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Rural Farm and Non-Farm Employment and Pattern of Rural Non-Farm Employment by Geo-Agro Base: A Study of West Godavari District

Rural non-farm employment has in recent times assumed importance in economic development. The non-farm sector plays a positive role in the removal of poverty, generation of employment and decentralisation of urbanisation. It is a significant source of income to the small and landless farmers during the slack season. It also facilitates structural transformation and provides non-food goods and services to the rural population. The extent and importance of the rural non-farm employment can be largely explained in terms of its contribution to the task of modernising and servicing agriculture and catering to the non-food needs of the rural people (World Bank, 1978, p. 8).

The World Bank (1978) examined the key role of rural non-farm sector in the generation of employment and in the diversification of the rural economy at the country level. Islam (1989) and a few other scholars have done some work at the country level on rural non-agricultural activities. Vyas and Mathai (1978) estimated the increase of workforce in agriculture vis-a-vis rural non-farm employment in India, though their findings are contrary to other studies. Rural non-farm economy in India accounted for nearly one-fifth of total employment and exhibited an increasing trend (Hazell and Haggblade, 1991). Sharma and Saxena (1984), Vaidyanathan (1986), Papola (1987), Dev (1990), Murthy and Durga (1992), Shukla (1991) and others studied the quantitative significance of rural non-farm employment at different levels, viz., at all-India, state and district levels and examined its determinants. Their inferences of trend estimations are at the macro level. It is necessary to know the quantitative significance of rural non-farm employment and its pattern at the micro level for formulating a good policy framework. Hence, this paper makes an attempt to study the trends and variations in rural non-farm employment regionally in West Godavari district which has a spectrum of agriculturally advanced areas (delta) and relatively backward areas (uplands). It is hypothesised that the pattern of rural non-farm employment is conditioned by geographical nature and agricultural development of a region.

The specific objectives of the study are (a) to estimate the relative shares of agriculture and non-agriculture in total employment at regional and taluka levels in rural West Godavari, and (b) to find out the variations in the pattern of rural non-farm employment under different geo-agro regions.

DATA BASE AND METHODOLOGY

The district is divided into four regions based on the break-up of available data from the population censuses.¹ The period of analysis is 1971-91. The total workers engaged on farms and non-farms have been considered for the estimation of the shares, growth and pattern of workforce in rural West Godavari. To analyse the existing variations in rural employment among regions, only the male workforce is considered, keeping in view the changes in the definitions of 'workers' adopted in different censuses. To examine the changes in the workforce, simple percentages are used. To analyse the pattern of rural non-farm employment between delta and upland areas, discriminant analysis is used.

RELATIVE EMPLOYMENT SHARES OF AGRICULTURE AND NON-AGRICULTURE

The relative shares of agriculture and non-agriculture in total employment between 1971

and 1991 are presented in Table I. The data clearly show the dominance of the agricultural sector in the total employment, as it contributed above 80 per cent during the study period in the entire district except in Tanuku and in 1991 for some regions and taluks. However, a slight rise in the share of total workforce employed in non-agricultural activities was evident during the period under study. At the regional level, the proportion of total workforce employed in non-agriculture in delta taluks was the highest in 1971 and 1981 compared to the other taluks with the exception of agency taluk in 1991.

TABLE I. RELATIVE SHARES OF AGRICULTURAL AND NON-AGRICULTURAL EMPLOYMENT:
TALUKWISE IN RURAL WEST GODAVARI DISTRICT, 1971-91

District/ Taluk (1)	Agriculture (A) Non-agricul- ture (NA) (2)	Total workforce			Male workforce		
		1971 (3)	1981 (4)	1991 (5)	1971 (6)	1981 (7)	1991 (8)
West Godavari district	A	83.13	82.36	80.55	80.59	79.69	77.49
	NA	16.87	17.64	19.45	19.41	20.31	22.51
Delta taluks	A	82.65	80.92	79.99	80.04	78.66	77.91
	NA	17.35	19.08	20.01	19.96	21.34	22.09
Bhimavaram	A	85.23	84.79	83.26	83.26	82.43	80.32
	NA	14.77	15.21	16.74	16.74	17.57	19.68
Narasapur	A	84.23	81.23	77.80	81.88	79.99	77.60
	NA	15.77	18.77	22.20	18.12	20.01	22.40
Tanuku	A	78.83	77.22	79.19	75.66	74.24	76.15
	NA	21.17	22.78	20.81	24.34	25.76	23.85
Delta Upland taluks	A	83.09	83.30	81.01	80.77	80.48	77.72
	NA	16.91	16.70	18.99	19.23	19.52	22.28
Eluru	A	84.21	84.00	80.72	81.74	80.64	76.31
	NA	15.79	16.00	19.28	18.26	19.36	23.69
Kovvuru	A	83.25	83.61	80.42	80.63	80.73	76.78
	NA	16.75	16.39	19.58	19.37	19.27	23.22
T.P. Gudem	A	81.79	82.25	81.85	80.09	80.08	79.86
	NA	18.21	17.75	18.15	19.91	19.92	20.14
Upland taluk (Chintalapudi)	A	85.16	86.04	82.20	82.69	83.63	78.37
	NA	14.84	13.96	17.80	17.31	16.37	21.63
Agency taluk (Polavaram)	A	83.97	87.04	79.03	80.69	83.44	73.81
	NA	16.03	12.96	20.97	19.31	16.56	26.19

Sources: Government of India (1971, 1981).

Unpublished data of decennial census (1991) obtained from the Office of the Director of Census Operations, Andhra Pradesh, Hyderabad.

At the taluk level, Tanuku occupied the first place in 1971 and 1981 in the growth of non-agricultural employment but in 1991 Narasapur wrested the first position from Tanuku relegating it to the third position. A consistent rise in the share of non-agriculture in total employment in delta taluks was not noted. In the remaining taluks, there was a decline in the share of total workforce in non-agricultural employment in 1981. It might be due to changes in the definition of 'workers' in 1971 and 1981 Censuses and non-diversification of rural economy. The sharp fall in the share of non-agriculture in total employment of the agency taluk in 1981 compared to 1971 was due to the classification of a big village as a town in the 1981 Census. The increase in the share of delta taluks in non-agricultural employment could be ascribed to the impact of green revolution and well-established and age-old canal irrigation facilities enjoyed by these taluks. These factors helped this region to open up the gates for agro-based industries and demand-based establishments.

The delta upland taluks particularly the uplands accounted for a relatively low share in

non-agricultural employment in 1971 and 1981 as the impact of the green revolution was weak. However, by 1991, delta uplands witnessed significant changes in their agricultural economies. The spread of tubewell irrigation on a large scale and the consequent commercialisation of agriculture gave a fillip to non-agricultural employment by 1991. In fact, all the three delta upland taluks close to Tanuku showed higher levels of non-agricultural employment than Bhimavaram, another delta taluk. The upland and agency areas also witnessed similar transformation during the eighties. This facilitated diversification of employment in the non-agricultural sector in these two taluks also, and this led the agency area to surpass delta taluks by 1991.

Compared to total workforce, the share of male workforce in agricultural employment tended to decline, while its share in non-agricultural employment has shown an increase. It suggests the shift of male workforce to non-agricultural pursuits and indicates the slow decline in the pressure for employment seeking in agriculture. All the regions in the district exhibited a similar phenomenon.

To focus the variations regionally, as mentioned earlier, the distribution of male workforce is examined. The data have clearly shown that the trends in rural non-farm employment of male workforce are spatially similar, when compared to the trends in the employment of total workforce.

RELATIVE GROWTH OF AGRICULTURAL AND NON-FARM EMPLOYMENT

The data on relative growth of rural agricultural and rural non-farm employment during 1971-91 are given in Table II. The growth of rural non-farm employment in both the decades was greater than that of agricultural employment. A significant trend in the growth of rural non-farm employment is that its decennial growth was greater than the growth of population during 1971-81 and the difference was displayed more sharply between 1981 and 1991 in the district. It indicates the sectoral transformation in employment in the district. At the regional level also, the decennial growth of rural non-farm employment was more than the growth of agricultural employment in all the regions. The deltas with higher decennial growth in non-farm employment than the district's average stood first at the regional level during the first decade, followed by delta upland taluks, and upland and agency taluks. But during 1981-91, this ranking was changed, and agency and upland taluks occupied first and second places in the growth of rural non-farm employment. In all the regions the growth of rural non-farm employment was greater than the growth of population.

Among taluks, Narasapur (delta) reported the highest decennial growth of rural non-farm employment during 1971-81, followed by Kovvuru and Tanuku. Chintalapudi taluk (upland) and Polavaram taluk (agency) took the last places. But this ranking was changed dramatically during 1981-91, with Polavaram and Chintalapudi taluks scoring higher decennial growth and occupying first and second positions respectively. The higher growth of non-farm employment in delta taluks could be ascribed to its level of agricultural development. It is substantiated by the decline in the growth of agricultural employment between 1971-81 and 1981-91.

Analysing the data relating to male workforce, it was observed that the growth of both agricultural and non-farm employment was lower than that of the total workforce. It is because of the higher base of male workforce and its smaller change in the study period in all the regions. But the significant fact is that the farm sector showed lower growth in the

TABLE II. DECENNIAL GROWTH OF AGRICULTURAL AND NON-FARM EMPLOYMENT: TALUKWISE IN RURAL WEST GODAVARI DISTRICT, 1971-91

District/ Taluk	Agriculture (A) Non-farm (NF)	<i>(per cent)</i>					
		Total workforce			Male workforce		
		1971-81 (3)	1981-91 (4)	1971-91 (5)	1971-81 (6)	1981-91 (7)	1971-91 (8)
(1)	(2)						
West Godavari district	A	18.45	20.48	42.71	14.67	16.51	33.60
	NF	25.07	35.76	69.80	21.34	32.81	61.14
Delta taluks	A	13.57	18.49	34.57	13.12	14.19	29.18
	NF	27.61	25.67	60.37	23.06	19.34	46.86
Bhimavaram	A	18.07	23.20	45.47	16.64	16.53	35.92
	NF	22.21	38.09	68.77	23.67	33.94	65.64
Narasapur	A	11.01	7.48	19.31	11.48	5.99	18.16
	NF	37.04	32.73	81.90	26.05	22.25	54.09
Tanuku	A	12.34	26.16	41.73	11.77	20.68	34.88
	NF	23.43	12.34	38.66	20.56	8.90	31.29
Delta Upland taluks	A	23.97	17.81	46.05	16.48	15.27	34.27
	NF	22.14	37.63	68.10	18.64	36.27	61.67
Eluru	A	20.77	21.97	47.30	15.77	17.27	35.77
	NF	22.66	53.02	87.69	24.48	51.60	88.71
Kovvuru	A	28.43	5.97	36.10	18.24	4.13	23.12
	NF	25.10	31.42	64.41	17.44	31.94	54.95
T.P. Gudem	A	22.62	26.56	55.18	15.35	24.98	44.17
	NF	18.87	30.00	54.54	14.90	26.65	45.52
Upland taluk (Chintalapudi)	A	14.36	16.95	33.74	16.73	9.90	28.29
	NF	6.47	56.08	66.18	9.15	55.03	69.23
Agency taluk (Polavaram)	A	31.22	38.84	82.18	21.59	34.16	63.13
	NF	2.26	147.46	153.06	-4.15	152.41	141.94

Source: As in Table I.

male workforce than the non-farm sector. The growth of male workforce was more steep during 1981-91 than in 1971-81 at district and intra-district levels. Regionally, delta upland taluks and delta taluks ranked first and second respectively in the growth of male workforce in 1971-81, followed by upland area, whereas agency area showed negative growth due to classification of one big village as a town in 1981 Census.

This picture of male workforce in the non-farm sector changed grossly by 1981-91. The agency and upland areas occupied first and second positions respectively, followed by delta upland taluks. Even in the long run (1971-91), the agency and upland areas showed higher decennial growth than their counterparts. At taluk level also, similar trends were observed both in 1971-81 and 1981-91. The high growth of male workforce in the non-farm sector in agency and upland areas is due to lower base of male workforce coupled with commercialisation of agriculture in the very recent past and non-existence of urban centres.

VARIATIONS IN THE PATTERN OF RURAL NON-FARM EMPLOYMENT BY GEO-AGRO REGIONS

This is a cross-sectional analysis. To test the hypothesis that the pattern of rural non-farm employment is conditioned by geographical nature and agricultural development, the discriminant analysis is considered as ideal because it discriminates between regions. In this study there are two natural regions: (1) Deltas and (2) Uplands. These regions are formed by joining the respective mandals² in delta (31) and upland (15) groups. Thus there are two groups or clusters, namely, delta and upland mandals respectively. These groups are distinctly different geographically and in their levels of agricultural development. The discriminating variables run are broad industry groups of rural non-farm employment in each

mandal available from 1991 Census data except mining and quarrying which is kept as outlier due to its non-representation in as many as 31 mandals out of 46.

Keeping the discriminating variables in the linear function in each group, there are two discriminant functions as follows:

$$D_1 = a_1 + A_1X_1 + A_2X_2 + \dots + A_nX_n$$

$$D_2 = b_1 + B_1X_1 + B_2X_2 + \dots + B_nX_n$$

wherein X_1, X_2, \dots, X_n represent the discriminating variables, and D_1 and D_2 are delta and upland mandal groups respectively.

Mahalanobis D square value explains about the measure of distance between the two groups. The higher heterogeneity among groups is explained by this measure.

The test statistic used to find whether the two groups are distinctly different or not is shown below:

$$F = \frac{n_1 + n_2 - p - 1}{p} \cdot \frac{n_1 n_2}{n_1 + n_2} \cdot \frac{D_2}{n_1 + n_2 - 2}$$

for $F_p, n_1 + n_2 - p - 1$ degrees of freedom

where n_1 = number of observations in group I.

n_2 = number of observations in group II.

p = number of variables used to discriminate the two groups.

As could be seen from the results of the discriminant functions in Table III, the means for three out of the five industry groups of rural non-farm employment are higher in the

TABLE III. MEANS AND COEFFICIENTS OF DISCRIMINANT FUNCTION

Variable	Means		Coefficients	
	Cluster I (Delta mandals)	Cluster II (Upland mandals)	Cluster I (Delta mandals)	Cluster II (Upland mandals)
(1)	(2)	(3)	(4)	(5)
1. Percentage of employment in manufacturing to total rural non-farm employment	28.41	21.42	18.14	17.26
2. Percentage of employment in construction to total rural non-farm employment	2.45	2.81	-3.15	-1.77
3. Percentage of employment in trade and commerce to total rural non-farm employment	22.86	25.38	15.11	14.62
4. Percentage of employment in transport, storage and communications to total rural non-farm employment	8.06	5.37	24.37	22.74
5. Percentage of employment in other services to total rural non-farm employment	37.60	42.30	17.58	16.87
Mahalanobis D square = 65.17				

upland mandals than in the deltas. The means are higher in the deltas in respect of employment in manufacturing and transport, storage and communications. However, all the five coefficients of the discriminant function are higher for the deltas compared to the uplands. The Mahalanobis D square value of 65.17 clearly shows that the composition of rural non-farm employment is distinctly different between the two regions. Both the means and coefficients taken together show that the deltas have an edge over uplands with regard to manufacturing and transport, storage and communications, while uplands have a relatively high proportion of 'other services' such as trade and commerce and construction in their rural non-farm employment industry groups.

The distribution of mandals according to probability attached by discriminant function indicates that only three mandals out of 31 from cluster I have characteristics of cluster II and two mandals out of 15 from cluster II have the characteristics of cluster I. This suggests that the pattern of rural non-farm employment will vary in different geographical and agro-developed regions.

SUMMING UP

The study reveals that agriculture plays a leading role in the generation of employment in rural West Godavari. However, a slight rise in the share of rural non-farm employment in total employment was evident during the study period. At the regional level, the delta taluks have accounted for the highest share of rural non-farm employment compared to the other taluks with the exception of the agency taluk in 1991. Among taluks, the shares of Tanuku and Narasapur in rural non-farm employment were found to be higher. The decennial growth of rural non-farm employment in the study period was higher than the growth of agricultural employment and population in the district, which confirms sectoral transformation in the employment structure of rural West Godavari.

As the results of analysis reveal large variations in the pattern of rural non-farm employment between different geo-agro regions, it would be better to consider the variations in geo-agro base for formulating suitable employment generation programmes in rural areas.

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NOTES

1. The comparability of census data among different censuses was discussed by Bhalla (1985).
2. As the mandal system (taluk was divided into four to six mandals) has been in force since 1985, it has become possible to set clear natural geographical divisions.

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