

# Chronic Poverty and Malnutrition in 1990s

*The focus of the paper is on two interrelated but distinct issues of chronic poverty and malnutrition. It analyses the trends in extent, depth and severity of poverty and also malnutrition in rural and urban areas during the last few decades. The incidence of chronic poverty is higher than that of very poor in both rural and urban areas but the former is lower than severe malnutrition. Although the risk of malnutrition decreases with household income (standard of living index), elimination of poverty cannot ensure eradication of malnutrition. The incidence of child malnutrition is particularly high among poor households where mothers have poor nutritional levels, less education and poor access to antenatal care. The lowest incidence of child malnutrition is not in the richest but in the middle income states with progressive social policy. In the 1990s, with faster urban economic growth, urban poverty declined faster, but inter quintile urban inequality and rural-urban inequality worsened. Poverty, chronic poverty and malnutrition, together, got concentrated in a few geographical locations and among specific social groups.*

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## I Introduction

The process of poverty reduction has been significant during the past two decades. This has been well documented while analysing the performance of the Indian economy in poverty reduction. The proportion of population below the poverty line has remained constant (at about 50 per cent) till the mid-1970s but registered a decline thereafter with yearly fluctuations. The decline was remarkable in the 1980s and 1990s – from 51 per cent in 1977-78 to 39 per cent in 1987-88 and further to 26 per cent in 1999-00 (*Economic Survey*, 2001-02). This can be attributed to higher economic growth, improvement in real wages and proliferation of poverty alleviation programmes. The severity of poverty, reflected in the percentage of very poor, has declined at a faster rate than income poverty in both rural and urban areas [Radhakrishna and Ravi 2004]. Who are the remaining poor? The poor near the poverty line might have crossed the poverty line leaving behind the hard core poor who suffer from multiple deprivation. Hence, it can be argued that income poverty reduction is relatively easy and elimination of multiple deprivation is rather difficult to achieve. For instance, the incidence of child malnutrition is greater than income poverty and its pace of reduction is much slower.

This paper focuses on chronic poverty<sup>1</sup> and malnutrition.<sup>2</sup> Both these categories are interdependent. Various studies suggest that a two-way relationship exists between chronic poverty and malnutrition among children and women. Chronic energy deficiency among mothers adversely affects the nutritional status of children, which, in turn, affects their educational attainment, human capital, morbidity and labour productivity. Poor women are exposed to the risk of chronic energy deficiency. Development experiences suggest that income is a blunt instrument that breaks the vicious circle of chronic poverty and malnutrition. The goal of this paper is to answer the following questions: (i) what is the prevalence of poverty and chronic poverty? (ii) who gained from poverty/chronic poverty reduction? (iii) how far does income growth lead to the elimination of malnutrition and chronic poverty?

The analysis is mostly data driven and is constrained by the availability of sufficient data.

## II Poverty Post-Reform

### Trends in Per Capita Real Expenditure

The growth rate trends of per capita real expenditure, and food intake as computed from various rounds of the National Sample Survey (NSS) between 1970-71 and 1999-00 for three expenditure groups, viz, bottom 30 per cent, middle 40 per cent and top 30 per cent are presented in Tables 1 and 2.

The results show that the growth rate of rural per capita total expenditure (PCE) at 1990-91 prices, decelerated to 0.75 per cent during 1990-98 (1.20 per cent if 55th and 56th rounds are included) from 1.60 per cent during 1970-89. In contrast, the urban annual growth rate accelerated from 1.92 per cent during 1970-89, to about 2.84 per cent during 1990-98 (3.01 per cent if 55th and 56th rounds are included). The annual growth rate of the ratio of urban per capita real expenditure to that of rural has increased from 0.37 per cent during 1970-89 to 1.80 per cent in the 1990s. This clearly shows that rural-urban divide had widened in the 1990s. It is also noteworthy, that the high growth in urban areas was accompanied by increasing inequality [Radhakrishna and Ravi 2004].

The widening urban inequality is reflected in differential growth rates across the urban expenditure groups. The per capita real expenditure of top 30 per cent of the urban population increased at 3.52 per cent (3.29 per cent if 55th and 56th rounds are included) per annum during 1990-98 while that of bottom 30 per cent increased at 1.50 per cent (2.32 per cent if 55th and 56th rounds are included). In the case of rural areas, the bottom 30 per cent experienced a decline in the growth rate from 1.73 per cent during 1970-89 to 0.44 per cent during 1990-98 (1.48 per cent if 55th and 56th rounds are included). The analysis conclusively shows that in the 1990s, the urban areas and the top 30 per cent gained substantially while there

is a relative deterioration in the rural areas although all rural groups improved their position. The results are robust whether we include or exclude the 55th and 56th rounds from the analysis.

### Trends in Poverty

The three conventional measures of poverty, viz, headcount ratio (HCR), poverty gap ratio (PGR) and Foster-Greer-Thorbecke index (FGT), show substantial poverty reduction during 1970-2001. The performance is better in urban areas than in rural areas (both in terms of poverty reduction and smoothness of year-to-year fluctuations). It is noteworthy that all the poverty measures show that the rural-urban gap in the performance of poverty reduction further widened in the 1990s (Table 3).

The decline in the severity of poverty is faster than the extent or depth of poverty. For instance, during 1990-2001, while FGT declined at an annual rate of 7.32 per cent in rural areas and 10.87 per cent in urban areas, PGR declined at 5.25 per cent in rural areas and 7.19 per cent in urban areas and HCR at 3.48 per cent in rural areas and 4.95 per cent in urban areas. Due to the faster decline of the severity of poverty, the percentage of very poor also declined at a faster rate than PGR and HCR but the rate is lower than that of FGT. It is noticeable that the incidence of very poor tracks FGT more closely compared to HCR and PGR.

Thus, there is conclusive evidence to show that the decline in urban poverty had accelerated in the 1990s. For instance, FGT for urban areas dropped at an annual rate of 4.09 per cent during 1970-1989 and at 10.87 per cent during 1990-2001. The conclusion will remain unchanged whether we include or exclude the 55th and 56th NSS rounds. However, in the case of rural areas, the picture is unclear; inference on the change in growth rate depends on whether we include or exclude the 55th and 56th rounds. The inclusion of both 55th and 56th rounds, however, tends to suggest an improvement in the rate of poverty reduction, although at a much lower rate than in urban areas.

The incidence of poor, very poor and extremely poor show substantial reduction between 1993-94 and 1999-00 uniformly across all states with the exception of Assam and Orissa (Table 4). Poverty level remained more or less the same in Assam and Orissa.

### Growth and Poverty Relationship

The strength of the trickle down effect is usually measured by the elasticity of headcount poverty with respect to income. The estimate of poverty elasticity with respect to income (per capita total expenditure) which is still tentative is - 1.68 for rural and - 1.87 for urban (Table 3A). Clearly, the rural-urban differences in poverty reduction cannot be attributed to the differences in the growth elasticity of poverty but to the differences in their income growth. During 1989-2000, the per capita expenditure has increased at 1.20 per cent per annum in rural areas, while it was 3.01 per cent in urban regions.

### Profiles of the Poor

The composition of the poor is changing and rural poverty is getting concentrated in households belonging to agricultural labour and artisans and urban poverty in casual labour households (Table 5A). The agricultural labour households accounted for 41 per cent of rural poor in 1993-94 and increased to 47 per cent

in 1999-00. In contrast, the share of self-employed in agriculture among the rural poor dropped from 33 to 28 per cent. The increase in the relative size of agricultural labour households was both due to the rise in the dependence of rural households on agriculture

**Table 1: Growth Rates of Per Capita Food Items, Calorie Intake and Total Expenditure**  
(Per cent per annum)

	Bottom 30	Middle 40	Top 30	All Classes
<i>Rural</i>				
Per capita cereal expenditure*				
1970-1989	0.10	-0.55	-1.26	-0.67
1990-1998	-1.40	-2.36	-2.46	-2.16
1990-2000	-1.38	-2.30	-2.30	-2.06
1990-2001	-1.38	-2.04	-2.26	-2.04
Per capita non-cereal food*				
1970-1989	2.81	2.24	1.88	2.13
1990-1998	-0.18	-0.16	-0.89	-0.53
1990-2000	0.42	0.42	0.10	0.26
1990-2001	0.95	0.77	0.54	0.68
Per capita food expenditure*				
1970-1989	1.11	0.72	0.58	0.73
1990-1998	-0.85	-1.15	-1.42	-1.21
1990-2000	-0.55	-0.78	-0.68	-0.69
1990-2001	-0.29	-0.56	-0.36	-0.42
Per capita calorie intake				
1970-89	0.16	0.15	0.40	0.23
1990-98	-0.96	-1.63	-1.76	-1.53
Per capita total expenditure*				
1970-1989	1.73	1.48	1.65	1.60
1990-1998	0.44	0.48	1.03	0.75
1990-2000	1.11	1.03	1.11	1.08
1990-2001	1.48	1.31	1.03	1.20
<i>Urban</i>				
Per capita cereal expenditure*				
1970-1989	0.08	-0.32	-0.18	-0.17
1990-1998	-0.68	-0.55	0.29	-0.29
1990-2000	-0.77	-0.80	-0.06	-0.53
1990-2001	-0.93	-0.91	-0.34	-0.72
Per capita non-cereal food*				
1970-1989	2.17	1.91	0.85	1.38
1990-1998	0.12	0.00	-0.57	-0.27
1990-2000	0.75	0.59	0.28	0.46
1990-2001	0.93	0.72	0.39	0.58
Per capita food expenditure*				
1970-1989	1.15	1.05	0.60	0.86
1990-1998	-0.21	-0.18	-0.37	-0.27
1990-2000	0.13	0.16	0.22	0.18
1990-2001	0.18	0.21	0.24	0.22
Per capita calorie intake				
1970-89	0.31	0.05	0.32	0.21
1990-98	-0.58	-0.74	-0.05	-0.44
Per capita total expenditure*				
1970-1989	1.75	1.88	1.99	1.92
1990-1998	1.50	2.24	3.52	2.84
1990-2000	2.09	2.71	3.55	3.08
1990-2001	2.32	2.83	3.29	3.01

Note: \* At 1990-91 prices.

Source: Growth rates except those of calorie intake are from semi-log trend equations estimated from the NSS data. Growth rate of calorie intake are taken from Ravi (2000).

**Table 2: Per Capita Calorie Intake and Its Growth Rates**

Expenditure Classes	Rural K Cal/day			Growth Rate (Per Cent)	
	1972-73	1977-78	1993-94	1999-00	1972-2000
Bottom 30 per cent	1504	1630	1678	1696	0.6
Middle 40 per cent	2170	2296	2119	2116	-0.1
Top 30 per cent	3161	3190	2672	2646	-0.8
All groups	2268	2364	2152	2149	-0.3
<i>Urban</i>					
Bottom 30 per cent	1579	1701	1701	1715	0.4
Middle 40 per cent	2154	2154	2438	2136	-0.0
Top 30 per cent	2572	2979	2405	2622	0.1
All groups	2107	2379	2071	2156	0.1

Source: Computed from NSS Report No 405.

for livelihood, from 28 to 31 per cent as well as higher incidence of poverty among agricultural labour households – 40 per cent in 1999-00 in contrast to 26 per cent in all rural households. The casual labour households constituted 32 per cent of urban poor in 1999-00 compared to 25 per cent in 1993-94 [Radhakrishna et al 2003]. This was both due to their increased dependence of urban households on casual labour market as well as higher incidence of poverty among urban casual labour households. It needs to be recognised that growing dependence of rural and urban households on the casual labour market exposes them to market risks and tends to increase transient poverty. Movement into and out of poverty occurs due to fluctuations in the labour market.

The data indicate that the geographical landscape of rural poverty has been changing over the years (Table 6). The percentage share of backward states such as Bihar, Orissa, Madhya Pradesh and Uttar Pradesh in the rural poor rose from 53 per cent in 1993-94 to 61 per cent in 1999-00 whereas the share of agriculturally prosperous north-western states such as Punjab, Haryana and Himachal Pradesh declined from 3.03 to 1.26 per cent and that of southern states from 15.12 to 11.43 per cent. Surprisingly, some of the better off states such as Maharashtra, Gujarat and West Bengal had a relatively higher share in rural poverty. These three states accounted for one-fifth of the rural poor in 1999-00. Urban poor were getting concentrated in Uttar Pradesh, Maharashtra, West Bengal, Madhya Pradesh and Andhra Pradesh. Their share in all India urban poor rose from 56 per cent in 1993-94 to 60 per cent in 1999-00.

The occupational composition of the rural poor varied across the states<sup>3</sup>. In developed states, poverty was highly concentrated among agricultural labour households. In contrast, in backward states, poverty extended to other occupational groups including

self-employed in agriculture. For instance, in Punjab, Tamil Nadu, Maharashtra and Andhra Pradesh agricultural labour households constituted more than 60 per cent of the rural poor in 1999-00, in contrast their share was less than 16 per cent in Rajasthan and 28 per cent in Assam.

Among the social groups, scheduled castes, scheduled tribes and backward castes accounted for half of the rural population in 1999-00 while they accounted for a greater percentage of the rural poor (Table 5A). The poor among scheduled castes in rural areas were concentrated mostly in Uttar Pradesh, Bihar and West Bengal and comprised 58 per cent (Table 7). In urban areas, Madhya Pradesh, Maharashtra and Uttar Pradesh accounted for 41 per cent of the total poor. In both rural and urban areas, the incidence of poverty among scheduled castes was high in Bihar, Madhya Pradesh and Uttar Pradesh.

The percentage share of scheduled tribe population among the rural poor has increased rapidly from 14.8 per cent in 1993-94 to 17.5 per cent in 1999-00 (Table 5A). This increase was mainly due to comparatively slower reduction in the incidence of poverty. The percentage of poor among the scheduled tribes declined from 50 per cent in 1993-94 to 44.2 per cent in 1999-00, whereas for all India rural population it declined from 37 to 27 per cent. Bihar, Madhya Pradesh, Maharashtra, Orissa, Rajasthan and West Bengal together accounted for 82.1 per cent

**Table 3A: Growth Elasticity of Poverty**

Rural:	log HCR = 13.02 - 1.68 log PCE - 0.01 t	df = 14
	(t) = (3.59) (-2.45) (-0.01)	R <sup>2</sup> = 0.91
Urban:	log HCR = 14.63 - 1.87 log PCE + 0.01 t	df = 14
	(t) = (3.79) (-2.73) (0.86)	R <sup>2</sup> = 0.93

PCE: Per capita expenditure at constant prices.

**Table 3: Trends in Headcount Ratios of Very Poor, Moderately Poor, All Poor, Poverty Gap and FGT**

Year	Rural					Urban				
	Percentage of Very Poor	Percentage Moderately Poor	Head Count Ratio (HCR)	Poverty Gap Ratio (PGR)	RGT	Percentage of Very Poor	Percentage Moderately Poor	Head Count Ratio (HCR)	Poverty Gap Ratio (PGR)	FGT
1970-71	34.83	22.62	57.45	18.10	7.34	32.76	19.87	52.63	17.03	6.95
1972-73	35.58	22.53	58.11	18.65	7.70	30.66	19.51	50.17	16.03	6.48
1973-74	31.29	22.16	53.45	16.24	6.37	30.07	20.69	50.76	15.51	6.03
1977-78	33.24	21.65	54.89	17.55	7.25	34.70	20.29	54.99	18.35	7.79
1983	25.46	21.40	46.86	13.35	4.90	24.68	19.24	43.92	12.88	4.77
1986-87	21.12	21.21	42.33	11.29	3.90	21.37	17.17	38.54	11.02	3.88
1987-88	18.66	22.00	40.66	10.09	3.22	21.92	18.12	40.04	11.24	3.89
1988-89	16.47	21.19	37.66	8.99	2.75	19.38	18.25	37.63	10.13	3.37
1989-90	13.33	20.07	33.40	7.51	2.16	18.37	18.03	36.40	9.64	3.14
1990-91	16.04	20.62	36.66	8.72	2.67	17.90	17.45	35.35	9.47	3.16
1991	15.60	23.23	38.83	8.75	2.50	18.27	18.15	36.42	9.74	3.24
1992	17.95	22.30	40.25	9.70	2.99	17.95	17.11	35.06	9.34	3.03
1993	16.76	24.01	40.77	9.27	2.71	19.14	18.54	37.68	10.08	3.37
1993-94	13.78	21.10	34.88	7.82	2.25	15.98	16.54	32.52	8.36	2.60
1994-95	15.94	24.10	40.04	8.93	2.54	17.92	17.52	35.44	9.39	3.00
1995-96	15.48	23.20	38.68	8.60	2.44	14.02	16.98	31.00	7.56	2.17
1997	13.39	19.88	33.27	7.48	2.10	12.94	15.81	28.75	7.03	2.01
1998	16.45	22.56	39.01	8.92	2.59	14.11	16.29	30.40	7.61	2.26
1999-2000	8.63	18.76	27.39	5.34	1.31	9.08	14.10	23.18	5.02	1.18
2000-01	8.11	18.24	26.35	5.07	1.21	9.19	13.82	23.01	5.04	1.20
Growth Rates										
1970-1989	-4.48	-0.40	-2.52	-4.18	-5.86	-2.93	-0.69	-1.97	-2.95	-4.09
	(-7.16)	(-3.60)	(-8.01)	(-7.33)	(-6.94)	(-6.55)	(-4.00)	(-6.60)	(-6.32)	(-6.13)
1990-1998	-1.35	-0.27	-0.73	-1.30	-2.09	-4.83	-1.48	-3.09	-4.44	-6.69
	(-1.06) <sup>+</sup>	(-0.27) <sup>+</sup>	(-0.73) <sup>+</sup>	(-1.19) <sup>+</sup>	(-1.57) <sup>+</sup>	(-4.36)	(-2.86)	(-4.15)	(-4.40)	(-4.74)
1990-2000	-4.53	-1.22	-2.48	-3.82	-5.41	-6.97	-2.23	-4.82	-6.45	-9.78
	(-2.20) <sup>+</sup>	(-1.27) <sup>+</sup>	(-1.96) <sup>+</sup>	(-2.29) <sup>+</sup>	(-2.52)	(-4.67)	(-3.79)	(-4.63)	(-4.65)	(-4.72)
1990-2001	-6.32	-1.81	-3.48	-5.25	-7.32	-7.72	-2.62	-4.95	-7.19	-10.87
	(-3.24)	(-2.13) <sup>+</sup>	(-2.97)	(-3.34)	(-3.58)	(-6.03)	(-4.99)	(-5.97)	(-6.00)	(-6.08)

Note: Figures in the parentheses are t-ratios

+ The regression coefficient of the semi-log trend equation is not significant at 5 per cent.

Source: Radhakrishna and Ravi (2004).

of the poor among scheduled tribes in 1999-00 (Table 8). It is worth noting that nearly 30 per cent of the total poor scheduled tribes were located in Madhya Pradesh alone. The incidence of poverty was high in rural areas in Orissa (73 per cent), Bihar (59 per cent), Madhya Pradesh (57 per cent) and West Bengal (50 per cent) and in urban areas, it was high in Orissa (59 per cent), Madhya Pradesh (53 per cent), Karnataka (52 per cent), Andhra Pradesh (48 per cent) and Bihar (43 per cent).

### Incidence of Very Poor

The percentage of very poor in rural areas declined from 13.8 per cent in 1993-94 to 8.6 per cent in 1999-00 and from 16 to 9 per cent in urban areas – a decline of about 1 percentage point per year. The decline was faster in the case of very poor as compared to poor (Table 3). For instance, during 1990-01, the percentage of very poor declined at an annual rate of 6.32 per cent in rural areas and 7.72 per cent in urban areas whereas the percentage of poor declined at 3.48 per cent in rural areas and 4.95 per cent in urban areas. If the historical trends persist, in most of the states, the percentage of very poor will be reduced to an insignificant level by the end of this decade.

Interstate variations in the incidence of very poor were substantial – varying between 0 and 21.7 per cent in rural areas and

between 0 and 21.6 per cent in urban areas during 1999-2000. Meghalaya, Mizoram, Nagaland, Delhi, Chandigarh, A and N Islands, Lakshadweep, Goa and Daman and Diu had no incidence of very poor (Tables 4 and 4A). All these union territories and small states performed extremely well in the reduction of severity of poverty. Even in 1993-94, almost all of them had no or very low incidence of very poor. It is worth noting that Rajasthan, a less developed state, performed well in the reduction of the incidence of very poor.

Orissa showed no change in the incidence of very poor in the 1990s. It had the highest incidence in both rural as well as in urban areas in 1993-94 and also in 1999-00. Assam is in league with Orissa in terms of bad performance. Between 1993-94 and 1999-00, the incidence of very poor in Assam had increased in both rural and urban areas despite a reduction in the percentage of poor implying worsening of inequality among the poor. High concentration of very poor is observed in the rural and urban areas of Bihar and Madhya Pradesh, in rural areas of Assam and West Bengal and in urban areas of Maharashtra, Uttar Pradesh and Pondicherry.

In the case of scheduled castes, the very poor were concentrated in Uttar Pradesh, Bihar and West Bengal accounting for 63 per cent in 1999-00 (Table 7). In urban areas, the very poor among scheduled castes and tribes were mostly located in the same states

**Table 4: Incidence of Extremely Poor, Very Poor, Moderately Poor and Poor – Statewise, 1993-94 and 1999-2000 (Rural)**  
(Percentage)

Sl No	All-India/ State/UT	1993-94				1999-2000			
		Extremely Poor	Very Poor	Moderately Poor	Poor (BPL)	Extremely Poor	Very Poor	Moderately Poor	Poor (BPL)
1	All-India	2.0	14.7	22.1	36.8	0.8	8.2	18.3	26.5
2	AP	0.6	4.1	11.8	15.9	0.4	2.7	7.8	10.5
3	Ar Pradesh	2.5	16.1	25.3	41.4	0.0	6.3	17.1	23.4
4	Assam	0.7	12.3	33.0	45.3	1.9	14.8	25.4	40.2
5	Bihar	4.0	27.6	30.3	57.9	1.1	14.1	29.9	44.0
6	Goa	0.2	1.9	3.1	5.0	0.0	0.0	0.0	0.0
7	Gujarat	0.5	6.5	15.6	22.1	0.2	3.3	9.1	12.4
8	Haryana	1.1	8.8	19.5	28.3	0.6	1.5	5.9	7.4
9	HP	0.9	8.9	21.4	30.3	0.0	1.3	6.2	7.5
10	J and K	0.4	4.9	13.3	18.2	0.0	0.5	4.2	4.7
11	Karnataka	1.4	11.2	19.0	30.2	0.3	3.3	13.6	16.9
12	Kerala	1.5	9.4	16.0	25.4	0.2	1.9	7.5	9.4
13	MP	2.6	16.9	23.8	40.7	1.2	12.3	24.9	37.2
14	Maharashtra	3.2	16.0	21.9	37.9	0.7	6.5	16.8	23.3
15	Manipur	0.1	2.3	16.9	19.2	0.0	2.4	11.7	14.1
16	Meghalaya	0.2	2.9	21.4	24.3	0.0	0.2	5.8	6.0
17	Mizoram	0	1.3	4.9	6.2	0.0	0.1	2.7	2.8
18	Nagaland	0	0.0	1.9	1.9	0.0	0.0	0.2	0.2
19	Orissa	3.1	21.7	28.1	49.8	2.8	21.7	26.1	47.8
20	Punjab	0.1	3.0	8.7	11.7	0.0	1.1	4.9	6.0
21	Rajasthan	0.7	8.6	17.8	26.4	0.1	2.4	11.0	13.4
22	Sikkim	0	8.1	23.2	31.3	0.2	3.2	18.5	21.7
23	TN	1.9	12.4	20.6	33.0	0.6	5.7	14.4	20.1
24	Tripura	0.9	8.7	14.6	23.3	0.2	3.2	13.5	16.7
25	UP	2.6	19.4	23	42.4	0.5	8.7	22.3	31.0
26	WB	1.4	13.6	27.6	41.2	1.1	10.8	20.9	31.7
27	A and N Islands	0	0.0	1.1	1.1	0.0	0.0	0.3	0.3
28	Chandigarh	0	0.0	11.8	11.8	0.1	0.1	7.6	7.7
29	D and N Haveli	0.1	18.5	33.2	51.7	0.0	4.7	11.9	16.6
30	Daman and Diu	0	1.6	0	1.6	0.0	0.0	0.0	0.0
31	Delhi	0	0.0	2	2.0	0.0	0.0	0.7	0.7
32	Lakshadweep	0	0.0	0	0.0	0.0	0.0	0.0	0.0
33	Pondicherry	0	5.3	13.6	18.9	0.5	2.9	8.6	11.5

Notes: Extremely poor: Persons whose per capita total expenditure is less than 50 per cent of state-specific poverty line. Very poor: all those persons whose per capita total expenditure is less than 75 per cent of the state-specific poverty lines. Moderately poor: persons whose per capita expenditure lies between 75 per cent and 100 per cent of state-specific poverty lines.

Source: Computed from NSS 50th and 55th round Consumer Expenditure Data.

**Table 4A: Incidence of Extremely Poor, Very Poor, Moderately Poor and Poor – Statewise, 1993-94 and 1999-2000 (Urban)**  
(Percentage)

Sl No	All-India/ State/UT	1993-94				1999-2000			
		Extremely Poor	Very Poor	Moderately Poor	Poor (BPL)	Extremely Poor	Very Poor	Moderately Poor	Poor (BPL)
1	All-India	2.9	15.1	17.7	32.8	1.2	9.2	14.8	24.0
2	AP	2.2	16.8	22.0	38.8	1.2	9.3	17.9	27.2
3	Ar Pradesh	0.4	1.9	3.9	5.8	2.2	4.1	0.9	5.0
4	Assam	0.2	1.2	6.8	8.0	0.2	2.1	5.1	7.2
5	Bihar	1.6	13.9	20.9	34.8	1.4	10.5	23.0	33.5
6	Goa	0.3	7.6	20.6	28.2	0.0	3.8	2.5	6.3
7	Gujarat	1.2	10.7	17.6	28.3	0.4	3.7	11.1	14.8
8	Haryana	0.2	4.9	11.5	16.4	1.2	3.6	6.4	10.0
9	HP	0	1.1	8.2	9.3	0.0	0.9	3.7	4.6
10	J and K	0	1.9	3.2	5.1	0.0	0.0	2.0	2.0
11	Karnataka	4.9	21.7	18.1	39.8	1.9	9.3	15.3	24.6
12	Kerala	2.0	9.8	14.5	24.3	0.9	6.2	13.7	19.9
13	MP	5.3	25.3	22.8	48.1	2.7	18.2	20.4	38.6
14	Maharashtra	5.9	18.4	16.6	35.0	2.4	12.4	14.4	26.8
15	Manipur	0.2	0.4	6.5	6.9	0.0	0.0	0.5	0.5
16	Meghalaya	0	0.1	1.7	1.8	0.0	0.0	0.0	0.0
17	Mizoram	0	0	0	0	0.0	0.0	0.0	0.0
18	Nagaland	0	0	0	0	0.0	0.0	0.0	0.0
19	Orissa	4.2	21.7	18.9	40.6	3.0	21.6	21.9	43.5
20	Punjab	0	2.2	8.6	10.8	0.0	0.9	4.5	5.4
21	Rajasthan	1.3	12.7	18.3	31.0	0.1	5.6	13.8	19.4
22	Sikkim	0	0	1.0	1.0	0.0	1.2	3.6	4.8
23	TN	3.7	18.2	21.7	39.9	1.2	7.9	14.6	22.5
24	Tripura	0.1	1.8	4.2	6.0	0	0.4	1.0	1.4
25	UP	2.9	17.0	18.1	35.1	1.0	12.3	18.4	30.7
26	WB	0.8	7.4	15.6	23	0.2	4.2	10.5	14.7
27	A and N Islands	0.1	1.2	4.0	5.2	0.0	0.5	0.0	0.5
28	Chandigarh	0.2	0.2	1.9	2.1	0.0	0.9	2.2	3.1
29	D and N Haveli	4.0	28.3	10.7	39.0	0.0	2.0	10.3	12.3
30	Daman and Diu	0	2.1	19.6	21.7	0.0	1.4	9.5	10.9
31	Delhi	1	6.9	9.2	16.1	0.0	1.7	7.5	9.2
32	Lakshadweep	0	4.7	11.2	15.9	0.0	0.1	3.2	3.3
33	Pondicherry	3.2	16.1	20.3	36.4	2.2	12.7	9.7	22.4

Notes: Extremely poor: Persons whose per capita total expenditure is less than 50 per cent of state-specific poverty line. Very poor: all those persons whose per capita total expenditure is less than 75 per cent of the state-specific poverty lines. Moderately poor: persons whose per capita expenditure lies between 75 per cent and 100 per cent of state-specific poverty lines.

Source: Computed from NSS 50th and 55th round Consumer Expenditure Data.

mentioned earlier. In the case of very poor scheduled tribes, they were mostly located in the rural regions of four states, viz, Madhya Pradesh, Orissa, Bihar and Maharashtra comprising of 77 per cent in 1999-00 (Table 8). It is worth noting that the concentration of very poor in these states tended to be somewhat higher than the concentration of poor.

### Chronic Poverty

How can chronically poor households be identified among the poor? The sub-category of poor persons, who are below the poverty line for a long duration, usually five years, constitutes the chronic poor. In practice, the availability of data dictates the duration. In the National Sample Surveys, the duration does not extend beyond a year and also specific household consumption is available for a reference period of usually one month. Hence, it is not possible to identify the chronic poor from the NSS data. In the present study, we have attempted to identify the chronic poor in an indirect manner by establishing correspondence between NSS and National Family Health Survey (NFHS) data. Even though, NFHS has not collected any information on income/consumption, information on households possession of durables, ownership of assets, amenities etc, was available. Using this information, the standard of living index has been computed for each sample household of NFHS. The correspondence between poverty line and the standard of living index has been established by equating the percentage of people below the poverty line computed from the NSS data with the percentage of people below the standard of living index. The percentage of people below the cut off point of the standard of living index will be equal to the percentage of people below the poverty line of the NSS. A poor household with a malnourished child is considered as chronically poor. Among the three measures of malnutrition, height-for-age index is an indicator of chronic under nutrition (stunted), weight-for-height index (wasted) reflects acute under-nutrition and weight-for-age (under weight) is a composite measure of both chronic and acute under-nutrition. We have chosen height-for-age since deficiency in food energy intake over a long duration gets reflected in stunting.

The standard of living index data revealed that in the case of children belonging to poor households, 57 per cent of those in rural areas and 50 per cent in urban areas were stunted (Table 9). The percentage varied between 32 (Kerala) and 60 (West Bengal) in rural areas and between 31 (Kerala) and 64 (Haryana) in urban areas. It is worth observing that in some of the states with low incidence of poverty, such as Haryana and Jammu and Kashmir, the percentage of stunted children among the poor was high.

The incidence of chronic poverty has been estimated by multiplying the percentage of malnourished among the poor with the proportion of poor and the estimates are presented in Table 9. The percentage of chronically poor in rural areas is estimated to be 15 per cent, and 13.7 per cent in urban areas. The incidence of chronic poverty is higher than the incidence of very poor but lower than the severe malnutrition levels (weight-for-age/height-for-age less than median – 3 SD).

The percentage of chronically poor is quite high in Bihar (25.3 per cent in rural and 19.3 per cent in urban), Orissa (24.4 per cent in rural and 22.2 per cent in urban), Madhya Pradesh (21.4 per cent in rural and 22.2 per cent in urban) and Uttar Pradesh (19.6 per cent in rural and 19.4 per cent in urban). Rural areas

of Assam and West Bengal have high incidence while it is very low in Jammu and Kashmir and the north-western states of Punjab, Haryana, Himachal Pradesh and Kerala.

The profiles of very poor are likely to reflect those of chronically poor since very poor are likely to be exposed to the risk of chronic poverty. Since the probability of a very poor household moving out of poverty in some good years is likely to be very low. Hence, the incidence of chronic poverty is likely to be high among the very poor. It may be noted that profiles of the very poor are not very sensitive to marginal changes in the cut-off point. Both the sub categories of poor – very poor and chronically poor are not only deprived of adequate income, but also suffer from multiple deprivation (Table 10). It is noteworthy that deprivation in sanitation and housing is more in rural areas. The deprivation although more in the bottom class, is spread across all income groups in rural areas.

## III Food Consumption

### Cereal Consumption

The NSS data reveal that the per capita consumption of cereals has been declining since the early seventies [Radhakrishna 1991; Radhakrishna and Ravi 1992; Rao and Radhakrishna 1997; Rao 2000]. Between 1970-71 and 1997-98, the per capita cereal consumption declined by 0.72 per cent per annum in the rural

**Table 5: Incidence of Poverty among Socio-Economic Groups (Percentage)**

Category	Very Poor		Poor	
	1993-94	1999-00	1993-94	1999-00
Rural				
<i>Caste</i>				
Scheduled tribes	22.1	17.0	50.2	44.2
Scheduled castes	21.7	11.5	48.3	35.3
Other backward castes	NA	7.0	NA	25.5
All groups	14.7	8.2	36.8	26.5
<i>Occupation</i>				
Agriculture labour	26.2	14.1	54.4	39.7
Non-agriculture labour	15.2	8.7	42.2	27.2
Urban				
<i>Caste</i>				
Scheduled tribes	24.0	17.5	43.0	37.5
Scheduled castes	26.1	16.4	50.9	39.1
Other backward castes	NA	10.7	NA	30.2
All groups	15.1	9.2	32.4	23.6
<i>Occupation</i>				
Casual labour	36.6	26.0	64.5	53.0

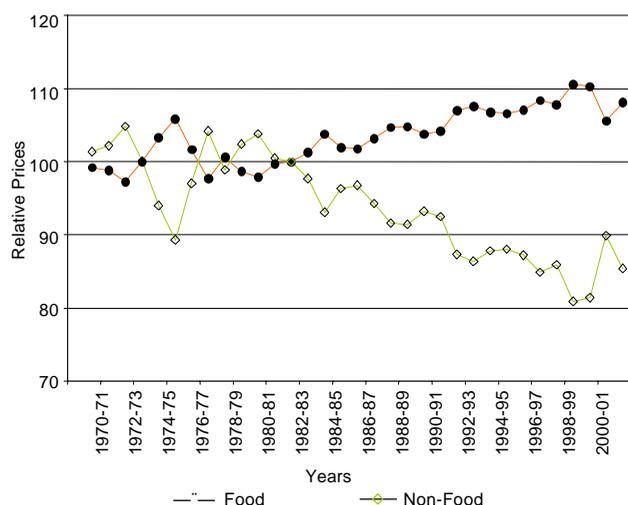
Source: Same as Table 4.

**Table 5A: Percentage Distribution of Poor by Categories in Rural Areas (Percentage)**

Category	1993-94	1999-00
<i>Caste</i>		
Scheduled castes	27.6	27.3
Scheduled tribes	14.8	17.5
Others	57.6	55.2
All Groups	100.0	100.0
<i>Occupation</i>		
Agriculture labour	40.7	46.8
Non-agriculture labour	8.4	7.6
Artisans	11.2	12.3
Self-employed	33.2	28.1
Others	6.5	5.3
All Groups	100.0	100.0

Source: Same as Table 4.

**Figure: Trends in Relative Prices of Food and Non-Food in Rural India**



areas and by 0.74 per cent per annum in urban areas. The cereal consumption in rural areas fell from 15.35 kg per capita/month in 1970-71 to 12.5 kg in 1997-98 while in urban areas it fell from 11.36 to 10.4 kg. The declining trend is visible across all the states with the exception of Kerala, West Bengal and Orissa. The decline is very prominent in the rural areas of Punjab and Haryana. What is most striking is the low per capita intake of cereals in the most prosperous state of Punjab (9.8 kg in rural and 9.7 kg in the urban areas in 1997-98) and the converse in the backward state of Orissa (16 kg in rural and 13.25 kg in urban areas). This is partly due to the diversification of the food basket in Punjab and Haryana in favour of superior non-cereal food, particularly milk and milk products, vegetables and fruits, etc. Can these changes be viewed in a positive perspective? The striking decline in cereal consumption can be attributed to changes in consumer tastes and preferences from food to non-food items, within the food group from cereals to non-cereal food and from 'coarse' to 'fine' cereals [Radhakrishna and Ravi 1992]. More recently, Rao (2000) has shown that the decline in cereal consumption has been greater in rural areas where improvements in rural infrastructure made other food and non-food items available to the rural households and hard manual work is greatly reduced in agriculture due to farm mechanisation. Rao further observes that a reduction in the intake of foodgrain on this account should not be taken as deterioration in human welfare.

### Food Consumption and Calorie Intake

Per capita cereal expenditure at constant prices declined both in rural and urban areas throughout this period (1970-98) for all the expenditure classes, except for the bottom 30 per cent during the first two decades and top 30 per cent for urban areas during the last decade (Table 1). During the 1990s, the decline was more in rural areas than in urban areas. The fall in cereal consumption was more than compensated by the increased consumption of non-cereal food items during the first two decades and as a result, the per capita calorie intake increased at 0.2 per cent per annum during this period both in rural and urban areas. However, this did not continue during 1990-98 when the per capita calorie intake fell by about 1.5 per cent per annum in rural areas and by 0.4 per cent in urban areas. This implies that the consumption

**Table 6: Percentage Distribution of Very Poor across States and Statewise Share of Very Poor in Total Poor: 1993-94 and 1999-2000**

Sl No	States	1993-94		1999-2000	
		Per Cent Share (in All-India Very Poor)	Ratio (Per Cent Very Poor to Poor)	Per Cent Share (in All-India Very Poor)	Ratio (Per Cent Very Poor to Poor)
<b>Rural</b>					
1	All-India	100.0	40.1	100.0	30.8
2	AP	2.1	25.7	2.5	25.5
3	Assam	2.6	27.1	5.7	36.8
4	Bihar	23.0	47.7	22.0	32.1
5	Gujarat	1.9	29.6	1.7	26.6
6	Haryana	1.2	30.9	0.4	19.8
7	HP	0.5	29.5	0.1	16.7
8	Karnataka	3.6	36.9	1.9	19.5
9	Kerala	2.1	37.0	0.8	20.4
10	MP	9.3	41.5	12.4	33.0
11	Maharashtra	8.3	42.2	5.9	27.7
12	Orissa	6.3	43.7	11.2	45.3
13	Punjab	0.5	25.4	0.3	18.4
14	Rajasthan	3.2	32.4	1.7	18.1
15	TN	4.5	37.6	3.3	28.2
16	UP	23.7	45.8	19.9	28.2
17	WB	7.2	33.0	10.3	34.1
18	Others	0.9	27.2	0.4	16.8
<b>Urban</b>					
1	All India	100.0	46.1	100.0	38.4
2	AP	8.6	43.2	7.4	34.2
3	Assam	0.1	14.6	0.3	29.0
4	Bihar	4.8	40.0	5.9	31.3
5	Gujarat	4.6	37.8	2.7	25.0
6	Haryana	0.6	30.0	0.8	36.4
7	HP	0.01	11.9	0.02	18.7
8	Karnataka	9.2	54.5	6.4	37.7
9	Kerala	2.1	40.5	2.0	30.9
10	MP	11.9	52.6	14.0	47.1
11	Maharashtra	17.2	52.6	19.3	46.2
12	Orissa	2.8	53.4	4.5	49.6
13	Punjab	0.4	20.8	0.3	17.3
14	Rajasthan	3.9	41.0	2.8	28.8
15	TN	11.0	45.6	8.1	35.0
16	UP	14.3	48.5	17.2	40.0
17	WB	4.1	32.2	3.7	28.7
18	Others	2.6	40.1	1.4	24.0

Source: Same as Table 4.

**Table 7: Incidence of Poverty among Scheduled Castes in Selected States**

State	Percentage of				Percentage Share in All India			
	Very Poor		Poor		Very Poor		Poor	
	1993-94	1999-2000	1993-94	1999-2000	1993-94	1999-2000	1993-94	1999-2000
<b>Rural</b>								
AP	7.5	4.1	26.0	16.5	2.5	2.9	3.9	3.9
Bihar	39.5	22.9	70.6	59.1	19.8	23.0	15.9	19.4
MP	18.8	13.5	45.3	41.2	6.0	7.2	6.5	7.2
Maharashtra	24.2	8.2	51.4	31.6	6.6	3.6	6.3	4.5
Tamil Nadu	17.3	9.0	44.4	31.7	6.0	6.4	6.9	7.4
UP	31.4	14.2	59.4	43.4	30.0	27.7	25.6	27.7
WB	16.5	13.1	46.3	34.9	9.8	12.6	12.4	10.9
Rural India	21.7	11.5	48.3	35.3	100	100	100	100
<b>Urban</b>								
AP	22.9	16.2	45.8	42.2	4.5	8.1	4.6	8.8
Bihar	27.3	22.9	57.0	51.4	4.3	6.0	4.6	5.7
Karnataka	38.1	24.6	62.8	46.7	7.9	6.5	6.6	5.2
MP	38.7	27.6	63.9	56.1	14.5	11.8	12.3	10.0
Maharashtra	33.2	19.5	53.8	40.7	18.1	16.3	15.1	14.2
Tamil Nadu	35.3	21.3	61.5	45.7	14.1	10.0	12.6	9.0
UP	29.7	16.7	59.0	44.3	14.8	15.5	15.1	17.2
WB	16.1	9.4	38.7	28.3	5.8	4.8	7.2	6.0
Urban India	26.1	16.4	50.9	39.1	100	100	100	100

Source: Same as Table 4.

of non-cereal food items could not compensate the loss of food energy intake due to fall in cereal consumption. For the bottom 30 per cent of the population, the per capita cereal expenditure at constant prices was almost stagnant during 1970-89 but declined during 1990-98 (Table 1). It seems that the improvement in income growth did not translate into a higher consumption of cereals. The declining cereal consumption would not be a major cause of concern if the food energy intake levels of the poor were nutritionally adequate.

There is a substantial variation in energy intake among different expenditure segments of the population. While the top 30 per cent of the population is adequately fed, both in rural and urban areas, the middle 40 per cent gets barely close to the nutritional requirement (Table 2).

The per capita calorie intake of the bottom 30 per cent in 1999-00 was low at 1,696 kcal per day in rural areas and 1,715 kcal per day in urban areas. This section of the population was unarguably deprived of nutritionally adequate diet. Whether one includes or excludes the 55th round data, it is clear that there has been stagnation in food energy intake since the mid-1970s. Incidentally, the National Nutrition Monitoring Bureau (NNMB) data show a decline of per capita calorie intake in the 1990s in the rural areas of its sample states and also in tribal areas. The conclusions are: (i) Calorie gap of the bottom 30 per cent is too large to be ignored, (ii) Improvement in the food energy intake is not commensurate with the improvement in total expenditure, and (iii) the per capita calorie intake, was stagnant or deteriorating. The trend in increase in the real price of food items in the more recent period is a cause of concern (see Figure).

Historical trends reveal substantial diversification of the consumption basket of the poor in favour of non-cereal items, particularly non-food items. The per capita non-food expenditure at constant prices has been expanding among all income groups of rural and urban areas throughout but the rate of expansion was higher in the 1990s, even among the poor [Radhakrishna et al 2004]. The budget share of cereals of the bottom 30 per cent declined from 51 per cent in 1970-71 to 38 per cent in 1990-91 and further to 33 per cent in 1998 in rural areas and from 36 to 26 per cent and further to 22 per cent in urban areas during the same period.

A question of topical interest is: Is the consumption of food items by the poor households not optimum from a nutritional perspective? Various studies suggest that the poor generally suffer from micro-nutrient (iron, vitamin A, riboflavin, niacin, etc) deficiencies due to lack of variety in their diet (NNMB reports). It is therefore important to analyse the implications of the changes in dietary preferences on the nutritional and health status of the poor. So long as the diversification of the consumption basket improves nutritional status, even though it may not add calories, it should not be a cause of concern.

## IV Malnutrition

The reports from the National Nutrition Monitoring Bureau (NNMB) provide data on the nutritional status of general population as well as certain vulnerable groups in rural areas. The information is based on large scale, periodic diet and nutritional surveys in nine states. These reports use Gomez classification<sup>4</sup> for children and body-mass index (BMI)<sup>5</sup> classification for adults. The NNMB data show that the incidence of under-nutrition

among children, even though slowly declining, is still alarmingly high during the late 1990s and their incidence is higher than that of income poverty. About half of the children and slightly over a third of adults were undernourished in 2000-01 [Radhakrishna and Ravi 2004].

The percentage of malnourished children declined from 61.5 in 1975-79 to 56.2 in 1991-92 and further to 47.7 in 2000-01 which is visible across all NNMB sample states except Madhya Pradesh and Orissa (ibid). The decline is very striking in Kerala and Tamil Nadu – from 56.8 per cent to 28.8 per cent during 1975-2001 in Kerala and from 59.6 per cent to 39.0 per cent in Tamil Nadu. Malnutrition levels in Madhya Pradesh and Orissa in 2000-01 is about the same as in early 1970s.

**Table 8: Incidence of Poverty among Scheduled Tribes in Selected States**

State	Percentage of				Percentage Share in All India			
	Very Poor		Poor		Very Poor		Poor	
	1993-94	1999-2000	1993-94	1999-2000	1993-94	1999-2000	1993-94	1999-2000
Rural								
AP	7.2	7.6	26.4	23.1	2.2	2.3	3.5	2.7
Assam	7.1	11.9	41.9	39.2	1.3	3.2	3.4	3.9
Bihar	37.8	21.6	69.3	58.7	14.0	9.8	11.3	10.2
Gujarat	11.6	7.5	30.5	27.5	4.9	3.5	5.6	4.9
MP	27.9	20.8	57.0	57.1	28.7	28.3	25.8	29.9
Maharashtra	21.1	16.8	51.8	44.2	9.0	12.5	9.7	12.6
Orissa	39.7	42.1	71.4	73.0	20.1	26.8	15.8	17.8
Rajasthan	16.5	6.5	45.7	24.8	5.9	3.8	7.2	5.6
West Bengal	16.7	16.3	62.1	50.1	4.9	5.1	2.3	6.0
Rural India	22.1	17.0	50.2	44.2	100	100	100	100
Urban								
AP	31.1	11.7	45.6	47.5	9.5	5.4	7.8	10.3
Bihar	14.9	18.8	35.0	42.9	4.5	9.8	5.9	10.5
Gujarat	10.4	7.8	35.6	38.4	3.9	3.2	7.6	7.4
Karnataka	40.7	30.0	62.8	51.7	11.1	13.0	9.6	10.5
MP	37.3	33.5	66.4	53.4	25.2	30.0	25.1	22.4
Maharashtra	38.1	21.9	60.5	42.7	26.5	17.0	23.6	15.6
Orissa	44.6	32.7	62.8	59.4	14.6	14.8	11.5	12.6
Rajasthan	3.7	5.7	8.4	21.8	0.4	1.6	0.5	2.8
WB	4.8	15.9	23.5	33.7	0.8	3.5	2.3	3.4
Urban India	24.0	17.5	43.0	37.5	100	100	100	100

Source: Same as Table 4.

**Table 9: Undernutrition (Height-for-age) among poor and Incidence of Chronic Poverty: 1997-98**

State	Rural		Urban	
	Percentage of Stunted Children among Poor	Percentage of Chronically Poor	Percentage of Stunted Children among Poor	Percentage of Chronically Poor
Andhra Pradesh	49.6	5.2	34.3	13.5
Assam	52.4	21.1	49.1	3.8
Bihar	57.5	25.3	63.0	19.3
Gujarat	49.5	6.1	51.2	7.3
Haryana	60.5	4.5	64.2	6.1
Himachal Pradesh	58.8	4.4	54.8	2.7
Jammu and Kashmir	59.9	2.8	51.6	1.2
Karnataka	56.5	9.6	49.7	13.9
Kerala	32.4	3.1	30.9	6.5
Madhya Pradesh	57.4	21.4	56.9	22.2
Maharashtra	55.8	13.0	30.9	15.0
Orissa	51.1	24.4	49.1	22.2
Punjab	56.9	3.4	46.4	3.1
Rajasthan	60.1	8.1	57.2	11.7
Tamil Nadu	41.6	8.4	46.5	9.4
West Bengal	60.0	19.0	53.5	8.8
Uttar Pradesh	63.1	19.6	59.6	19.4
Other States	43.1	5.3	46.4	3.9
All-India	57.1	15.1	49.6	13.7

Note: Stunted children among the poor and chronically poor are estimated by matching NSS and NFHS at unit level.

## Poverty and Malnutrition

There are substantial inter-state variations in the malnutrition levels of children of under-five years; in 2000-01, it varied between 28.8 per cent in Kerala and 63.9 per cent in Madhya Pradesh. In terms of nutritional status of children, middle-income states such as Kerala, Tamil Nadu and Andhra Pradesh performed better than West Bengal and higher-income states like Maharashtra and Gujarat. Not surprisingly, poorer states such as Madhya Pradesh and Orissa showed the worst performance. It is worth noting that, with low food energy intake, Kerala and Tamil Nadu could perform well possibly due to their successful interventions in health and nutrition. The National Family Health Survey (NFHS) estimates of malnutrition based on standard deviation classification also reveal a similar pattern. NFHS-2 shows that north-eastern states performed better [Radhakrishna and Ravi 2004].

NNMB data for eight sample states show that, in 2000-01, 37.4 per cent of adult females and 39.4 per cent of adult males suffered from Chronic Energy Deficiency (CED) and the extent of malnutrition among the adults was almost as much as that of children. The inter-state variations in CED are similar to those of malnutrition among the children. The CED was found to be lower in Kerala (22.4 per cent for males and 18.7 per cent for females) and Tamil Nadu (26.7 per cent for males and 38.7 per cent for females) and higher in Madhya Pradesh, Maharashtra and West Bengal (above 50 per cent). Gender differences seem to exist in some states, particularly in Tamil Nadu.

The NFHS-2 results show that 36 per cent of ever-married women aged between 15 and 49 have chronic energy deficiency (Arnold et al 2004). It is more pronounced among rural, illiterate and those with a low standard of living. Those who consume milk or curd daily are less prone to CED than other women (ibid). Chronic energy deficiency levels are higher in higher income states such as Maharashtra (40 per cent) and Gujarat (38 per cent) and middle income state West Bengal (44 per cent) and the levels are closer to that of less developed states like Bihar (40 per cent), Madhya Pradesh (39 per cent) and Orissa (48 per cent). Punjab (17 per cent), Kerala (19 per cent), Arunachal Pradesh (11 per cent), Manipur (19 per cent) and Nagaland (19 per cent) and Sikkim (11 per cent) have lower incidence of feminine malnutrition. Clearly, north-eastern states performed better. Some of them out performed even Punjab and Kerala.

What is the impact of poverty reduction on malnutrition? Is the reduction in malnutrition commensurate with poverty reduction? The NFHS-2 statewide data for rural malnutrition based on weight-for-age is regressed on rural poverty estimates based on NSS 55th round.<sup>6</sup> The results indicate the prevalence of malnutrition even when poverty is completely eradicated. The poverty coefficients, which are positive and significant, show that a 10 per cent reduction in poverty reduces malnutrition by 6 per cent. The malnutrition for 20 fractile classes formed on the basis of standard of living index also revealed that malnutrition declines slowly with improvement in standard of living but persists even among the top fractile classes. For example, 28 per cent of the children of the richest fractile class in the rural areas and 21 per cent of children of the richest fractile class in urban areas suffer from malnutrition.

The NFHS-2 data are analysed to identify the determinants of malnutrition in rural areas using logit regression model. The model is estimated separately for underweight and stunted categories of malnutrition based on standard deviation classification.<sup>7</sup> The standard of living index is one of the independent variables chosen to serve as a proxy for the income level of the household. The other independent variables are: sex of the child, birth order and place of delivery and leafy vegetable consumption – specific to the child; mother's age, mother's body mass index, employment status, education and ante-natal care – specific to the mother; household size, caste and consumption of nutritious food – specific to the household; existence of drainage, fair price shop, 'anganawadi', 'mahilamandal', health and education facilities – specific to the village.

In the case of child-specific variables, coefficients are significant for birth order and leafy vegetable consumption. The probability of child malnutrition decreases with the increase in the consumption of leafy vegetables and increases with the birth order. Nutritional status, education, age and working status of the mother have significant impact on malnutrition. Probability of a child falling into malnutrition decreases with increase in mother's body mass index. Probability of malnutrition also decreases with age and ante-natal visits but, on the other hand,

**Table 10: Profile of Very Poor, Moderately Poor and Non-Poor – All India: Rural**  
(Percentage)

Sl No	In	SC+ST		Labour (Ag+Non-ag)		Land Less		Landholding Up to 1.0 Ha		Not Got Enough Food to Eat*		Average HH Size		Children (Per Cent)	Housing Condition	Female Headed Bad Household
		1993-94	1999-2000	1993-94	1999-2000	1993-94	1999-2000	1993-94	1999-2000	1993-94	1999-2000	1993-94	1999-2000	1993-94	1993-94	1993-94
1	Very poor	47.2	50.7	56.5	61.3	47.0	47.8	36.7	47.9	12.0	11.0	5.7	6.1	47.8	31.7	6.6
2	Moderately poor	39.1	42.1	44.2	51	38.7	42.4	38.5	51.5	7.3	5.4	5.4	5.9	41.9	23.9	5.9
3	Non-poor	25.8	25.9	26.6	32.8	34.5	37.1	31.9	49.5	2.9	1.7	4.6	4.8	33.0	14.1	6.6

\* Inadequate food either throughout the year or in some months.

**Table 10A: Profile of Very Poor, Moderately Poor and Non-Poor – All India: Urban**  
(Percentage)

Sl No	In	SC+ST (Per Cent)		Casual Labour (Per Cent)		Not Got Enough Food to Eat* (Per Cent)		Average HH Size		Children (Per Cent)	Housing Condition	Female Headed Household
		1993-94	1999-2000	1993-94	1999-2000	1993-94	1999-2000	1993-94	1999-2000	1993-94	1993-94	1993-94
1	Very poor	29.0	32.0	30.9	40.3	5.4	4.9	5.6	6.1	44.5	23.3	9.5
2	Moderately poor	22.8	26.6	20.1	26.0	2.5	2.4	5.2	5.7	38.6	15.1	8.2
3	Non-poor	12.8	14.3	6.7	8.8	1.1	0.8	4.1	4.2	29.1	5.7	7.1

\* Inadequate food either throughout the year or in some months.

increases when the mother is working. The adverse effect of the working status of the mother may be a characteristic among the poor households.

The coefficient of all the household-level variables are statistically significant and are in conformity with our understanding that the risk of malnutrition decreases with the standard of living of the household and increases with household size. However, contrary to our understanding, scheduled tribes have a low probability of malnutrition which may be due to the low incidence of malnutrition in north-eastern states/union territories. None of the village level variables are found to be significant.

## V

### Development Experiences and Lessons

Three major conclusions follow from the preceding analysis. The first one is that all the states, with the exception of Assam and Orissa, have experienced poverty reduction between 1993-94 and 1999-00. However, due to uneven poverty reduction across states and social groups, the poor got concentrated in less developed states and among a few vulnerable social groups. In the agriculturally prosperous states, agricultural labour households have accounted for bulk of the rural poor while in the less developed regions, rural poverty has extended to other occupational groups including those self employed in agriculture. In urban areas, poverty was concentrated among casual labour households. The second conclusion is that Assam, Orissa, Madhya Pradesh and Uttar Pradesh have remained laggards in poverty reduction. Structural factors and inadequate growth might be the major causes underlying their poor performance. In this context, it is worth mentioning that Rajasthan, a resource poor state, could perform better in poverty reduction and may have lessons to offer from its experience. The third and final conclusion is that the poor are likely to be vulnerable to risks in labour market and may increasingly suffer more from transient poverty since their dependence on the casual labour market for livelihood is rising fast both in rural and urban areas. Backward regions and disadvantaged social groups are afflicted by chronic as well as transient poverty.

The trends in total expenditure/income and food energy intake over the last three decades do not show strong relationship between them. The food energy intake increased marginally during 1970-1989 and stagnated/declined during the 1990s across all classes. The slow response could be attributed to the shift in consumption patterns – from cereal to non-cereals and from coarse cereals to fine cereals – across all income groups [Radhakrishna et al 1992, 2004]. The significant increase in the price of food in the 1990s also had an adverse impact on food energy intake [Radhakrishna, Ravi 2004]. These tendencies should become a major cause of concern since the per capita intake of the bottom 30 per cent at 1,600-1,700 k cal/day falls short of the required nutritional norm (Table 2).

The connection between food energy intake and nutritional status is less illuminating. For instance, Kerala and Tamil Nadu have achieved high levels of nutritional status with low calorie intake. This underscores the impact of factors other than food energy intake on nutritional status. Sukhatme, in his pioneering studies on malnutrition, explained that conversion efficiency of food into energy depends on the access to safe drinking water, health care and environmental hygiene.

Logit regression results show that the risk of child malnutrition decreases with increased standard of living, and increases with household size. The risk of malnutrition also decreases with mothers' nutritional status and education. The risk of malnutrition is greater if the child has a working mother. Birth order and consumption of leafy vegetables are other important factors and so is ante-natal care. It can be inferred from the above findings that social and food security policies, which improve incomes of the poor households as well as access of women to education and health care, would reduce both chronic poverty and malnutrition. The Kerala experience illustrates how these policies have facilitated demographic transition from a high-mortality – high fertility regime to a low one.

## VI

### Concluding Observations

Over the three decades, severity of poverty reduced faster than extent of poverty. The percentage of very poor, was about 8 per cent in rural areas and 9 per cent in urban areas in 1999-00. The estimated level of chronic poverty (15 per cent in rural areas and 13.7 per cent in urban areas) is greater than the incidence of very poor but lower than the incidence of child malnutrition. In the 1990s, the urban poverty reduced faster than rural due to faster urban economic growth; but inter-quintile urban inequality and rural-urban inequality increased. The poor will increasingly depend on risky labour markets and increasingly will live in poorer states.

The profiles of very poor reveal that the presence of socially disadvantaged groups (SCs, STs and female-headed households) is high in very poor households. Similarly, the landless households, dependent mainly on wage earnings and casual labour (vulnerable to changes in land and labour markets), are found in larger proportion in very poor households. In developed regions where poverty levels are low, the very poor generally belong to SCs and STs, and/or casual labour households. Nearly half of the very poor are children. The very poor also suffer from poor housing and hunger.

While India has made considerable progress in poverty reduction, the overall improvement in nutritional status has been rather slow. Economic growth although resulted in decline in income poverty but has not translated into either commensurable increase in food energy intake nor significant reduction in malnutrition. The estimates of undernourishment show that 20 to 21 per cent of rural children are severely malnourished and another 30 to 39 per cent, mild to moderately malnourished (based on weight-for-age criterion) and 25 per cent are severely and another 24 per cent are mild to moderately malnourished (according to height-for-age criterion) [Radhakrishna et al 2003]. Generally the risk of malnutrition is high among poor households where mothers have poor nutritional levels.

The eradication of severe malnutrition should be the first priority of social policy and the feeding programmes should be targeted towards them, especially, women and children. Liberal use of growth-supplementing, employment-oriented food-for-work programmes should be the principal instruments to eradicate mild to moderate malnutrition. However, efficacy of these programmes depends on targeting, good governance of the delivery system and above all, political commitment. **[EWT]**

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## Notes

## References

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- 1 Chronic poverty is a sub-category of poverty, which refers to persons who are below the poverty line for a prolonged period.
- 2 Malnutrition is a different dimension of poverty. There are well developed methods to measure child malnutrition and chronic energy deficiency among the adults. Both input measures such as food energy intake and outcome measures including anthropometric measures and clinical signs are used for the assessment of malnutrition.
- 3 Incidence of very poor and poor have been computed for various occupational groups for all states for 1993-94 and 1999-00. Due to space considerations, estimates are not presented in this paper.
- 4 In Gomez classification, the body weights of pre-school children are expressed as a percentage of National Centre for Health Statistics (NCHS) standards and their nutritional status are identified. Children with weight for age less than 60 are treated as severely malnourished, between 60 and 75 as moderately malnourished, between 75 and 90 as mildly malnourished and above or equal to 90 are treated as normal [NIN 2002].
- 5 The Body Mass Index (weight in kg/height in metres<sup>2</sup>) is used as an indicator of nutritional status of the adults. Adults whose body mass index is less than 18.5 are considered to suffer from chronic energy deficiency [NIN 2002].
- 6 The regression results are given in Radhakrishna and Ravi (2004). The following regression has been estimated using statewise estimates of child malnutrition (NFHS 2) and poverty (55th NSS round) for rural areas:  $\log m_1 = 2.08 + 0.026 \text{ HCR}$  and  $\log m_2 = 2.85 + 0.012 \text{ HCR}$ , where  $m_1$  is the proportion of children with severe underweight ( $< \text{median} - 3 \text{ SD}$ ) and  $m_2$  is the children with underweight ( $< \text{median} - 2\text{SD}$ ) and HCR is the headcount ratio. All coefficients are statistically significant.
- 7 The results of logit regression estimated for rural areas are given in Radhakrishna et al (2003). Inferences have been drawn from only significant coefficients. Results are similar for underweight and stunted.

- Fred, Arnold; Parveen, Nangia and Uma, Kapila (2004): 'Indicators of Nutrition for Women and Children in India: Current Status and Programme Recommendations', *Economic and Political Weekly*, Vol XXXIX, No 7, February 14-20.
- National Institute of Nutrition (NIN) (2002): *Diet and Nutritional Status of Rural Population*, NNMB Technical Report No 21, Hyderabad.
- Radhakrishna, R (1991): 'Food and Nutrition: Challenges for Policy', *Journal of the Indian Society of Agricultural Statistics*, 43(3), 211-27.
- Radhakrishna, R and C Ravi (1990): 'Food Demand Projections for India', Centre for Economic and Social Studies, Hyderabad.
- (1992): 'Effects of Growth, Relative Price and Preferences on Food and Nutrition', *Indian Economic Review*, 27 (special number), 303-23.
- (2004): 'Malnutrition in India: Trends and Determinants', *Economic and Political Weekly*, Vol XXXIV, No 7, February 14-20.
- (2004): 'Measurements of Changes in Economic Welfare in India: 1970-2001', *Journal of Quantitative Economics* (forthcoming).
- Radhakrishna, R, K Hanumantha Rao, C Ravi and B Sambhi Reddy (2003): 'Chronic Poverty, Food Security and Malnutrition in the Nineties'. Paper presented in the seminar on Chronic Poverty Related Issues, at *Indian Institute of Public Administration*, New Delhi, November.
- Radhakrishna R, S Indrakant and C Ravi (2004): 'Changing Food Preferences, Nutritional Intake, and Nutritional Status: Emerging Perspectives and Issues, in Aditya Bhattacharjee and Sugata Marjit (ed), *Globalisation and the Developing Economics*, Manohar.
- Rao, C H H (2000): 'Declining Demand for Foodgrains in Rural India: Causes and Implications', *Economic and Political Weekly*, January 22.
- Rao, C H H and R Radhakrishna (1997): 'National Food Security: A Policy Perspective for India' in G H Peter and J V Braun (ed), *Food Security, Diversification and Resource Management: Re-focussing the Role of Agriculture*, Ashgate.
- Ravi, C (2000): 'Complete Demand Systems, Welfare and Nutrition: An Analysis of Indian Consumption Data' (unpublished PhD thesis).