CHAPTER IV

CHAPTER IV

FARM WAGES OF AGRICULTURAL LABOURERS

4.1 Agricultural Wages in West Bengal

4.1.1 Introduction

Agricultural labourers are most vulnerable, impoverished and the poorest of the poor; the incidence of poverty among them is the highest in comparison to other categories of rural households (Dev, 1988; Sharma, 1995). The poverty among agricultural labourers is found due to low wage rates and low employment opportunities. The wage rates are not only low but also gender specific, region specific, operation specific and crop specific. There are for instances, separate wages for male and female, separate wages for harvesting of paddy and harvesting of jute; transplanting of paddy and for threshing it. An agricultural operation in West Bengal is being done both on time rate and piece rate basis. But in the case of piece rate basis work, for example, transplantations, weeding and harvesting of paddy and jute, wages are divided equally between all members of the group. No gender differentials exist for piece rate basis work. Some operations are daily rated and paid in cash. In these operations too, however, the rates paid for men and women are different.

Generally, agricultural labourers are divided into two categories – casual labourers and attached or tied labourers. Casual labourers are hired on a day to day basis and paid at the end of day's job or on the completion of a particular task, while the former case constitutes daily rated casual labourers, the latter case constitutes the piece rated casual labourers. On the other hand, permanent or attached or tied labourers hired on a long term basis ranging few months to few years. However, modernization, commercialization and diversification of agriculture lead to decline in the incidence of permanent labour, eroding patron-client relationship between employers and employees, growing feminization of labour, conversion of wage payments from kind to cash and ultimately increasing bargaining strength and pushing up the wage rates. To what extent this is happening in a district of West Bengal remains an empirical question.

4.1.2 Wage Determination

The main features of rural labour markets in West Bengal are limited and parasitic nature of rural labour mobility, intra-village uniformity and inter-village

variation of wage rate (for a given operation and gender). The considerable diversity and complexity regarding appointment of labourers and wage payment to the agricultural labourers exist in the rural labour market. The unit of analysis of agricultural labour markets is the village and within the village-level labour markets, agricultural wage is determined by collective bargaining between the groups of village employers and labourers. However, the prevailing rate will depend upon the relative bargaining powers of employers and labourers. This 'prevailing wage' can be interpreted as the agreed or 'bargained' wage i. e. the wage rate mutually agreed by village employers and labourers. This agreement is totally informal treated as tacit collective bargaining. But it is true that this 'going wage' rate is not invariant overtime and seems to be responsive to parametric shifts in labour-demand supply (Datt, 1996).

There are several theories regarding wage determination in the rural labour markets. For example, the subsistence or institutional wage theories, the efficiency wage models, the labour turnover models, the supply-demand models and the interlinked markets theories. The subsistence wage theory states that real wages in the LDCs are set at the 'subsistence level which is identified as the 'natural' price of labour. The market price for labour (the wages actually paid) usually differs from the 'natural 'price (the long run subsistence wage), depending on the supply and demand for labour. This theory assumes that wages are fixed not in the sense that they do not change, but in the Hicksian sense that they are independent of supply and demand. Modern economists like K. Bardhan (1973), P. K. Bardhan (1979a, 1984a, 1984b), Lal (1986) and Acharya (1989) show that the observed variation in real wages overtime and space is systematically responsive to factors affecting labour demand and supply.

The original contributors of efficiency wage theory were Leibenstein (1957) and elaborated by Mirrlees (1975), Rodgers (1975), Stiglitz (1976, 1982), Dasgupta and Ray (1986, 1987) and Dasgupta (1993). This theory explains the downward rigidity of real wages and concomitant involuntary unemployment of labour in the labour market. The employer's tendency is to pay more than the market-clearing wage, which induces involuntary unemployment in the labour market. The labour turn over model also shows that under certain circumstances employers find it profitable to pay wages above the market clearing level. P. K. Bardhan (1979a) explains the application of labour turn over models in agricultural wage determination in Indian

context. He shows that higher wages reduce the recruitment cost of labour and lower wages increase the recruitment cost of labour. So employers is willing to pay wages more than the market clearing wage level in order to maximize profit.

Recent studies on rural labour markets like K. Bardhan (1970, 1973, 1977), Pandey (1973), P. K. Bardhan (1984a, 1984b) and Sidhu (1988) accepted the importance of supply demand models in determination of wage rate as compared to the fix-wage theories. This model shows wages to be responsive to the varying conditions of demand for and supply of labour.

The interlinked markets theory shows that rural labour markets in India are interlinked with those in land or credit markets. An important instance of the former is the institution of share cropping, which despite the general decline of tenancy in India since 1950s, is still significant in many parts of the country (Bhalla, 1983; Rudra, 1982b and Omvedt, 1983). However, more pertinent in the present context is the labour-credit linkage, which often takes the form of employers giving wage advances to labourers that are repaid, with or without interest, through wage deductions later (Bardhan and Rudra, 1980; Jodha, Datt, 1996). But the empirical significance of labour-credit interlinkage for casual agricultural labour markets in India appears to be limited, though there are some regional variations. The phenomenon obviously is important for attached labourers, current consumption credit often being the very basis of attachment (P. K. Bardhan and Rudra, 1978; Rudra, 1982b). However, the share of attached labourers in total labour force is very small. Bardhan and Rudra's (1978) survey of villages in West Bengal in 1975-76 shows strong labour credit linkage but second surveys in 1979 in the same set of villages implies a much lower incidence of labour credit linkage in West Bengal. Out of these models, the demand-supply model is the most appropriate model in determination of wages in rural labour markets.

Theoretically, demand and supply of labour determine the wage rates. However, regional agricultural wages are determined by many other factors such as level of economic development, previous year's wage rate, productivity of land, intensity of cropping, level of irrigation use and use of modern inputs like chemical fertilizers, pesticides, high yielding varieties seed and machinery and implements (Chand, Atteri and Ray 1994). Seasonality may have another factor, which affects the wages of labourers. The employers is willing to pay higher wages in some commitment on the part of labourers regarding the timing and speed at which time

bound operation like harvesting will be performed. Terms and conditions of labour hiring are often quite different in the peak season from the rest of the year (K. Bardhan, 1977).

Due to commercialization of agriculture the feudal patron-client relationship between oligopsonistic employers and their employees has been replaced by commercialized employer-labour relationship. For harvesting and other peak season operations, the employers now employ casual labourers on a daily or piece rate contract. The labour gangs of migrant or local bargain for with employers and manage to get a minimum subsistence wage to carry out specified operations within a specified period.

In our study area, out of 180 agricultural labour households, not a single agricultural labourer worked as annual farm servants to the employer's house. Only few agricultural labour households worked as semi-attached labourers in this district. So our analysis is mainly confined to wage determination of casual agricultural labourers. Casual day labourers work on time rate basis and casual group labourers work on piece rate basis. In the highly developed villages, the working hour of casual day labourers is 8 A.M. to 5 P.M. but in the moderately developed and least developed villages the working hour is 9 A. M. to 5 P. M. with an interval of launch. In the case of group labourers, there is no fixed working hours. During peak season, the demand for labour is high which induces to both casual as well as group labourers to demand higher wages from their employers. The bargaining process is totally informal and known as tacit collective bargaining. First skilled labourers are able to draw higher wages from their employers because the demand for skilled labourer is more as compared to unskilled labourers. During the slack season, the demand for labour is low and wages decline marginally. After two or three years, peak period wage rate was settled as market wage rate for all labourers. The labour-credit linkage did not exist in the study area. In this district, only 3.94 percent labourers took loans against their labour (Table 4.2). The number of agricultural labourers taking loans against their labour is highest at Nakol (5.60 percent) – a village under moderately developed blocks followed by Dharampur (5.26 percent) – a village under least developed blocks. But they get the market wage rate. So the role of credit in determining market wage rate did not exist. The employers are also not willing to provide advance wage to the labourers because of violation of code of conduct from the part of labourers. Casual day labourers work for any farmer who is prepared to

pay the current market wage rate. The labourers receive the payment either at the end of the day, or in intervals, if he works for some days with the same employers.

Table 4.1
Number of Different Types of Agricultural Labourers Across Surveyed Villages of Uttar Dinajpur District

Serial No.	Villages	Casual Labourers	Semi-Attached Labourers	Fully Attached Labourers
1.	*Delwalpur*	56	7	Nil
2.	*Malon*	71	3	Nil
3.	*Tilna*	75	2	Nil
4.	*Nakol*	71	1	Nil
5.	*Jagatagaon*	62	1	Nil
6.	*Dharampur*	56	1	Nil
7.	**All Villages**	391	15	Nil

Data Source: Own Field Survey

Table 4.2
Loan Repayment in Terms of Labour Across Surveyed Villages of Uttar Dinajpur District

Serial No.	Villages	Sample	Where the System of Loan Against Labour Exists	Where the Loan Repayment is At Wage Below the Market Rate
1.	*Delwalpur*	63	2 (3.17)	Nil
2.	*Malon*	74	2 (2.70)	Nil
3.	*Tilna*	77	3 (3.90)	Nil
4.	*Nakol*	72	4 (5.60)	Nil
5.	*Jagatagaon*	63	2 (3.17)	Nil
6.	*Dharampur*	57	3 (5.26)	Nil
7.	**All Villages**	406	16 (3.94)	Nil

Data Source: Own Field Survey

4.1.3 Mode and Rate of Wage Payment

By the mode of payment is meant whether the payment is made in cash or kind and some perquisites like meals or snacks, and rate of payment refers to whether a labourer is paid in time rate basis or piece rate basis. Daily wage payment in the form of purely cash constitutes 46.83 percent in the district. Monetization of wage payments seems to increase with the development of agriculture as Table 4.3 indicates. While urbanization, development of cash crops etc. should have speeded up monitisation, the extension of irrigation might have delayed it, since labourers wetlands were paid in kind to a large extent than those of dry lands (Hunter, 1872).

Another reason for the switch to cash payment was that at the time of scarcity, the small holding cultivators had no grain stocks at the time of transplantation. Naturally, casual labourers were more frequently paid in cash (District Gagetter, Dacca, 1912, p-85, Burdwan, 1910, p-109). The competitive nature of the functioning of market in the six sample villages comes out from the average wage earned by a worker per day. The average wage did not differ by a significant margin. They ranged between Rs. 38.37 at *Nakol* to Rs. 44.57 at *Jagatagaon*. The variations in the wage rates across the villages could largely be explained interms of factors like stamia / capacity of a particular labour to work, seasonal variations in demand for labour, the prevalence of labour-credit inter linkages, the number of absentee landlords and / or his family members work alongside agricultural labourers or not (Sharma and Kumar, 2003). The casual labourers in all the six sample villages on an average received wage payment after 3-4 days. For most of the days, the casual labourers worked on piece rate basis. The wage income earned by working on piece rate basis contributed around 61 percent of the total household's income. In one village, it was 65 percent. The average number of hours of work by a labourer did not exceed eight hours standard norm. During peak season, the average working hours varied from 8 to 9 hours. The last wage revision in the sample villages took place 3 years ago and wage rate was revised mainly due to the initiative of labourers.

4.1.4 Intra and Inter-village Wage Variations

There is no remarkable difference in the wage rate received by daily casual labourers within the village. Most of the casual labourers reported about uniformity of wage rate within the village for a given agricultural operation. But at *Nakol* – a village under moderately developed blocks, casual labourers reported the existence of differential wage rates within the village for a given agricultural operations. Very few casual labourers in our sample reported receiving a wage rate different from the market rate in the village for a given operation. The variation of the daily wage rate from the market rate arises due to the difference of skills of labourers. The higher demand for skilled labourers ensures better wages as compared to unskilled labourers. The speedy completion and better quality of works done by skilled labourers leads to higher wages to them than the market wage rate some times. Wage variations across the surveyed villages are found as in Table 4.3 indicates. It may be noted that most village studies have made similar observation. For instance, Bardhan and Rudra

(1983), Rodgers (1983), Drez and Mukherjee (1986) and Bardhan (1989), among others have reported this phenomenon. Wages are high in those villages where scope of non-farm activities are available and more labourers worked out side the village and even outside the state.

Table 4.3
Some Aspects of Functioning of Market for Casual Day Labourers in Surveyed Villages of Uttar Dinajpur District

Particulars		Unit	Villages under Highly Developed Blocks		Villages under Moderately Developed Blocks		Villages under Least Developed Blocks	
			Delwalpur	*Malon*	*Tilna*	*Nakol*	*Jagatagaon*	*Dharampur*
Money Wage Rate		Rs/Day	40.58	39.64	39.69	38.37	44.57	39.47
Cash+Kind +Meals		%	15	10	12	7	7	5
Cash+Kind		%	20	26	28	33	34	37
Only Cash		%	50	49	42	48	47	45
Only Kind		%	15	15	18	12	12	13
Rate of Payment	Time Rate	%	35	34	40	40	41	42
	Piece Rate	%	65	64	60	60	59	48
Frequency of Wage Payment		Days	3	4	3	4	4	4
Last Wage Revision		Years	3	3	3	3	3	3
Initiation of Wage revision	Employers	%	30	30	25	28	28	25
	Labourers	%	70	70	75	72	72	75

Data Source: Own Field Survey

4.1.5 Wage Earnings of Casual Group Agricultural Labourers

The wage rates for different agricultural operations earned by group agricultural labourers have been incorporated in Table 4.4. The employment of group labourers in agriculture has been spreading rapidly and is utilized for major agricultural operations like transplantations, weeding, harvesting and threshing involving more amount of labour. The payment is piece rate basis and the amount is shared equally among members. The transplantations of traditional variety of paddy (*aman*) requires 4-5 man days per *bigha* and wage rate varies from Rs. 200 per *bigha* at *Nakol* – a village under least developed blocks to Rs. 220 per *bigha* at *Jagatagaon* – a village under least developed blocks. At the same time, transplantations of *boro* paddy requires more man days per bigha as compared to traditional variety of paddy and accordingly wage rates per *bigha* for *boro* paddy is higher as compared to tradidional variety of paddy (table 4.4). For weeding of *aman* paddy, the wage rate varies from Rs. 140 per *bigha* at *Nakol* – a village under moderately developed blocks to Rs. 152 per *bigha* at *Jagatagaon* – a village under least developed blocks.

Similarly, for weeding of jute, the wage rate varies from Rs. 220 per *bigha* at *Nakol* – a village under moderately developed blocks to Rs. 248 per *bigha* at *Jagatagaon* – a village under least developed blocks. For harvesting of paddy, the traditional share system is still prevalent in these villages of this district. In the villages surveyed, the crop share for harvesting of paddy varied from 1/4th to 1/6th of the product. The harvesting share for paddy within a village also showed considerable variation; for instance in village *Delwalpur*, for paddy, the range varied from 1/4th for *boro* paddy to 1/5th for *aman* paddy. For harvesting of jute, piece rate system is used and wage rate varied from Rs. 140 per *bigha* at *Nakol* – a village under moderately developed blocks to Rs. 160 per *bigha* at *Jagatagaon* - a village under least developed blocks. Under the piece rate system, the supervision cost is lower as compared to individual casual workers. But the quality of work done by group labourers does not always ensure better quality as they maintained speed of the work.

Table 4.4
Operation Specific Wage Payments to Casual Group Labourers Across Surveyed Villages of Uttar Dinajpur District

Operations	Required Man Days Per *Bigha* (8 Hours)	Unit	Villages under Highly Developed Blocks		Villages under Moderately Developed Blocks		Villages under Least Developed Blocks	
			Delwalpur	*Malon*	*Tilna*	*Nakol*	*Jagatagaon*	*Dharampur*
Transplantations	4-5	Rs/*Bigha*	215	210	212	200	220	202
Aman Paddy (Traditional)	5-6	Rs/*Bigha*	250	246	248	238	255	240
Boro Paddy (HYV)								
Weeding								
Aman Paddy (Traditional)	3--4	Rs/*Bigha*	150	145	147	140	152	141
Boro Paddy (HYV)	4-5	Rs/*Bigha*	200	185	186	180	202	180
Jute	5-6	Rs/*Bigha*	240	235	236	220	248	225
Harvesting, Threshing and Storing								
Aman Paddy (Traditional)	8-9	Share of Product	1/5th	1/5th	1/6th	1/6th	1/5th	1/6th
Boro Paddy (HYV)	10-11	Share of Product	1/4th	1/4th	1/5th	1/5th	1/4th	1/5th
Harvesting of Jute	3-4	Rs/*Bigha*	156	145	147	140	160	141

Data Source: Own FieldSurvey
Note: One *Bigha* = 33 Decimal

4.1.6 Wage Earnings of Casual Day Agricultural Labourers

The most important wage system for casual day labourers in the area under study is the daily wage rate; it is a time rate, for a workday. An average working day

for casual day labourer, varies between six to eight hours, depending on the operation being performed. In all six villages, ploughing has strictly been a man's job, whereas transplanting, weeding, harvesting are typically performed by both man and woman for many years, there existed differential wage rates for genders in some villages. It was found that gender based discriminations had disappeared in three villages (*Delwalpur*, *Nakol* and *Dharampur*) out of six villages of Uttar Dinajpur district in some operations like transplantations and weedings. Jha (1997) showed in his study that gender based discrimination were absent in two villages out of five villages. It is interesting to note here that in one of Rudra's studies too, in only three out of fifty four villages were wage rates for casual female labourers lower than the wage rate for male casual labourers (Rudra, 1982).

Table 4.5

Particulars of Average Daily Wages of Casual Day Agricultural Labourers in Different Agricultural Operations Across Surveyed Villages of Uttar Dinajpur District

Operations	Villages under Highly Developed Blocks		Villages under Moderately Developed Blocks		Villages under Least Developed Blocks		All Villages /District
	Delwalpur	*Malon*	*Tilna*	*Nakol*	*Jagatagaon*	*Dharampur*	
Ploughing							
Males	43.25	41	41	38.50	44	40.25	41
Females	----	----	----	----	----	----	----
Sowing							
Males	42.5	39.25	39.5	38.00	43.75	39	39.83
Females	41	36.75	37.25	37.50	40.75	37.75	38.08
Transplantations							
Males	43.38	43.75	43	39.63	49.25	40.75	43.21
Females	43.38	41.50	41	39.63	46.75	40.75	42.13
Weeding							
Males	39.50	38.00	38.00	36.25	43.25	37.25	38.50
Females	39.50	35.75	35.5	36.25	39.5	37.25	37.08
Harvesting							
Males	45	44	46.25	43	50	44.25	44.96
Females	42	41.5	43.75	41	47	41.75	42.43
Others							
Males	41.50	39.25	41.25	38.90	45	39.25	40.42
Females	38.75	36.50	39.00	35.25	42.25	36.5	37.63
All Operations							
Males	41.48	40.88	40.67	38.81	45.88	40.13	41.32
Females	39.68	38.40	38.70	37.93	43.25	38.80	39.47
Discrimination Coefficient Between Males and Females	.05	.06	.05	.02	.06	.03	.05

Data Source: Own Field Survey

$$\text{Note: Discrimination Coefficient} = \frac{\text{Male Wage Rate} - \text{Female Wage Rate}}{\text{Female Wage Rate}}$$

The interesting question is: what brought about this change? Most of the respondents, from the villages, who were asked these questions, replied that female workers are less efficient than male labourers in some agricultural operations like

harvesting, leveling and irrigations. More over, they generally come in the work field one hour latter after maintaining their household works frequently. According to Kaur and Goyal (1996), women wages are lower than men's due to the fact that women are less mobile than men. Due to their family responsibilities they try to seek the jobs within their village / neighbouring villages. Women's poor bargaining power further widens the wage differences. They are much more disadvantaged in their access to employment due to more limited access to information on job opportunities due to lower literacy level, less access to mass media and less interaction with market place. As regards the gender-specificity of wage rate, the reason advanced by a majority of respondents in most field studies, that 'female workers are less efficient than male labourers' is spurious; it may be noted that in most field studies, an overwhelming percentage of respondents (employers as well as labourers) are males. The main factor, which explains lower wages rates for women, is the traditional lower status of women (Jha, 1997).

The average wage rates for different agricultural operations earned by male and female casual day agricultural labourers have been incorporated in Table 4.5. It shows marginal differences in wages of males and females in the operations in which both are employed in three villages (*Malon*, *Tilna* and *Jagatagaon*) of Uttar Dinajpur district. But in the remaining three villages, there was no gender differential in wages in some operations like transplantation, weeding and harvesting performed by both males and females. Out of six villages, discrimination coefficient between males and females is lowest at *Nakol* (.02) – a village under moderately developed blocks and highest at *Malon* (.06) – a village under highly developed blocks and at *Jagatagaon* (.06) – a village under least developed blocks in all agricultural operations. Among the different agricultural operations, weeding was the lowest paid operation and harvesting was the highest paid operation for labourers in the study area. In weeding, males and females are earning equal wages in three villages (*Delwalpur*, *Nakol* and *Dharampur*) of Uttar Dinajpur district. At *Delwalpur*, males and females are earnings Rs. 37.5 per day for weeding, at *Nakol* Rs. 36.25 per day and at *Dharampur* Rs, 37.25 per day for weeding. But in the rest of the villages *(Malon*, *Tilna* and *Jagatagaon*), women are earning less than men in all operations. In weeding, women are earnings Rs. 35.75 per day at *Malon*, Rs. 36.25 at *Tilna* and Rs. 39.25 per day at *Jagatagaon* while men are getting Rs. 38 per day at *Malon*, Rs 38 per day at *Tilna* and Rs 43.25 at *Jagatagaon*. In harvesting, women are getting wages less than men in all villages of

Uttar Dinajpur district. But in piece rate (share of product) system, men and women are getting equal wages in all villages in all agricultural operations. Because under this system, they form groups with equal able-bodied persons (men and women), bargain with employers and distribute their share equally among them after finishing their work. Under time rate system, for harvesting operations Rs. 45, Rs. 44, Rs. 43.5, Rs. 43, Rs. 50 and Rs. 4.25 per day are paid to males; Rs. 42, Rs. 41.5, Rs. 41.25, Rs. 41, Rs. 47 and Rs. 41.75 per day are paid to females at *Delwalpur*, *Malon*, *Tilna*, *Nakol*, *Jagatagaon* and *Dharampur*. It is seen from the above that among all the villages, the two villages (*Delwalpur* and *Jagatagaon*) maintained high average level of money wages for different agricultural operations.

Table 4.6
Particulars of Average Daily Wages of Casual Day Agricultural Labourers Across Surveyed Villages of Uttar Dinajpur District for Different Agricultural Operations (Seasonwise Wages in Rs)

Operations / Seasons	Villages under Highly Developed Blocks		Villages under Moderately Developed Blocks		Villages under Least Developed Blocks	
	Delwalpur	*Malon*	*Tilna*	*Nakol*	*Jagatagaon*	*Dharampur*
Ploughing						
Pre-*kharif*	42	40	35	35	43	38
Kharif	45	43	43	42	44	42
Rabi	42	39	38	35	43	38
Boro	44	42	44	42	46	43
Sowing						
Pre-*kharif*	40	37	35	33.5	41.5	35.5
Kharif	44.5	38.5	39	41	42.5	39.5
Rabi	39	37	35	33.5	41.5	37.5
Boro	43.5	39.5	43	39	43.5	41
Transplantation						
Pre-*kharif*	41	41	40	37.5	43.5	38
Kharif	44.5	43.5	42	43.5	50	44
Rabi	41.5	40	41.5	36.5	45.5	35.5
Boro	46.5	46	43	41	53	43
Weeding						
Pre-*kharif*	38	33.5	35.5	35	40	35
Kharif	41	38	38	40	41	38.5
Rabi	38	37	35	35	41	36.5
Boro	41	39	41.5	40	43.5	39
Harvesting						
Pre-*kharif*	41	40	41	41	43.5	41
Kharif	45	43.5	44	43	50	44
Rabi	41.5	41	40	40.5	47	41.5
Boro	46.5	46.5	44.5	43.5	53.5	45.5
Others						
Pre-*kharif*	38	37	35	34	41	34.5
Kharif	41	38.5	41	39	45.5	39
Rabi	40	36	39	33.5	43	36.5
Boro	41.5	40	42.5	40	45	41.5
Coefficient Variation of Wages	5.77	7.78	8.19	8.78	7.98	7.78

Data Source: Own Field Survey

4.1.7 Seasonal Variations in Agricultural Wages

Agricultural season can be divided in to four categories: *pre-kharif*, *kharif*, *rabi* and *boro*. There was variation in wages for different seasons. Wage rates were high during *kharif* season (mid-July to mid-October) and *boro* season (mid-January to mid-April) and comparatively low during the *pre-kharif* (mid-April to mid-July) and *rabi* season (mid-October to mid-January). This was mainly because the study area specializes mainly in *kharif* crops like *aman* paddy and *boro* crops like *boro* paddy. During these crops seasons, the demand for labour is very high for transplantations and harvesting of *aman* and *boro* paddy. At the time of harvesting of paddy, no labour goes out of their villages in search of employment. At the time of harvesting of *boro* paddy, labourers from Malda district comes in this district to carry out harvesting operation. The coefficient of variation of wages was lowest at *Delwalpur* (5.77) – a village under highly developed blocks and was highest at *Nakol* (8.78) – a village under moderately developed blocks. The values of coefficient variation of wages were 7.98 at *Jogatagaon* and 7.78 at *Dharampur* – villages under least developed blocks. High value of coefficient variation of wages implies high seasonal fluctuation of wages. The seasonal fluctuation of wages was low at the agriculturally developed villages. Thus, it transpires that development of agriculture reduces the seasonal fluctuation of wages in these villages. Another important factor, which will reduce seasonal fluctuation of wages, was occupational diversification in rural employment. Occupation diversification may be measured by the share of non-agricultural workers to total rural workers. The share of non-agricultural workers to total rural workers was higher at *Jagatagaon* and *Dharampur* as compared to other villages. As a result, the seasonal fluctuation of wages was lower at *Jagatagaon* and *Dharampur* as compared to some other villages like *Nakol*, *Tilna* and *Malon*.

4.1.8 Minimum Wages vs Agricultural Wages

The main objective of the Minimum Wage Act, 1948 was to prevent exploitation of labour through the payment of unduly low wages. The original Act has been amended from time to time and a number of advisory committees and boards set up by the Central and State governments have made recommendations relating to various aspects of the Act. For example, the National Commission on Rural Labour recommended that there should be uniform minimum wage applicable to all employments on the minimum subsistence level of workers and their families. Under

this Act, it is the statutory responsibility of the appropriate government to review the minimum wage at intervals not exceeding five years and revise them, if necessary. In the words of the National Commission for Labour, the Act is meant to ensure that market forces, and laws of demand and supply are not allowed to determine the wage of workmen in industries where workers are poor, vulnerable, unorganized and without bargaining power (GOI, 2002).

Government of West Bengal has fixed Rs. 62 per day as the minimum wage rate of labourer in the agricultural sector in the year 2000. The minimum wages fixed by the West Bengal Government are not actually paid to labourer in the agricultural sector in different villages of Uttar Dinajpur district. It may be noted that the implementation of minimum wages in the agricultural sector is difficult. In the peak seasons, wages remain high due to local shortage of labour. But this is only for short periods. In the slack season of agricultural activity, wages tend to be too low. Seasonal variation of wages in agriculture makes more problems regarding implementation of minimum wages in agriculture. To overcome these problems and to ensure higher wages in agriculture, it is necessary to create certain conditions in agriculture. Firstly, formation of trade union among agricultural labourers is essential to enhance bargaining power among them. Secondly, the public employment programme like National Rural Employment Guarantee Act, 2004 should provide alternative adequate employment opportunities in rural areas during slack season in agriculture. Other policies such as improved access of consumption credit for the labour during slack season, and reduced institutional credit for labour saving technology (with no land augmenting effects) provides additional support to the maintenance of minimum wages.

4.1.9 Overall Findings on Agricultural Wages

The wage determination process in rural labour market is very complex. There are several theories about determination of wage rate in the rural labour market. The wge rate will depend upon the bargaining power of both employers and labourers. Such type of informal bargaining is known as tacit bargaining. Modernization will increase the casualisation of agricultural labourers in our study area. Generally casual day agricultural labourers or casual group labourers bargain with their employers and able to ensure minimum subsistence wage rate for their livelehood after carrying out agricultural operations. Wage variations across the villages are found in the study

area. Higher occupational diversification will ensure the higher wage rate in the sample villages. Gender differential in wage rate are also found in the three villages out of six villages because of lower bargaining power of women, traditional lower status of women and some agricultural operations like ploughing, harvesting largely being male labour specific. At the same time, seasonal variation in wage rate will reduce the bargaining power of agricultural labourers in the study areas. Even they did not get the minimum wage rate fixed by the West Bengal Government in 2000 under the Minimum Wage Act.

4.2 Trends and Determinants of Agricultural Wages in West Bengal with Special Reference to Uttar Dinajpur District

4.2.1 Introduction

The important indicator of level of living of agricultural labourers is their wage rates, which is not only low but varies across the regions. Several studies, mainly based on data of agricultural wages in India (AWI), have reported rising trend of wages up to 1980's but reversed during the 1990's (Parthasarathy, 1996; Bhalla, 1997; Unni, 1997). Jose (1988) made a comparative study of wage rates over the periods 1970-71 to 1984-85 and concluded that real wage rates improved in almost every state with two major exceptions namely, Punjab and Haryana. But West Bengal shows wide fluctuations in the real wage without there being any perceptible increasing during 1970's. Acharya (1989) also made a comparative study of wage rates of agricultural labourers over the periods 1970-71 to 1984-85 and found that for one or two years in the mid seventies, the real wages reached their low point in all regions, though the extent of dip was not the same everywhere. The three years average wage figures for the years 1982-83 to 1984-85 show that in almost all areas, wages showed a rise. However, some recent studies do not support the trend of decelaration in real agricultural wages. Sharma (2001), for instance, using RLE data concluded that the agricultural wages did not witness a decline during 1990's contrary to the findings of studies based on AWI data. So different economists using different secondary data sources on rural wages have provided conflicting trends of real wages. In this section, we analyze the trends and determinants of agricultural wages across the districts of West Bengal.

4.2.2 Data Sources

There are various sources of data on the earnings of agricultural labourers. Out of these sources, the main source of data has been Agricultural Wages in India (AWI) annually published by the Directorate of Economics and Statistics, Ministry of Agriculture, Government of India. AWI is the only source that provides time series data on agricultural wages. Apart from AWI, Rural Labour Enquiry (RLE) Reports, published by the Labour Bureau are based on the quinquennial NSS surveys, have also been used in a number of studies to analyze the trends in wage earnings of agricultural labour households. The two sources differ not only in periodicity but also

in methodology and coverage (Rao, 1972). RLE is expected to provide a reliable estimate of agricultural wage earnings as the data are collected from a sample of agricultural labourers (Chavan and Bedamata, 2006). But RLE provides wage data only at the state level, so we use AWI data to analyze trends of wage rates of agricultural labourers across the districts of West Bengal.

Both money and real wages of agricultural labourers across the districts of West Bengal have been worked out for male and female labourers over the (1980-81 to 2000-01) twenty years. Wage rates compiled in this study are those of male and female workers hired for field labour operations. All wage rates are measured in rupee per day. The AWI gives monthly averages of daily wage rates. We have taken unweighted averages of these monthly wage rates to obtain the average annual wage rates. The real wages of agricultural labourers was calculated by deflating the nominal wage figure by the APIAL (Average Price Index of Agricultural Labourers) with 1960-61 as the base. However, since the APIAL are available only at the state level, the districts within each state have been subject to the same deflator.

4.2.3 Money Wages in Agriculture

The trends of money wage rates across the districts of West Bengal during the periods 1980-81 to 2000-01 has been examined in this section. It is seen from the Table 4.7 that there was a steady increase in money wages across the districts of West Bengal, though the magnitude of the increase differed from one district to another. Among all the districts one northern district of West Bengal mainly Darjeeling and three southern districts of West Bengal mainly Hooghly, 24 Parganas (south), and Midnapore (east) consistently maintained a high level of average money wages throughout the periods under review. During these periods, among all the sample districts, average nominal wage of male agricultural labourers was the highest for the district of 24 Parganas (south) closely followed by Hooghly, Howrah, Burdwan, Darjeeling and Midnapore (East). Relatively low level of money wages have all along been reported during these periods – from the districts of Purulia, West (Uttar and Dakshin) Dinajpur and Coochbehar. This is due to the fact that Purulia district is draught prone area of West Bengal. West Dinajpur and Coochbehar are economically backward and the absence of trade union among agricultural labourers in these districts put downward pressure on wage rate. Other districts of West Bengal did not show any particular trends of money wage rates. The ranking of districts based on

female wage was almost similar to that of male labourers. During 1980s, at the top was Burdwan district followed by Hooghly, Midnapore (East), 24 Parganas (South) and Darjeeling. During 1990s, 24 Parganas (South) recorded the highest average money wage rate followed by Hooghly, Midnapore (East), Burdwan and Darjeeling. A relatively low wage rate for female labourers was noted for Purulia, West Dinajpur and Coochbehar.

4.2.4 Real Wages in Agriculture

The constructed real wages of agricultural labourers for different districts of West Bengal obtained from NSS data for the periods 1983-84 to 2000-01 are given in Table 4.8. The main method of arriving at the real wage was to deflate the nominal wage figure by the APIAL with 1960-61 as the base. But APIAL are available only at the state level, the different districts of West Bengal have been subject to same deflator. First we consider the trends of male real wage rate of agricultural labourers. The male real wages show a decline in the mid-1980s but a gradual recovery in the latter part of the decade. However, these gradual increases were not sustained in subsequent years. In most of the districts of West Bengal, it is found that real wages fluctuates during the first half of the decade but increases during the second half of the decade.

In the case of female labourers, we do not find any clear trends of real wages during the first half of eighties in West Bengal but increasing trends in the second half of eighties. The similar phenomenon observed at the districts level except West Dinajpur and Burdwan. In the case of two districts, an increasing trend of real wages is observed during 1980's.

However, increasing trends of male real wages in the latter half of 1980s were not sustained in subsequent years. The decline in wage rate was observed in West Bengal in the first half of 1990s. This period was one when India faced serious economic crisis and adopted the policy of liberalization. After liberalization period real wages of agricultural labourers has declined in most of the districts of West Bengal. The latter half of the decade started with recovery of the wage rate but again found declining trend in the beginning of 2000. This similar trend of wage rate is also observed at the district level except Jalpaiguri district. In this district, an increasing trend of real wage is observed at the first half of 1990's and declining trend is

observed in the second half of 1990's. The data for female wage rate are available up to 1997-98. The similar trend is observed for female agricultural labourers.

The gender differential in agricultural wages is observed in various districts of West Bengal during our periods of analysis. The gender-based discrimination is arising from gender-based specialization of specific farm operations. Agricultural operations like ploughing and also post harvest operations, which may carry higher rewards, are generally performed by male workers. On the other hand, women workers predominantly perform operations such as sowing and weeding with relatively low wages. From the table, it is clear that gender disparities in wages are found to be conspicuously large in many districts of West Bengal. As far as up to 1997-98, female wages stayed at less than 80 percent of the male wage rates in some districts like Darjeeling, Malda, Murshidabad, North 24 Parganas and south 24 Parganas while in districts like Coochbehar, West Dinajpur, Jalpaiguri, Nadia, Birbhum, Bankura, Purulia, Hooghly, Howra, Burdwan and Midnapore (East and West), they tended to remain well above 80 percent levels. Finally the figures also show that in most of the districts there has been a distinct tendency for wage disparities to narrow down.

Table 4.7
Average Money Wage Rate Per Field Agricultural Labourers Across the Districts of West Bengal

Name of the Districts	1980-81		1981-82		1983-84		1984-85		1986-87		1987-88		1988-89		1989-90		1990-91	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Darjeeling	7.68	6.80	8.34	6.79	8.63	7.20	9.00	8.00	18.66	13.19	17.43	11.98	20.79	14.06	13	11	NA	NA
Coochbihar	6.26	4.90	7.52	7.17	NA	NA	8.74	7.81	10.00	7.33	11.78	9.47	14.08	10.77	15.72	12.56	16.98	13.38
West (Uttar and Dakshin) Dinajpur	5.05	4.51	5.65	4.93	6.79	6.29	NA	NA	10.96	8.65	10.46	7.74	11.78	9.77	14.20	11.23	17.03	12.59
Jalpaiguri	NA	NA	7.61	6.79	8.48	7.77	8.94	8.00	13.24	10.02	14.89	12.75	18.38	14.50	16.21	12.96	20	15
Malda	4.71	3.56	5.53	4.18	6.50	5.33	6.00	5.00	NA	NA	14.67	10.61	17.56	13.48	18.16	14.63	19.84	15.65
Murshidabad	7.75	6.69	7.40	5.80	9.83	7.29	11.46	9.58	13.69	9.10	14.17	10.14	18.78	14.25	19.83	16.10	19.9	17.11
Nadia	5.84	5.62	6.22	5.57	6.67	5.93	NA	NA	15.24	12.20	14.96	11.60	17.21	13.02	19.06	15.43	21.80	17.75
Birbhum	6.96	6.05	7.35	6.69	8.22	7.67	NA	NA	11.80	9.66	14.66	12.45	16.56	14.40	18.11	17.23	18.72	16.49
Bankura	7.28	6.59	7.59	8.36	NA	NA	NA	NA	12.97	12.61	14.82	13.81	NA	NA	22.08	20.16	24.26	21.50
Purulia	NA	NA	6.47	6.13	7.00	7.00	NA	NA	12.07	10.25	14.00	12.00	9.72	8.11	10.51	9.63	16.73	16.53
24 parganas (North)	7.63	6.08	7.94	6.21	8.00	7.88	9.00	NA	13.98	10.54	16.00	9.35	17.36	12.56	19.00	15.03	21.05	15.98
24 Parganas (South)					12.50	10.80	NA	NA	NA	NA	21.42	11.75	21.52	16.28	27.47	20.58	29.86	21.59
Hooghly	8.10	7.88	7.59	8.36	9.65	7.67	11.67	NA	16.20	13.17	18.45	15.85	20.30	17.50	23.18	19.03	24.54	21.35
Howrah	7.92	5.13	8.67	5.66	NA	NA	NA	NA	NA	NA	NA	NA	21.25	15.03	22.03	15.75	23.54	15.90
Burdwan	7.66	7.38	8.30	8.30	11.06	11.06	NA	NA	15.33	14.88	18.12	17.06	18.17	17.56	18.98	18.32	25.46	23.42
Midnapore (East)	7.58	6.46	7.27	6.38	11.00	10.00	NA	NA	15.59	12.61	19.33	17.00	25.35	22.12	23.38	20.44	25.68	22.11
Midnapore (West)					9.21	9.21	NA	NA	11.01	9.34	13.58	13.36	16.19	14.25	20.22	18.75	20.9	19.44
West Bengal	6.96	5.97	7.30	6.49	8.82	7.84	9.26	7.68	13.62	10.97	15.55	12.31	17.81	14.23	18.89	15.81	21.65	17.86

Table 4.7 (continued)

Name of the Districts	1991-92		1992-93		1993-94		1994-95		1995-96		1996-97		1997-98		1998-99		1999-00		2000-01	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Darjeeling	20	15	NA	NA	36.68	30.00	37.75	30.5	39.60	31.79	48.12	35.67	49.21	36.99	62.75	NA	63.17	NA	63.67	NA
Coochbihar	19.57	15.69	23.96	17.06	24.29	17.53	26.47	20.06	28.15	22.09	35.95	29.12	39.21	31.72	46.16	NA	49.48	NA	50.23	NA
West (Uttar and Dakshin) Dinajpur	19.84	14.75	23.70	14.10	24.15	17.51	24.41	18.96	26.48	20.85	37.32	29.53	40.81	33.15	47.09	NA	49.36	NA	51.60 50.37	NA NA
Jalpaiguri	23.74	21.31	NA	NA	28.13	23.83	29	25	NA	NA	NA	NA	46.06	38.13	51.69	NA	55.09	NA	56.56	NA
Malda	23.27	19.36	23.73	19.51	24.15	19.28	25.94	20.36	27.77	21.63	36.32	29.53	NA	NA	46.01	NA	49.96	NA	52.02	NA
Murshidabad	21.67	NA	23.25	NA	25.42	21.00	27.25	21.45	29.27	23.24	39.48	30.20	42	32.59	48.06	NA	53.21	NA	54.46	NA
Nadia	23.93	19.08	25.23	19.82	25.74	19.89	27.52	20.07	31.04	22.53	38.80	30.30	42.64	33.49	48.71	NA	54.25	NA	56.00	NA
Birbhum	20.85	18.26	21.10	19.62	21.49	19.60	24.33	20.50	25.67	22.50	34.07	29.12	38.69	34.13	44.96	NA	50.46	NA	51.79	NA
Bankura	25.89	22.50	26.33	20.67	26.95	21.18	28.31	22.21	30.32	23.93	37.33	30.44	40.30	34.44	48.50	NA	53.96	NA	55.02	NA
Purulia	20.04	20.01	NA	NA	22.00	17.00	22.33	16.76	23.38	19.33	31.50	22.50	33.16	25.89	39.08	NA	45.52	NA	47.48	NA
24 parganas (North)	24.79	18.96	29.58	20.00	30.18	20.70	30.16	0.34	32.93	22.18	38.72	30.28	43.97	34.99	49.90	NA	55.92	NA	57.52	NA
24 Parganas (South)	29.01	24.26	40.73	31.83	38.60	31.08	40.56	0.50	42.66	32.32	45.32	35.28	42.64	33.49	59.93	NA	64.17	NA	64.98	NA
Hooghly	28.02	24.33	32.28	25.98	32.02	24.48	33.13	24.57	NA	NA	NA	NA	43.43	34.99	50.99	NA	58.77	NA	60.17	NA
Howrah	25.20	17.00	28.46	19.5	32.30	22.38	32.92	25.00	34.77	27.59	43.77	33.63	46.16	36.30	54.80	NA	59.21	NA	61.35	NA
Burdwan	NA	NA	30.01	24.05	33.57	23.66	33.96	24.33	37.82	27.70	41.13	32.34	44.22	36.18	51.79	NA	57.44	NA	59.21	NA
Midnapore (East)	29.80	26.33	31.33	26.46	32.04	26.38	32.65	7.39	NA	NA	NA	NA	44.44	36.46	51.60	NA	59.94	NA	60.87	NA
Midnapore (West)	21.00	18.97	21.73	18.57	23.22	18.74	24.69	20.05	29.03	22.01	29.03	22.01	38.97	32.53	47.27	NA	52.59	NA	54.10	NA
West Bengal	23.54	19.72	27.24	21.32	28.29	22.01	29.49	22.83	31.35	24.22	38.35	30.00	42.24	34.09	49.96	NA	54.86	NA	55.97	NA

Data Source: Different Rounds of AWI

Note: NA = Not Available, M= Male, F=Female

Table 4.8
Average Real Wage Rate Per Field Agricultural Labourers Across the District of West Bengal

Name of the Districts	1980-81		181-82		183-84		1984-85		1986-87		1987-88		1988-89		189-90		1990-91	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Darjeeling	1.96	1.73	2.01	1.64	1.64	1.37	1.74	1.55	3.17	2.24	2.79	1.92	3.10	2.10	1.82	1.54	NA	NA
Coochbihar	1.60	1.25	1.81	1.73	NA	NA	1.69	1.51	1.70	1.25	1.89	1.52	2.10	1.61	2.20	1.76	2.19	1.73
West (Uttar and Dakshin) Dinajpur	1.29	1.15	1.36	1.19	1.29	1.20	NA	NA	1.86	1.47	1.68	1.24	1.76	1.46	1.99	1.57	2.20	1.63
Jalpaiguri	NA	NA	1.83	1.64	1.62	1.48	1.73	1.55	2.55	1.70	2.39	2.04	2.74	2.16	2.27	1.81	2.58	1.94
Malda	1.20	.91	1.33	1.01	1.24	1.02	1.16	.97	NA	NA	2.35	1.70	2.62	2.01	2.54	2.05	2.56	2.02
Murshidabad	1.98	1.71	1.78	1.40	1.87	1.39	2.22	1.86	2.33	1.55	2.27	1.63	2.80	2.12	2.77	2.25	2.57	2.21
Nadia	1.49	1.43	1.50	1.34	1.27	1.13	NA	NA	2.59	2.07	2.40	1.86	2.56	1.94	2.67	2.16	2.82	2.29
Birbhum	1.78	1.54	1.77	1.61	1.57	1.46	NA	NA	2.01	1.64	2.35	2.00	2.47	2.15	2.53	2.41	2.42	2.13
Bankura	1.86	1.68	1.83	2.01	NA	NA	NA	NA	2.21	2.14	2.38	2.21	NA	NA	3.09	2.82	3.13	2.78
Purulia	NA	NA	1.56	1.48	1.33	1.33	NA	NA	2.05	1.74	2.24	1.92	1.45	1.21	1.47	1.35	2.16	2.14
24 parganas (North)	1.95	.55	1.91	1.50	1.52	1.50	NA	NA	2.38	1.79	2.56	1.50	2.59	1.87	2.66	2.10	2.72	2.06
24 Parganas (South)					2.39	2.06	NA	NA	NA	NA	2.43	1.88	3.21	2.43	3.84	2.88	3.86	2.79
Hooghly	2.07	2.01	1.83	2.01	1.84	1.46	2.26	NA	2.76	2.24	2.96	2.54	3.03	2.61	3.24	2.66	3.17	2.76
Howrah	2.02	1.31	2.09	1.36	NA	NA	NA	NA	NA	NA	NA	NA	3.17	2.24	3.08	2.20	3.04	2.05
Burdwan	1.95	1.88	2.00	2.00	2.11	2.11	NA	NA	2.61	2.53	2.90	2.73	2.71	2.62	2.65	2.56	3.29	3.03
Midnapore (East)	1.93	1.65	1.75	1.54	2.10	1.90	NA	NA	2.65	2.14	3.10	2.72	3.78	3.30	3.27	2.86	3.32	2.86
Midnapore (West)					1.75	1.75	NA	NA	1.87	1.58	2.18	2.14	2.41	2.12	2.83	2.62	2.71	2.51
West Bengal	1.78	1.52	1.76	1.56	1.68	1.51	1.80	1.49	2.34	1.86	2.43	1.97	2.66	2.12	2.64	2.21	2.80	2.31

Table 4.8 (continued)

Name of the Districts	1991-92		1992.93		193-94		1994-95		1995-96		1996-97		1997-98		1998-99		1999-00		2000-01	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Darjeeling	2.19	1.64	NA	NA	3.52	2.88	3.29	2.66	3.14	2.52	3.51	2.60	3.46	2.60	3.81	NA	3.57	NA	3.24	NA
Coochbihar	2.14	1.72	2.39	1.70	2.33	1.68	2.31	1.75	2.23	1.75	2.62	2.13	2.76	2.23	2.81	NA	2.79	NA	2.64	NA
West (Uttar and Dakshin) Dinajpur	2.17	1.62	2.37	1.41	2.32	1.68	2.13	1.65	2.10	1.65	2.72	2.08	2.87	2.33	2.86	NA	2.79	NA	2.71 2.65	NA NA
Jalpaiguri	2.60	2.33	NA	NA	2.70	2.29	2.53	2.18	NA	NA	NA	NA	3.24	2.68	3.14	NA	3.11	NA	2.98	NA
Malda	2.55	2.12	2.37	1.95	2.32	1.85	2.26	1.78	2.20	1.71	2.65	2.16	NA	NA	2.80	NA	2.82	NA	2.74	NA
Murshidabad	2.37	NA	2.32	NA	2.44	2.02	2.38	1.87	2.32	1.84	2.88	2.20	2.96	2.29	2.92	NA	3.00	NA	2.86	NA
Nadia	2.62	2.09	2.52	1.98	2.47	1.91	2.40	1.75	2.46	1.79	2.83	2.21	3.00	2.36	2.96	NA	3.06	NA	2.95	NA
Birbhum	2.28	2.00	2.11	1.96	2.06	1.88	2.12	1.79	2.03	1.78	2.49	2.13	2.72	2.40	2.73	NA	2.85	NA	2.72	NA
Bankura	2.84	2.46	2.63	2.06	2.59	2.03	2.47	1.94	2.40	1.90	2.72	2.22	2.84	2.42	2.95	NA	3.05	NA	2.89	NA
Purulia	2.19	2.19	NA	NA	2.11	1.63	1.95	1.46	1.85	1.53	2.30	1.64	2.33	1.82	2.38	NA	2.57	NA	2.50	NA
24 parganas (North)	2.72	2.08	2.95	2.00	2.90	1.99	2.63	1.77	2.61	1.76	2.83	2.21	3.09	2.46	3.03	NA	3.16	NA	3.06	NA
24 Parganas (South)	3.18	2.66	4.06	3.18	3.71	2.99	3.54	2.66	3.38	2.56	3.31	2.58	3.00	2.36	3.64	NA	3.62	NA	3.42	NA
Hooghly	3.07	2.66	3.22	2.59	3.08	2.35	2.89	2.14	NA	NA	NA	NA	3.06	2.46	3.10	NA	3.32	NA	3.17	NA
Howrah	2.76	1.86	2.84	1.95	3.10	2.15	2.87	2.18	2.76	2.18	3.19	2.45	3.25	2.55	3.33	NA	3.34	NA	3.23	NA
Burdwan	NA	NA	3.00	2.40	3.22	2.27	2.96	2.12	3.00	2.19	3.00	2.36	3.11	2.55	3.15	NA	3.24	NA	3.11	NA
Midnapore (East)	3.26	2.88	3.13	2.64	3.08	2.53	2.85	2.39	NA	NA	NA	NA	3.13	2.57	3.14	NA	3.38	NA	3.20	NA
Midnapore (West)	2.30	2.08	2.17	1.85	2.23	1.80	2.15	1.75	2.30	1.74	2.50	2.65	2.74	2.29	2.87	NA	2.97	NA	2.85	NA
West Bengal	2.56	2.16	2.72	2.13	2.72	2.11	2.57	1.99	2.48	1.92	2.83	2.26	2.97	2.40	3.04	NA	3.10	NA	2.94	NA

Data Source: Different Rounds of AWI

4.2.5 Inter-regional Variation in Real Wages

Inter-regional variation in real wages of agricultural labourers across the districts of West Bengal has been probed further by computing the co-efficient of variation of real wages during the periods 1980-81 to 2000-01 for males and females workers separately. This co–efficient expressed in percentage terms (standard deviation / mean) x 100 are given in Table 4.9. For male agricultural labourers, there appears to have been a further decline in regional wage disparities. The co-efficient comes down from 13.48 percent in 1980-81 to 10.88 percent in 2000-01. The intervening years do not, however, show any continuous decline of disparities as there were number of years from 1983-84 onwards during which co-efficient of variation fluctuated around the value of 20. In the case of female wage rates, however, there is no such downward trend in the measure of disparities. For the period of eighties, some distinct patterns emerge: an initial decline in inter-district disparities, followed by an increase around the end of the eighties. For both male and female wages, there appears a downward trend of inter-districts disparity in the early nineties followed by an upward jump. But at the end of nineties, the regional variation of both male and female wages declined. For male, co-efficient variation of wages declined from 17.08 percent in 1995-96 to 7.48 percent in 1997-98. Similarly for females, the movement of co-efficient of variation of wages shows a similar trend though it is not so clear. Over the whole period, it is noticed that there has been a very gradual movement towards equity between the different regions.

We did not get the clear trend of co-efficient of variation of wages up to 1995-96. After that year, the co-efficient variation of wages is continuously declining for both male and females.

Table 4.9
Co-efficient Variation of Wages of Field Agricultural Labourers Across the Districts of West Bengal

Year	Males	Females
1980-81	13.48	19.74
1981-82	11.36	19.23
1983-84	20.83	21.85
1984-85	20.56	18.79
1986-87	16.67	19.35
1987-88	14.81	21.32
1988-89	19.92	23.11
1989-90	21.59	21.72
1990-91	15.71	17.32
1991-92	12.79	16.67

1992-93	18.75	14.08
1993-94	16.91	19.43
1994-95	17.51	16.58
1995-96	18.15	16.67
1996-97	9.89	10.62
1997-98	8.75	7.08
1998-99	9.87	NA
1999-00	7.10	NA
2000-01	10.88	NA

Data Source: Calculated From Table 4.8

4.2.6 Factors Influencing Wage Trends

The NSS data for study period show large variations in real wage rates of agricultural labourers across the districts of West Bengal. In this study, the variations in the male wage rates are sought to be explained by five relevant demands and supply variables. These variables are labour productivity, diversification of labour into other occupation, gross cropped area per agricultural labourers, cropping intensity and literacy rate. Out of five independent variables, variables such as labour productivity and cropping intensity are growth related economic variables, which are expected to increase demand for labour. Labour productivity may be used as a proxy of values of agricultural output per capita per male agricultural labourers. Parthasarathy (1996) shows that wage rates are positively related with labour productivity. Cropping intensity (CI) explains the intensity of crop cultivation in a region. The higher value of CI implies the higher demand for labour, which in turn increases the wage rate. So the relationship between CI and wage rate is positive. The relationship between VOPMAL and wage rate is also positive. Higher the value of VOPMAL is expected to increase the wage rate of agricultural labourers. Diversification of labour into other occupations is measured by percentage of male nona-gricultural labourers in total rural male labour (PMNAL). The proportion of non-agricultural labour in total rural labour force is a measure of the availability of jobs outside agriculture. The hypothesis here is that greater diversification of occupation raises agricultural wage rate by raising the supply price and bargaining power of labour.

GCAPMAL explains the intensity of supply of labour in each district. Higher values of GCAPMAL imply the higher demand for labour in that region. However,

the relationship between GCAPMAL and wage rate can also be negative if larger proportion of GCA is rain-fed because the requirement of labour per hectare is normally less in rain-fed areas, as has been reflected from the data on cost of cultivation (CACP, 2002). The rural male literacy rate has been used as a proxy variable of literacy rate for male agricultural labourers. The rural literacy rate increases the awareness of the people, which helps to increases the bargaining power of the labour community, and which ultimately results in higher wage rate.

Table 4.10
Determinants of Real Wage Rates of Agricultural Labourers Across the Districts of West Bengal

Districts	PMNAL		VOPMAL		CI		GCAPMAL		PMLR	
	1990-9	2000-0	1990-91	2000-01	1990-9	2000-01	1990-9	2000-01	1990-9	200-01
Darjeeling	49.68	77.39	9.64	15.19	125	136	3.32	3.22	67.07	81.28
Coochbehar	24.77	35.88	15.40	23.95	184	192	2.63	1.78	57.35	76.83
Uttar Dinajpur	21.83	31.87	13.28	18.43	161	183	1.89	1.35	45.83	59.27
Daskhin Dinajpu		32.39	13.28	19.56		157		1.35		73.30
Jalpaiguri	49.82	63.91	10.49	19.67	136	167	3.10	2.43	56	73.64
Malda	27.68	41.92	10.83	26.54	192	206	1.69	1.12	45.61	59.24
Murshidabad	32.36	42.97	14.70	29.13	183	192	1.78	1.35	46.42	61.40
Nadia	40.71	51.43	18.94	15.39	230	242	2.16	1.92	60.05	72.67
Birbhum	28.32	38.97	15.30	21.52	144	136	1.70	1.10	59.26	71.57
Bankura	28.16	36.21	16.33	19.56	139	145	1.75	.99	66.75	77.21
Purulia	47.20	40.45	9.06	11.15	106	104	1.78	.80	62.17	74.18
24 parganas (North)	63.81	75.12	9.08	22.84	145.50	198	1.21	1.27	71.59	84.35
24 Parganas (South)		57.94		15.14		142		.92		79.89
Hooghly	54.10	62.58	16.10	23.05	203	172	1.27	.88	75.77	83.05
Howrah	74.00	84.17	8.52	20.27	203	190	1.09	1.13	76.11	83.68
Burdwan	49.68	56.88	14.84	24.12	162	165	1.35	1.07	71.12	79.30
Midnapore	33.30	40.27	14.40	25.46	150	164	1.98	1.21	81.27	85.25

Data Source: Various Issues of Statistical Abstract, Government of West Bengal

We have estimated multiple regressions using the five variables to examine the variation of male wage rate across the districts of West Bengal. We are taking log value of both independent and dependent variables for our analysis. The study uses cross section data of 17 districts of West Bengal covering two time points: 1990-91 and 2000-01. The results of the multiple regression function are as follows:

Functional Relation Fitted

$$MRWR = a + b_1\ PMNAL + b_2\ VOPMAL + b_3\ CI + b_4\ GCAPMAL + b_5\ PMLR \text{ - - - - - - (I)}$$

Where

MRWR = Male Real Wage Rate

PMNAL = Proportion of Rural Male Non-Agricultural Labourers in Total Rural Male Workers

VOPMAL = Value of Output Per Male Agricultural Labourers (In Rs.)

CI = Cropping Intensity (percent)

GCAPMAL = Gross Cropped Area Per Male Agricultural Labourers (ha.)

PMLR = Proportion of Rural Male Literate to Total Rural Male Population

Estimated Equation for the year 1990-91,

$$MRWR = -062447 + 0.168973\ PMNAL + 0.213167\ VOPMAL + 0.055224\ CI - 0.16205$$
$$(0.143637) \quad (0.190179) \quad (0.194228) \quad (0.138978)$$
$$GCAPMAL + 0.262417\ MLR + U_i \text{ - - - - - - - } R^2 = .667591 \text{ - - - - - - - (2)}$$
$$(0.262391)$$

Estimated Equation for the Year 2000-01

$$MRWR = -0.25596 + 0.188225*PMNAL + 0.03527\ VOPMAL + 0.028577\ CI - 0.01511$$
$$(0.0663167) \quad (0.076103) \quad (0.101552) \quad (0.04468)$$
$$GCAPMAL + 0.262417\ MLR + U_i \text{ - - - - - - - - - } R^2 = .667045 \text{ - - - - - - - - (3)}$$
$$(0.166258)$$

The regression exercise is based on real wages of male agricultural labourers at two different points of time. As the results suggest, out of the five variables used in equation (1), only one variable namely, occupational diversification has positively and significantly influenced the real wage rate of male agricultural labourers in 2000-01 but in 1990-91, the coefficient of occupational diversification is only positive but not significant. The regression co-efficient of occupational diversification pertaining to the period 2000-01 suggests that an one unit increase in percentage of non-agricultural labourers in total rural workers increased about .19 paise / day in real wage rate of male agricultural labourers. This is due to the fact that occupational diversification restricts the supply of labour in agriculture and is likely to exert an upward pressure on agricultural wages. The value of R^2 is around .66 percent in all three times points, which is fairly good considering the cross section data used here for the analysis.

It was expected that the supply of labour (GCAPAL) and CI would positively and significantly influence the wage rates of agricultural labourers in two points of time. But this has not come out from the analysis. While the co-efficient of CI turned out to be positive but insignificant in the two time points, the co-efficient of GCAPAL

turned out to be not only insignificant but even negative during two points of time. Intensive use of machinery (tractor, harvesters, threshers etc) followed in those areas, which have higher CI may have dampened the increase of real wage rates of agricultural labourers. The insignificant co-efficient of GCAPAL implies that the supply of labour is no longer relevant in determining the wage rate because of the fast changes that have been taking place in the rural labour market (Narayana Moorthy and Bhattarai, 2004). These results are consistent with the findings of earlier studies (Acharya, 1989; Bhalla, 1993 and Sarmah, 2002). The male literacy rate is positively correlated with the real wage rate in two time points but not significant. So literacy rate is not a good determinant of real wage rate.

4.2.7 Overall Findings on Trends and Determinants of Agricultural Wages

The objective of this paper was to examine the trends and determinants of wages of agricultural labourers across the districts of West Bengal from 1980-81 to 1999-00. We have used AWI data to examine the trends of wages of agricultural labourers though there are certain limitations of AWI data set. The AWI wage data of different years shows that there was a slow down in the growth rate of real daily wages of male and female agricultural labourers in more than half of the districts in the first half of eighties but gradual recovery in the latter part of the decade. However, increasing trends of real wages in the latter half of the eighties were not sustained in the subsequent years. The decline in wage rate is observed in the first half of the nineties. The latter half of the decade started with recovery of the wage rate but again declined in the beginning of the 2000. The gender differential in wage rates of agricultural labourers has been found but declined in most of the districts over the years. There was a declining trend in the variation of real wages across the districts of West Bengal over the years. The variations in the male wage rates are sought to be explained by five relevant demands and supply variables. These variables are labour productivity, diversification of labour into other occupations, gross cropped area per agricultural labourers, cropping intensity and literacy rate. As the results suggest, out of the five variables used in equation (1), only one variable, namely, occupational diversification has positively and significantly influenced the real wage rate of male agricultural labourers in 2000-01.

4.3 Wages and Employment Levels of Agricultural Labourers in West Bengal with Special Reference to Uttar Dinajpur District

4.3.1 Introduction

The wage rates and employment availability per agricultural labourers in West Bengal is low as compared to some other states of India. Low wage rates and low employment availability per agricultural labourer are the main reasons for poor economic conditions of agricultural labourers in West Bengal. There are several theories about determination of wages and employment of rural labourers. In Libenstein's (1958) and Mazumdar's (1959) theory, given a positive association between wages and the efficiency of labour, it would be profitable for the employers to pay the workers a higher than the subsistence wage rate. An alternative approach to explain the determination of rural wages in terms of demand and supply of labour has also been followed by quite a few scholars. For example, Mishra (1970), Bardhan (1973), Lal (1974), Bardhan (1979 and 1984), Evanson and Binswanger (1979), Rosenweig (1979) and Vaidyanathan (1979) and some of the studies which try to explain interregional variations in agricultural wage rates in the conventional supply-demand frame work. Most of the studies shows that agricultural wages are positively related with demand factors like irrigation, cropping intensity, use of HYV's and average income level of cultivating households (perhaps indicating the agriculturist's paying capacity) and negatively related with supply factors such as relative size of agricultural labour and production variability index (Sidhu, 1988). On the other hand, Bardhan (1978), Mehra (19760) and Raj Krishna (1975) and some other studies which try to explain the impact of new agricultural technology on employment in rural areas. They explain whether it is positively or negatively related with the employment in agriculture.

Since there is considerable unemployment in rural areas and since wage rates and employment are interrelated terms, it is necessary to discuss the relationship between wage rates and employment in agriculture. This relationship is quite complex. The classical theory shows that the relationship between the money wage rate and employment level is negative. Our objective is to discuss the relationship between change in money wage rate and rate of employment in West Bengal in the context of modernization and commercialization of agriculture. Before discussing this

relationship, we discuss the trend of wage rate and trend of employment availability per agricultural labour in West Bengal.

4.3.2 Trends in Money Wage Earnings of Agricultural Labourers

The daily money wage earnings (Table 1) of both adult male and adult female agricultural labourers in West Bengal have been continuously increasing during 1970's, 1980's and 1990's. Gender differential in agricultural wages were observed in West Bengal during our period of analysis. The prevalence of such differentials often arises from gender-based specialization of specific farm operations. Agricultural operations like ploughing and also post-harvest operations such as sowing, transplantation and weeding with low relatively wages are performed by women workers. As far as up to 1999-00, female wage constitutes above 80 percent of male wages rates in West Bengal.

Table 4.11
Trends in the Average Agricultural Daily Money Wage Earnings Per Agricultural Labourer in West Bengal (in Rs)

Year	Adult Male	Adult female	Person
1974-75	3.49	2.83	3.16
1977-78	4.24	3.69	3.97
1983	4.85	4.52	4.67
1987-88	11.86	10.69	11.28
1993-94	23.64	20.49	22.07
1999-00	43.45	37.03	40.24

Data Source: Rural Labour Enquiry Reports on Wages and Earnings of 1974-75, 1977-78, 1983, 1987-88, 1993-94 and 1999-00

Table 4.12
Annual Growth Rate of Agricultural Daily Money Wage Earning Per Agricultural Labourer in West Bengal (in Percentage)

Year	Adult Male	Adult Female	Person
1974-75 to 1977-78	4.30	6.08	5.13
1977-78 to 1983	2.88	4.50	3.53
1983 to 1987-88	28.91	27.30	28.31
1987-88 to 1993-94	19.87	18.33	19.13
1983 to 1993-94	38.74	35.33	37.26
1993-94 to 1999-00	16.75	16.14	16.47

Data Source: Rural Labour Enquiry Reports on Wages and Earnings of 1974-75, 1977-78, 1983, 1987-88, 1993-94 and 1999-00

Table 4.12 shows the growth rate of money wage earnings of agricultural labourers in West Bengal. Growth rates are estimated on the basis of pre and post-reform periods. The pre-reform period includes the years 1983 to 1993-94 and post-reform period includes the years 1993-94 to 1999-00. The annual growth rate of money wage earnings during pre-reform period was 37.26 percent, which was higher than post-reform growth rate (16.75 percent). From the Table it is also clear that the annual growth rate of money wage earnings of agricultural labourers declined during post-reform period in West Bengal though the money wage earnings of agricultural labourers in absolute term increased over the periods.

Table 4.13
Agricultural Daily Money Wage Earning Per Agricultural Labourer Across Villages of Uttar Dinajpur District (in Rs)

Name of The Villages	Adult Male	Adult Female	Person
Villages under Highly Developed Blocks			
Delwalpur	41.48	39.68	40.58
Malon	40.88	38.40	39.64
Villages under Moderately developed Blocks	40.67	38.70	39.69
Tilna	38.81	37.93	38.37
Nakol			
Villages under Least Developed Blocks			
Jagatagaon	45.88	43.25	44.57
Dharampur	40.13	38.80	39.47
All Villages / District	41.32	39.47	40.40

Data Source: Own Field Survey

Table 4.13 highlights the average daily money wage earnings of agricultural labourers across the villages of Uttar Dinajpur district. From this Table, it is clear that the average daily agricultural money wage earnings of agricultural labourers in Uttar Dinajpur district was lower than the West Bengal level in different years as stated above. The wage rate of agricultural laboureres varies from Rs. 38.37 at *Nakol* – a village under moderately developed blocks to Rs. 44.57 at *Jagatagaon* – a village under least developed blocks. So the money wage earning of agricultural labourers was lower in the villages under moderately developed blocks as compared to the villages under the least developed and highly developed blocks. Marginal gender differential exist in the villages of Uttar Dinajpur district. Female wage rate constitutes more than 90 percent of the male wage rate. In our study area, we find that the share of non-agricultural workers to total rural workers or occupational diversification played an important role in determining the wage rates of agricultural labourers in a particular region of this district as compared to development factors.

4.3.3 Causes of Slow Growth Rate of Money Wage Earnings

After the introduction of economic reforms in India in 1991, the growth rate of money wage earnings of agricultural labourers declined in West Bengal (Table 4.12). There are several demand and supply factors, which affect the growth rates of money wage rates of rural workers. Most of the earlier studies (Mishra 1970, Bardhan 1973, Lal 1974, Bardhan 1979, 1984 and Vaidyanathan, 1980) show that agricultural wages are positively related with demand factors like irrigation, labour productivity, cropping intensity, use of HYV seeds and negatively related with supply factors such as share of agricultural labourers to total rural workers. Occupational diversification away from agriculture restricts the supply of agricultural labour and is likely to exert an upward pressure on agricultural wages. Diversification to other occupations is measured by percentage of non-agricultural labour in total rural labour. According to H. S. Sidhu (1988), the new agricultural technology is not only expected to generate an increase in the demand for labour but because of the increased importance of timeliness of each operation, it is also likely to increase the bargaining power of wage labour. As a result agricultural wage rates are likely to be positively related with the demand factors. We analyze below the trends of these demand and supply factors during pre and post-reforms period in order to explain the reasons behind the slow

growth rate of money wage rates in the post-reform period (1991-2001) as compared to pre-reform period (1981-1991) in West Bengal.

Table 4.14
Annual Growth Rates of Demand Factors Related to Agricultural Daily Money Wage Rates and Employment Levels of Agricultural Labourers in West Bengal (Percentage)

Demand Factors	**1981-1991**	**1991-2001**
1. Value of Agricultural Output Per Worker (taken value of 10 agricultural product)	13.73	7.54
2. Area Under HYV Seeds	9.43	4.86
3. Fertilizers (N.P.K.) Consumption Per Thousand Hectare of Net Sown Area (in tones)	16.62	4.41
4. Cropping Intensity	1.44	.57
5. Irrigated Area Under Canals (in hectares)	.78	.49
6. Mechanization of Agricultural Technique, i. e., No. of Tractors Per thousand hectare of Net Sown Area	1981-1991 20.14	1991-1997 20.50

Data Source: Various Issues of the Statistical Abstract, Government of West Bengal

Table 4.15
Annual Growth Rate of Supply Factors Related to Agricultural Daily Money Wage Rate and Employment Level of Agricultural Labourers in West Bengal (In Percentage)

Supply Factors	1981-1991	1991-2001
Agricultural Labourers	4.15	3.70
Non-Agricultural Labourers	6.44	8.87

Data Source: Various Issues of the Statistical Abstract, Government of West Bengal

Table 4.16
Share of Supply Factors Related to Agricultural Daily Money Wage Rates and Employment Levels of Agricultural Labourers in West Bengal

Supply Factors	1981	1991	2001
1.Share of Agricultural Labourers to Total Rural Workers	32.95	32.27	33.08
2. Share of Non-Agricultural labourers to Total Rural Workers	25.77	29.33	41.40

Data Source: Census 1981, 1991 and 2001

From the Table 4.14, it is clear that the growth rate of value of agricultural output per worker was 13.73 percent during the pre-reform period, which was higher than the post-reform period growth rate (7.54 percent) in West Bengal. Similarly, growth rate of area under HYV seeds was 9.43 percent during pre reform period; it declined to 4.86 percent during the post-reform period. The annual growth rates of all demand factors like cropping intensity, fertilizers consumption per thousand hectares of net sown area, irrigated area under canals and number of tractors used per thousand hectare of net sown area in West Bengal declined during the post-reform period. Now we consider the supply factors, i. e., the share of agricultural labourers to total workers and share of non-agricultural workers to total rural workers. From the Table 4.16, it is clear that the share of agricultural labourers to total rural workers increased from 32.27 percent during 1991 to 33.08 percent during 2001. It creates downward pressure in the rural money wage rates. Similarly, the share of non-agricultural workers to total rural workers also increased from 29.33 percent during 1991 to 41.40 percent during 2001. It creates upward pressure on the money wage rates of agricultural labourers. So both demand and supply factors are responsible for low growth rates of money wage rates in West Bengal during the post-reform period.

4.3.4 Trends of Employment Days Available Per Agricultural Labourers in West Bengal

The employment days available per agricultural labourer were 242 man days in 1977-78, which was higher than 80's and 90's level in West Bengal. The employment days available per male agricultural labourer was higher than the female agricultural labourer. The employment days available per agricultural labourer were lower in 1993-94 as compared to 1987-88 in West Bengal. The decline in employment days pe ragricultural labourers in West Bengal are likely due to the adoption of labour displacing technology. Ishikawa's well known observation on the 'path of change' in labour intensity in rice cultivation in Japan and Taiwan is illustrated by his invented 'U' shaped curves. The rising phase of this curve is a consequence of labour using, yield-enhancing technological factors: mainly HYV-water-fertilizer package and the improved cultivation practices. After a point, the introductions of labour saving technological factors (mechanization, improved implements etc.) begin to outweigh the impact of labour using factors, and consequently the labour absorption trend line falls (Jha, 1997).

Table 4.17
Trends of Employment Days (Annual) Available Per Agricultural Labourer in Agricultural Activities in West Bengal

Year	Adult Male	Adult Female	Person
1974-75	223	158	190
1977-78	270	215	242
1983	236	201	218
1987-88	265	193	229
1993-94	260	178	219

Source: Rural Labour Enquiry Reports on Employment and Unemployment for 1974-75, 1977-78, 1983, 1987-88 and 1993-94

Table 4.18
Growth Rate of Employment in Agriculture in West Bengal

Year	Adult Male	Adult female	Person
1983/1993-94	1.15	-0.64	.71
1993-94/1999-00	1.12	-.2.54	.30

Data Source: Chadha and Sahu (2004).

Table 4.18 gives a synoptic view of agricultural employment growth across sex in West Bengal. Growth rates are estimated for two sub-periods: 1983/1993-94 and 1993-94/1999-00. We take these as pre and post-reform periods. The rate of growth of employment in agriculture declined from .71 percent in 1983 / 1993-94 to .30 percent in West Bengal in 1993-94 / 1999-00 (post-reform period). The rate of growth of employment of male agricultural labourers also declined but positive during pre and post-reform period. For female workers, the rate of growth of employment is negative during pre and post-reform period.

Table 4.19
Average Number of Employment Days (Annual) Available Per Agricultural Labourer in Agriculture Across Surveyed Villages of Uttar Dinajpur District. (8 Hours Man-Day)

Name of the Villages	Adult Male	Adult Female	Person
Villages under Highly Developed Blocks			
Delwalpur	171.63	157.30	164.28
Malon	198.47	176.06	189.12
Villages under Moderately Developed Blocks			
Tilna	145.21	133.02	138.18
Nakol	201.23	172.66	189.02
Villages under Least Developed Blocks			
Jagatagaon	182.67	143.86	160.53
Dharampur	181.95	157.56	168.75
All Villages / Uttar Dinajpur District	180.98	157.15	169.71

Data Source: Own Field Survey

The employment days available per agricultural labourer in agriculture across the villages of Uttar Dinajpur district (Table 4.19) was lower than the West Bengal level in different years as stated above. The employment days available per agricultural labourer varied from 138.18 days at *Tilna* – a village under moderately developed blocks to 189.12 days at *Malon* – a village under highly developed blocks. Gender differential exists in employment days available per agricultural labourers. The employment days available per male agricultural labourer was higher than per female agricultural labourer in Uttar Dinajpur district. The employment days available per female agricultural labourer constitutes 86.83 percent of the man days available per male agricultural labourer.

4.3.5 Causes of Slow Growth Rate of Employment

The new agricultural technology can be divided into two categories, i. e. water fertilizer technology (commonly known as HYV technology) and agro-mechanic technology, which is often equated in the literature within mechanization especially tractorisation. The HYV technology can increase the demand for labour if irrigation facilities are available and when fertilizer responsive varieties are used, which in turn increases the work associated with improved agricultural practices. Application of all

the inputs like water, fertilizer, pesticides require the use of more labour. The yield of HYV seeds is higher as compared to traditional varieties and therefore the use of more labour is also required for harvesting and threshing of crops. On the other hand, mechanization especially tractorisation reduces the demand for labour.

Several studies have shown that HYV technology has increased the demand for labour in agriculture. For example, Bardhan (1978) shows an increase in labour use per hectare with increasing technological improvement as irrigation, HYV, fertilizers, plant protection chemicals and multiple cropping in Hooghly district of West Bengal between 1956-57 and 1970-71, input of human labour per year per acre of cultivated area doubled. This phenomenal increase was associated with irrigation extension in their survey areas from 15 percent of net sown area to 55 percent, diversification in cropping pattern in the crops of potato, wheat and summer paddy, as increase in the cropping intensity from 1.23 to 1.53. Bardhan's regression results confirmed the influence of HYV technology on employment (Basant, 1987).

Mehra (1976) concludes that like irrigation, the seed-water fertilizer technology also increases labour use indirectly through an increase in the cropping intensity and even more importantly via changes in the cropping pattern in favour of more labour intensive crops. But since its spread was accompanied by mechanization, the substitution of capital for labour had led to a reduction rather than an increase in the labour input per hectare on individual crops (Basant, 1987).

Raj Krishna's (1975) decomposition analysis for Punjab as a whole (wheat and rice combined) substantiates Mehra's conclusion about mechanization. In his model negative employment effect of tractor technology (-95 man hours per hecare) set against the positive effect (+ 64 man hours per hectare) arising from other elements of change (including those in the pattern and intensity of cropping associated with factors other than tractor use) is only reason for negative direct employment effect of technological change (K. Bardhan, 1977).

The HYV technology has a positive effect on employment in agriculture. The growth rate of fertilizer used per thousand per hectare of net sown areas, growth rate of irrigated area under canals, growth rate of area under HYV seeds declined during the post-reform period as compared to pre-reform period in West Bengal. But the mechanization technique especially tractorisation increased during the post-reform period in West Bengal. The growth rate of number of agricultural tractor per thousand hectare of net sown area during pre-reform period was 20.14 percent but it increased

to 20.50 percent during the post-reform period in West Bengal. So annual growth rate of adoption of seed fertilizer technology or HYV technology declined during the post-reform period but tractorisation increased during the post-reform period in West Bengal. These are the reasons of slow growth rate of employment in agriculture during the post-reform period as compared to pre-reform period growth rates.

4.3.6 Regression Analysis

Regression technique has been adopted to understand the relationship between employment days available per agricultural labourer and money wage earning per agricultural labourer both in West Bengal and across the villages of Uttar Dinajpur district. Here we assume employment days available per agricultural labourer as dependent variable and money wage earning as independent variable. The results of regression exercises are presented in the form of estimated equations both for West Bengal and across the villages of Uttar Dinajpur district. From the Tables 4.11 and 4.17, the following function has been fitted for male agricultural labourer in West Bengal:

$Y = a + bx + u_i$

Where Y = Agricultural Employment Days Available Per Male Agricultural Labourer

x = Money Wage Earning Per Male Agricultural Labourer

Thus estimated equation at the state level for male agricultural labourer:

$Y = - 35.845 + .18126\ x$

(8.8834) (.2189)

$R^2 = .186034$

$N = 5$

The fitted function for female agricultural labourer:

$Y = a + bx + u_i$

Where Y = Agricultural Employment Days Available Per Female Agricultural Labourer

x = Agricultural Money Wage Earning Per Female Agricultural Labourer

The estimated equation for female agricultural labourer at state level:

$Y = 20.286 - .06266x$

(8.4090) (.1920)

$R^2 = .034281$

$N = 5$

From the tables 4.13 and 4.19, we have fitted the following function for male agricultural labourer at the district level:

$Y = a + bx + u_i$

Where Y = Agricultural Employment Days Available Per Male Agricultural Labourer

x = Agricultural Money Wage Earning Per Male Agricultural labourer

The estimated equation for male agricultural labourer:

$Y = 43.92707 - .01453\ x$

(2.679121) (.0582702)

$R^2 = .015092$

$N = 6$

The fitted function for female agricultural labourer:

$Y = a + bx + u_i$

Where Y = Agricultural Employment Days Available Per Female Agricultural Labourer

x = Agricultural Money Wage Earning Per Female Agricultural Labourer

The estimated equation for female agricultural labourer:

$Y = 48.2485 - .05607x$

(1.912232) (.051925)

$R^2 = .225708$

$N = 6$

The regression analysis shows that there exists no systematic relationship between the dependent and independent variables both at the state level and district level. The co-efficient include variables like money wage rate of male and female agricultural labourers are found to be insignificant. Given other things, a one percent change in male money wage rate leads to a .181 percentage point positive change in the employment for male agricultural labourers and a one percentage change in female money wage rate leads to .063 percentage point negative in the employment for female agricultural labourers at the state level, which are not significant in statistical analysis. Similarly given other things at the district level, a one percent change in male money wage rate leads to a .015 percentage point negative change in the employment for male agricultural labourers and a one percent change in female money wage rate leads to a .056 percentage point negative change in the employment for female agricultural labourers, which are also not significant in statistical analysis. The values of all variance are very negligible both at the state level and at the district

level. So there is no systematic relationship between wage rates and employment in rural labour market. Mukherji (2006) shows that the relationship between wage and employment levels is indeterminate, when market imperfections exist in the labour market. The classical connections between wage rate and employment level are thus only in the case of perfect competition and monopoly. However, oligopsonistic situation exists in the village labour market. Therefore, the inverse relationship between wage rate and employment level did not exist in the rural labour market.

4.3.7 Overall Findings on Wages and Employment Level

The growth rate of both wage rates and employment rates in agriculture declined during the post-reform periods. It is also found that the inverse relationship between wage rates and employment did not exist in the rural labour market. Various studies as stated above shows that new HYV technology increased the demand for labour in the rural labour market which inturn increased the wage rates of agricultural labourers. On the other hand, tractorisation reduces the demand for labour, which put downward pressure on the wage rates. As a result we did not get any systematic relationship between wages and employment in agriculture

4.4 Summary

There are several theories regarding wage determination in the rural labour markets. For example, the subsistence or institutional wage theories, the efficiency wage models, the labour turns over models, the supply-demand models and the interlinked markets theories. Out of these models, the demand-supply model is the most appropriate model in determination of wages in rural labour markets. Theoretically, demand and supply of labour determine the wage rates. However, regional agricultural wages are determined by many other factors such as level of economic development, previous year's wage rate, productivity of land, intensity of cropping, level of irrigation use and use of modern inputs like chemical fertilizers, pestisides, high yielding varieties seed and machinery and implements. Seasonality may have another factor, which affects the wages of labourers.

Our analysis is mainly confined to wage determination of casual agricultural labourers due to non availability of annual farm servant in the study area. Casual day labourers work time rate basis and casual group labourers work piece rate basis. In the case of group labourers, there is no fixed working hours. An average working day for

casual day labourer, varies between six to eight hours, depending on the operation being performed. daily wage payment in the form of purely cash constitutes 46.83 percent in the district. Monetization of wage payments seems to increase with the development of agriculture. There is no remarkable difference in the wage rate received by daily casual labourers within the village. Most of the casual labourers reported about uniformity of wage rate within the village for a given agricultural operation. The variation of the daily wage rate from the market rate arises due to the difference of skills of labourers. Gender differential in wage rates existed in some villages. The minimum wages fixed by the West Bengal Government are not paid to labourer in the agricultural sector in different villages of the district.

The trends and determinants of agricultural wages across the districts of West Bengal have also been discussed. Both money and real wages of agricultural labourers have been worked out for male and female labourers over the periods 1980-81 to 2000-01. For this purpose, we use AWI data. There was a steady increase in money wages across districts of West Bengal, though the magnitude of the increase differed from one district to another over the years. The constructed real wages of agricultural labourers for different districts of West Bengal obtained from NSS data for the periods 1983-84 to 2000-01. In most of the districts of West Bengal, it is found that real wages fluctuates during the first half of eighties but increases during the second half of the decade. The decline in wage rate is observed in West Bengal in the first half of 1990's. This period was one when India faced serious economic crisis and adopted the policy of liberalization. After liberalization period real wages of agricultural labourers has declined in most of the districts of West Bengal. The latter half of the decade started with recovery of the wage rate but again found declining trend in the beginning of 2000. The data for female wage rate are available up to 1997-98. The gender differential in agricultural wages is also observed in various districts of West Bengal during our periods of analysis. The gender-based discrimination is arising from gender-based specialization of specific farm operations.

Inter-regional variation in real wages of agricultural labourers across districts of West Bengal has been probed further by computing the co-efficient variation of real wages during the periods 1980-81 to 2000-01 for males and females workers separately. For both male and female wages, there appears a downward trend of inter-districts disparity in the early nineties followed by an upward jump. But at the end of nineties, the regional variation of both male and female wages declined. Over the

whole period, it is noticed that there has been a very gradual movement towards equity between the different regions. The NSS data for study period show large variations in real wage rates of agricultural labourers across the districts of West Bengal. In this study, the variations in the male wage rates are sought to be explained by five relevant demands and supply variables. These variables are labour productivity, diversification of labour in to other occupation, gross cropped area per agricultural labourers, cropping intensity and literacy rate. As the results suggest, out of the five variables, only one variable namely, occupational diversification has positively and significantly influenced the real wage rate of male agricultural labourers in 2000-01.

Since there is considerable unemployment in rural areas and since wage rates and employment are interrelated terms, it is necessary to discuss the relationship between wage rates and employment in agriculture. This relationship is quite complex. The classical theory shows that money wage rate is inversely related to employment. But in the case of West Bengal, both growth rate of money wage rate and employment declined during the post economic reform period. We did not find any systematic relationship between wage rate and employment level both in at the state level and district level.