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Agricultural development and gender inequality in rural labour market in Odisha

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Abstract Women are discriminated against in the labour market by engaging in low-paid and low-status jobs and paying lower wages than that of their male counterparts for similar work. This paper analyses gender inequality in the rural labour market in Odisha in comparison to the agriculturally advanced state of Punjab and all India. The paper uses data from Reports on Employment and Unemployment in India published by the National Sample Survey Office over the period from 1972-73 to 2011-12. Data on wages have been collected from various issues of Rural Labour Enquiry Report on Employment and Unemployment of Rural Labour Households, published by Labour Bureau of India. Based on these data, the paper finds that even with agricultural development and technological change, gender-based wage differential persists and there is a need to reduce the wage disparity between male and female by enforcing the laws and regulations on equal pay for equal work. The planners, policy makers and development practitioners in India are required to formulate appropriate policies, programmes and strategies for generation of additional employment for females and removing gender-disparity in work allocation and wage payment in rural labour market.

Keywords Gender discrimination, Labour market imperfections, Worker population ratio, Employment, wage inequality

JEL classification J31, J71, Q19

1 Introduction

A large segment of rural population in India depends on labour market to earn wages for sustenance. However, labour is highly differentiated in terms of its own attributes such as age, sex, caste, education and skill, and also due to the perception and prejudices of its buyer. These factors make labour markets highly segmented. The unequal production relations and class inequality also make labour markets prone to discrimination and exclusion. Disparities in wages, earnings and incomes may not be based only on the varying attributes, endowment and productivity of workers but also of the employers' and society's perceptions and prejudices about the value of labour of different categories of workers (Papola 2012). A glaring example of such wage discrimination is based on gender.

In low income countries as India, discrimination against women in rural labour market is widely prevalent and tends to persist (Lynn 1992). Women are discriminated by engaging them in low-paid and low-status jobs and paying lower wages compared to their male counterparts for similar works (Nayyar 1987; Deininger et al. 2013). Despite the emphasis on equality of sexes in the Indian Constitution and different legislative enactments, women are still subjected to various discriminatory practices in the social and economic spheres. However, with technological change and growing feminisation of agriculture, it is expected that gender disparity in agricultural wages will be reduced (Singh & Meenakhi 2004).

The introduction of bio-chemical technologies has increased intensification of agriculture necessitating

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timely completion of agricultural operations. This has also led to increased demand for labour. However, intensification also induces mechanisation of certain operations such as ploughing and harvesting. Usually, men operate machines and mechanisation may displace female labour. It is argued that mechanisation has lowered the workload of men, whereas workload of women has not been reduced (Singh & Meenakhi 2004). For example, transplantation is done manually by female labourers while tractors are used to plough land. The technological changes have displaced a large number of women and reduced prospects of their employment (Sharma 1988). The unequal access to assets, skills and resources has worsened the position of female agricultural labourers. The status of female agricultural labourers has gradually deteriorated due to their lack of bargaining power, immobility and low literacy.

In this backdrop, the main objective of this paper is to assess the effect of agricultural development and technological change on gender inequality in rural labour market in Odisha, an agriculturally backward state in the eastern India. We will examine this by making a trend analysis of different dimensions of gender disparity vis-à-vis development in agriculture in the state and also comparing the related parameters with those for agriculturally advanced state of Punjab and all-India. Rest of the paper is organized as follows. Section 2 explains the data-set used for the purpose. Section 3 analyses the trend in gender disparity in work participation in rural Odisha, Punjab and all India, which is studied with the help of dimensions like a) worker population ratio; b) proportion of workers in agriculture; c) days of employment available to males and females in the rural labour market. Section 4 analyses the gender-based wage differential and Section 5 concludes and highlights the major findings.

2 Sources of Data

The study uses secondary sources of data, collected from the National Sample Survey reports on 'Employment and Unemployment in India' for different rounds. This data-set is preferred over those from population census as it is based on more exhaustive questionnaires and captures more of female workers (Nayyar 1987). Various issues of Rural Labour Enquiry Report on Employment and Unemployment of Rural Labour Households, published by the Labour Bureau of India are used in section 4. The three different sources of data of wages and employment are: (i) Rural Labour Enquiry Reports on Wages and Earnings published by the Labour Bureau, (ii) Agricultural Wages in India, published by Ministry of Agriculture & Farmer's Welfare, Government of India and, (iii) Wage Rates in Rural India published by Ministry of Labour & Employment, Government of India.

3 Gender disparity in work participation

The gender disparity in the level and structure of workforce in rural Odisha, Punjab and all-India for period 1972 to 2011 is examined in terms of worker-population ratio, and proportion of female workers in agricultural workforce.

3.1 Worker-population ratio

The worker-population ratio (WPR) is defined as the number of persons/person-days employed per one thousand persons/person-days. The persons who are engaged in any economic activity or who despite their attachment to economic activity, abstain themselves from work for any reason of illness, injury or physical disability, bad weather, festivals, social and religious functions or other contingencies necessitating temporary absence of work constitute workers. Also, the unpaid households who assist in the operation of an economic activity, farm or non-farm, are considered as workers. WPR is thus a broad indicator of the level of employment in the economy.

There exists a visible disparity in WPR of males and females in Odisha; the WPR of males was more than females throughout the reference period. The male-female difference in WPR depicts an increasing trend from 1972 to 1987; however, it declined slightly in 1993 and again increased continuously (table 1, figure 1). By contrast, the male-female differences in WPR in Punjab exhibit a decreasing trend from 1972 to 1987; show an increase in 1993 and again a decline till 2009 and a rise in 2011. The decrease in the difference in male-female WPR might be due to the increase in the demand for female labourers in the post green revolution period. The adoption of high yielding varieties increased the use of total labour per hectare; and much of this increase is accounted for by female and male labourers, implying an increase in the employment opportunities for those seeking

Table 1. Worker population ratio in rural Odisha, Punjab and all India, 1972 to 2011

NSS (1)	Odisha (2)			Punjab (3)			AllIndia (4)		
Round/Year	Male	Female	Diff.	Male	Female	Diff.	Male	Female	Diff.
27th(1972-73)	57.7	30.7	27.0	54.9	27.0	27.9	53.1	31.8	21.3
32nd (1977-78)	56.5	27.4	29.1	55.9	27.6	28.3	52.6	32.6	20.0
38th(1983)	57.5	29.4	28.1	58.1	31.9	26.2	55.6	34.2	21.4
43rd(1987-88)	56.6	27.6	29.0	56.0	31.7	24.3	53.9	32.3	21.6
50th(1993-94)	56.6	31.7	24.9	54.6	22.0	32.6	55.3	32.8	22.5
55th(1999-00)	55.1	29.9	25.2	53.0	28.0	25.0	53.1	29.9	23.2
61st(2004-05)	58.6	32.2	26.4	54.9	32.2	22.7	54.6	32.7	21.9
66th(2009-10)	57.8	24.3	33.5	53.1	24.0	29.1	54.7	26.1	28.6
68th(2011-12)	59.2	24.6	34.6	56.6	23.4	33.2	54.3	24.8	29.5

Sources: Various rounds of NSS.

agricultural wage work (Agarwal 1984). Again, the WPR of females in rural areas of Odisha, Punjab and all-India has declined over the reference period (figure 1). This decline may be due to the increase in the household income and implementation of many poverty alleviation programmes. Vaidyanathan (1994) considers these as important factors leading to women's withdrawal from the workforce.

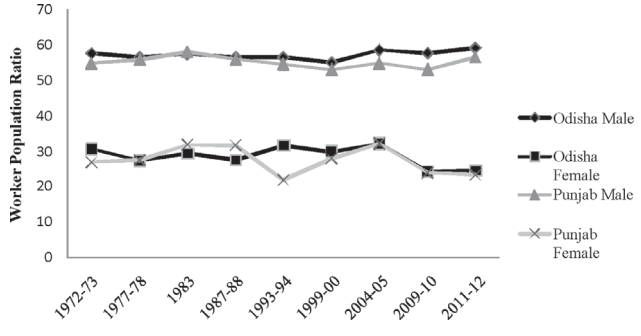

Figure 1. Worker population ratio of male and female

3.2 Proportion of workers in agriculture

With economic growth and structural transformation, it is expected that the employment in the economy will shift from agriculture to industry and services. But, agriculture continues to be a dominant activity in rural India with 59.4 per cent of male workers and 74.9 per cent of female workers engaged in it in 2011. Agriculture is broadly defined to include crop production and allied activities such as livestock, forestry, plantation and orchards. Table 2 shows long-term trend of decline in the proportion of both male and female workers in agriculture in rural Odisha, Punjab and all India from 1972 to 2011. During 1972 to 2011, it is observed that more females were engaged in agriculture as compared to males. The proportion of female workers in agriculture was more than male in Odisha throughout this period. The male-female difference in the proportion of workers in agriculture in Odisha shows a very fluctuating trend with the disparity of 15.7% in 2007-08, but declined to 10% in 2011-12. The male-female differential in proportion of workers in agriculture was more pronounced in Punjab than in Odisha (figure 2). It is interesting to observe that Punjab depicts the highest proportion of female workers in agriculture and the male-female difference in the proportion of workers in agriculture is more than twice of the national average.

With the economic progress and development of non-farm activities, there is a decreasing trend in the proportion of both male and female workers in agriculture, however the proportion of female workers has always remained higher than the male workers. This may be due to increasing outmigration of males from rural areas to urban areas in search of better paying jobs. As women labourers are mostly unskilled and lack mobility, they tend to stay in the village, doing household chores and engage themselves in agricultural activities to support their families.

3.3 Days of employment available

Worker population ratio or workforce participation alone is not an efficient measure of employment

Table 2. Percentage of workers in agriculture (1972 to 2011)

Year (1)	Odisha (2)		Punjab (3)		All India (4)	
	Male	Female	Male	Female	Male	Female
1972-73	84.7	86.2	84.9	93.0	83.2	89.7
1977-78	84.6	85.8	77.8	90.0	80.5	88.1
1983	78.2	81.0	77.0	92.2	77.5	87.5
1987-88	74.9	78.0	68.8	91.6	74.5	84.7
1993-94	78.7	85.0	68.1	92.7	74.1	86.2
1999-00	77.0	80.4	63.7	90.6	71.4	85.4
2004-05	65.9	74.6	54.7	89.7	66.5	83.3
2007-08	68.1	83.8	54.7	82.7	66.5	83.5
2009-10	64.0	76.2	53.2	82.3	62.8	79.4
2011-12	59.3	69.3	43.5	75.40	59.4	74.9

Sources: Same as in table 1.

available to the labour households as it only indicates the proportion of working persons during a year. The intensity of work or the number of work days available to each worker provides a clearer and complete picture of the employment situation. This section examines the full days in a year of wage paid employment in agriculture per agricultural labourer in rural labour households.

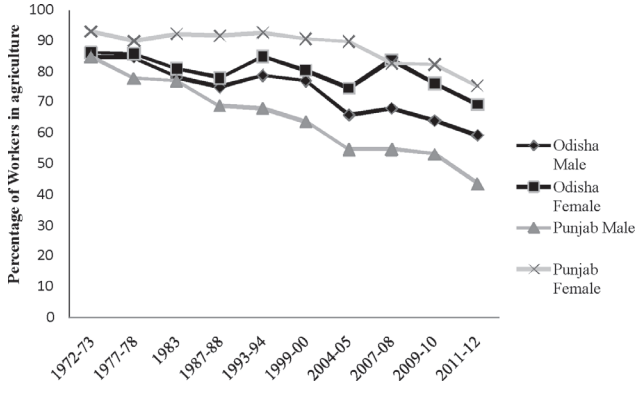

Figure 2. Percentage of workers in agriculture

Days of employment received by an agricultural labourer in a particular year is an interplay and net result of the changes in the demand and supply of labour. It is expected that in a year where there is low agricultural production, the demand for labour would be much less, thus reducing the total available days. Employers prefer male workers for certain operations such as ploughing, fertiliser application, spraying of pesticides and harvesting may be due to pre-determined socio-cultural prejudices. Table 3 presents data on the number of full days in a year of wage paid employment in agriculture per agricultural labourer in rural labour households in Odisha, Punjab and all India from 1956 to 2004.

Over the reference period from1956 to 2004, it is observed that there is disparity in male-female full-days of wage-paid employment, the male full-days of employment is higher compared to that of female in Odisha, Punjab and all-India level. However, this disparity between the full-days of wage paid employment between males and females in agriculture has declined over time (figure 3), may be due to increase in demand for labour and outmigration of male workers to urban areas for employment.

It is observed that the difference between the male-female full days of wage paid employment in agriculture was highest in Odisha as compared to Punjab and all-India from 1956 to 2004. Thus, more parity in full-days of wage paid employment between males and females is observed in Punjab and all-India as compared to Odisha. It seems with technological advancement and cultivation of short duration crops; multiple cropping has been possible. With increase in intensity of cropping, demand for labour has increased and more female labourers have got employment for enhanced duration. Sometimes women also withdraw from workforce, resulting in greater availability employment to those remain in agriculture (Unni 1992).

Table 3. Full days in a year of wage paid employment in agriculture per agricultural labourer in rural labour households, 1956 to 2004

Year (1)	Odisha (2)			Punjab (3)			All India (4)		
	Male	Female	Diff	Male	Female	Diff.	Male	Female	Diff.
1956-57	175	70	105	229	145	84	194	131	63
1964-65	225	164	61	282	170	112	219	161	58
1974-75	162	111	51	216	149	67	192	136	56
1977-78	218	159	59	251	232	19	229	186	43
1993-94	213	171	42	303	244	59	237	215	22
1999-00	216	189	27	316	307	9	238	213	25
2004-05	213	179	34	264	285	-21	228	199	29

Sources: Various issues of Rural Labour Enquiry Report on Employment and Unemployment of Rural Labour Households, Labour Bureau.

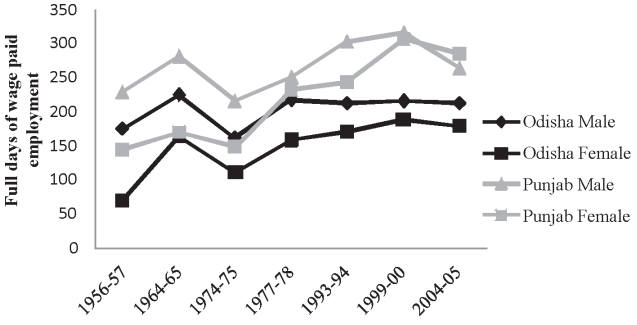

Figure 3. Full days of wage paid employment in agriculture per agricultural labourer in rural labour households

4. Labour market imperfections and wage differentials

Female participation in the labour market is a function of landlessness, poverty and other socio-economic factors. However, another important factor that determines female participation is the male participation rates and male wage rates rather than the female wage rates. With rise in household income, women tend to withdraw from labour market. With rise in male wage rates there is a decline in the female participation (Parthasarthy 1996). In India, particularly the confinement of women inside the house is associated with historical, cultural and social reasons. Male is considered to be the main bread winner for the family, which automatically makes her role as of a subordinate.

There is a general notion that females are physically lesser that the males. But, in rural India women are engaged in construction carrying heavy loads, work entire day in the field transplanting rice and carry water from far away ponds and other water sources besides engaging themselves in household chores. On an average, a woman puts 12-16 hours of work, which defy the notion of her being physically weak. In fact studies indicate that women carry immense strength in performing triple tasks – farming and livestock activities, household work, and reproductive roles.

There are social prejudices about the nature of work that women can do, which are explained by the traditional norms and values. There is traditional division of labour, where there are certain occupations that have a greater concentration of women workers, and there are certain times when women participate higher as compared to others, leading to segmentation of market for women. Within agriculture, women are engaged in fields during transplanting of paddy and also in the post-harvest operations. On the other hand, ploughing, cattle grazing and harvesting are mainly male-dominated activities. This division in the kinds of jobs between men and women epitomises market segregation (Nayyar 1987). As a result of market segregation, women are confined to poorly paid and inferior jobs. Also, evidences suggest that if males and females are performing the same task, male labourers are paid more than the female labourers (Deininger et al. 2013). This puts forward the question of wage rates and wage rate differentials that exist between male and female workers.

We attempt to examine the male and female wage differentials. For the purpose, following dimensions are taken into consideration: a) average daily money earnings of an adult male and female in all agricultural

Table 4. Average daily money wage earnings (Rs.) of adult males and females of rural labour households in all agricultural operations (1956 to 2009)

Year (1)	Odisha (2)			Punjab (3)			All India (4)		
	Male	Female	M-FM Ratio	Male	Female	M-FM Ratio	Male	Female	M-FM Ratio
1956-57	0.8	0.5	1.6	2.0	1.2	1.7	1.0	0.6	1.7
1964-65	1.3	0.9	1.4	2.1	1.4	1.5	1.4	0.9	1.6
1974-75	2.6	1.8	1.4	5.6	3.6	1.6	3.3	2.3	1.4
1977-78	3.2	2.3	1.3	6.5	4.7	1.4	3.8	2.7	1.4
1993-94	16.30	12.09	1.3	41.98	36.82	1.1	21.52	15.33	1.4
1999-00	28.69	22.31	1.2	63.57	73.98	0.9	40.50	28.57	1.4
2004-05	39.63	28.05	1.4	71.46	53.71	1.3	48.07	33.77	1.4
2009-10	72.08	54.66	1.3	129.09	73.08	1.7	87.41	64.76	1.3

Sources: Various issues of Rural Labour Enquiry Report on Wages and Earnings of Rural Labour Households, Labour Bureau of India.
Notes: 1956-57 data refer to wages of casual labourers in agriculture in all agricultural households.

operations from 1956 to 2004, and b) average daily wage rates in different agricultural occupations for July, 2014-15.

4.1 Average daily money wage earnings

The Rural Labour Enquiries (RLE) provide information on the average daily wage earnings of workers by dividing the earnings recorded for a week for each activity by the corresponding number of full-days of employment in that activity. Therefore, these data do not relate to the prevailing wage rate in the region but it shows only the average based on the number of days of employment and total wage income. Table 4 shows the average daily money wage earnings of adult male and female labourers in all agricultural operations.

It is observed that the average daily money wage earnings of male were more than female of rural labour households in agricultural operations in Odisha during the period from 1956 to 2009. However, the male-female ratio of average daily money wage earnings in all agricultural operations in Odisha shows a declining trend indicating lessening of gender-based wage disparity with technological change (figure4).

The average daily money wage earning of both male and female workers in Punjab was more than their counterparts in Odisha. However, the male-female ratio of average daily earnings in Odisha was less than in Punjab till 1977 but after that the trend reversed. But, recently (2009-10), this ratio in Punjab was more than Odisha. Thus, the gender-based wage disparity is more

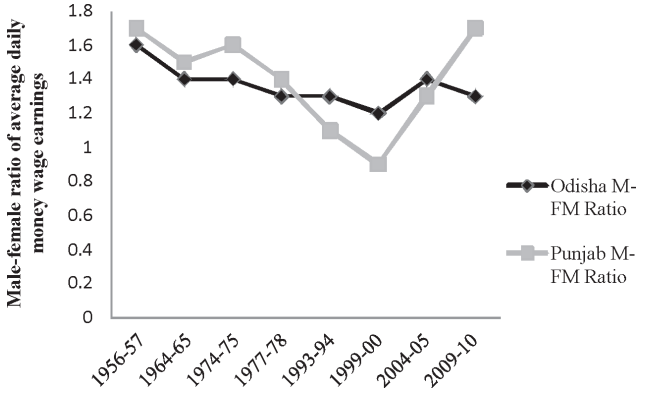

Figure 4. Male-female ratio of average daily money earnings in all agricultural operations

pronounced in agriculturally advanced state of Punjab and tends to increase with increasing mechanisation.

4.2 Male-female wage differential

This section explains the male-female wage differential in various agricultural operations.The discrimination in female agricultural employment is mainly due to the division of labour based on sex. There is an observable social division of labour on the farm. Female labour is primarily involved in specific operations such as transplanting, weeding, harvesting and threshing. There are certain jobs, which are generally restricted to men, and others to women. Ploughing, sowing and spreading fertilizers are usually considered as male jobs that require skills; hence males get a higher wage rate for doing these jobs. The problem

Table 5. Average daily wage rates in different agricultural occupations for July, 2014-15

Operations (1)	Odisha (2)		Punjab (3)		All-India (4)	
	Male	Female	Male	Female	Male	Female
Ploughing/ tilling workers	208.90	-	338.25	-	256.72	192.36
harvesting/winnowing/threshing workers	-	-	268.57	-	236.55	199.19
Sowing (Transplanting/planting/weeding workers)	193.04	156.37	298.21	-	225.03	184.22
Animal husbandry workers(including, poultry, daily)	125.96	109.86	238.03	-	180.79	136.59
General agricultural labourers (watering/irrigation etc.)	175.98	154.76	282.40	-	220.82	171.44
Horticulture workers(including nursery growers)	125.00	-	289.17	-	215.44	154.22
Loggers/ wood cutters	215.63	-	-	-	307.34	171.47

Source: *Wage Rates in Rural India* (2014-15), Ministry of Labour & Employment, Government of India Labour Bureau.

arises when transplanting and weeding are rated as unskilled and lower wages are fixed for women. Transplanting is not only a skilled job, but very arduous exposing women to infections, leech bites and ailments like arthritis. Weeding is no way a less skilled job, which again is exclusively assigned to women. Thus, ultimately gross injustice is faced by the poor womenfolk. This may be due to their low literacy level, lack of mobility, low organisational ability and less bargaining power to demand wages at par with male labourers.

Table 5 presents wage rates of male and female engaged in various agricultural occupations prevalent in July 2014-15. July is chosen as peak month for paddy transplantation. Females receive lesser wage as compared to males for performing the same operations both in Odisha and all-India level. Wage rates of males and females in all the agricultural operations in Odisha are less than the prevailing wage rates in all-India. The wage rates of females in different agricultural operations in Punjab are not available. However, wage rates of males in agricultural operations in agriculturally advanced state of Punjab are observed to be higher than in Odisha.

5 Concluding observations

We recapitulate important conclusions that emerge from a comparative analysis of gender disparity in rural labour market in agriculturally backward state of Odisha, agriculturally advanced state of Punjab and all India. There exists observable gender disparity in worker population ratio. Male WPR are consistently higher than female WPR, and male-female difference in WPR has increased over the years. The male WPR has slightly increased, whereas the female WPR has declined. With economic progress and development of non-farm activities, there is a decreasing trend in the proportion of both male and female workers in agriculture. However, the proportion of female workers has always remained higher than the male workers perhaps due to increasing outmigration of males to urban areas in search of better paying jobs. As women labourers are mostly unskilled and lack mobility, they tend to stay in the village, doing household chores and engage themselves in agricultural activities.

There exists disparity in wage paid employed days in agriculture available to males and females. This difference is highest in Odisha, but tended to decline until 2004 indicating that women are getting more days of employment with advancement of agriculture. The male and female average daily wage earnings in agricultural operations are the lowest in Odisha. The male-female ratio of average daily earnings in Odisha was less than that of Punjab till 1977 but after that with technological advancement in Punjab, the trend reversed. Thus, the gender-based wage disparity is more pronounced in Punjab but tends to increase with increasing mechanisation. Women are also discriminated by engaging them in low paid and low status jobs. They are even paid lower wages as compared to their men counterparts for the same agricultural activity. Wage rates of females in all the agricultural operations were less than males in Odisha.

To sum up, there is a need to enforce laws and regulations on equal pay for equal work. In accordance with the Fundamental Rights, Directive Principles of State Policy and Equal Remuneration Acts and National Policy for Women, the employer should pay equal

remuneration to male and female workers for same work or work of similar nature. To ensure pay parity, there is a need to enforce transparency in wage payment system. Payments may preferably be made through bank account and employer has to maintain a register showing the details of work done and payment made thereof. Also, there is a need to create awareness among female workers and employers on constitutional provisions, Equal Remuneration Acts, rules and regulations regarding wage payment. The NGOs, CBOs (community-based organisations) and Panchayati Raj Institutions may take steps to sensitise people about the equality between women and men in wage payment and other entitlements.

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