our sample women overwhelmingly represent home-based activities such as beedi-rolling, in South 24 Parganas blocks too, a majority of them is in home-based activities, but the activities are slightly more diverse than in the case of Murshidabad blocks. The field survey was motivated by the need for knowing, first, the nature of work participation by comparing and contrasting areas where apparently there is very high degree of participation by women with areas where it is low. And second, we wanted to inquire if there was a very large earning gap between men and women in these areas from which one could conclude that women were stuck with low-skill low-wage home-based work whereas men enjoyed better work opportunities.

In Table 1 we present a number of basic indicators for the four blocks. Clearly, four blocks have been selected purposively to present the diversity in terms of the percentage of Muslims in the population, female work participation rate, and literacy rate. In all four blocks, the density of population is higher than the average for the state as a whole (903 per sq km), which implies that the scope for expanding opportunities in agriculture is rather limited in all these blocks despite varying degrees of urbanization in the blocks.

Table 1. Select Indicators for the Four Sample Blocks

	Murshidabad		*South 24 Parganas*	
	Samserganj	*Murshidabad-Jiaganj*	*Thakurpukur-Maheshtala*	*Budge Budge I*
Population per square km	2516	1042	2170	3764
% of urban population	34.6	0	20.3	51.0
Female literacy (%)	29.7	46.8	67.8	64.5
% female workers in female population	49.8	14.5	12.5	6.7
% of Muslims	81.2	52.8	28.4	44.2

Source: Census 2001

The survey was conducted during December 2007 to April 2008. We selected randomly 232 households from two blocks in each district. Since one of our objectives was to focus on the connection between Muslim women and home-based work, our selection of the areas with the blocks was somewhat purposive so as to get a high representation of Muslim women in our sample. For example, within Thakurpukur-Maheshtala block our sample households were selected around the town Chatta Kalikapur. While the percentage of Muslims in the block is 28.4, in Chatta Kalikapur area it is close to 80 per cent.

The survey collected information on household characteristics and on a small number of items for all the household members, besides detailed information on the woman respondent's activity status, educational level, earning, her perception on a variety of issues such as children's educational prospect etc, and a wide range of well-being indicators. We first use the detailed information on 464 women respondents from the same number of surveyed households for a descriptive-analytic account of various aspects related to the women's experience with the labor market, education and what they think about a number of things that one can associate with

women's work. We then focus our attention on all those members of the households who belong to the age-group 15-59, as they constitute the sample of working age population. There are 648 such persons in the Murshidabad sample, with 50.61 per cent men and 49.38 per cent women and 679 in South 24-Parganas with 49.19 per cent men and 50.81 per cent women. From our sample, we observe that 85.98 per cent of men and 84.68 per cent of women are employed in our Murshidabad sample whereas these figures for men and women are 92.81 per cent and 65.21 per cent, respectively, in South 24-Parganas sample. In what follows we first present a descriptive-analytic account of the findings from the survey and then present the regression results. A woman in the working age-group should be classified into any of the three mutually exclusive and exhaustive categories: (i) working for wage, (ii) working for own enterprise (self-employed), and (iii) not working. However, since in our sample areas the number of women in the self-employment category is very small we merge the first two categories into one i.e. 'working'. We have applied the regression method to analyze the respondent's 'choice' to be in one of the two groups – 'working' and 'not working'. The regression technique to estimate the earning gap and its decomposition will be described later in more detail.

Women were found to be engaged in activities in these areas which are generally low-paying. Even though there are requirements of job specific skills, these skills have very little connection with formal levels of education. The women usually enter these activities at an early age and 'learning by doing' in an informal setting is the usual mode of skill acquisition. Three such activities which are predominant in the survey areas are beedi-rolling, tailoring, *zari* work (a kind of embroidery) and production of fireworks. While beedi-rolling is the predominant activity in Murhidabad blocks, in South 24 Parganas we find the other three activities mentioned above. Even though in beedi-rolling women are over-represented, there are a large number of men in our sample who are engaged in this home-based activity.

Apart from beedi-rolling the other occupation that women find themselves in some areas in Murshidabad is spinning and weaving, which is also home-based. The purpose of our study is not to describe beedi-rolling and the condition of women who are engaged in this activity. A number of studies can be found which had earlier focused exclusively on the beedi industry and beedi workers[1].

In Chatta Kalikapur area in South 24 Parganas, tailoring as a profession has a long tradition and it is transmitted through several generations. Earlier it was a men-only occupation. Later, with the introduction of sewing machines and with women's gradual entry into the production process, a kind of division of labor between men and women developed. Women got those tasks which are considered 'subsidiary' in nature – piercing buttonholes, removing loose threads, hand-sewing ornamental designs, and so on, while cutting cloth and stitching and interlocking by machines fall in the men's domain. The dresses produced in Chatta – *punjabi*, school uniforms, trousers, and now jeans – mostly cater to the internal market, unlike some other textile centres in India like Tirupur in Tamil Nadu which are heavily export-oriented.

Does the division of labor mean that men enjoy the benefit of an unequal distribution of the drudgery of work? It seems that women do not think so. When asked the question: "Do you think that men are lucky to work on tasks that require less physical effort?" a large majority of the women in South 24 Parganas (88 per cent) said "no". It is not clear whether their perception is biased due to the hegemonic hold of patriarchal ideology.

Among the 232 women respondents in Murshidabad, only 6 per cent were not working and looking for work, and less than 2 per cent were outside the labor force. Among those who were working, 72 per cent were beedi workers. The number of days in a year for which each of them works varies from 120 to 365[2], and the average is 245 days. However, most of them work for five hours or less in a typical day. In South 24 Parganas, on the other hand, women on average work for much longer hours. Only 6.7 per cent said they work for five hours or less. An overwhelming majority of the women (75 per cent) work for eight hours or more, and the average number of days they work is more or less the same as in Murshidabad.

Around 61 per cent working women in Murshidabad and 11 per cent in South 24 Parganas said they started working before they reached 15 years of age. The difference between the two areas is reflective of a combination of factors such as differences in levels of education and family earnings. Table 2 presents the educational profiles of the members of the sample households belonging to the age group 15-59. Clearly, the educational levels in general are somewhat better in South 24 Parganas sample than in Murshidabad. Interestingly, there is no gender gap in education in the former, whereas in the latter there is a moderate degree of disparity. We shall see later that the average level of earning is also better in South 24 Parganas.

Table 2. Educational Profile of the Sample Persons

	Murshidabad		*South 24 Parganas*	
	Women	*Men*	*Women*	*Men*
Illiterate	53.6	44.2	26.7	28.1
Literate and below primary	16.6	21.9	18.9	19.3
Primary	22.3	17.1	28.7	23.6
Below secondary but above eighth standard	3.1	8.2	20.3	17.7
Secondary	2.8	4.0	3.5	3.9
Higher Secondary	1.6	3.3	1.2	3.6
Graduate and above	-	0.3	0.3	2.5

Thus, the vicious circle of low earning–low education, perpetuating with low aspiration in between, seems to be stronger in Murshidabad than in South 24 Parganas, even though the majority of the women belong to the Muslim community in both the areas. Interestingly, our regression results reported later show that the religious community membership is not significant in explaining participation in work. It seems that even though in general there is a negative relationship between the percentage of Muslims in a block and female work participation rate, in areas where historically some economic activities have developed which women can balance with family responsibilities, women from all communities seem to join the work force in large numbers. However, the preference for home-based work cannot be taken as entirely the result of patriarchal control on women's movement outside home. We asked the question "if your workplace were away from home, would the male members of your family (husband or father-in-law) still let you work?" 64 per cent women in Murshidabad and 42 per cent in South 24 Parganas said "yes". In terms of control over the money they earn, the percentages of women who control

fully their part of earnings too differ between the two areas. While in Murshidabad it is 77 per cent, in South 24 Parganas, it is only 33 per cent. About 72 per cent women in South 24 Parganas report that their earnings form less than one half of their family income, whereas in Murshidabad 63 per cent says so. In other words, a higher percentage of women in Murshidabad than in South 24 Parganas contribute the major part of their family income. There seems to be a connection between the monetary contribution to the family kitty and women's control over the money they earn.

In what follows we explain with econometric technique the nature of work participation by women.

4. Methodology

We first estimate a model of female work participation based on a probit model using the following specification:

L = f (FE, AGE, AGE SQUARED, HA, S, RELIGION, MSTATUS, HE, NOMALES, NOFEMALES, ELDERLY, BPL CARD) ... (1)

L stands for work participation by an individual woman taking values 0 if she participates in paid work and 1 otherwise. FE is a dummy variable for the woman's level of schooling which has been categorized into four groups viz. EDU1 = illiterate (base category), EDU2 = literate but did not complete primary education, EDU3 = completed primary but below secondary, EDU4 = secondary and above. AGE and AGE SQUARED are self-explanatory, HA is household assets measured by acres of land owned, S captures the presence of children in the household which has been categorized into two groups viz., CHILD06 and CHILD714 where CHILD06 represents children between the age 0 to 6 and CHILD714 represents children of age greater than 6 but less than or equal to 14. RELIGION is religion dummy and MSTATUS is marital status. HE is a dummy variable representing head of the household's educational level categorized as earlier into four groups. NOMALES is number of males in the age-group 15 to 59 years, NOFEMALES is the number of females between ages 15 and 59, ELDERLY is the number of household members aged 60 and above. BPL CARD is a dummy variable representing the status of the household in terms of whether or not it holds the card that entitles the households members to the benefits meant for the population below poverty line.

Next we estimate separate earning functions for men and women. Since work participation is not likely to be random, we follow Heckman (1979) to control for potential selection bias in the earning functions by including an additional selectivity term (inverse Mill's ratio). In this study we apply the two-stage method developed by Lee (1983) to control for selection bias. Selectivity terms are estimated for each individual i from the estimated probabilities of work participation and included in the earnings function in the usual Mincerian form as follows:

$$\ln W_i = \beta X_i + \tau \gamma_i + \epsilon_i \quad \text{... (2)}$$

where lnWi is the natural log of earnings of individual i, Xi is a vector of observed characteristics, γi is the selectivity term and εi is a stochastic error distributed as N (0, σ^2). Equation (2) is estimated with OLS with and without sample selectivity bias. While controlling for selectivity bias in earnings function, an important issue is identification i.e. one or more variables should affect participation decision but not earnings. In this study, household assets (for example, acres of land owned) and some demographic characteristics of households (for example, presence of children,

presence of elderly above age 59, numbers of males and females in the age-group 15-59) are used as identifying variables. X

Next, we decompose the earning differential between men and women into two parts i.e. the one due to the 'characteristics' and the other due to 'discrimination'. We use the methods originally developed by Oaxaca (1973) and Blinder (1973) and subsequently refined by Reimers (1983), Cotton (1988) and Oaxaca and Ransom (1994).

In the context of semi-logarithmic wage equation estimated by OLS the following formulation is used by Oaxaca and Ransom:

$$\ln (\bar{W}_m/\bar{W}_f) = \acute{X}_m (\beta_m - \beta^*) + X_f (\beta^* - \beta_f) + (X_f - \acute{X}_m) \beta^* \quad \ldots (3)$$

where $\bar{W}_m$ and $\bar{W}_f$ represent the geometric mean wages for men and women respectively and β* is the estimated nondiscriminatory wage structure. In equation (3) the first term refers to male advantage (i.e. the amount by which men's characteristics are overcompensated relative to their marginal product), the second term refers to female disadvantage (i.e. the amount by which women's characteristics are undercompensated) and the third term refers to differential due to characteristics. The sum of the first two terms represents the total differential from discrimination. To determine β*, Paternostro and Sahn (1999) suggest that we can assume

$$\beta^* = \Omega \beta m + (I - \Omega) \beta_f \quad \ldots (4)$$

where Ω is a weighting matrix and I is the identity matrix. Then following Oaxaca (1973), we can have either Ω = I, i.e. the men's wage structure or Ω = 0, i.e the women's wage structure, as β*. Reimers (1983) methodology assigns equal weight to both men and women. Hence following Reimers, Ω = 0.5 I. Cotton (1988) shows that neither the men's nor the women's wage structure should prevail in a discrimination free environment. He argues that men would be paid more than the non-discriminatory wage and women would be paid less. Following Cotton's methodology the weighting structure implies that Ω = ImI, where Im is the fraction of men in the sample (Paternostro and Sahn, 1999). Neumark (1988) suggests the use of the coefficients from a pooled regression over both groups as an estimate for β*. In terms of notation this is equivalent to Ω = (X'X)-1Xm'Xm .

The methodology of Oaxaca and Ransom was applied in their study on Guinea by Glick and Sahn (1997) where β* was estimated on the basis of a pooled sample of men and women in the three sectors viz., self-employed, private sector and public sector. Appleton, Hoddinott and Krishnan (1999) further extended the Oaxaca and Ransom methodology to account for sectoral effects while estimating the gender wage gap in three African countries.

5. Female Work Participation: Results from Probit Model Estimation

Table 3 reports for Murshidabad and South 24-Parganas separately the results from the probit model estimation for determining the factors influencing the decision to participate in work. The effects of AGE and AGE SQUARED for both Murshidabad and South 24-Parganas are as expected. As age increases the probability to participate increases but increases at a decreasing rate, as the coefficient of AGE SQUARED is negatively significant. The marital status (MSTATUS) has no significant effect on the decision to participate in Murshidabad. This finding contradicts the usual belief that married women, having higher reservation wage due to access to their husband's income, are less likely to join the labor force than unmarried women. However,

while running the regression for South 24 Parganas, we dropped this variable as it showed multicollinearity.

RELIGION has no significant effect either in Murshidabad or in South-24 Parganas. Holding BPL CARD also has no statistical significance. Ownership of cultivable land (DLAND) has negative significant effect in Murshidabad, which implies that an alternative source of non-labor income decreases the probability of work by women. However, it has no significance in South 24 Parganas.

The effect of education on the decision to work by women is evident from Table 4. EDU2 i.e, attended school but did not complete primary has positive significant effect and EDU3 i.e., completed primary has negative significant effects. Thus more education seems to reduce the probability to participate in work by women in Murshidabad even at such low level as the primary. We observe no significant relationship between the level of education and the decision to work by women in South 24 Parganas. Our findings in Mushidabad, are in contrast to the findings of Glewwe (1990) in Ghana that schooling is positively related to entry into wage employment. Our findings reveal that illiterate women are more likely to participate in wage employment in Murshidabad. This is perhaps because of the particular nature of work that the women in our sample do i.e, beedi-rolling, and spinning and weaving, which require very little formal education.

Table 3. Impact of Explanatory Variables on Female Work Participation: Results of Probit Estimation

Variables	*Murshidabad*		*South 24-Parganas*	
	Coefficients	*z-value*	*Coefficients*	*z-value*
Intercept	-1.92	-2.21**	-1.09	-1.55
AGE	0.22	3.35 *	0.11	2.73*
AGE SQUARED	-0.003	-3.25 *	-0.001	-2.48*
MSTATUS	0.19	0.68		
RELIGION	0.05	0.20	-0.02	-0.10
BPL CARD	-0.09	-0.45	0.13	0.77
DLAND	-0.83	-2.13 **	0.48	0.68
EDU2	0.45	2.38*	0.04	0.21
EDU3	-0.92	-3.63*	-0.02	-0.09
EDU4	-0.02	-0.09	-0.13	-0.57
HEADEDU2			-0.22	-1.14
HEADEDU3	-0.96	-1.28	-0.24	-1.28
HEADEDU4			-0.55	-1.59***
CHILD06			0.20	1.23
CHILD714			0.13	0.86
NOMALES			-0.56	-1.43
ELDERLY			-0.03	-0.14
Log Likelihood	-115.86		-225.59	
X^2	61.17		23.10	
Pseudo R^2	0.21		0.05	
No. of observations	318		345	

Note: * implies significant at 1% level; ** implies significant at 5% level; *** implies significant at 10% level

Table 3 shows that the variable HEADEDU4 has a negative significant effect in South 24-Parganas, which implies that with the head of the household completing secondary education or above, the probability of women's work participation decreases. This may be due to the fact that the educational level of the head of the household acts as a proxy for family income.

We included a large number of demographic variables in our estimation as well, such as CHILD06, CHILD714, NOMALES, NOFEMALES and ELDERLY. However, all these variables are dropped from our estimation in Murshidabad due to the problem of multicollinearilty. In South 24-Parganas some of these variables are included but none of them appear to be significant. Thus the presence of children or elderly people does not influence the decision to work by women in South 24-Parganas. This finding, however, contradicts the findings of Glick and Sahn (1997) and Kabubo-Mariara (2003) who observe that presence of children influences the work participation decision of women in Africa.

Table 4. Estimated Coefficients for Men and Women Earnings Function in Murshidabad

Variable	*Men (NLS)*	*Men (Selectivity Corrected)*	*Women (NLS)*	*Women (Selectivity Corrected)*
Intercept	10.29	4.73	-7.41	5.66
	(17.51)*	(7.06)*	(-12.51)*	(14.41)*
DAYS	-0.007	0.002	0.01	-0.001
	(-8.59)*	(5.21)*	(15.26)*	(-3.16)**
RELIGION	-0.04	0.004	0.02	-0.04
	(-0.69)	(0.05)	(0.41)	(-0.52)
CASTE	0.04	-0.01	-0.02	0.12
	(0.68)	(-0.12)	(-0.43)	(1.25)
LHOURS	1.85	0.47	-0.0003	0.58
	(16.37)*	(5.94)*	(-0.003)	(7.59)*
MSTATUS	0.003	0.09	-0.003	-0.09
	(10.85)*	(1.08)	(-3.64)*	(-1.54)
EDU2	-0.29	0.06	0.31	-0.17
	(-2.94)*	(1.08)	(3.15)*	(-2.63)*
EDU3	-0.09	-0.009	0.28	-0.12
	(-0.93)	(-0.16)	(2.69)*	(-1.82)***
EDU4	-0.46	0.21	0.23	-0.22
	(-2.18)**	(2.05)**	(1.13)	(-1.51)
EXP	-0.002	0.0004	0.11	-0.005
	(-0.54)	(0.16)	(2.00)**	(-1.85)***
GAMMA	1.59		0.71	
	(3.41)*		(5.63)*	
HEAD	-3.85	0.08	3.42	0.09
	(-30.73)*	(1.10)	(27.67)*	(0.82)
Λ		0.26		-0.35
		(0.39)		(-0.91)
Adj R^2	0.74		0.67	

Note: * signifies 1% level of significance; ** signifies 5% level of significance; *** signifies 10% level of significance

6. Determinants of Gender Differential in Earnings

Estimates from earnings equations for men and women in Murshidabad using non-linear least squares (NLS) and selectivity correction are reported in Table 4[3]. The dependent variable is the natural log of monthly earnings. For both men and women a large number of variables are observed to be significant. The variable DAYS is positively significant for both men and women, in both the NLS and selectivity corrected estimates. It implies that higher the number of days worked in a year higher is the monthly earning. It explains why women have a tendency to work for as many days as they can in a year.

The variable LHOURS is positively significant (except in NLS for women) which implies that if average daily working hours increases monthly earnings increases. This is obvious given the practice of wage payment by piece rate. The estimated coefficients for LHOURS are 0.47 and 1.85 for selectivity corrected and NLS estimations which imply that with longer working hours earnings increase somewhere between the range of 60 per cent to 536 per cent per month for men. The estimated coefficient for LHOURS for women is 0.58 in selectivity corrected estimation which implies that earnings increase by 78 per cent for women[4].

In NLS estimates the variable MSTATUS is significant for both men and women but the signs are different. This finding is expected, because married men have more responsibilities for their families to take care and therefore they are likely to work for a longer period in a year. However, for women it may be the reverse. Our finding of a negatively significant coefficient for MSTATUS for women in NLS further justifies our explanation for engagement of women in wage earning activities for smaller duration.

The coefficient for the variable ‘primary education incomplete but attended school’ appears to be negatively significant for men and positively significant for women in NLS and negatively significant for women in selectivity corrected estimates. The estimated coefficient for EDU2 for women is 0.31 in NLS estimates which implies that monthly earnings for women who attended school but did not complete primary education is 36.34 per cent higher than illiterate women i.e. relative to EDU1 base. EDU3 is positively significant only for women in NLS estimates. The estimated coefficients for EDU3 imply that women who have completed primary earn at least 32.31 per cent higher than illiterate men. Similar interpretation holds good for EDU4. So our results indicate that there is some incentive for schooling for both men and women in Murshidabad.

The variable EXP for women only is positively significant in NLS and negatively significant in selectivity corrected estimates. NLS estimates give exact power of the variable EXP which appears to be 1.59 for men and 0.71 for women. Thus the quadratic relationship between EXP and earnings as appeared from OLS estimates is not valid in Murshidabad. The estimated coefficient for EXP for women in NLS is 0.11 which implies that experience raises monthly earnings by 11.63 per cent for women.

Table 5 reports results for estimation of earnings function for South 24 Parganas. It may be noted that due to the observed quadratic relationship between the variable EXP and earnings for men in South 24-Parganas in OLS we have tried with NLS to get the exact power of the variable EXP. For women, there was no such problem. Thus we have reported the estimates from NLS for men and OLS for women. The variables which have positive significant effects on men in South 24 Parganas are DAYS and LHOURS. LHOURS is positively significant for women too.

The home-based work usually involves contractual arrangement between the 'mahajans' and the worker. The 'mahajans' may be reluctant to hire those who take these jobs as part-time activities. In tailoring business, for example, small amount of capital with a very fast turnover rate is the key to profit. A number of tasks are performed in quick succession and the gestation period between procuring of the raw material and delivering the finished product in the weekly wholesale market is usually a week. The pressure of delivering the finished product every week without delay forces the mahajan to maintain a strict schedule. In this kind of production process the longer one works at a stretch, more valuable is her work to the mahajan. LHOURS is expected to have positive significant effect since payments are made on the basis of piece rate. So, longer the working hours per day, higher would be the monthly earnings. The estimated coefficient of LHOURS for men is 0.83 in NLS estimates and for women this figure is 1.23 in OLS. These imply that LHOURS increases monthly earnings by 129.33 per cent for men and for women it increases monthly earnings by 242.12 per cent. MSTATUS is positively significant for men in NLS and for women in OLS in South 24 Parganas, the explanation for which is similar to Murshidabad finding.

Table 5. Estimated Coefficients for Men and Women Earnings Function in South 24 Parganas

Variable	*Men (NLS)*	*Men (Selectivity Corrected)*	*Women (OLS)*	*Women (Selectivity Corrected)*
Intercept	10.72		0.57	
	(6.39)*		(1.03)	
DAYS	0.004	0.001	0.001	0.001
	(4.68)*	(0.66)	(1.29)	(0.74)
RELIGION	-0.59	0.34	-0.67	0.42
	(-1.32)	(0.21)	(-1.26)	(0.29)
CASTE	-0.52	0.21	-0.55	0.24
	(-1.13)	(0.13)	(-1.02)	(0.17)
LHOURS	0.84	0.12	1.23	0.41
	(7.88)*	(0.16)	(9.89)*	(0.86)
MSTATUS	1.08	0.36	0.86	0.25
	(6.63)*	(0.38)	(4.85)*	(0.60)
EDU2	-0.21	0.02	-0.07	0.19
	(-1.44)	(0.03)	(-0.42)	(0.42)
EDU3	-0.16	0.04	-0.09	0.08
	(-1.19)	(0.08)	(-0.58)	(0.20)
EDU4	-0.98	0.13	0.31	-0.04
	(-3.26)*	(0.15)	(0.90)	(-0.05)
EXP	-0.52	-0.005	0.03	-0.005
	(-0.31)	(-0.21)	(4.35)*	(-0.28)
GAMMA	2.52			
	(3.20)*			
HEAD	-3.77	0.16	-3.86	0.12
	(-22.32)*	(0.17)	(-20.18)*	(0.16)
Λ		5.89		4.09
		(2.39)*		(2.68)*
Adj R^2	0.64		0.44	

Note: Same as in Table 5.

For men in South 24 Parganas from NLS we get two other variables negatively significant viz., EDU4 and HEAD. Hence schooling has negative effect on earnings for men in South 24 Parganas which is rather counter-intuitive. The estimated coefficients for EDU4 imply that schooling decreases monthly earnings by 166.44 per cent for men than the base category of illiterates. Thus education has no effect on the activity of men in South 24 Parganas. Although the variable EXP is not significant in NLS estimation for men in South 24 Parganas, its power is significant and is 2.52. This finding supports a quadratic relationship between EXP and earnings for men in South 24-Parganas. For women the variable EXP is positively significant and its coefficient is 0.03 which implies experience increases earnings by 3.05 per cent.

An important finding from Tables 4 and 5 is that the selectivity variable (λ) is not significant for men and women in Murshidabad. Hence there was no problem of selectivity bias in Murshidabad. However, this variable appears to be significant for both men and women in South 24-Parganas which signifies the problem of selectivity bias.

7. Decomposition of Earnings Differential

Earning differentials between men and women in Murshidabad and South 24-Parganas are reported in Table 6. For estimation of earning differentials we used the program *decomp* developed by Ian Watson which could be run on STATA. Log of earning differential appears to be 0.472 in Murshidabad and 1.140 in South 24-Parganas. These imply that the average monthly earning of women is 91 percent of that of men in Murshidabad and 80 per cent in South 24-Parganas. As discussed in the section on methodology, we applied five alternative methods to decompose the earning differential between men and women. Some of the methods show that the earning differential attributable to the productivity difference is smaller than the difference due to discrimination both in Murshidabad and South 24-Parganas. Following the basic Oaxaca method it is observed that the composition of earning differential differs depending on whether the male or the female wage structure prevails. For example, in Murshidabad, assuming that men's wage structure prevails, we observe that 70.6 percent of the earning differential arises as a result of discrimination and only 29.4 percent is due to differential characteristics across gender. We have also estimated the contribution of some important variables separately. From Table 6 we observe that the contribution of education is negligible in explaining differential due to characteristics. Contribution of LHOURS appears to be negative in four of the five methodologies, which implies that the number of hours worked per day by women is higher than that by men in Murshidabad and it serves to reduce the overall gap to a large extent.

Assuming that the women's wage structure prevails in Murshidabad, it appears from Table 6 that the contribution of differential due to characteristics to gender differential in earnings is 67.3 percent, which is much higher than what we obtained by applying the earlier method. Following Reimer's and Cotton's and Neumark's methodology discrimination was found to be less than that estimated by the Oaxaca methodology based on the assumption that men's earning structure prevails (the discrimination component of earnings differential is 51.6 percent, 51.9 percent and 44.3 percent following Reimer's, Cotton's and Neumark's methodology, respectively).

From Table 6 it further appears that, compared to Murshidabad the discrimination component in South 24-Parganas is more, following all the five methods. Contribution of DAYS and LHOURS constitute the major portion of the component of differential due to characteristics.

Thus men's longer working hours per day and larger number of days worked in a year together account for more than two-thirds of the characteristics portion of the differential. However, the interpretation of discrimination in South 24-Parganas should be done with caution. Here discrimination is not due to wage discrimination but largely due to occupational segregation within tailoring.

Table 6. Earnings Differentials between Men and Women in Murshidabad and South 24-Parganas

	Murshidabad	*Ln ($\bar{W}_m$ / $\bar{W}_f$) = 0.472*		*South 24 Parganas*	*ln($\bar{W}_m$ / $\bar{W}_f$) =1.140*	
	Discrimination	*Percentage due to discrimination*	*Differential due to characteristics*	*Discrimi-nation*	*Percentage due to discrimi-nation*	*Differential due to characteristics*
Ω = I	0.0.333	70.6%	0.139	0.932	81.7%	0.209
EDU			0.001			-0.011
EXP			0.063			0.024
DAYS			0.186			0.080
LHOURS			-0.095			0.120
Ω = 0	0.154	32.7%	0.318	0.922	80.9%	0.218
EDU			0.019			0.002
EXP			0.167			0.018
DAYS			0.230			0.072
LHOURS			0.070			0.125
Ω = 0.5 I	0.244	51.6%	0.228	0.927	81.3%	0.213
EDU			0.011			-0.005
EXP			0.115			0.021
DAYS			0.208			0.076
LHOURS			-0.012			0.123
Ω =I_m I	0.245	51.9%	0.227	0.927	81.3%	0.213
EDU			0.011			-0.004
EXP			0.114			0.021
DAYS			0.208			0.076
LHOURS			-0.013			0.123
Ω = $(X'X)^{-1}$ Xm'Xm	0.209	44.3%	0.263	0.886	77.7%	0.254
EDU			0.012			0.004
EXP			0.104			0.064
DAYS			0.238			0.073
LHOURS			-0.034			0.130

8. Conclusion

This paper had three objectives: first, to explain the behavior of female work participation in specific areas in West Bengal where limited opportunities in agriculture force the women to seek non-farm work of a kind that suits their very little formal education and the demands of household chores; second, to identify the variables explaining differential in earnings by men and women; and third, to analyze if any gender discrimination in earnings is present. An analysis of the block level data from the Census of India reveals that in West Bengal higher the percentage of Muslims in the population lower is the female work participation. However, a few outliers are

observed which are characterized by very high incidence of home-based work. Keeping in mind this fact we have drawn samples from four blocks of two districts of West Bengal viz., Murshidabad and South 24-Parganas, which have high percentages of Muslim population and major occupations are categorized into the class of household-based industries.

Findings from the estimated probit model show that as age increases the probability to participate in work by women increases but at a decreasing rate both in Murshidabad and South 24-Parganas. Ownership of cultivable land reduces the probability of participation by women in Murshidabad, and higher the level of education lower is the probability to participate in work by women. Education and decision to work are, however, not related in South 24 Parganas. In South 24 Parganas we observe that higher the level of education i.e., completed secondary or above, by head of the household, lower is the probability of women's work participation, which is probably due to the fact that head of the household's educational level proxies for family income.

To identify the variables explaining differences in earnings between men and women we have estimated the earnings functions by both the non-linear least squares method and the Heckman selectivity corrected method. For Murshidabad we find that higher the number of days worked higher is the monthly earnings for men and women. Similar finding emerged for men only in South 24-Parganas. On the other hand, longer the working hour per day higher is the monthly earnings for both men and women in Murshidabad and in South 24-Parganas. In Murshidabad and South 24-Parganas married men earn more than unmarried men, which is expected. But this relationship for married women is reverse in Murshidabad. Education appears to have a positive significant effect on monthly earnings for women in Murshidabad. But this relationship is reverse for men in Murshidabad and South 24-Parganas. Finally, experience is found to have a positively significant relationship with earnings for women both in Murshidabad and South 24-Parganas.

Earning differential between men and women is decomposed following Oaxaca and Oaxaca and Ransom methodologies to derive estimates of gender discrimination in earnings. Results suggest that very low percentage of men and women earnings differentials is attributable to differentials due to characteristics in both Murshidabad and South 24-Parganas and the gap is largely due to discrimination. However, the discriminatory component of earnings gap appears to be considerably greater in South 24 Parganas than in Murshidabad. However the decomposition exercise should not mislead us to ignore the fact that the earning differential itself is not large enough either in Murshidabad. The overall earning differential between men and women in the two areas is found to be relatively narrower compared to the findings of earlier studies elsewhere (Kingdon and Unni, 2000). This leads us to conclude that even in areas where home-based work is highly predominant and women's representation in this type of work is significantly higher than that of men, it cannot be said that men enjoy much better work opportunities. Both men and women seem to be engaged in types of work that are low-skill low earning type – no matter whether it is home-based or not.

Notes:

1. See Bagchi, Jasodhara and Ashim Mukhopadhyay (1996), Dharmalingam (1993), among others.
2. Although we have put the upper limit as 365, when someone says 'throughout the year' one does not literally mean 365 days.

3. OLS estimation of the earnings function for both men and women in Murshidabad and for men only in South 24-Parganas reveal a quadratic relationship between experience (EXP) and earnings. Thus it is justified to use the non-linear least square estimation procedure to capture properly such non-linearity in relation. However, for women in South 24-Parganas we report the OLS estimation results. For NLS estimation, the functional relationship with earnings is linear for all other variables except the variable EXP , which is raised to the power GAMMA.
4. The specification for the estimation of earnings function is semi-logarithmic and in this case the percentage change in earnings due to a change in an explanatory variable is 100*[exp(β)-1] where β is the estimated coefficient.

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