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Recent Trends in Rural Employment and Wages in India: Has the Growth Benefitted the Agricultural Labours?

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Abstract

This paper has examined three features of the rural economy in the context of transition of Indian economy: (a) shift in rural employment pattern, (b) trends in rural wages and agricultural growth, and (c) relationships between agricultural wages, productivity and rural non-farm employment (RNFE) in India. The change over of farm employment to non-farm employment has been found higher for male than female workers and the recent decade has witnessed a higher rate of transition. The RNF sector provided employment to about 38 per cent of male and 21 per cent of female labour forces in 2009-10. It is observed that although the wages were lower for farm labours than non-farm labour, the growth rate of agricultural wages has been higher than of non-farm wages. The wage determinant analysis has revealed that agricultural productivity and RNFE have a positive influence on agricultural wages, while labour availability (labour-land ratio) and high dependency on agriculture pull down the wage rates. The analysis has confirmed that the growths of agriculture and RNFE have trickled down to the agricultural labour, indicating an inclusive growth. The study has concluded that policies directed towards improving agricultural productivity and promoting RNFE would provide better agricultural wage rates and assure rural livelihood security.

Key words: Rural non-farm employment, agricultural labour wages, determinants, India

JEL Classification: J2, J3, J6, O4, Q1

Introduction

Rural employment and wages are the important factors which influence the livelihood status of rural households. It is widely witnessed that as economy grows, the labour force shifts from farm to non-farm sector and this migration is determined by the total factor productivity of both the sectors. Similarly, experience in the developed countries has shown that during structural transformation, the contribution of agricultural sector to total GDP falls down, and the secondary sector (industry sector) leads for some period and finally the tertiary sector (service sector) constitutes the largest part of GDP (Eswaran *et al*., 2009). Employment pattern in the developing countries has revealed that development of alternative employment opportunities in the rural non-farm sector is a necessity for productive farm employment of labour force under the rapid growth of population (Chaudhry and Chaudhry, 1992). The lack of sufficient employment opportunities and stagnant wages may cause economy-wide problems like high incidence of poverty in the rural areas. A similar process has been observed in China where growth of rural non-farm employment (RNFE) has revealed a significant impact on poverty reduction (Janvry *et al*., 2005). The study on rural employment and wage trend is important and useful in many ways. For example, rural wages being the significant source of rural income are the major determinant of livelihood security of rural households. The agricultural wages have also been used as a proxy for studying poverty and living standards in the rural

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areas (Deaton and Drèze, 2002; Lanjouw and Murgai, 2008). Under this scenario, identification of factors which significantly influence the agricultural wages would help in formulating the suitable strategies to sustain the growth rate of wages. In this context, this study was carried out to explore the trends in rural employment and growth rates of rural wages. The study has also examined the impact of agricultural productivity growth, RNFE and availability of labour on rural agricultural wages.

Data

The study is based on various published and unpublished reports of the National Sample Survey Organisation (NSSO) and Labour Bureau, Government of India, New Delhi. The data on rural employment were taken from the reports of last five quinquennial surveys [43rd round (1987-88) to 66th round (2009-10)] (http://mospi.nic.in). The data on wagerates for agricultural and non-agricultural labour in the rural areas were compiled from various issues of *Wage Rate in Rural India* (WRRI), published by Labour Bureau (http://labourbureau.nic.in). In the present study, for a comparison of wagerates of farm and non-farm labours, the wagerate of a ploughman was considered for the farm sector and of a mason and / or carpenter for the non-farm sector. To compute real wages, the nominal wagerates of farm labour were deflated by consumer price index for agricultural labour (CPIAL) and that of non-farm labour by consumer price index for rural labour (CPIRL) and 2011-12 was taken as the base year. The information regarding state-wise GDP, gross cropped area, rural population and literacy rate were compiled from various Government published reports (http://eands.dacnet.nic.in;http://www.censusindia.gov.in).

Methodology

Determinants of Agricultural Labour Wages

The determinants of agricultural labour wages were identified by using the cross-section and time-series data. The variables considered in the model were agriculture gross state domestic product (AgGSDP), share of AgGSDP in gross state domestic product (GSDP), literacy, labour availability and share of rural non-farm employment (RNFE). The data pertained to 20 states of India for two periods of time. As data on some of the selected variables (rural population, literacy rate and employment) were not available for some years, the last two years of census reports were selected for constructing the panel data (2001-02 and 2011-12). A dummy variable was introduced in the model to estimate the time effect on value of the selected variables. The functional form of wage determination model can be written as follows:

$$Y = f(X_1, X_2, X_3, X_4, X_5, D_1)$$

where, Y is the agricultural labour wages (₹/day); X_1 is the agriculture productivity (₹ crore /'000ha); X_2 is the share of agriculture gross state domestic product in gross state domestic product (%); X_3 is the rural literacy (%); X_4 is the rural labour supply (No. of labour per ₹ 000 ha); X_5 is the share of rural non-farm employment (%) and D_1 is the time dummy (1, for 2011-12, and 0 for 2001-02).

The state-wise annual average agricultural wages were used as the dependent variable. The explanatory variables included in the model were as follows. It was expected that agricultural productivity could significantly raise the wagerate in the state. The percentage share of AgGSDP in total GSDP was taken as the major indicator of economic development of a state and it was assumed that the economically-developed states would have higher wage levels, as compared to the economically-backward states. It was also hypothesized that literacy level in a state would positively influence the wage levels, while supply of rural labour (rural population by gross cropped area) would reduce wagerates. Finally, the states having higher RNFE share in the employment would have higher wagerate, as higher RNFE opportunities would accelerate migration of agriculture labour to the RNFE and in turn, would create supply shortage of labour in agriculture and thereby resulting in increase in wages. For this purpose, the percentage share of RNF employment was calculated from the NSSO reports for the selected years.

Results and Discussion

Employment Pattern in Rural India

The employment pattern and structural transformation of rural India have been shown in Table 1. The rural employment was classified into two categories, viz. farm employment and non-farm

Table 1. Trend in rural employment: 1987-88 to 2009-10

(in per cent)

Employment sector	Male workers					Female workers				
	1987-88	1993-94	1999-00	2004-05	2009-10	1987-88	1993-94	1999-00	2004-05	2009-10
Farm	74.7	73.8	71.3	66.2	62.5	82.6	84.6	84.0	81.6	78.8
Non-farm										
a. Manufacturing	7.7	7.0	7.3	8.0	7.1	7.5	7.5	7.7	8.7	7.6
b. Trade, hotel &restaurant	5.3	5.5	6.8	8.3	8.2	2.4	2.2	2.3	2.8	3.1
c. Construction	2.7	3.3	4.5	6.9	11.4	3.2	1.1	1.2	1.7	4.2
d. Transport, storage & communication	2.1	2.2	3.2	3.9	4.2	0.1	0.1	0.1	0.2	0.3
e. Mining & quarrying	0.7	0.7	0.6	0.6	0.8	0.5	0.5	0.4	0.4	0.3
f. Other services	6.8	7.4	6.3	6.1	5.8	3.7	4.0	4.3	4.6	5.7
Sub-total (a to f)	25.3	26.2	28.7	33.8	37.5	17.4	15.4	16.0	18.4	21.2

Source: Compiled by authors from various NSSO reports

employment. It is clearly visible from Table 1 that Indian rural population is primarily employed in the farm sector. In most of the developed countries, movement of labour force from farm to non-farm sector was witnessed as the economy of a country advanced with time. A similar structural transformation has been taking place in India for the past three decades. However, the rate of transformation is slow. Although, the percentage share of farm sector employment has continuously declined since late -1980s, it still provided employment to about 60 per cent of male and about 80 percent of female workers. The reduction in dependency on farm sector employment was higher for male workers (8 percentage point) than female workers (3 percentage point), indicating that female workers were more dependent on agricultural sector than their male counterpart.

Across the non-farm sector, manufacturing (with 7.7 percentage share) accounted for the highest share of male non-farm employment in 1987-88. However, its share slightly declined over time and it reached seven per cent in 2009-10. On the other hand, the female workers' dependence on manufacturing sector has been high and their share gradually increased from 7.5 per cent in 1987-88 to 8.7 per cent in 2004-05, but dropped to 7.6 per cent in 2009-10. Overall, not much change has been observed in the manufacturing sectors' share in rural non-farm employment over this period. In 2004-05, its share peaked for both male and female workers. Trade, hotel and restaurant sector occupied the second position in rural non-farm employment for male workers. The percentage share of employment in this sector has marginally increased for male workers. On the other hand, it was not an attracting employment sector for female workers, who occupied only two to three per cent share throughout these periods.

The construction sector has grown amongst non-farm employment during these periods for male workers. It was ranked third in 1987-88 and subsequently it occupied top position in 2009-10 with 11.4 per cent share in non-farm employment. It is evident from the data that this sector has absorbed most of the male labour force migrated from agriculture. Although a significant increase in employment share was observed for the male workers, the dependency of female workers on this sector declined during the period 1994 to 2005, but jumped in 2010. The percentage share of transport, storage and communication services sector was doubled during the study period from two per cent to four per cent for male workers. Mining and quarrying sector provided employment to less than one per cent of workers throughout this period. The improvement in farm labour productivity due to technological developments and increased mechanization could be the major factors which forced the movement of labour from farm to non-farm sector. Further, enhanced capital investment, skill building and infrastructural development in the non-farm sector might have accelerated the transition of the economy.

Table 2. Distribution of households and population by household type

(in per cent)

Category	1987-88	1993-94	1999-00	2004-05	2009-10
i. Self-employed					
(a) in agriculture	37.7	37.8	32.7	35.9	31.9
(b) in non-agriculture	12.3	12.7	13.4	15.8	15.5
Sub-total	50.0	50.5	46.1	51.7	47.4
ii. Labour					
(a) agricultural labour	30.7	30.3	32.2	25.8	25.6
(b) other labour	9.0	8.0	8.0	10.9	14.8
Sub-total	39.7	38.3	40.2	36.7	40.4
iii. Others	10.3	11.2	13.7	11.6	12.2

Distribution of Rural Households by Nature of Employment

According to NSSO, a household type is classified based on the means of its livelihood on the basis of major source of its income during the reference period. Distribution of rural households based on the household type is shown in Table 2. A look at Table 2 reveals that the majority of households (about 50%) were under the self-employed category. The percentage share of households under self-employment in agriculture had marginally declined over the period and marginally increased under self-employed in non-agriculture. The percentage share of rural households self-employed in agriculture declined about three per cent points during the study period. Across labour households, the percentage share of households belonging to the agricultural labour category was highest for all the study years but it declined from 31 per cent in 1987-88 to 25.6 per cent in 2009-10. The data also indicated that some of the self-employed households had moved to other labour category households, indicating casualization of employment in the rural areas

Trend in Agricultural Wages

The rural employment pattern shows that agriculture continues to be the key sector for determining the livelihood status of rural households in India. The agricultural growth decides the development of all other sectors. In this context, it was imperative to examine the trend in wages of the farm and non-farm sectors along with agricultural growth rates. The determinants of agricultural wages have also been discussed in details in this section.

The real wagerates of three major occupations in the rural areas for the period 2002-03 to 2011-12 have been depicted in Figure 1. The wagerate was the highest for masons followed by 'carpenters' and 'agricultural labours'. The movement in the real wages for these

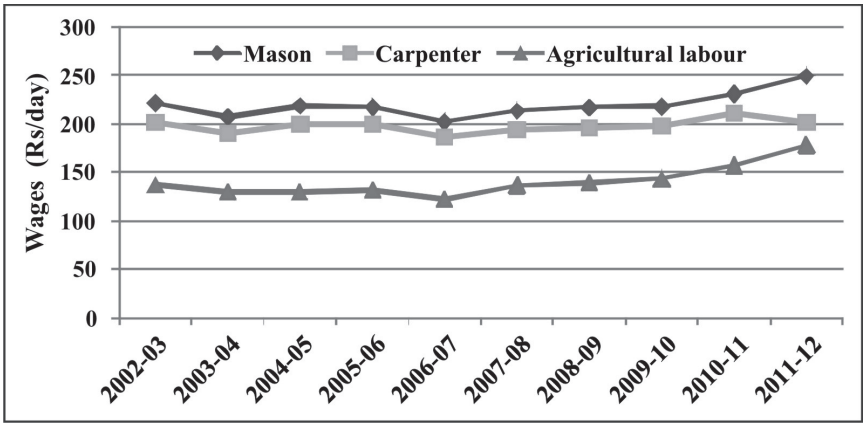

Figure 1. Trends in rural real wages at all-India level (base year: 2011-12)

occupations was almost parallel over these years. The wagerates gradually increased for masons and agricultural labours and were almost constant for carpenters. On the average, a mason was paid ₹ 221 per day in 2003 and it increased to ₹ 250 per day in 2012. On the other hand, a carpenter's wages hovered around ₹ 200 per day during this period. The wages for an agricultural labour were though the lowest, recorded the highest wage increase of ₹ 41 per day from ₹ 137 in 2002-03 per day to ₹ 178 per day in 2011-12.

Regional Trends in Rural Wages

The state-wise wagerates for major occupations in rural areas are presented in Table 3. The states were categorized into three groups based on agricultural wages of 2011-12, viz. (i) high wagerate states (>₹ 220/day), (ii) medium wagerate states (₹ 150 - 220/day), and (iii) low wagerate states (< ₹ 150/day). The states were found to be almost equally distributed among these three categories. The agricultural wagerates were the highest in Kerala (₹ 483/day) and the lowest in Madhya Pradesh (₹ 108/day). The economically-developed states (Kerala and Tamil Nadu), hilly states (Himachal Pradesh and Jammu & Kashmir) and agriculturally-progressive states (Punjab and Haryana) were under the high wagerate states category. However, it was found that some of the productive states (Andhra Pradesh, Maharashtra and Karnataka) were under the medium and low wagerate categories. It was also

Table 3. State-wise real wages for farm and non-farm labours in rural India

(₹/day)

State	Agricultural labour			Mason			Carpenter			Wage ratios (2011-12)	
	2003-04	2007-08	2011-12	2003-04	2007-08	2011-12	2003-04	2007-08	2011-12	Farm and mason	Farm and carpenter
High wagerate states (> ₹ 220/day for agricultural labour in 2011-12)											
Kerala	441	410	483	339	357	463	358	358	458	1.0	1.1
Tamil Nadu	216	207	280	240	240	361	219	242	300	0.8	0.9
Himachal Pradesh	227	255	253	328	319	322	324	329	320	0.8	0.8
Jammu & Kashmir	225	194	230	332	280	331	312	284	334	0.7	0.7
Haryana	156	171	222	301	315	335	260	257	294	0.7	0.8
Punjab	153	144	221	292	277	330	290	275	328	0.7	0.7
Medium wagerate states (₹ 150- 220/day for agricultural labour in 2011-12)											
Andhra	111	134	210	182	194	252	148	146	182	0.8	1.2
Rajasthan	153	176	194	285	260	317	277	243	294	0.6	0.7
West Bengal	156	160	191	173	170	184	161	165	150	1.0	1.3
Maharashtra	116	124	168	204	203	232	181	178	188	0.7	0.9
Karnataka	109	110	159	187	182	217	181	169	186	0.7	0.9
Odisha	100	94	151	205	189	217	188	186	178	0.7	0.8
Low wagerate states (< ₹ 150/day for agricultural labour in 2011-12)											
Bihar	108	115	140	201	195	221	179	169	170	0.6	0.8
Gujarat	128	131	139	261	236	254	233	215	212	0.5	0.7
Assam	129	121	139	200	207	215	185	197	184	0.6	0.8
Uttar Pradesh	112	112	131	235	222	273	212	203	213	0.5	0.6
Madhya Pradesh	94	92	108	181	172	170	150	143	135	0.6	0.8
All-India	136	137	178	219	214	250	200	195	202	0.7	0.9
CV (%)	48	44	42	25	24	29	28	27	36	-	-

Notes: The nominal wages were deflated by CPIAL and CPIRL (Base year: 2011-12)
The average wagerates at all-India level were derived by dividing the sum total of wages of all the 20 states by the number of quotations.

Source: Compiled by author from various issues of WRRI.

observed that Gujarat, one of the high agricultural growth states in India, could find a place in low wage-rate states category. Shah (2011) has reported that migration of labours from the neighbouring states like Rajasthan and Madhya Pradesh was the major factor which worked against the increase in wagerate in Gujarat.

The variation in wages across the states was wide among high wagerate group than the other two groups of the states. The wagerate in Kerala was more than two-times of the other states within the group and it could be due to the shortage of labour for agricultural operations and cultivation of high-value crops. The wagerates were higher of non-farm occupations than of farm occupations. The inter-state variations across non-farm occupations were less in agricultural operations. The co-efficient of variation (CV) has clearly shown that although the differences in wagerates across the states was less for non-farm occupations, it showed the increasing trend during 2003-04 to 2011-12, it indicated the growing disparity in non-farm wagerates across the states. On the other hand, a decreasing trend was observed in differences for agricultural wages, implying that the disparity in wages for farm occupations has declined across states with time, may be due to the implementation of the schemes like Mahatma Gandhi National Rural Employment Guarantee Scheme.

Rural Wages and AgGSDP

The state-wise growth rates for real wages and AgGSDP during the previous decade (2002-2012) and sub-period of XI Five-Year Plan (2007-12) were estimated and are presented in Table 4. At all-India level, the real wages during XI Plan grew faster than in the total period and it was true for both agricultural

Table 4. State-wise growth rates of wages and AgGSDP

(in per cent)

State	Agricultural labour		Mason		Carpenter		AgGSDP	
	2002-12	2007-12	2002-12	2007-12	2002-12	2007-12	2002-12	2007-12
High wagerate states (₹ 220/day for agricultural labour in 2011-12)								
Kerala	0.3	4.2	2.9	6.6	2.5	6.3	-1.1	-0.5
Tamil Nadu	2.4	8.7	4.4	11.1	3.8	7.1	5.4	4.1
Himachal Pradesh	2.3	-1.4	-0.8	0.3	-0.8	-1.3	1.9	-1.9
J&K	-0.7	5.3	-0.7	4.4	-0.1	4.2	2.3	2.0
Haryana	4.1	7.6	1.5	2.5	2.0	3.9	4.3	3.7
Punjab	3.9	10.6	0.4	4.6	0.5	4.4	2.3	1.0
Medium wagerate states (₹ 150 to 220/day for agricultural labour in 2011-12)								
Andhra Pradesh	7.7	12.2	4.3	6.6	2.9	6.1	5.8	2.0
Rajasthan	1.5	0.9	0.8	4.1	-0.2	3.9	6.9	9.1
West Bengal	1.9	4.4	-0.3	1.5	-0.9	-1.8	2.2	2.3
Maharashtra	3.6	7.9	1.0	3.5	0.4	2.4	3.7	-0.03
Karnataka	3.5	9.4	0.9	4.2	0.1	2.7	5.0	4.2
Odisha	3.6	13.5	-0.2	3.2	-0.7	-0.6	5.1	4.0
Low wagerate states (<₹ 150/day for agricultural labour in 2011-12)								
Bihar	3.0	5.4	0.2	2.8	-0.5	0.6	4.3	5.9
Gujarat	0.3	0.04	-1.6	0.3	-2.2	-1.3	7.3	6.2
Assam	0.6	4.0	0.2	0.4	0.1	-1.9	2.7	5.6
Uttar Pradesh	1.4	4.2	0.6	5.6	-0.2	1.7	1.7	3.7
Madhya Pradesh	0.9	3.3	-1.2	-0.6	-1.3	-1.0	6.5	9.0
All-India	2.4	6.7	1.0	3.8	0.2	1.5	4.2	3.8

Source: Author estimates based on various WRRI and CSO reports.

and non-agricultural wages. On other hand, the AgGSDP recorded a little higher growth rate during entire study period than in the XI Plan period. During XI Plan, agricultural wagerates observed a reasonably higher growth (6.7%) as against a moderate growth in non-farm wagerates (3.8 % for masons and 1.5% for carpenters). In the XI Plan, the highest growth rate in agricultural wages was registered in Odisha (13.5 %), followed by Andhra Pradesh (12.2%), Punjab (10.6%) and Karnataka (9.4%). The medium wagerate states have recorded a higher growth in agricultural wages, except Rajasthan. It was noted that the real agricultural wages in Himachal Pradesh declined during this period. Jammu & Kashmir had registered a negative growth rate in the previous decade; however, in the recent period, a positive growth rate of 5.3 per cent was observed.

The wagerates in non-farm sector have not grown significantly, especially for carpenters. The growth rates in wages of both mason and carpenters were less than five per cent for all the states, except Tamil Nadu, Kerala and Andhra Pradesh. Most of the states in the low wagerate category have witnessed a negative growth for carpenters. In Rajasthan, a robust growth was observed for AgGSDP (9%) but a poor growth was seen for agricultural wages (0.9%); a similar trend was observed in Madhya Pradesh during XI Plan. In contrast, Andhra Pradesh, Karnataka, Odisha and Punjab recorded a reasonably higher growth for agricultural wages but a low growth for AgGSDP.

Determinants of Agricultural Wages

The relationships among agricultural wages, productivity, share of AgGSDP in GSDP, rural literacy, labour availability and share of RNFE in rural employment were empirically studied using the wage determinant model. The estimates of the model are given in Table 5. The linear regression model was chosen based on the overall significance of the model, which explained 56 per cent of the variations in the agricultural wages. All the variables included in the model were found significant, except rural literacy and had the expected signs. The significant positive coefficient of agricultural productivity implies that improvement in agricultural productivity is associated with a considerable increase in the agricultural wagerates. On an average ₹ 10000/ ha increase in agriculture productivity, the wagerate would be increased by ₹ 12 per day. It indicates that agricultural productivity growth is inclusive. This conclusion is in line with the Sidhu (1988) who reported that agricultural productivity improved the wagerates in Punjab and Haryana.

Table 5. Determinants of agricultural wages

Variable	Co-efficient	Standard error
Intercept	86.54	52.60
Agricultural productivity (₹ crore/'000ha)	11.70***	3.24
Share of AgGSDP (%)	-1.14*	0.68
Rural literacy (%)	-0.33	0.67
Rural labour supply (per'000 ha)	-0.005***	0.002
Share of RNF employment (%)	0.63*	0.41
Time dummy	1.89	9.75
R^2	0.56	
No. of observations	40	

Note: ***, ** and * are significance levels at 1 per cent, 5 per cent and 10 per cent, respectively

The significant negative coefficient of percentage share of AgGSDP indicates that with one per cent increase in share of AgGSDP, the agricultural wagerate would decline by one rupee per day. It suggests that as the state ceased to be an agrarian economy with contribution of AgGSDP coming down, the wages in the state are likely to increase. In other words, as the contribution of manufacturing and service sector to GSDP increases, it needs more labour and consequently, the agricultural wages increase. This fact is further strengthened by the positive relationship between agricultural wagerate and percentage share of non-AgGSDP. Thus, growth of non-farm sector has trickled down to rural labour also.

The supply of rural labour also plays an important role in determining agricultural wages. As expected, the coefficient of labour supply was negative and significant, and this means that the higher availability of labour per unit of land would significantly reduce the agricultural wages. It implies that the surplus labour should be diverted towards non-farm employment in order to assure better wages for agricultural labour and improve the rural livelihood conditions. The complementary role of RNFE in improving agricultural

wages was better explained by its coefficient. The positive coefficient signified that a higher RNFE share would eventually increase the agricultural wages, by absorbing surplus labour from the agricultural sector. Similar results were reported by Kumar *et al*. (2011), indicating the role of RNFE in improving income and reducing of poverty in the rural areas.

Summary and Conclusions

The study has analyzed the changing employment pattern in the rural areas during the past two decades using NSSO survey data. Although a growth is seen in non-farm employment in rural India, it is rather weak in terms of its share in rural employment. The agricultural sector continues to be the largest employer of rural work force and it provided employment to about 60 per cent of the male workers and about 80 per cent of the female workers in 2009-10.

The transition of labour force from farm to non-farm sector has been fast in the recent period. Some of the self-employed households in the agricultural sector moved towards the labour force, indicating a rise in the number of small and marginal farmers working as labour. The trend in real wagerate has shown that agricultural wages have grown faster than the non-farm wages.

The wage determinant analysis has indicated that agricultural productivity influences the agricultural wages, benefitting agricultural labours. The study has also shown that the states with higher share of non-AgGDP in the total GDP pay higher wages, which implies that the growth of non-farm sector positively contributes to the agricultural wages. The share of RNFE is directly related with agricultural wages. It is likely that the growth in RNF sector and agricultural sector will continue which will further improve rural wages, which in turn, will have a strong impact on livelihood and economic security in India.

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