The Indian Journal of Labour Economics, Vol. 48, No. 2, 2005

ECONOMIC REFORM AND AGRICULTURAL WAGES IN INDIA

Ravi Srivastava and Richa Singh*

In this paper, the authors focus on agricultural wages and explore the rate of growth of real wages in different periods, corresponding to pre and post-economic reform. They then use the state level data over the entire time period to see whether the determinants of wages have changed over time.

I. INTRODUCTION

The Indian economy witnessed a major shift in the policy regime in the early nineties with the adoption of the New Economic Policy committed to greater liberalisation and opening up of the economy. The directional changes and their supposed impact on rural well-being have given rise to an intense debate in the literature. In the past, this debate has been focussed on trends in rural poverty.[1] But given the nature of non-comparability between the NSS 55th Round and earlier rounds of NSS consumption expenditure surveys, the debate has been rather inconclusive. However, careful adjustments of the data do suggest that the rate of reduction in poverty declined in the post reform period (Sen and Himanshu, 2003). Estimates of changes in rural poverty in the pre and post reform periods are widely divergent, suggesting that the rate of poverty reduction could have both increased and decreased in the post-reform period.

At the same time, the ambit of the debate has been broadened to an examination of other indicators and dimensions of rural well-being such as changes in employment and the structure of the workforce, mortality, health and nutrition status, rural wages and the condition of farmers (Sundaram, 2001; Sundaram and Tendulkar, 2003; Radhakrishna and Ravi, 2003; Deaton and Dreze, 2002; Panchamukhi, 2002). An examination of these alternative indicators also provides corroboration of the emerging trends in rural poverty (Deaton and Dreze, 2002).

Rural agricultural wage rate is identified as a critical indicator of economic well-being of rural labour (Acharya, 1989; Acharya and Papanek 1989; Datt and Ravallion, 1997). Directly, rural wages pertain to a section of the rural population which has a high incidence of poverty. Indirectly, rural wages signify the condition of the labour market and a high demand for labour and tight labour market conditions usually typify conditions leading to higher rural prosperity and lower poverty. Data on agricultural wages is available on a regular basis from several sources of which *Agricultural Wages in India (AWI)*, compiled and published by the Directorate of Economics and Statistics, Ministry of Agriculture, is the most important. The quinquennial NSS surveys on employment and unemployment provide data on both agricultural and non-agricultural wages and form the basis of the *Rural Labour Enquiry (RLE)* Reports which are published by the Labour Bureau. The two sources differ not only in periodicity but also in methodology and coverage. Wage data for *AWI* is collected for different agricultural operations on a monthly basis through different agencies of the State governments

* Centre for the Study of Regional Development, Jawaharlal Nehru University, New Delhi. The authors are grateful to Niranjan Sarangi and Shalini Saksena for their help, advice and computational support and to P. M. Kulkarni for valuable comments.

from centres (a village) within a number of districts in each state. The method of selection of the centres and the districts and the method of enquiry lacks uniformity and statistical objectivity. On the other hand, the NSS surveys are conducted all over the country through trained investigators, cover a much larger number of villages, and use a uniform methodology (Rao, 1972; Chavan and Bedmatta, 2003).

Trends in agricultural and rural wages have been explored in a number of studies (Krishnaji, 1971; Jose, 1974, 1978 and 1988; Lal, 1976; Sen, 1994; Parthasarthy, 1996; Bhalla, 1997; and Sarmah, 2002). Many studies have focussed on a long period of time and have brought out the acceleration in wages in the post-green revolution period in several states since the mid 1960s and subsequently again in the 1980s. During the 1980s, rural wages are shown to have risen quite sharply in a number of poor states (Jose, 1988). The period also witnessed a narrowing down of gender disparities. Another important conclusion of the study was that there was a strong linkage between the wage rate and the absolute level of product per worker (Srivastava, 2000). Studies for the nineties, however, revealed that the tendency of wages to rise in the eighties was reversed during the nineties and the growth of wages registered a deceleration (Sen, 1994; Parthasarthy, 1996; Bhalla, 1997; Unni, 1997; and Sarmah, 2002)

However, certain other recent studies do not support the trend of deceleration in real agricultural wages. Sharma (2001), for instance, using *RLE* data concluded that the agricultural wages did not witness a decline during the nineties contrary to the findings of studies based on *AWI* data. Sundaram (2001) also rejects the view that there has been a slow down in the rate of growth of average daily wage earnings of adult labourers during 1990s.

It is now possible to review the performance of agricultural wages for an entire decade following the onset of structural adjustment and economic reforms. Given the characteristics of rural labour such as high incidence of poverty, assetlessness, poor access to health and educational facilities and deplorable living conditions, gains from the reforms were likely to bypass the group. In addition, unlike their urban counterparts, rural labourers lack organisation and social security benefits like old age pension, maternity and sickness benefits and hence would not be able to make use of the opportunities provided by the structural reforms. With little skills and assets of their own and poor access to resources, rural labour households seem to have limited possibilities of sharing in the gains of the market-oriented process of economic reforms.

However, a significant impact on the prospects of agriculture and rural labour has been foreseen by some economists. An important rationale of economic reforms is its supposedly pro-agricultural and pro-labour bias. Impact of the economic reforms on rural labour are largely expected to be indirect and entrenched in the stabilisation and structural measures. The liberalisation of agriculture and the lowering of tariffs and removal of trade controls is expected to provide a major fillip to agriculture, raising agricultural incomes and productivity through farm and non-farm diversification and also raising the demand for labour. At the same time, the impetus given to labour-intensive export based growth was expected to have increased the demand for non-farm labour. This was expected to have had a substantial beneficial impact on agricultural wages and rural wages, accelerating the reduction of poverty in rural India (Rao, 1994). Yet at the same time it may be pointed out that stabilisation measures, which cut down on public investment, would have an unfavourable impact on the condition of rural labour. It would thwart public investment in rural infrastructure and since adequate rural infrastructure is a necessary precondition to realise the employment gains through the reform process the benefits would be limited. Besides with shift in production away from coarse grains and cereals along with free play of market forces prices of food grains would increase which would

depress real wages. However in the long run it has been argued that high prices are in the interest of labour as it would lead to increase in output and demand for labour, thus boosting agricultural wages (Boyce and Ravallion, 1991).

To sum up, the immediate impact of the structural and stabilisation measures on rural employment and welfare, as pointed out by (Rao, 1994) is expected to be negative. In the short run reduced public investment, rising prices of food grains, reduced agricultural growth, and limited employment gains through expansion of non-agricultural activities, will have an adverse impact on the economic well-being of rural labour. But in the long run, however, gains have been foreseen through the economic reforms which would largely be in the form of increased employment opportunities, provided it is accompanied by timely and adequate investment and diversification of the rural economy. Otherwise, backwash affects of technogical upgradation in rural industries, inflation and capital intensity in agriculture would adversely affect rural labour.

In this paper, we focus on agricultural wages and explore the rate of growth of real wages in different periods, corresponding to pre and post-economic reform. We then use the state level data over the entire time period to see whether the determinants of wages have changed over time. In doing so, we take a conscious decision to bypass a number of issues-institutional and non-institutional-which influence the determination of wages at the state level. Trends have been analysed for 15 major states based on wage data taken from two main sources, viz., *RLE* and *AWI*.

II. STATE-WISE GROWTH RATES OF RURAL VILLAGES

1. Trends Based on *RLE* Reports

RLE reports provide data on average daily wage earnings of workers by dividing the earnings recorded for a week for each activity by corresponding number of full days of employment in that activity. Earnings are reported for 'agricultural labour households' and 'rural labour households' separately, in cash and kind, for different types of agricultural and non-agricultural operations, such as, ploughing, sowing, transplanting, weeding, harvesting, cultivation, forestry, plantation, animal husbandry and fisheries. The data is reported at the state level for males, females and child labour.

Data on the last two categories is either very inadequate or missing in the *AWI*. Hence, we have simply focussed on trends in male wages in both the surveys. Although our focus in this paper is on agricultural wages, we also present the trend in rural wages. This is because it has been argued that in the recent period there has been a beneficial shift of labourers to non-agricultural sectors which have a witnessed acceleration in the growth of wages over this period (Sundaram, 2001a).

For the purpose of our analysis we have used the average daily earnings of males for all classes of rural labour households (RLHH) in agricultural and non-agricultural operations. The money earnings are converted into real earnings by deflating with CPIAL. Compound annual growth rates have been calculated for the pre and post reform period. Periods 1983-94 and 1993-94 to 1999-00, broadly correspond to pre and post reform periods.

The results of the *RLE* on agricultural wages of labourers in RLHH for major states are presented in Table 1. The annual growth rate of real wages decelerated sharply during 1993-00 as compared to 1983-1993, from 7.6 per cent per year in the first period to 2.4 per cent. This decline occurred in each and every major Indian state. During 1983-93, several states with low

Table 1
Male Agricultural Real Wage Earnings Levels and Compound Growth Rate of Rural Labour Households, 1983 to 1999-00

State	*Male agriculturalwage earnings*			*Compound annual growth rates*		
	1983	*1993-94*	*1999-00*	*1983-1993-94*	*1993-00*	*1983-00*
Andhra Pradesh	1.8	3.4	4.4	7.1	4.4	5.7
Assam	2.9	4.4	4.6	3.6	1.8	2.7
Bihar	1.7	2.9	3.9	5.5	5.0	5.0
Gujarat	2.0	3.3	4.1	4.7	3.5	3.9
Haryana	2.3	4.5	5.9	6.0	5.4	5.4
Karnataka	1.4	3.3	4.1	8.7	3.9	6.4
Kerala	3.8	7.0	9.9	5.7	6.0	5.5
Madhya Pradesh	1.3	2.9	3.1	7.9	1.4	5.1
Maharastra	1.6	3.5	4.1	8.2	2.5	5.7
Orissa	1.2	3.0	3.2	9.0	0.9	5.5
Punjab	3.5	6.2	6.2	5.7	-0.1	3.3
Rajasthan	1.8	3.9	4.7	7.6	2.4	5.3
Tamil Nadu	1.6	4.1	5.3	9.3	4.2	6.9
Uttar Pradesh	1.4	3.0	3.5	7.9	2.3	5.4
West Bengal	1.9	4.5	3.8	8.7	-2.4	4.2
All India	1.7	3.7	4.3	7.6	2.4	5.3
Correlation with initial wage level				-0.67	0.03	-0.51

Source: Rural Labour Enquiry: Report on Wages and Earnings of Rural Labour Households, 1983, 1993-94 and 1999-00.

initial wages, such as Andhra Pradesh, Karnataka, Maharashtra, Madhya Pradesh and Uttar Pradesh experienced above average growth rate in real wages. For all states taken together, there was a negative and significant correlation between initial wage level and the growth of real wages during 1983-93.

However, this changed during 1993-00 and initial wage levels (in 1993-94) and growth of real wages during 1993-94/1999-00 showed a very low, positive correlation. States which experienced comparatively high growth rates in real wages were at both sides of the spectrum - high wage states like Kerala, Haryana and Tamil Nadu, on the one hand, and Bihar, Andhra Pradesh and Karnataka on the other.

Compound rates of growth of real non-agricultural wages also show similar deceleration between 1983-93 and 1993-00 (Table 2). The all India compound rate of growth of rural non-agricultural wages declined from 7.4 per cent per year during 1983-93 to 2.9 per cent per year during 1993-00. The deceleration in growth rate of wages again took place across all major states. In the 1983-93 period, states such as Orissa and West Bengal, which had high levels of rural poverty, experienced very high rates of growth of non-agricultural wage rates, but in the post-reform period, only Madhya Pradesh and Bihar among the poorer states experienced above average growth rates in real wages, while the other states in this category were Tamil Nadu, Maharashtra, Karnataka, Haryana and Andhra Pradesh.

It is thus evident that rural wages experienced a deceleration across all the states during the nineties. Both agricultural and non-agricultural wage earnings of male RLHH registered a slowdown in growth rate of wage earnings in the post reform period. As in the case of agricultural wage earnings, the correlation between initial wage level and the growth of real non-agricultural earnings during 1983-93 was negative and significant while for the second period it becomes insignificant and positive.

Table 2
Male Non-agricultural Real Wage Earnings Levels and Compound Growth Rate of Rural Labour Households, 1983 to 1999-00

State	*Male non-agricultural wage earnings*			*Compound annual growth rates*		
	1983	*1993-94*	*1999-00*	*1983-1993-94*	*1993-00*	*1983-00*
Andhra Pradesh	2.4	4.5	5.8	6.6	3.7	5.4
Assam	4.3	5.8	5.7	3	-0.1	1.7
Bihar	2.8	4.1	5.1	3.8	3.3	3.6
Gujarat	3.4	5.8	4.9	5.6	-2.5	2.2
Haryana	2.8	6.1	7.8	8.1	3.6	6.2
Karnataka	2.5	4.8	6.3	6.8	3.8	5.5
Kerala	4.6	8.6	11.3	6.4	4	5.4
Madhya Pradesh	2.1	3.8	5.3	5.9	4.8	5.5
Maharastra	2.8	6.0	8.0	7.9	4.3	6.3
Orissa	1.5	3.8	4.3	10.1	1.6	6.5
Punjab	3.6	6.4	7.1	5.8	1.4	4.0
Rajasthan	2.9	4.9	5.7	5.4	2.1	4.0
Tamil Nadu	2.6	5.0	7.6	6.7	6.2	6.5
Uttar Pradesh	2.2	4.2	4.7	6.7	1.4	4.5
West Bengal	2.5	5.6	5.0	8.5	-1.7	4.2
All India	2.7	5.6	6.9	7.4	2.9	5.6
Correlation with initial wage level				-0.59	-0.09	0.52

Source: Rural Labour Enquiry: Report on Wages and Earnings of Rural Labour Households, 1983, 1993-94 and 1999-00.

1. Trends Based on *AWI* Reports

The *AWI* data on wages differs from the RLE in several respects. The most important facet is that *AWI* wages are reported to be higher than the daily earnings reported by the *RLE* (Rao, 1972; Jose, 1974; and Sharma, 2001). In the literature, it is generally accepted that the upward bias is relatively uniform over time (e.g. Rao, 1972) and the *AWI* data is fairly reliable, subject to certain important limitations. However, clearly, there are important differences between the two data sets. A comparison of the *AWI* and the *RLE* data on average male agricultural wages for relevant years (1983, 1993-94 and 1999-00) reveals that *AWI* estimates of wages are not only higher, the ranking of states in terms of wage estimates also differs between the two surveys at different points of time. The real wage estimates and the ranking of states for 1983, 1993-94 and 1999-00 is shown in Appendix Table A1. Given that these two surveys differ in many important respects, it would be useful to know the extent to which the *AWI* confirms some of the general trends brought out by the periodic *RLE* surveys.

AWI reports data for various categories of agricultural labour like ploughing, sowing, weeding and reaping/harvesting. The first category is reported only for male workers under the assumption that the task is undertaken mostly by male labourers, while all other categories are reported for males, females and child labour. For certain states like Andhra Pradesh, Karnataka and Maharashtra a consolidated figure for 'field labour' is published. The wage reported is a simple average (monthly and annual) of the wage paid both in cash and kind with the latter being converted into monetary form. All wage rates are in Rs. per day.

For the state level analysis of male agricultural wages, we have taken the series calculated by Sarmah (2002) up to the period 1991. This series has been updated beyond 1991 using AWI

reports which are available only till the year 1997-98. For the period 1998 to 2002 we have used the state level series obtained from the Ministry of Agriculture. The series has been updated by taking a simple average of wages rates reported for various operations like ploughing, sowing, and weeding is taken, for all states except Andhra Pradesh, Karnataka and Maharashtra, for these states we have used the consolidated figure of field labour as reported in the AWI. To arrive at the annual wage rate an un-weighted simple average of monthly figures is taken. At the state level weighted average of nominal wage rates has been calculated. Weights used reflect the proportion of agricultural labour population derived from the decennial population Census for 1981 and 1991. Nominal wage so arrived were converted into real wage by deflating by Consumer Price Index for Agricultural Wages (CPIAL) collected from *Indian Labour Journal*. The state level series is based only on male agricultural labourers.

Growth rates of real wages have been estimated by fitting a kinked exponential model (Boyce, 1986) of the following form:

$$\text{In } Y_t = á_1 + â_1 (D_1t + D_2k) + â_2 (D_2t - D_2k) + ì_{1,}$$

where,

$\text{In } Y_t$ = log of real male agricultural wage rate
$â_1$ = growth rate for period 1 i.e. 1981-1991
$â_2$ = growth rate for period 2 i.e. 1992-2000
k = break point (1991 is taken as break point, hence k =11)
D = dummy variable with value 1 before 1991 and 0 for period after 1991
$á_1$ = Constant
$ì_1$ = error term

The method adjusts for the kink by smoothing over the break point and ensures that the growth rate for the entire period lies between the growth rates of the two sub-periods. Kinked exponential models by imposing a continuity restriction at the break points between sub periods, eliminates the discontinuity bias and thus provides an improved basis for comparison of growth rates. Secondly since the whole series and all observations of the variable are taken into account in the kinked exponential method this method is preferred to the discontinuous estimates. The results of the kinked exponential model are presented in Table 3.

The overall growth rate in real male agricultural wages in India shows a significant decline from 4.9 per cent per annum during 1980-1991 to 2.6 per cent during 1992-2002. During the eighties low wage rate states such as Orissa and Madhya Pradesh perform better than the high wage rate states, such as, Kerala and Haryana. Highest growth rate during this period was registered by West Bengal (7.4 per cent) followed by Maharashtra (6.2 per cent), while the lowest growth rate was recorded by Gujarat (1.5 per cent) followed by Kerala (1.8 per cent). During this period there is a significant, negative correlation between initial level of wages and growth rates of wages.

During the post reform period a slowdown in real wage rates is palpably visible. Only five states show an improvement in growth rate, the most significant being that of Kerala (from 1.8 per cent to 7.3 per cent) followed by Gujarat and Tamil Nadu. The decline in growth rates is found to be very marked in the states of West Bengal (from 7.4 per cent in the eighties to -1.1 per cent in the nineties), Maharashtra (6.2 per cent to 1.1 per cent), Punjab (4.1 per cent to 1.9 per cent) Orissa (5.6 per cent to 1.2 per cent), and Assam (3.2 per cent to -0.1 per cent), all of

Table 3
Male Agricultural Wage Levels and Compound Growth Rate of Rural Labour Households, 1981 to 2000-02

States	*Male agricultural wage levels*			*Compound annual growth rates*		
	1981	1991	2002	1981-91	1992-02	1981-02
Andhra Pradesh	2.9	4.9	5.4	4.1(8.11)	0.7 (1.5)	2.2 (8.0)
Assam	4.2	5.6	5.1	3.2 (5.7)	-0.1 (1.1)	1.5 (4.9)
Bihar	2.7	4.5	5.4	4.4 (6.7)	1.2 (1.9)	2.7 (8.2)
Gujarat	3.1	4.1	6.1	1.5 (1.8)	4.2 (5.5)	2.9 (7.9)
Haryana	5.1	7.3	11.6	2.9 (5.2)	3.4 (6.8)	3.1 (13.5)
Karnataka	2.8	3.9	5.7	3.4 (3.4)	2.8 (3.1)	3.1 (7.3)
Kerala	6.1	7.6	15.5	1.8 (3.9)	7.3 (17.8)	4.7 (13.1)
Madhya Pradesh	2.1	3.7	4.5	5.5 (12.4)	2.2 (5.5)	3.8 (14.4)
Maharastra	2.2	3.8	5.1	6.2 (4.8)	1.1 (0.8)	3.5 (5.7)
Orissa	2.3	3.9	4.8	5.6 (9.4)	1.2 (2.3)	3.3 (9.4)
Punjab	5.4	8.0	7.2	4.1 (10.6)	-0.4 (-1.2)	1.7 (5.7)
Rajasthan	3.2	4.4	6.6	2.3 (2.7)	2.9 (3.7)	2.6 (7.3)
Tamil Nadu	2.6	3.6	6.0	3.3 (6.3)	4.9 (10.5)	4.2 (17.8)
Uttar Pradesh	2.4	4.3	5.3	4.9 (8.2)	1.9 (3.5)	3.3 (10.9)
West Bengal	3.4	5.3	5.7	7.4 (7.9)	-1.05 (-1.3)	2.9 (4.7)
All India	2.9	4.6	5.9	4.9 (7.1)	2.6 (3.1)	3.1(7.3)
Correlation with initial wage level				-0.47	0.05	-0.10

Note: Figures in parentheses give 't' test values.
Source: 1981 to 1991 based on Sarmah (2001), 1991 to 2002 based on *AWI* reports and data from Ministry of Agriculture.

which had registered a high growth in the eighties. In Andhra Pradesh, Bihar, Uttar Pradesh and Madhya Pradesh also the growth rates of wages remained at a dismally low level in the nineties as compared to the eighties. Out of the 15 states studied as many as 10 show a declining trend in real agricultural wages in the post reform period as compared to the pre reform period. During this period there is virtually no correlation between initial levels of wages and growth rate of wages.

The growth pattern of real wages based on *RLE* and *AWI* data brings out a number of other significant features which are summarised as follows: (1) On the basis of *AWI* estimates, Assam, Punjab and West Bengal show a decline in real wages in the recent decade. Note that the *RLE* also shows a decline in real agricultural wages in Punjab and West Bengal over 1993-00; (2) Unlike the *RLE* results, in which all states show a deceleration in wage growth in the second sub-period, in the *AWI* estimates, five out the 14 major states show higher rates of growth during 1992-2002. These states are Gujarat, Haryana, Kerala, Rajasthan and Tamil Nadu. All other states show lower rates of growth of real wages in the post-reform period, as compared to the observed trend in the 1980s; (3) All the five states which show an increase in the rate of growth of real wages based on AWI estimates, in the post reform period showed lower than average growth rates of wages in the pre-reform decade. Four of these states, viz., Kerala, Gujarat, Rajasthan and Haryana experienced the *lowest* rates of growth in the pre-reform period but all these states achieved the *highest* rates of growth among all major states in the pre-reform period; (4) At the other end, West Bengal, which experienced the highest rate of growth of real wages in the pre-reform period, experienced the lowest and negative rate of growth of wages in the post-reform period; (5) The fact that some states have oscillated between very high and very low rates of growth of real wages in the two periods would suggest

that there could be specific long-term lagged adjustments of wages to changes in labour market conditions, which may be independent of reform related conditions. Alternatively, there could be state specific reasons for changes in growth rates in agricultural wages which a study such as this one, which focuses on all states, may need to control for; (6) During the pre-reform period, Orissa and Madhya Pradesh among the poor states, as well as Maharashtra experienced above average growth rates, whereas the growth rate of real wages in Uttar Pradesh was similar to the all India rates and Bihar had a lower than average growth rate of wages. However, all these states experienced a deceleration in wages in the post-reform period; (7) During the pre-reform decade, West Bengal showed the highest rate of growth followed by Maharashtra, Orissa, Madhya Pradesh, Uttar Pradesh and Bihar. As already pointed out, Tamil Nadu, Assam, Haryana, Rajasthan, Kerala and Gujarat had the lowest rates of growth of wages; (8) During the post-reform period. Kerala had the highest rate of growth of agricultural wages, followed by Tamil Nadu, Gujarat, Haryana and Rajasthan whereas Andhra Pradesh, Assam, Punjab and West Bengal had the lowest growth rate of wages; (9) Over the entire period, Kerala experienced the highest rate of growth of agricultural wages, followed by Tamil Nadu, Madhya Pradesh, Maharashtra, Uttar Pradesh and Orissa; and (10) Despite differences, both the AWI and the RLE attest to a general pattern: several of the poor states experienced high rates of growth in the pre-reform period and a slow down thereafter. The other states show a more varied pattern.

III. EXPLAINING GROWTH IN REAL AGRICULTURAL WAGES

In the Indian context the most common approach for wage determination has been the neoclassical demand and supply framework. There are already a large number of studies explaining variations in wages across Indian states or NSS regions. Most of these studies are cross-sectional studies and use a number of variables affecting the demand or supply of agricultural labour. Productivity has been considered a dominant factor on the demand side; while on the supply side size of agricultural labour force and proportion of non-agricultural labour force have been used to explain determination of agricultural wages. Lal (1976) used per cent increase in cereal output and per cent increase in agricultural labour force, while Jose (1988) used only agricultural product per worker as determinants of agricultural wages. During the nineties diversification of rural labour force was identified as an important factor in explaining agricultural wages. Bhalla (1997) and Parthasarthy (1996), for example, used share of non-agricultural workers along with labour productivity as explanatory variables in their models of wage determination. Landlessness and land-labour ratio have also been used as explanatory variables by some economists, such as, Parthasarthy (1996), and Sharma (2001). More recently, Sarmah (2002) used urbanisation, male literacy and child mortality as added variables to explain wage determination of agricultural workers. Broadly, productivity variables like per worker output or per hectare output along with irrigation and rural diversification have emerged as key determinants of wages. Human development related variables like male literacy and life expectancy have also been found to play a positive role in wage determination.

Our primary interest is in variables which affect the growth of wages over time. Moreover, we see economic reforms as having a possible impact on the demand for agricultural wage labour through a number of routes.

We have taken into consideration the following groups of variables (for details, see Appendix Table A2): (1) Agricultural Productivity: The Net State Domestic Product in Agriculture per agricultural worker (SDPAGWK) or per hectare (SDPHA); (2) Agricultural

Diversification: Percentage Area under Non-food grains (ARENFG); (3) Non-farm Diversification: Percentage share of rural non-farm workers in total rural workforce (RUNFWK); or Percentage share of total non-farm workers in total (urban + rural) workforce (RNFWK); and (4) Capital investment: Percentage of net area irrigated (IRRI)

Although our paper focusses mainly on variables which may change under the impact of reforms, thereby affecting the demand for labour and the growth rate of wages, we have taken into consideration one supply variable, viz., Percentage of agricultural labourers to total rural workers (PAGLAB).

In the case of the *AWI*, we have compiled annual data on agricultural wages from 1980-81 to 2001-02. Regular time series of several explanatory variables is also available till 2000-01. In some cases (as in the case of workforce data), such a series can be obtained through interpolation. In all, we have compiled data for 14 major states over 20 years (1980-81 to 2000-01).

In our regression analysis, we have pooled together our cross-section data across different points of time and have used panel data analysis to obtain the results. Results have been computed using EVIEWS 3.1 econometric package.

By combining time series with cross section data, panel data analysis gives more informative data, more variability, less collinearity among variables, more degrees of freedom and more efficiency. The technique of panel data analysis can take into account the heterogeneity between states by allowing for individual-specific variables. Panel data analysis is also more suited to studying the dynamics of change. Finally, panel data analysis is more suited to better detect and measure effects that simply cannot be observed in pure cross-section or pure time series data. Thus, panel data analysis can enrich empirical analysis in ways that may not be possible if we only use cross section or pure time series data.

Our general functional form is as follows:

$$Ln(w_{it}) = \acute{a} + bX_{it} + E_{it} \quad (1)$$

where

w_{it} is real wage/daily earnings at 70-71 price level
X is the array of independent variables
b is the array of coefficients
i=1,2,3 …. 14 , for the 14 major states
and t = 1983, 1993-94 and 1999-00 in the case of *RLE* data
and t=1, 2, 3, 4, ….. 20 in case of *AWI* data

Initially we assume that the X's are non-stochastic and that the error term follows the classical assumptions, viz., $E(u_{it}) \sim N(0, s^2)$

The simplest way is to stack the observations for each State and to estimate the usual OLS regression. In the case of *AWI*, we introduce a time dummy, T, as follows:

T=0 if t=1 to 10 and T=1 id t=11 to 20.

In this case, significance of the time dummy, T, along with some of the dummy-interaction variables is suggestive of some changes in the relationship between ln(w) and the explanatory variables.

Our original equation now becomes modified as follows:

$$Ln(w_{it}) = \acute{a} + bX_{it} + \ddot{a}T_{2t} + \tilde{a}(TX_{it}) + E_{it} \quad (2)$$

However, if these results show a low D-W statistic, this could be suggestive of auto-correlation or of specification errors. Further, these results assume that intercept and slope coefficients are the same for all the States, and across time, which is a restrictive assumption.

We may therefore allow the intercept term for each state to vary, while keeping the slope coefficients the same. We may thus estimate the Fixed Effects Model (FEM), in which we do not allow the slope coefficients to vary for each state across time (notice however, that by taking time interactive dummies, we have allowed for different slope coefficients for the pre-reform and post-reform periods).

In order to allow for the fixed effect intercepts to vary across states, we introduce differential time dummies as follows:

$$Ln(w_{it}) = a + f_i + bX_{it} + \ddot{a}T + \tilde{a}(TX_{it}) + E_{it} \quad (3)$$

where,

f_i are the dummies for each of the 14 states

The FEM can judged to be better if the R^2, adjusted for degrees of freedom) improves and if the D-W statistic is also higher. We can also use the restricted F test.

Further, to decide between FEM and Random Effect Model, Haussman test can be employed and the Feasible GLS method correcting for cross-section heteroscedasticity and contemporanous correlation can be used.

1. Regression Results for Panel Data Analysis of *AWI* Data

Our regression model has been tested with AWI data for the 20 year period (1980-2000) using alternative specifications of the five groups of variables discussed earlier. Results are presented here for two alternative specifications using agricultural income per worker and per hectare respectively, since both these alternative models have comparably high explanatory value.

(i) Model with Net State Domestic Product in Agriculture per Agricultural Worker

We initially use pooled data analysis with Feasible GLS specification, which corrects for both cross-section heteroskedasticity and contemporanous correlation, to get the results as shown in Table 4.

In the pooled regression (Table 4), all the five variables chosen (ARENFG, SDPAGWK, IRRI, PAGLAB, and RUNFWK) are significant. The time dummy is also significant but only at 10 per cent level. However, the model has a low Durbin-Watson Statistic.

Pooled regression analysis has therefore been carried out using time dummy interaction with each of the variables, and the results are presented in Table 5.

It can be seen that all the five variables chosen, as well as the Time dummy, are again significant and have the correct signs (growth of real wages is positively associated with increase in the percentage area under non-foodgrains, agricultural income per worker, percentage of net area irrigated and percentage of total workforce in the non-farm sector, and is negatively associated with increase in the share of agricultural labourers in the rural workforce). It can also be seen with inclusion of time interaction, the time interaction effect with SDPAGWK, IRRI, ARENFG and PAGLAB are all highly positive. RUNFWK is the only variable for which the time interaction effect is not significant. However, the DW statistic is still low and $\overline{R^2}$ is marginally lower. We therefore see whether taking into account the Fixed State effects improves the specification of the model.

Table 4
Results for the Model with Common Coefficients

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
C	1.01221	0.030178	33.54077	0.00
ARENFG	0.00255	0.00046	5.515804	0.00
SDPAGWK	0.01180	0.00000	20.99652	0.00
IRRI	0.00318	0.00023	14.09455	0.00
PAGLAB	-0.00500	0.00051	-9.89061	0.00
RUNFWK	0.01001	0.00058	17.12859	0.00
TIME	0.03425	0.020125	1.701897	0.09
Log likelihood	285.907		Mean dependent variable	1.58
R-squared	0.57		S.D. dependent variable	0.36
Adjusted R-squared	0.56		Sum squared residual	15.08
S.E. of regression	0.24			
Durbin-Watson stat	0.57			

Table 5
Results for the Model with Common Coefficients with Time Interaction

Variable	*Coefficient*	*Std. error*	*t-statistic*	*Prob.*
C	0.92197	0.03	29.37	0.00
ARENFG	0.00405	0.00	6.32	0.00
SDPAGWK	0.01510	0.00	19.22	0.00
IRRI	0.00357	0.00	12.93	0.00
PAGLAB	-0.00446	0.00	-7.23	0.00
RUNFWK	0.00922	0.00	10.61	0.00
TIME	0.37664	0.06	6.07	0.00
TIME*ARENFG	-0.00376	0.00	-4.39	0.00
TIME*SDPAGWK	-0.00388	0.00	-3.42	0.00
TIME*IRRI	-0.00177	0.00	-4.38	0.00
TIME*PAGLAB	-0.00323	0.00	-2.96	0.00
TIME*RUNFWK	0.00078	0.00	0.64	0.53
Log likelihood	300.2471		Mean dependent variable	1.58
R-squared	0.58		S.D. dependent variable	0.36
Adjusted R-squared	0.56		Sum squared residual	14.8
S.E. of regression	0.24			
Durbin-Watson stat	0.58			

Fixed effects model (FEM)

As in the previous cases, the model is estimated by Feasible GLS specification which corrects for both cross-section heteroskedasticity and contemporanous correlation The results of the FEM show that all the State specific dummies are significant at 1 per cent level. The results of the model are as shown in Table 6.

With fixed effects $\overline{R^2}$ improves to 0.74 and DW statistics is 1.10, which shows that the model is more satisfactory than the first set of results. All the variables, except PAGLAB continue to be highly significant (at 1 per cent level, except RUNFWK, which is significant at 2 per cent probability level). Interestingly, once state specific effects are taken into account, the overall time dummy is no longer significant, but the time interaction dummy is significant in the case of all the variables except PAGLAB. However, for IRR, the time interaction coefficient is significant at 9 per cent probability.

Table 6
Results for Fixed Effects Model

Variable	*Coefficient*	*Std. error*	*t-statistic*	*Prob.*
ARENFG	0.003361	1.10E-03	3.046085	0.00
SDPAGWK	0.007070	1.74E-06	4.064413	0.00
IRRI	0.010166	0.000807	12.59777	0.00
PAGLAB	-0.000323	0.000631	-0.51213	0.61
RUNFWK	0.006130	0.002634	2.326787	0.02
TIME	0.011812	0.071172	0.165963	0.87
TIME*ARENFG	-0.002819	6.58E-04	-4.2804	0.00
TIME*SDPAGWK	-0.006110	1.26E-06	-4.85415	0.00
TIME*IRRI	-0.000817	0.000483	-1.68944	0.09
TIME*PAGLAB	-0.001031	0.001184	-0.87065	0.38
TIME*RUNFWK	0.007187	0.001346	5.340314	0.00
Log likelihood	348.93	Mean dependent variable		1.58
R-squared	0.77	S.D. dependent variable		0.36
Adjusted R-squared	0.75	Sum squared residual		8.18
S.E. of regression	0.18			
Durbin-Watson stat	1.09			

The regression coefficients in the model show the following: (a) A 1 per cent increase in area under non-food grains results in a 0.34 per cent increase in real agricultural wage. The time interaction effect of NFG is also significant and negative, indicating that in the post-reform period, the responsiveness of wages to shifts in area under NFG has declined In the second period, .a 1 per cent increase in area under non-food grains results in only a 0.06 per cent increase in real agricultural wage; (b) A 1 per cent increase in the share of non-farm workers to total workers results in a 0.61 per cent increase in real agricultural wage. The time interaction effect of RUNFWK is significant and positive indicating that in the post-reform period, there is an increase in the responsiveness of wages to RUNFWK (a 1 per cent increase RUNFWK results in a 1.33 per cent increase in real agricultural wage in this period); (c) A 1 per cent increase in area under irrigation results in a 1.02 per cent increase in real agricultural wage. The time interaction effect of IRR is negative and significant, indicating that in the post-reform period, an increase in the percentage of area under irrigation results in a smaller increase in real wages (a 1 per cent point increase in percentage of area irrigated results in increase in real agricultural wages of 0.93 per cent); and (d) An increase of Rs 10000 in agricultural income per worker results in an increase of real agricultural wages by 0.71 per cent. The time interaction effect of SDPAGWK is negative and significant. Taken together with the general coefficient, an increase of Rs. 1000 in SDPAGWK results in 0.10 percentage increase in real agricultural wages in the second period.

(ii) Model with Net State Domestic Product in Agriculture per Hectare

Our alternative model uses land productivity (Net State Domestic Product in Agriculture Per Hectare) instead of NSDPAGWK as was earlier the case (Table 7). The methodology of estimation is the same as before.

All variables included in the model (AREANFG, SDPHA, IRRI, PAGLAB, RUNFWK) are significant at 1 per cent level. The Time dummy is, however, not significant. The D-W statistic is low, although $\overline{R^2}$ is 0.56 (Table 8).

Table 7
Results for the Model with Common Coefficients

Variable	*Coefficient*	*Std. error*	*t-statistic*	*Prob.*
C	0.90344	0.025	36.13748	0.00
ARENFG	0.00514	0.00018	28.54699	0.00
SDPHA	0.00000	1.60E-07	5.093023	0.00
IRRI	0.00642	0.000184	34.93244	0.00
PAGLAB	-0.00687	0.000487	-14.1103	0.00
RUNFWK	0.01235	0.000351	35.22162	0.00
TIME	0.03036	0.017701	1.71497	0.09
Log likelihood	285.8	Mean dependent variable		1.58
R-squared	0.58	S.D. dependent variable		0.36
Adjusted R-squared	0.57	Sum squared residual		14.84
S.E. of regression	0.23			
Durbin-Watson stat	0.64			

Table 8
Results for the Model with Common Coefficients (with SDPHA and Time interaction)

Variable	*Coefficient*	*Std. error*	*t-statistic*	*Prob.*
C	0.87255	0.031365	27.81944	0.00
ARENFG	0.00587	0.000252	23.25518	0.00
SDPHA	0.00000	1.63E-07	4.335758	0.00
IRRI	0.00669	0.000249	26.89353	0.00
PAGLAB	-0.00664	0.000631	-10.5287	0.00
RUNFWK	0.01199	0.00051	23.50799	0.00
TIME	0.16123	0.064281	2.508155	0.01
TIME*ARENFG	-0.00139	0.000359	-3.88596	0.00
TIME*SDPHA	0.00000	1.30E-06	2.946263	0.00
TIME*IRRI	-0.00121	0.000443	-2.71878	0.01
TIME*PAGLAB	-0.00091	0.001193	-0.76194	0.45
TIME*RUNFWK	-0.00164	0.000989	-1.65988	0.10
Log likelihood	287.1	Mean dependent variable		1.58
R-squared	0.58	S.D. dependent variable		0.35
Adjusted R-squared	0.56	Sum squared residual		14.75
S.E. of regression	0.24			
Durbin-Watson stat	0.64			

With time interaction, the specification of the model improves, although the DW statistic shows an insignificant improvement and $\overline{R^2}$ is marginally lower. However, the time dummy is now significant and the interaction coefficients for ARENFG, SDPHA, IRRI, PAGLAB and RUNFWK are all significant. Since the D-W statistic is still low, it is important to estimate the model with Fixed Effects to take account of misspecification and state specific effects.

Fixed effects (with SDPHA and time interaction)

The final model improves the $\overline{R^2}$ to 0.74 and the DW statistic to 1.1 (Table 9). After state specific effects are taken into account, all the five variables remain significant. However, PAGLAB is significant at 6 per cent probability level. The time dummy is no longer significant, But the time interaction effect of ARENFG, IRRI, and RUNFWK are all significant.

In this model as well, a one per cent increase in area under NFG increases real agricultural wage by 0.37 per cent. The time interaction effect of the variable is negative reducing the responsiveness of agricultural wages to shifts in area under non-food grains. A one per cent shift in favour of NFG will improve wages only by 0.03 per cent in the post reform period.

Table 9
Results for the Model with Fixed Effects (with SDPHA and Time Interaction)

Variable	*Coefficient*	*Std. error*	*t-statistic*	*Prob.*
ARENFG	0.00267	0.000981	2.719181	0.01
SDPHA	0.00000	2.08E-07	1.660928	0.10
IRRI	0.00858	0.000856	10.01815	0.00
PAGLAB	-0.00024	0.000623	-0.39173	0.70
RUNFWK	0.01313	0.00076	17.27053	0.00
TIME	0.05562	0.065778	0.845542	0.40
TIME*ARENFG	-0.00051	0.000361	-1.41103	0.16
TIME*SDPHA	0.00000	1.31E-06	0.872224	0.38
TIME*IRRI	-0.00097	0.00052	-1.87017	0.06
TIME*PAGLAB	-0.00120	0.001071	-1.11642	0.27
TIME*RUNFWK	0.00128	0.000947	1.355159	0.18
Log likelihood	343.63	Mean dependent variable		1.58
R-squared	0.79	S.D. dependent variable		0.35
Adjusted R-squared	0.77	Sum squared residual		7.47
S.E. of regression	0.17			
Durbin-Watson stat	1.27			

A 1 per cent increase in area under irrigation increases real wage by 1.04 per cent in the pre-reform period. But the time interaction effect being negative, in the post-reform period, a 1 per cent point increase in area under irrigation would increase wages by 0.96 per ent. Finally, a one percent increase in the share of non-farm workers in total workforce increases real wage by 1.33 per cent.

Increase in NSDP in agriculture per hectare has a small and positive effect on wages in the pre-reform period. A Rs. 1000 increase in SDPHA will result in an 0.04 per cent increase in real agricultural wages, but in the post-reform period real wages would actually fall by 0.12 per cent.

The increase in agricultural wage labour (as percentage of rural workforce) has a negative and significant impact on real wages. A 1 per cent increase in the share of agricultural labour is associated with a percentage decline of 0.11 per cent in real wages in both periods.

Diversification of the workforce again has a positive and significant impact on real agricultural wages. A 1 per cent increase in the share of non-farm workers in the total workforce results in a percentage increase of 0.81 per cent in real agricultural wages in the pre-reform period. In the post reform period, the impact of occupational diversification on wages is even higher-a 1 per cent increase in the share of non-farm workers in the total workforce now results in a percentage increase of 1.44 per cent in real agricultural wages.

IV. CONCLUSION

Both the *RLE* and the *AWI* incontrovertibly indicate that the growth rate of real agricultural wages has declined in the post reform period. Our pooled analysis of the *AWI* data for 14 states across 20 years shows that growth in wages is influenced by trends related to agricultural growth and diversification, as well as by non-farm diversification. The regression analysis also shows that the nature of the relationship between the different explanatory variables and growth in wages has changed significantly between the pre-reform and post-reform period.

As we have shown, in the earlier discussion of the results, each of the key agricultural growth variables (relative increase in area under non-foodgrains, increase in percentage area under irrigation, increase in agricultural productivity per worker or per hectare) has a

significantly smaller impact on agricultural wages in the post-reform period. Thus, while on the one hand, investment in agriculture, especially public investment, and overall agricultural growth has declined in the post-reform period,[2] the pattern of agricultural growth in this period has been such that it has had a much smaller impact of growth of agricultural wages.

Indeed, the major impact on agricultural wages now appears to come from the diversification of the workforce away from agriculture and the responsiveness of wages to this diversification has grown in the post-reform period. However, it is clear, that this diversification has not been able to offset the diminished impact of the emerging pattern of agricultural growth on wages leading to the significant deceleration in real agricultural wages discussed in this paper.

Appendix

Table A1

Real Wage Estimates and the Ranking of States for 1982-83 (1983), 1993-94 and 1999-00

States	*Real male agricultural wages*						*Ranks*					
	RLE			*AWI*			*RLE*			*AWI*		
	1983	*1993-94*	*1999-00*	*1983-84*	*1993-94*	*1999-00*	*1983*	*1993-94*	*1999-00*	*1983-84*	*1993-94*	*1999-00*
Andhra Pradesh	1.7	3.4	4.4	3.6	4.9	5.0	8	12	8	7	9	11
Assam	3.1	4.4	4.9	3.9	5.1	5.2	3	5	6	5	6	9
Bihar	1.7	2.9	3.9	3.1	4.4	4.9	10	14	13	9	11	12
Gujarat	2.1	3.3	4.1	3.7	4.1	7.1	5	9	10	6	13	6
Haryana	2.4	4.3	5.9	6.6	8.2	10.0	4	3	3	1	2	2
Karnataka	1.4	3.2	4.1	2.4	3.6	4.4	12	11	9	15	15	14
Kerala	4.0	7.0	10.0	6.0	8.8	13.5	1	1	1	2	3	1
Madhya Pradesh	1.3	2.9	3.1	2.8	4.4	4.8	14	13	14	11	12	10
Maharashtra	1.6	3.5	4.1	2.7	4.9	4.7	11	10	12	13	10	13
Orissa	1.3	3.0	3.2	2.6	4.3	3.9	15	15	15	14	14	15
Punjab	3.6	6.2	6.2	5.9	8.3	7.6	2	2	2	3	1	3
Rajasthan	1.9	4.0	4.6	4.8	4.5	6.3	6	4	5	4	5	4
Tamil Nadu	1.7	4.1	5.3	2.7	4.6	[illegible]	[illegible]	6	4	12	8	7
Uttar Pradesh	1.4	3.0	3.4	2.9	4.2	4.7	13	8	11	10	7	8
West Bengal	1.9	4.4	3.8	3.1	6.9	6.1	7	7	7	8	4	5
All India	1.8	3.7	4.2	3.3	4.0	4.9						

Table A2

Summary of Variables Used in Determination of Agricultural Wages

Variable name	*About variable*	*Source*
SDPAGWK/ SDPHA	Net State Domestic Product from agriculture in series 1981 to 2001 and deflated at 1993-94 prices	1. NSDPAG derived from CSO 2. Agricultural Workers derived from: i) *Census of India* 1981, 1991 and 2001. To arrive at the time series we have interpolated the data between 1981 -1991 and 1991-2001 ii) NSS 1983, 1993-94 and 1999-00 3. Net Sown area : *Agricultural Statistics of India*
RNFWK	Percentage of rural non-farm workers	Non farm workers (rural) which is derived by deducting cultivators and agricultural labour from total workers is taken as percentage of total rural workforce Source: i) *Census of India* 1981, 1991 and 2001. To arrive at the time series we have interpolated the data between 1981-1991 and 1991-2001

Table A2 contd.

		ii) NSS 1983, 1993-94 and 1999-00
RUNFWK	Percentage of rural +urban (total) non-farm workers	—do—
PAGLAB	Percentage of Agricultural Labour	Agricultural labour (rural) taken as percentage of total rural workforce Source: i) *Census of India* 1981, 1991 and 2001. To arrive at the time series we have interpolated the data between 1981 -1991 and 1991-2001 ii) NSS 1983, 1993-94 and 1999-00
ARENFG	Percent area under non food grains	Area under non food grains is derived by deducting area under food grains from gross sown area and then taking it as a percentage of gross sown area *Source*: *Agricultural Statistics of India*
IRRI	Percent irrigated area to gross sown area	Total irrigated area taken as percentage of gross sown area *Source: Agricultural Statistics of India*
KEXPHA and KEXPCP	Real capital development expenditure in rural areas per hectare and per rural person	Capital development expenditure includes development expenditure under three heads i) agriculture and allied activities, ii) irrigation and flood control and iii) Rural development which is deflated using all India GDP deflator to arrive at development expenditure at 1993-94 prices taken as per hectare and per capita (rural) Source: Development expenditure: RBI Bulletin Rural Population : i) Census of India ii) NSS GSA : *Agricultural Statistics of India*
REXPHA and REXPCP	Real revenue development expenditure in rural areas per hectare and per rural person	—do—
TEXPHA and TEXPCP	Real total development expenditure in rural areas per hectare and per rural person	Includes both Revenue and capital development expenditure

Notes

1. The Planning Commission estimates show a high decline of 10 per cent points in rural poverty from 36 per cent in 1991 to 26 per cent in 2001. Sundaram and Tendulkar's (2001) initial estimates also showed 8.2 per cent point decline at the all India level. Deaton and Dreze (2002) also show a decline of around 7 per cent points. These estimates were based on adjusted NSS (1999-00) data in order to make it more comparable with the previous rounds. However, Sen and Himashu (2003) highlighted errors in this approach with their estimates showing a much lower poverty decline in the nineties. Tendulkar and Sundaram (2003) have also made adjustments in their poverty estimates in light of the suggestion of Sen and Himashu (2003) and their new estimates also show a much lower estimate of a 4.2 per cent point decline in poverty during the nineties.
2. The *Economic Survey* 2002-03 records a decline in public investment in agriculture as per cent of GDP from 1.6 in 1993-94 to 1.3 per cent in 2000-01.

References

Acharya, Sarthi (1989), "Agricultural Wages in India: A Disaggregated Analysis", *Indian Journal of Agricultural Economics*, Vol. 44, No. 2. April-June, pp. 122-139.

—— and Papanek, Gustav F. (1989), "Agricultural Wages and Poverty in India: A Model of Rural Labour Market", Institute for Economic Development, Boston University.

Bhalla, Sheila (1997), "Trends in Poverty, Wages and Employment in India," *The Indian Journal of Labour Economics*, Vol. 40, No. 2, April -June, pp. 213- 223.

Boyce, K. James (1986), "Kinked Exponential Models on Growth Rate Estimation", *Oxford Bulletin of Economics and Statistics*, Vol. 48, No. 4, pp. 385-391.

—— and Ravallion, Martin (1991), "A Dynamic Econometric Model of Agricultural Wage Determination in Bangladesh", *Oxford Bulletin of Economics and Statistics*, Vol. 53, No. 4, pp. 361-376.

Chavan, Pallavi and Bedmatta, Rajshree (2003), "Trends in Agricultural Wages in India 1964-65 to 1999-2000," *All India Conference on Agriculture and Rural Society in Contemporary India*, Barddhaman, December 17-20.

Deaton, Angus and Dreze, Jean (2002), "Poverty and Inequality in India: A Re-examination", *Economic and Political Weekly*, September 7.

Datt, Gaurav and Ravallion, Martin (1997), "Macroeconomic Crises and Poverty Monitoring: A Case Study for India", *Review of Development Economics*, Vol. 1, No. 2, June, pp. 135-152.

—— (1998), "Why Have Some Indian States Done Better than Others at Reducing Rural Poverty", *Economica*, Vol.65, pp. 17-38.

Jose A.V. (1974), "Trends in Real Wage Rates of Agricultural Labourers", *Economic and Political Weekly*, Review of Agriculture, March, pp. A25-A30.

—— (1978), "Real Wages, Employment, and Income Agricultural Labourers", *Economic and Political Weekly*, Review of Agriculture, March, pp. A16-A20.

—— (1988), "Agricultural Wages in India", *Economic and Political Weekly*, June 25, pp. A46-A58.

Krishnaji, N. (1971), "Wages of Agricultural Labour", *Economic and Political Weekly*, Review of Agriculture, September, pp. A148-A151.

Panchamukhi V.R. (2002), "Social Impact of Economic Reforms in India: A Critical Appraisal", *Economic and Political Weekly*, Vol. 35, No. 10, p. 836.

Parthasarthy, G. (1996), "Recent Trends in Wages and Employment of Agricultural Labour", *Indian Journal of Agricultural Economics*, Vol. 51, Nos.1and 2, January-June, pp. 145-167.

Radhakrishna, R. and Ravi, C. (2003), "Malnutrition in India: Trends and Determinants", *Working Paper No. 22*, Centre for Economic and social Studies, Hyderabad.

Rao, V.M. (1972), "Agricultural Wages in India- A Reliability Analysis", *Indian Journal of Agricultural Economics*, Vol. 48, No. 3, July-September, pp. 38-62.

Rao, C.H. Hanumantha (1994), "Economic Reforms and the Prospects for Rural Labour", *The Indian Journal of Labour Economics*, Vol.37, No. 1.

Lal, Deepak (1976), "Agricultural Growth, Real Wages, and the Rural Poor in India", *Economic and Political Weekly*, Review of Agriculture, June, pp. A47-A61.

Sarmah, Sasank (2002), "Agricultural Wages in India: A Study of States and Regions", *The Indian Journal of Labour Economics*, Vol. 45, No.1, pp. 89-116.

Sen, Abhijit (1994), "Rural Labour Markets and Poverty", *The Indian Journal of Labour Economics*, Vol. 37, No. 4, October-December, pp. 575-608.

—— and Himanshu (2003), 'Poverty and Inequality in India: Getting Closer to the Truth', Centre for Economic Studies and Planning, Jawaharlal Nehru University, New Delhi (Mimeo).

Sharma, H.R. (2001), "Employment and Wage Earnings of Agricultural Labourers: A State-wise Analysis", The *Indian Journal of Labour Economics*, Vol. 44, No. 1, pp. 27-38.

Srivastava, Ravi (2000), "Changes in Contractual Relations of Land and Labour", *Indian Journal of Agricultural Economics*, Keynote Paper, Conference Issue, October-December.

Sundaram, K. (2001a), "Employment and Poverty in 1990's Further results from NSS 55th Round Employment Unemployment Survey, 1999-2000", *Economic and Political Weekly*, August 11, pp. 3039-3326.

—— (2001), "Employment Unemployment Situation in the 1990's: Some Results from NSS 55th Round Survey," *Economic and Political Weekly*, March 17-23, pp. 931-940.

Sundaram, K. and Tendulkar, S.D. (2003), ''Poverty in India in the 1990s: Revised Estimates'', *Economic and Political Weekly* , Vol. 38, No. 46, November 15, pp. 4865-4872.

Economic and Political Weekly,

earlier the *Economic Weekly* that began existence in 1949, is one of India's foremost journals in the social sciences. Articles in the ***EPW*** encompass a wide range of disciplines - economics, sociology, politics, international affairs and history as well as relatively new disciplines such as gender studies and the environment.

In the many decades of its existence, it has tracked changes and developments, both momentous and subtle, in India and elsewhere and opened up many new areas of debate. While fostering research and scholarship of the highest order, *EPW* provides a forum for younger scholars and researchers to present their work to a wider, international audience.

Besides widely acclaimed research papers, *EPW* offers:

- Reports and commentaries on contemporary events and happenings;
- Book reviews that offer detailed and in-depth analysis of recent literature in the social sciences;
- Regularly updated statistics on the Indian economy and corporate performance.

Inland Subscription Rates in Rupees

	Half Year	One Year	Two Years	Three Years
Institutions/Companies	-	1250	2300	3300
Individuals	500	935	1750	2500
Teachers/Researchers	-	685	-	1800
Students	-	450	-	-

Concessional rates for students and teachers/researchers are available only in India. Certificate from relevant academic institution must accompany request for concessional Subscription

All payments by bank draft in favour of **Economic and Political Weekly**, drawn On **Mumbai Branch**.

Postal address:
Economic and Political Weekly**,**
Hitkari House
284 Shahid Bhagat Singh Road,
Mumbai 400 001, INDIA
Email: **circulation@epw.org.in**