Nutritional Norms for Poverty: Issues and Implications

Concept paper prepared for the Expert Group to Review the Methodology for Estimation of Poverty

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Abstract

Since Independence, an era marked largely by limited income and growth, the Government of India has been pursuing its policies for economic welfare with reference to a nutrition-based subsistence norm. The concept and method of estimating poverty has come in for criticism in recent years in the context of (i) economic policy reforms based on targeted policy interventions; and (ii) the findings on economic growth involving a decline in poverty along with an increase in calorie deprivation. The debate seems to have overlooked issues concerned with both method and norm. This study therefore examines the following questions: What is the status of real consumer expenditures of the poorer decile groups during the past three decades? What do estimates of cereal quantities consumed for different population groups suggest? How far they tally with such estimates for the total population? What have been the temporal changes in calorie intake across different decile groups? How valid are the exogenous norms for threshold levels of calorie intake worked out in the 1960s and 1970s since when the economy has experienced structural and technological changes and improvements? How far the self-perception of the population with reference to adequacy of food consumption corroborates such findings? How far these measures and interpretations are validated by estimates of final health outcome parameters?

Per capita calorie intake in general has declined for the richer sections and increased for the poorer ones, though not sufficiently, in both rural and urban India. Similar profiles are found across states with differences in income percentiles at which they converge. Reductions in calorie intake have taken place almost on a sustained basis for the majority, the higher decile groups in particular, for the past three decades. This should have spelt a worsening health disaster, which has not happened. State wise profiles on calorie intake and deprivation reveal little co-variation with related health outcome parameters. This might be because of either compensating changes in diets and related health parameters, which calls for serious academic attention or irrelevance of energy as the major determinant of physical capability and health. It is difficult on the basis of available information and knowledge to explain the observed relationship among income/consumption, calorie intake and health outcomes. In other words, calorie norm may no longer be relevant today for defining the minimum subsistence. Hence, one could explore alternative options for distributional outcome evaluation.

With the country transforming itself into one of the fastest growing economies in the world, it is important to set sights high for not only sustaining the growth process but also make it broad based and inclusive as visualized in the Eleventh Five Year Plan. Such improvements may be measured in terms of a robust order-based average like the median. Inclusion (participation) of the relatively deprived in such a growth process may be defined with reference to the order-based average of the outcome measure, that is, assess their economic status with reference to a threshold, specified as a function of the median income/consumption.

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1. Introduction

1.1 The concept of poverty and estimates of its magnitude and profile are quite relevant in the context of policy formulation, its process and outcome evaluation. It matters most in a country low-income developing country like India, which has been pursuing development strategies and policy programmes for 'Growth with Poverty Reduction'. Consistent with this policy concern, the concept of poverty and norm for its definition has evolved over time depending upon information availability, prevailing exigencies, policy imperatives and priorities.

1.2 One important norm used consistently for defining poverty line relates to nutrition, the energy intake criterion in particular. The Government of India (GoI) has been using a minimum dietary energy requirement norm of 2400 kcal per person per day for the rural sector and 2100 kcal for the urban sector while the Food Agricultural Orgnisaion norm for India as a whole for 2003-05 is 1770 kcal.[1]

1.3 With economic growth and development involving structural and technological changes, observed consumption patterns have changed. This could be reflecting changes in minimum nutritional requirements. [2] The GoI has also recognized that physical activity level and energy requirement has declined over the decades and the Indian Council of Medical Research has reconstituted its Expert Committee to review the Recommended Dietary Allowance for Indians (GoI 2002a). Therefore, it appears it is time for revisions in the norm for or even the concept of poverty.

1.4 This study, therefore, raises some relevant issues and examines them from an economic perspective. To begin with, it would examine how did the Indian approach, official in particular, to defining and measuring poverty originate and evolve over time? What are the major issues regarding the nutritional basis for poverty measurement highlighted in academic and policy debates in India? How valid are these debates in terms of their methodological basis and data relevance? What are the issues relevant today? What is the possible solution?

1.5 This concept paper is structured in the same order as the questions listed above and ends with a final section on the main recommendation. [3]

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[1] The FAO norms are changed periodically; they were 1740 for the period 1990-92 and 1750 for 1995-97 (see http://www.fao.org/es/ess/faostat/foodsecurity/index_en.htm).
[2] See Suryanarayana (2003b) and Suryanarayana and Silva (2007).
[3] The Terms of Reference for the concept paper is available in Annexure I to this paper.

2. Defining Poverty: Indian Approach

2.1 In India, the official approach to define and measure poverty for purposes of policy formulation and evaluation in the context of a strategy for poverty reduction has provided much of the impetus for academic as well as policy related studies on issues concerned with definition, measurement, interpretation, policy choice and evaluation. The official approach has laid emphasis on ensuring a subsistence minimum and hence, on eradicating absolute poverty.

2.2 The approach has evolved as follows:

2.2.1 A decade prior to India's Independence, the National Planning Committee in 1936 under Pundit Nehru made an economic review and recognized that "there was lack of food, of clothing, of housing and of every other essential requirement of human existence" (Nehru, 1946). Against this assessment, the Committee declared that the development policy objective should be to "ensure an adequate standard of living for the masses, in other words, to get rid of the appalling poverty of the people" (Nehru 1946). Towards this end, the Committee defined goals for the total population in terms of nutrition (involving a balanced diet of 2400 to 2800 calories per adult worker), clothing (30 yards per capita per annum) and housing (100 sq. ft per capita).

2.2.2 After the first two five year plans, the Government appointed a Committee on Distribution of Income and Levels of Living for an outcome evaluation from the distributional perspective. The Government also set up a working group, which defined a national minimum of Rs 20 per capita per month (Rs 25 for urban areas) at 1960/61 prices (GoI 1962). This minimum, considered adequate to ensure minimum energy requirements for an active and healthy life and also minimum clothing and shelter, did not include expenditures on health and education, which are to be provided by the State as per the Indian Constitution.[4]

2.2.3 The Government of India prepared a 'Perspective of Development: 1961-1976' keeping this minimum of Rs 20 per capita per month at 1960/61 prices as the goal for the fifth five year plan. This was based on the explicit acknowledgement that "the minimum which can be guaranteed is limited by the size of the total product and the extent of redistribution which is feasible" (GoI 1962). The Perspective unambiguously stated that (i) poverty removal should be the central concern of planning in India; (ii) every citizen should be assured of a minimum income within a reasonable period of time; and (iii) the minimum itself should be revised upwards with economic progress (*ibid.* p. 13).

2.2.4 The Government set up a Task Force on Projection of Minimum Needs and Effective Consumption Demand to consolidate academic research and information on the subject and develop it further to facilitate drafting of the Sixth Five Year Plan (GoI, 1979b; p. 4). The Task Force defined the poor as "those whose per capita consumption expenditure lies below the midpoint of the monthly per capita expenditure class having a daily calorie intake of 2,400 in rural areas and 2,100 in

[4] It was Dandekar and Rath (1971), which was probably the first attempt to define an income/consumer expenditure norm for poverty with reference to an explicit average daily per capita calorie intake norm of 2250 kcals for both rural and urban areas.

urban areas" (GoI 1981, p. 81).[5] The poverty lines corresponding to these norms were worked out with reference to the National Sample Survey (NSS) data for the year 1973-74. The poverty line turned out to be Rs 49.09 per capita per month at 1973-74 prices for rural all- India.

2.2.5 The methodological details for poverty estimation, viz., (i) integration of estimates of mean consumption from the National Accounts Statistics (NAS) and distribution parameters from the NSS; and (ii) use of implicit private consumption deflator from the NAS to adjust poverty lines for changes in prices in particular (GoI, 1986c; p. 10), became subjects of considerable academic scrutiny and critique (Minhas *et al.*, 1991). Given the importance of the social goal for poverty eradication and relevance of estimates of poverty for policy choice and resource allocation, the Government set up an Expert Group in 1989 to look into the methodology for estimating poverty and also the question of re-defining poverty line (GoI 1993, p. 1). The Expert Group recommended the same poverty lines as those by GoI (1979b) but revised the methodology with respect to choice of database, and price indices for corrections in spatial and temporal price variations. Some recommendations are as follows:

2.2.5.1 Poverty line defines on an average the level of per capita per day expenditure "which meets a normative minimum standard of living, deemed reasonable. Calorie intake is but one of the ingredients, though an important one, of the minimum standard, but the poverty line makes an allowance for non-food consumption needs as well on the basis of observed consumer behaviour." (GoI 1993, p.30).

2.2.5.2 The all-India poverty lines and norms suggested by the Task Force on Minimum Needs and Effective Consumption Demand would continue to be the basis for further estimates of poverty.

2.2.5.3 As regards state-specific poverty lines, base year (1973-74) estimates for all states are to be made with reference to the same all-India living standard norm. This is to ensure comparability of poverty estimates across states and over time. For this purpose the 'standardised commodity basket corresponding to the poverty line at the national level' are to be valued at state specific prices in that year. This is done using Fisher's cost of living indices reflecting inter-state price differentials with respect to all-India for the rural and urban sectors respectively. The state-sector-specific poverty lines for subsequent years are to be updated by consumer price indices obtained by weighted state-sector-specific prices where the weighting diagram is given by the corresponding all-India consumption basket for the base year poverty line. Considering that reliable, comparable data in sufficient disaggregation are not readily available to researchers and take time, the Expert Group recommends the use of published commodity group indices from the Consumer Price Index for Agricultural Labourers for the rural and a simple average of `suitably weighted' indices from Consumer Price Index for Industrial Workers and Consumer Price Index for Urban Non-manual Employees for the urban sector for purposes of consumer price indices. Given the state-specific poverty lines, the corresponding poverty ratios are to be estimated relying `exclusively' on the NSS size distribution of per capita consumption expenditure. And all-India poverty ratios are to be obtained as `a ratio of the aggregate number of State-wise poor persons to the total all-India (rural and urban) population' (GoI 1993, p. 34).

[5] There are norms for the total population worked out as a population weighted average of age-gender-activity specific calorie allowances recommended by the Nutrition Expert Group (1968) (GoI 1979; p. 9)

3 Issues

3.1 The Expert Group Report (GoI 1993) itself has provided a comprehensive and nearly exhaustive summary of major issues involved in estimating poverty including the need to "broaden the concept of poverty and delink food poverty from poverty in general" (GoI 1993; p. 14). Though the Report has listed several caveats and clarifications, the concept and method of estimating poverty has received wide academic attention, comment and criticism in recent years in the context of (i) economic policy reforms based on targeted policy interventions to ensure cost efficiency[6]; and (ii) the findings on economic growth involving decline in poverty along with (a) a decrease in average per capita calorie intake and (b) an increase in incidence of calorie deficiency.

3.2 Majority of the studies on issues related to changes in poverty and its nutritional basis/implications are focused on documenting the changes across states and over time in, *inter alia*, poverty, per capita consumer expenditure, per capita food expenditure, per capita cereal consumption, per capita calorie intake, associated changes in health outcomes, explaining the observed findings, hence their methodological imperatives and policy implications. The studies, of course, differed with regard to the range of questions examined, database, sample period, method of analysis and policy perspective.[7]

3.3 In general, some major findings have been as follows: (i) Per capita consumer expenditure increased since the mid-70s; (ii) Incidence of poverty declined in general in both rural and urban India with differences in experience across states; (iii) But per capita calorie intake declined in both rural and urban India; the proportionate decline was more for the rich than for the poor; (iv) Incidence of calorie deficiency increased over time; and (v) Deprivation measures based on nutrition intake indictors are weakly associated with those based on health /education outcome indicators.

3.4 Some factual details on decline in estimates of poverty as well as average per capita calorie intake and an increase in extent of calorie deprivation in recent years are as follows: For the country as a whole rural poverty declined from 45.61 per cent in 1983 to 28.30 percent and urban poverty declined from 42.15 per cent to 25.70 per cent between 1983 and 2004-05. Between the same two years, average calorie intake per capita declined from 2221 to 2047 and from 2089 to 2020 kcal in the rural and urban sectors respectively. As regards calorie deprivation, its extent increased from 69 to 85 per cent in rural India and from 60 to 65 per cent in urban India (Table 3.1).

3.5 Some issues relevant for a discussion on norms for poverty may be classified into the following broad categories: (i) Conceptual; (ii) Data base, (iii) Methodology; and (iv) Norms for poverty line. The following sub-sections sum up the major issues in the same order.

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[6] For instance, the Seventh Five Year Plan states: "Cost-effectiveness of the programmes and minimization of leakages should be the two guiding principles in the implementation of poverty alleviation programmes." (GoI 1985, p. 51).

[7] Some of these studies are Deaton and Dreze (2009), Dev (2005), GoI (1993, 2002e), Meenakshi and Viswanathan (2005), Palmer-Jones and Sen (2005), Patnaik (2004, 2007) Radhakrishna (1991, 2005), Radhakrishna *et al.* (2004), Ray and Lancaster (2005), Suryanarayana, (1995, 1996, 1997, 2000a, 2000b, 2003a & 2003b, 2008b, 2009), Suryanarayana and Silva (2007).

3.1 Concept:

3.1.1 The Expert Group has essentially followed a well-accepted approach to defining poverty, that is, the *Basic Needs* approach based on the food energy method. The Group has clarified that "The use of calorie norm in measuring poverty amounts only to a first order approximation to what may be considered to be an acceptable level of minimum need." (GoI 1993; p. 15).

3.1.2 It has also made it explicit that "the poverty line, while being anchored in a 'norm' of calorie requirement, does not seek to measure the nutritional status, and more specifically the incidence of malnourishment or under-nourishment in the population. It focuses rather on the purchasing power needed to meet the specific calorie intake standard with some margin for non-food consumption needs. Moreover the calorie norms relate to an average for the reference group and not the minimum required for biological existence, given that there is a considerable variation in calorie requirement of individuals depending on their workload, age, sex and activity status" (GoI 1993, p.5).

3.1.3 The Group has also recognized "the desirability of defining the normative standard for non-food consumption and its constituents, without reference to actual behaviour, but until this is done, the existing basis seems to be the most practical and reasonable. It is this consumption basket that constitutes the minimum standard for defining the boundary between the poor and the non-poor" (GoI 1993, p.30)

3.1.4 Given the general perception that inadequate energy intake is the major constraint (see, for instance, Sukhatme 1978), the proposal to anchor poverty line in the calorie norm made sense. In the current era of privatization of health and education, and hence, 'catastrophic' health/education expenses, one issue that would need some review is to define some normative standards for the non-food components, possibly, with reference to potential policy options.

3.2 Data Base

3.2.1. One question that has received little academic attention is the very information base for defining poverty norms and estimates. The NSS is so designed as to obtain an unbiased estimate of average consumer expenditure and not consumption distribution. As the National Sample Survey Organization itself points out, the "procedure of recording cooked meals served to others in the expenditure of the serving households leads to bias-free estimates of average per capita consumption as well as total consumer expenditure. However, donors of free cooked meals are likely to be concentrated at the upper end of the per capita expenditure range and the corresponding recipients at the lower end of the same scale. Consequently, the derived nutrition intakes may get inflated for the rich (net donors) and understated for the poor (net recipients). This point has to be kept in mind while interpreting the NSS consumer expenditure data for studies relating to the nutritional status of households." (GoI 2006b, p.5). [8] In fact, there is evidence to show that "free meals eaten outside

[8] This problem must have been quite serious during the 50s and 60s when wage payment in kind like meals from the employer- to the employee- household used to be substantial, that is, more than 50 per cent of the total wage payments. This must have resulted in overestimation of poverty for the 1950s and 1906s and the extent of

home are concentrated at the lower end of the MPCE but are not counted against the receiving households. In the survey, they get counted against the serving households thereby the calorie intakes of serving households getting inflated in relation to actual. If crude adjustment suggested …were made, the deficits in calorie intake in relation to norm for the poorer households would be reduced and correspondingly the surpluses of the richer households would undergo downward adjustment." (GoI 2007c, p. 35).

3.2.2. In pursuit of unbiased estimates of averages, the survey is generally carried out in the form of successive sub-rounds spread over an agricultural year. This is to take into account seasonal variations in income and consumption in a monsoon dependent agricultural economy. This is an important factor, which has not been considered while choosing the reference year for the poverty line estimated by the Task Force (GoI 1979b). The National Sample Survey on consumer expenditure during the 28th round was not spread over the full agricultural year but lasted from October 1973 till June 1974. One would expect consumption estimates for the bottom decile groups to be much more sensitive to seasonal variations than those for the richer decile groups.[9]

3.2.3. The factors listed above would affect estimates of calorie Engel functions and hence, calorie deprivation based on such a data set. Given that the poverty lines were estimated by inverse linear interpolation of the calorie Engel function, one is not sure how reliable would be the estimates of the poverty lines and under-nutrition, for rural India in particular.

3.2.4. In addition, there is also the question regarding the representativeness of the NSS distribution (Suryanarayana 2008a). For instance, there is a general belief that the NSS 61st round data for the year 2004-05 is relatively nuisance-free. The current Expert Group, in all probability, would use this data to look into issues regarding revising the methodology for poverty estimation. However, one is not sure how far the database is reliable and representative. The NSS data for the 61st round reports size distribution of households across twelve percentile classes of monthly per capita consumer expenditure (MPCE) for both rural and urban sectors (Table 3.2). It may be noted that the first four MPCE classes account for the poorest thirty per cent of the population, which exceeds the estimate of poverty. But they do not exhaust the set of households with *Antyodaya or Below Poverty Line (BPL)* cardholders. More than half of the households in these MPCE classes do not have the *Antyodaya or BPL* ration cards. Percentage number of households possessing the *Antyodaya* or the *BPL* ration cards, of course, decline across higher percentile classes of expenditure in both rural and urban sectors. In rural India, even the richest percentile class (consisting of the richest five per cent of the rural population) includes households possessing the *Antyodaya or* the BPL ration cards: Nearly one (0.8) percent have the *Antyodaya* card and about 11 % have the *BPL*-card. In urban India, at least one-hundredth of the richest five per cent have the *BPL*-card. In other words, majority of the households

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overestimation must have declined since then with monetization of the labour market in rural India (Suryanarayana 2000).

[9] For similar reasons, one would expect biased estimates for the NSS 27th round (October 1972 – September 1973) and 38 round, which was conducted during a calendar year (January-December 1983).

with *Antyodaya or BPL* ration cards are APL.[10] The NSSO explains this feature as follows: "*It should be mentioned here that the MPCE of a household is based on its consumption expenditure during the last 30 days. A poor household that bought a durable good during the 30 days prior to the date of survey might conceivably be placed in a higher MPCE class than the class in which its usual MPCE lies.*" (GoI 2007e, p. 16; Footnote # 3). One cannot vouch for the validity of this explanation since it would mean that majority of the "*usually"* poor households fall in the APL classes and hence, would amount to stating that the NSS estimates of consumption distribution do not represent the "*usual MPCE"*. Either way the information content and hence, policy relevance of the data becomes suspect.

3.3 Methodology

3.3.1 The decline in calorie intake despite an increase in per capita consumer expenditure is not a recent finding. The Expert Group itself has presented evidence based on the NSS estimates for 1977/78 and 1983 and observed "a decline in the average intake of calories across expenditure classes even though, the real per capita expenditure has been rising." (GoI 1993; p. 15). The Group has explained this finding in terms changes in consumption patterns. But estimates of such changes were at current prices and the interpretations were independent of the underlying database, its design and changes in institutional factors. [11]

3.3.2 Attempts have also been made to correlate observed changes in all-India consumption patterns that of cereals in particular with those in relative prices. But, it may be noted that the all-India profile is simply an aggregation over the experiences of states specialized in rice, or wheat, or jowar, etc. and simple explanations/explorations in terms of a rational behaviour of a representative consumer may not make much sense for the following reasons:

3.3.2.1 The regional differences in the predominant cereal in the consumption pattern of different states correspond to the local crop production pattern. A state-wise analysis brings out that the larger reductions in total cereal consumption have occurred in the predominantly coarse cereal growing and consuming states of Andhra Pradesh, Gujarat, Karnataka, Maharashtra, Rajasthan and Uttar Pradesh (Suryanarayana, 1996). And decline in coarse cereal production and hence, consumption has accounted for much of the decline in total cereals consumption.

[10] Estimated poverty lines for rural and urban India for the year 2004-05 are Rs 356.30 and Rs 568.60 respectively (GoI, 2007b).

[11] The extent of change in consumption patterns as revealed by estimates of item wise budget shares at constant prices (using disaggregate Laspeyers' price indices) is much less than price-unadjusted budget shares. Such estimates by decile-group-specific deflation showed some improvement in levels of living since 1977, but cereal consumption showed little or marginal improvement in both rural and urban sectors. This could be because of an increase in average cereal cost resulting from changes in cereal consumption basket in favour of superior but costlier cereals necessitated by a decline in coarse cereal availability. This factor combined with increasing landlessness and casualisation of rural labour market increased the market dependence of the poor households and adversely affected that part of their consumption through market purchases and hence total cereal consumption in the rural sector. The extent of decline is relatively less in the urban sector, perhaps due to regular availability of food grains through the PDS (Suryanarayana, 1995, 2000).

3.3.2.2 In general, for many states/regions there is a single cereal like rice or wheat dominating the local cereal consumption basket. This holds good even today (Table 3.3). Hence it may not make much sense to explain observed changes cereal consumption in terms of relative cereal prices.

3.3.2.3 The relative-price-change and substitution effect hypothesis for the decline in coarse cereal consumption may not be valid for the poorer sections in particular. This is because coarse cereals continue to be the cheapest among cereals (Table 4.7) and at sub-subsistence level of living one would expect the poor to decide by absolute prices rather than relative ones.

3.3.2.4 Over time, due to differential growth experiences of states, there have been re-ordering of state distributions. In particular, Kerala, which used to have an average per capita consumption less than the all-India average, has grown faster since the 1973-OPEC crisis; it now enjoys the highest average per capita consumption (Table 3.4 and GoI 2006b). But consumption basket and levels of calorie intake and responses are different for Kerala and other states. This could be one reason for observed peculiarities in calorie response to changes in average per capita real consumption for India as a whole.

3.3.2.5 Further, due to differences in state-specific policies on taxes and subsidies, the constraints on consumers differ across states

3.3.2.6 In sum, the issues listed above raise questions about he validity of the specification of an aggregate demand function to explain observed changes in consumption patterns and hence, also Engel function used to work out the poverty lines.

3.3.3 The apparently paradoxical findings on growth with a decline in average calorie intake status received much attention particularly in the reform era, which laid emphasis on cost-efficiency via interventions targeted with reference to consumer expenditure-based poverty norms.

3.3.4 Several studies have come out with similar findings, which have been used for policy evaluation from different perspectives. For instance, the High Level Committee (HLC) on Long Term Grain Policy (GoI, 2002e) has found that more than 70 per cent of the population had a per capita energy intake less than 2100 calorie (kcal) per day for some years since 1993-94. The HLC also found that the bottom 80 per cent of the rural and the bottom 40 per cent of the urban households respectively spend more than 60 per cent of their total expenditures on food. However, the estimates of consumption poverty were only 37.37 per cent for rural Indian and 32.36 per cent for urban India in 1993-904. The HLC observed that the magnitude of food insecurity by the calorie intake / food share criterion was more than the incidence of poverty in India. Therefore, it has concluded that any attempt to target a safety net like the Public Distribution System only to the poor would end up penalizing the non-poor but food insecure (as defined in terms of calorie deprivation).

3.3.5 The issue raised by the HLC provides an empirical illustration of a well-known methodological problem: Though (a) the concepts of both poverty and food insecurity are anchored in terms of a subsistence food-consumption / calorie-intake norm, and (b) their estimates are based on the same consumer expenditure data set and hence, tally for any reference year, the two estimates would however differ for subsequent years because of differences in methodology. Estimates of poverty for subsequent years are made on the basis of data on consumer expenditure distribution (at current prices) with reference to poverty lines suitably adjusted only for changes in cost of

living. In contrast, food insecurity estimates are based on observed data on physical measures, such as cereal consumption and calorie intake which are realizations in response to changes in not only cost of living, including relative prices, but also tastes and preferences, as well as a host of other factors. Hence, the set of poor identified and estimated in terms of an economic access (monetary) measure need not necessarily tally with the set of food insecure (by base year norm) in terms of a physical measure for a subsequent year. [12] This is borne out by estimates of poverty and calorie deficiency for India as a whole as well states by sectors for a subsequent year, say 1983 (Tables 3.5 and 3.6)

3.4 Calorie Norms for Poverty Line

3.4.1 The HLC (GoI 2002e) and similar studies seem to have interpreted mean based averages and summary measures like incidence of calorie deficiency without much attention to the disaggregate details.[13] This can have implications for interpretations particularly when dealing with consumption/food/calorie distributions, which are positively skewed. This is because mean based averages are not robust estimators for skewed distribution and would reflect changes in the upper percentiles than in the mainstream or location of distribution.

3.4.2 A disaggreagate analysis of calorie intake by decile group has shown that incidence of calorie deficiency has increased in both rural and urban sectors because the calorie intakes of the richer decile groups have declined and those of the poor, though increased, still fall below the conventional normative minimum (Suryanarayana 2003b). The decline in the calorie intake of the richer sections could be explained in terms of changing consumption patterns in favour of non-calorie food and non-food items at the expense of calorie intake. Moreover, the poor seem to have opted for some diversification in consumption providing a more nutritious diet though not necessarily adequate energy (Suryanarayana, 1995a).[14] But such worsening shortfalls in food grain consumption and calorie intake are not corroborated by final outcome indicators, such as anthropometric measures and other indicators of health status, which show some improvement (Suryanarayana, 1997). In other words, policy efforts by the GoI in terms of targeted programmes to promote both economic and physical access to food grains, better physical infrastructure and medical facilities seem to have paid dividends in terms of improved living conditions and health status and hence, reduced calorie requirement. Therefore, the observed decline in cereal consumption and calorie intake need not necessarily indicate worsening food insecurity situation. This could be interpreted as a call for revisions in nutrition norms by triangulating input, output and final impact measures for assessing food security.

[12] The Expert Group has noted this methodological difference but has favoured the former approach on grounds of comparability of results: The difficulty with the second approach is that "it is difficult to make a meaningful comparison of poverty incidence across States at any given point of time because of inter-State variation in the composition and quality of the consumption basket associated with the given calorie norm. The composition of the basket differs not only due the differences in tastes and preferences, but also, it appears, due to the differences in income levels. As the incomes change, the basket changes over time as well" (GoI 1993, p. 56).

[13] See for instance, GoI (2008; p. 132)

[14] A major reason for diversification could be monetization of the rural labour market necessitating purchases of food grains and complementary food items & kitchen overheads (Suryanarayana 2000).

4 Current Scenario on Nutrition and Poverty

4.1 Studies in general are based on mean-based estimates of consumer expenditure, cereal consumption and calorie intake and summary measures of calorie deprivation like incidence of calorie deficiency and conclude that under-nutrition and food insecurity has increased in India. Of course, estimates by the official poverty-line-calorie norms (GoI 1979b) show that incidence of calorie deficiency is 85 per cent in rural India and 65 per cent in urban India (Table 3.1). But it is important to examine the disaggregate profiles of such changes and their implications.

4.2 This section examines changes in consumer expenditure, cereal consumption, and calorie intake at the al India level since 1972/73 to address the following questions: What is the status of the real consumer expenditures of the poorer decile groups during the sample period under review? What do the estimates of cereal quantities consumed for different population groups suggest? How far they tally with such estimates for the total population? What have been the temporal changes in calorie intake across different decile groups? How valid are the exogenous norms for threshold levels of calorie intake worked out in the 1960s and 1970s since when the economy has experienced structural and technological changes and improvements? How far the self-perception of the population with reference to adequacy of food consumption corroborates such findings? How far these measures and interpretations are validated by estimates of final health outcome parameters? The following sub-sections examine these issues.

4.1 Consumption Expenditure, Cereal Consumption and Calorie Intake

4.1.1 To examine the changes in real consumption distribution, Table 4.1 provides estimates of decile group wise per capita consumer expenditure at current prices for rural and urban India for the different years for which estimates from the NSS quinquennial rounds are available. The estimates at 1972-73 prices (Table 4.2) are obtained using deflators implicit in the poverty lines for the corresponding years. In other words, the estimates presented in Table 4.2 are obtained using common deflators for all the decile groups in rural and urban India separately.[15] The estimates of these deflators show that the cost of living for the poor household increased by about 785 per cent in rural India and 1040 per cent in urban India between the terminal years. [16] The estimates of averages for both rural and urban India show that real per capita consumption levels have increased by more than 40 per cent since 1972/73 (Table 4.2). The increases have been progressive in rural India in the sense that the poorest three decile groups enjoyed greater percentage increases in their real

[15] Ideally decile group specific estimates at constant price should be obtained using decile group specific deflators to account for differences in consumption baskets. For time and information constraints, this could not be done. The results from Suryanarayana (1995a) obtained using fractile-group-specific deflators based on Minhas *et al.*' representative price indices for rural and urban India for the period from 1972-73 till 1988-89 have brought out the following. In rural India, the poorest three decile groups experienced higher (in percentage terms) increases in consumer expenditure than the whole population. The consumption expenditure (at constant prices) for the rural population as a whole increased by 18.88 per cent; it increased by 32.02 per cent for the poorest and by 28.05 per cent for the second poorest decile group. As regards the urban sector, the corresponding increases for different decile groups were broadly the same, between 16.50 and 20.25 per cent.

[16] Not reported here but are available with the author for verification.

consumption than the population as a whole and hence, than the relatively better off. However, the increases in real consumption in urban India have been regressive.

4.1.2 Consistent with the observed increases in per capita total consumer expenditures at constant prices, given the general perception that levels of consumption are low, one would expect increases in cereal consumption expenditure to be a priority. However, cereal expenditure declined for all but the poorest decile group in both rural and urban all-India. Generally the percentage decrease in cereal expenditure was higher for the richer decile groups in both the sectors (Table 4.4).

4.1.3 Both in rural and urban India, the brunt of cereal inflation has been the minimum on the poorest decile group (Table 4.5). Relative prices have changed. Though prices have increased, coarse cereals continue to be the cheapest among cereal grains. Still both the poor and the rich have reduced their consumption of coarse cereals with the difference that the poorer decile groups in both rural and urban all-India have substituted coarse cereals by superior cereals. The net result is that only the poorest decile group enjoyed an increase (about 10 per cent) in total cereal consumption in rural and urban all-India; rest experienced a decline in cereal consumption (Table 4.6). The estimates of average per capita cereal quantities consumed for the total population show a decline in both rural and urban India during sample period under consideration (Table 4.6). A profile across decile groups of population shows, as could be expected for a mean based average, that the decline in average per capita cereal consumption for the total rural and urban population has largely been due to a pronounced decline in cereal consumption of the top decile groups.

4.1.4 With the decline in average cereal consumption, a decline in average calorie intake would follow unless accompanied by compensating increases in non-cereal consumption. Though cereal consumption increased only for the poorest decile group (Table 4.6), per capita calorie intake has generally increased for the bottom two decile groups in rural and bottom three decile groups in urban all-India. This would suggest that there have been compensating increases in non-cereal consumption for the bottom two/three decile groups of the rural/urban population. Still their calorie intakes fall short of the norms used for defining the poverty lines. On the other hand, top decile groups have reduced their cereal consumption and hence, calorie intake by choice. The combined impact of these two diverse patterns of changes is that estimates of incidence of calorie deficiency by the conventional calorie norms for the total (rural and urban combined) population turns out to be higher about 80 per cent for India.

4.1.5 Intake of fat in general for all decile groups (Table 4.10) and that of protein for the poorest decile groups (Table 4.9) in both rural and urban India has improved over time. While per capita fat intake is higher than the norm (16g/person/day) even for the poorest decile group, that for protein is less than the norm (48g.person./day) only for the poorest two decile groups in rural and urban India. Since calorie-intake is the critical factor limiting even fat-protein absorption, one may consider threshold minimum of calorie intake only.

4.1.6 The calorie norms cited above have been worked out in the 1970s and hence, may be outdated and irrelevant with improvements in modes of production and standard of living. This could be one of the major reasons for voluntary reductions in cereal

consumption and calorie intake of the richer decile groups. This would raise a question on the relevance of the official calorie norm for food security estimates. Given the different but converging time-profiles of calorie intake across decile groups, one option could be to consider the converging limits as the subsistence norms as done in Suryanarayana and Dimitri (2007). The corresponding calorie limits based on the updated sample till 2004-05 turn out to be 1800 for rural India and 1860 for urban India (Table 4.8).[17] This looks unreasonable since generally one would expect a higher calorie norm for the rural sector given the occupation specific characteristics.

4.1.7 This would raise a number of following questions: How to go about verifying their validity? How far state-wise time profiles of changes in energy intake by decile groups replicate the all-India scenario? Could information of on subjective perceptions of adequacy of food consumption and morbidity be taken as evidence? How far measures of association between different indicators would validate these measures? What is the evidence?

4.2 State wise evidence on energy intake, perceptions on food adequacy & health status

4.2.1 This diverse profiles of changes in calorie intake across decile groups holds generally good for all major states but for differences in consumer expenditure percentiles where they seem to converge (Tables 4.18 – 4.32). For the rural and urban sectors of Punjab and Rajasthan and rural sector of Haryana and UP, calorie intake has decreased for all decile groups between 1972-73 and 2004-05. This has happened even for the poorest decile groups with energy intake at less than 1600 kcal. (see for instance Punjab (Table 4.28)). On the other hand, in Kerala, which was noted for its "health active woman" even at levels of energy intake (1300 to 1400 kcal.) much less than the prescribed allowance (Sukhatme, 1981, p. 1323), even the ninth decile group of rural population continues increasing its energy consumption at levels higher than 2400 kcal. per capita per day today (Table 4.24).

4.2.2 It should be noted that the reductions in calorie intake in general have been taking place almost on a sustained basis for the past three decades (since 1972-73). Given the general perception about the importance of energy in human diet, this should have spelt a sustained health disaster, which has not happened. Instead there has been some improvement though not on a scale and pace consistent with observed economic growth. This might be because of either compensating changes in diets or related health parameters, which calls for some academic attention or irrelevance of energy as the major determinant of physical capability and health.

4.2.3 Since its 38th round (1983), the National Sample Survey Organization has periodically asked what are called probing questions like whether the household gets two square meals a day through out the year. Such questions were asked during the 38th (1983), 50th (1993-94) and the 61st (2004-05) rounds. Till the 55th round, the

[17] The Corresponding estimates of per capita consumer expenditure per month at current prices for 2004-05 work out to be Rs 342 and 625 respectively for rural and urban India (Table 4.1). To provide some margin for error, one may consider the upper terminal values for these decile groups as poverty lines, that is, Rs 365 and 675 respectively.

investigator asked direct question to the household. In 1983, 81 per cent of the rural households reported adequate food consumption (two square meals a day); this percentage increased to 95 in 1993-94, 96 in 1999-2000 and to 97 in 2004-2005 (Table 4.11). In the urban sector, corresponding number increased from 93 per cent in 1983 to 99 percent in 1999-2000 and 2004-2005. In sum, this piece of evidence corroborates the perception that the population is well fed.

4.2.4 Some relevant information on health status is provided in Tables 4.12 to 4.14. The estimates of association as measured by rank correlation coefficients are presented in Table 4.15. The estimates of association do not make much sense. For instance, cross sectional evidence on rural household perceptions on adequate food consumption co vary inversely with estimates of per capita calorie intake across states while the association is insignificant for the urban sector. Consistent with this finding, household perception on food adequacy bears significant positive association with incidence of calorie deficiency (with reference to alternative norms) in the rural sector and no association in the urban sector. Only sensible estimate of association pertains to the ones between calorie intake and incidence of calorie deficiency in both rural and urban sectors. Other measures of association between subjective and objective measures of food security and alternative measure of morbidity/health consciousness are insignificant for the rural sector. As regards the urban sector, either they are insignificant or do not makes any sense. For instance, association between incidence of calorie efficiency and infant mortality is significant and inverse implying that higher the incidence of calorie deprivation lower is incidence of infant mortality, which is absurd.

4.2.5 While nutrition security *per se* is important to promote good health outcomes, the latter depend crucially on other important factors like biology, choice and environment. The states of Kerala and Tamil Nadu provide evidence of high health status despite poor calorie intake due to largely to other factors like safe drinking water, hygiene and awareness. Most important is to recognize prevalence of morbidity rates across sates, which definitely would affect the utilization of nutrients consumed. In sum, it is important to distinguish between input and outcome measures and recognize that the process is not instantaneous to generate contemporaneous correlations; instead, there would be lags also. There is limited scope for cross-sectional / time series comparisons between incomes/growth rates, malnutrition and health outcomes using the available statistical information.

4.2.6 All these results could mean that the available statistical information on energy intake parameter *per se* has little policy relevance. Hence, one could explore alternative options for distributional outcome evaluation in the revised policy context during the New Millennium when the country has transformed itself into one of the fastest growing economies in the world. With growth confined to only a few sectors and regions, inequalities have begun to widen, which have become transparent and strike in the information era. Hence, it is important to set sights high for not only sustaining the growth process but also make it broad based and inclusive as visualized in the Eleventh Five Year Plan.

5 Recommendation

5.1 Norm for Broad based Growth, which is Inclusive

5.1.1 The concept of absolute poverty made sense in an era of material deprivation and limited growth in income when the policy agenda was to ensure a subsistence minimum for the population. With growth and development involving structural changes and widening disparities, the policy agenda is no longer cast in terms of ensuring a subsistence minimum but in terms of inclusion in the mainstream growth process.

5.1.2 Given this perspective, a major question that arises is as follows: How to measure growth performance and inclusion? Government policy documents as well as academic studies generally measure growth performance or welfare improvement in terms of mean-based averages of income/consumption. A mean-based estimator of average is not a robust measure for a skewed distribution like that of household/personal income/consumption. Hence, it would make sense to use order-based measures for welfare appraisals using data on household/personal income/consumption distributions.

5.1.3 A broad based growth process may be characterized as one wherein there is all-round improvement as reflected in the three alternative perspectives of macro economy, viz., production, income and expenditure. Such improvements may be measured in terms of a robust order-based average like the median. We may define inclusion (participation) of the relatively deprived in such a growth process with reference to the order-based average of the outcome measure only, that is, assess their economic status with reference to a threshold, specified as a function of the median.

5.1.4 In the absence of comprehensive and related information on production (in particular) and income accounts, one would not be able to estimate and examine order-based averages and inclusion coefficients for the three different macro dimensions. The only feasible option is that based on household consumption distribution. In such a context, profiles of inclusion could be examined to some extent by examining mean-based estimate of average income (from the NAS) and consumption from the NSS, and order-based estimates of inclusion in consumption distribution. The relevant measures could be as follows:

5.1.4.1 Elasticity of mean consumption with reference to mean income (η), which would indicate, from an economic perspective, whether growth in income is really broad based and inclusive since if growth were concentrated at the top, even mean consumption would not increase at a corresponding rate and η would be less than unity.

$$\text{Elasticity of mean consumption with reference to mean income } (\eta) = \frac{\partial \mu_c / \mu_c}{\partial \mu_y / \mu_y},$$

Where $\boldsymbol{\mu_c}$ and $\boldsymbol{\mu_y}$ stand for mean consumption and mean income respectively.

5.1.4.2 Elasticity of median consumption with reference to mean consumption (ε) where

$(\varepsilon) = \dfrac{\partial\xi_{50} / \xi_{50}}{\partial\mu_c / \mu_c}$. A value for ε > 1, would imply a scenario approaching broad based growth. This would further corroborate the results on inclusive growth based on estimates of η; and

5.1.4.3 Inclusion coefficient for consumption distribution (ψ).[18]

5.1.5 We define an ' **Inclusive Co-efficient**' (IC) in terms of 'ψ' given by

$$\psi = 1 - 2\int_0^{\delta\xi_{50}} f(x)dx \qquad \ldots(3)$$

Where $0 < \delta < 1$ and $\xi_{.50}$ such that

$$\int_0^{\xi_{50}} f(x)dx = \frac{1}{2} = \int_{\xi_{.50}}^{\infty} f(x)dx$$

where $0 < \psi < 1$. In this study, we assign 0.6 as the value for δ. It has the following relevant properties:

5.1.5.1 When the 'number of relatively poor' participating and hence, benefiting from the mainstream economic process is nil, ψ will tend to the value 0; it will approach unity, as the set of beneficiary poor tends to exhaust the set of all relatively poor.

5.1.5.2 Any value greater than ½ for ψ, would indicate a situation where the proportion of the bottom half of the population falling in the inclusion zone or the mainstream is more than the proportion in the relative deprivation-zone, implying a scenario of inclusion.

5.1.5.3 Progressive improvement in ψ and its positive covariance with median income/consumption would indicate Inclusive Growth; a constant ψ would imply perpetuation of status quo and a decline in ψ with negative covariance with median income/consumption would be evidence of exclusion.

5.1.5.4 Being a rank-order based measure, it will reflect the deterioration / amelioration in the lot of the bottom half of the population satisfactorily. However, for the very same feature, it suffers from the limitation that the measure is not additive and hence, not decomposable.

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[18] In a corresponding fashion, one could consider a coefficient of broad based income generation and distribution 'γ' with reference to median income/consumption for welfare evaluations where $\gamma = \int_{\delta\xi_{50}}^{(2-\delta)\xi_{50}} f(x)dx$ where f (x) is the income/consumption density function and γ lies in the interval (0,1). In an ideal scenario on broad based growth that is inclusive, ψ and γ would converge. To verify whether the growth process is broad based one might consider adjusting the median by taking the product of median and γ.

5.2 Inclusion in a Plural Society

5.2.1 The measures discussed above could be generalized to account for regional/social groupings and differentials. This is be important for the for the following reasons:

5.2.1.1 Countries like India have a plural society, that is, a society consisting of different groups like the Scheduled Castes (SCs), Scheduled Tribes (STs), Other Backward Castes (OBCs) and other social groups called 'Others'.[19] For historical reasons, in India these social groups differ with respect to mean as well as distribution of economic welfare, however measured. For instance, in India SCs and STs constitute the socially vulnerable and economically backward classes.

5.2.1.2 In pursuit of social welfare, governments pursue both mainstream economic policies and targeted welfare programmes to uplift the generally backward classes.

5.2.1.3 But, for reasons like Type I and Type II errors, even the targeted programmes do not end up providing for a general improvement of the backward social groups.[20] As a result, there are situations when only a subsection of the backward communities get included in the mainstream / benefited from welfare programmes.

5.2.1.4 Therefore, inclusion in a plural society has two dimensions: (i) inter-group and (ii) intra-group. Inter-group dimension could be examined with reference to differences / disparities in median levels of income / consumption expenditure across social groups while the intra-group dimension could be examined in terms of ICs defined with respect to group-specific as well as overall median.

5.2.2 Some details about these measures are as follows:

5.2.2.1 Inter-group inclusion as measured by proximity of sub-group-specific median ($\xi^{S}_{.50}$) to overall median (of the total /mainstream population, i.e., all sub-groups inclusive given by $\xi^{M}_{.50}$).[21] For a given δ such that $(0 < \delta < 1)$, there can be two situations:

Case (a): $\xi^{S}_{.50} < \delta\, \xi^{M}_{.50}$ implies exclusion of the sub-group

Case (b): $\xi^{S}_{.50} \geq \delta\, \xi^{M}_{.50}$ would imply inclusion of the sub-group concerned.

5.2.2.2 Intra-group inclusion for any given social group 'i' could be measured with respect to either own median ($\xi^{S}_{.50}$) **providing a measure of** ψ_i^{S} **(**that is, IC-Subgroup) or overall median ($\xi^{M}_{.50}$) providing a measure of ψ_i^{M} **(**that is, IC-Mainstream). These two measures would (a) be distinct and different for situations when there is inter-group exclusion; and (b) converge with progressive inter-group inclusion:

a. IC-Subgroup (ψ_i^{S}) would measure the extent of inclusion of the bottom half of the sub-group under review in its *own* progress.

b. IC-Mainstream (ψ_i^{M}) would measure the extent of inclusion of the bottom half of the sub-group under review in the progress of the *country/society as a whole*. The limits for IC-Mainstream (ψ_i^{M}) are as follows:

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[19] For that matter, one could consider different occupations/regions/sectors/states instead of social groups.

[20] When a targeted welfare programme fails to reach/benefit the intended beneficiaries, it is called Type I error. Type II error refers to a situation when the programme benefits the unintended beneficiaries (Cornia and Stewart 1993).

[21] The mainstream median ($\xi^{M}_{.50}$) may be defined with reference to different combinations of the social groups including as well as excluding the sub group under review depending upon the context. For illustration purpose, we have considered the median of the total population here.

ψ_i^M = (-) 1 implies perfect exclusion of the sub-group
ψ_i^M = 1 implies perfect inclusion of the entire subgroup

5.2.2.3 IC index in a Plural Society: The ratio (ω_i) of IC-Mainstream (ψ_i^M) to IC-Subgroup (ψ_i^S) for a given social subgroup 'i' would provide a measure of its inclusion from an integrated perspective.

$$\omega_i = \frac{\psi_i^M}{\psi_i^S} \qquad \ldots(4)$$

where 'ψ_i^M' = IC-Mainstream defined with respect to median of the *total* population ($\xi^M_{.50}$)
'ψ_i^S' = IC-Subgroup defined with respect to median of the *Social group* population ($\xi^S_{.50}$)

The conceptual Limits for IC index (ω) are given below:

ω = *(-) infinity* implies perfect intra- and inter-exclusion.
ω = *infinity* implies perfect intra-exclusion and inter-inclusion of the entire subgroup.

5.2.2.4 For situations when $\xi^S_{.50} < \delta\ \xi^M_{.50}$, a comprehensive measure of inclusion for the entire (as against for the bottom half) social sub-group 'i' population in the mainstream would be indicated by the β-measure given by:

$$\beta_i = \tfrac{1}{2}(1 + \psi_i^M) \qquad \ldots(5)$$

where $0 \leq \beta_i \leq 1$.

The β-measure indicates the proportion of the subgroup population participating/included in the growth process as reflected in outcome measures like consumer expenditure distribution. Its limiting values will be zero and one; it will be zero when the entire social sub group is excluded from the mainstream and unity, otherwise.

5.2.2.5 An empirical illustration for the measures discussed above is available in Suryanarayana (2008b)

References

Cornia, Giovanni Andrea and Frances Stewart (1993):"Two Errors of Targeting". *Journal of International Development*, Vol. 5, No.5, pp. 459-496.

Dandekar, V.M. and N. Rath (1971): *Poverty in India*, Indian School of Political Economy, Lonavala.

Government of India (1962): "Perspective of Development: 1961-1976: Implications of Planning for a Minimum Level of Living", reprinted in Srinivasan, T.N and P.K. Bhardhan (eds.) (1974): *Poverty and Income Distribution in India*, Statistical Publishing Society, Calcutta, pp. 9-38.

Government of India (1979a): "Survey Results: Consumer Expenditure: NSS, 27th Round (October1972- September 1973)", *Sarvekshana: Journal of he National Sample Survey Oganisation,* Department of Statistics, Ministry of Planning, pp. S287-S436.

Government of India (1979b): *Report of the Task Force on Projections of Minimum Needs and Effective Consumption Demand*, Perspective Planning Division, Planning Commission, New Delhi.

Government of India (1981): *A Technical Note on the Sixth Plan of India (1980-85)*, Perspective Planning Division, Planning Commission, New Delhi.

Government of India (1983): "A Note on Per Capita Per Diem Intake of Calories, Protein and Fat based on the Data Collected in the Household Survey on Consumer Expenditure, NSS 27th Round : October 1972 - September 1973', *Sarvekshana*, Vol. VI, Nos. 3-4, 1983.

Government of India (1985): "*The Seventh Five Year Plan1985-90* Vol. II, Planning Commission, New Delhi.

Government of India (1986a): "Some Results on the Second Quinquennial Survey on Consumer Expenditure: National Sample Survey Thirty-second round (July '77-June '78)", *Sarvekshana*, Vol. IX, No. 3, pp. S51-S184.

Government of India (1986b): "A Report on the Third Quinquennial Survey on Consumer Expenditure: National Sample Survey. Thirty-eighth round (January-December 1983)", *Sarvekshana*, Vol. IX, No. 4, pp. S1-S102.

Government of India ((1986c): *A Technical Note on the Seventh Plan of India (1985-90)*, Planning Commission, New Delhi.

Government of India (1989a): "Results on Per Capita Consumption of Cereals for Various Sections of Population: NSS 38th round (1983)", *Sarvekshana*, Vol. XIII, No. 2, pp. S1-S176.

Government of India (1989b): "Results on Per Capita and Per Consumer Unit Per Diem Intake of Calorie, Protein and Fat and Perceptions of the People on Adequacy of Food", *Sarvekshana*, Vol. XIII, No. 2, Issue No. 41, pp. S177-S258.

Government of India (1991): "Results of the Fourth Quinquennial Survey on Consumer Expenditure (sub-sample 1) : NSS 43rd round (July 1987 - June 1988)", *Sarvekshana*, Vol. XV, No. 1, pp. .

Government of India (1992): *Bulletin on Food Statistics: 1991*, Ministry of Agriculture, New Delhi.

Government of India (1993): *Report of the Expert Group on Estimation of Proportion and Number of Poor*, Perspective Planning Division, Planning Commission, New Delhi.

Government of India (1996a): *Level and Pattern of Consumer Expenditure. 5th Quinquennial Survey 1993-94,* Report No. 402, National Sample Survey Organisation, Department of Statistics, New Delhi.

Government of India (1996b): *Nutritional Intake in India NSS 50th Round July 1993-June 1994 Fifth Quinquennial Survey on Consumer Expenditure*, Report No. 405, National Sample Survey Organisation, Department of Statistics, New Delhi.

Government of India (2001a): *Level and Pattern of Consumer Expenditure in India 1999-2000 NSS 55th Round July 1999 – June 2000*, Report No. 457 (55/1.0/3), National Sample Survey Organisation, Ministry of Statistics & Programme Implementation, New Delhi.

Government of India (2001b): *Reported Adequacy of Food Intake in India 1999-2000 NSS 55th Round (July 1999-June 2000),* Report No. 466(55/1.0/7), National Sample Survey Organisation, New Delhi.

Government of India (2001c): *Nutritional Intake in India 1999-2000 NSS 55th Round (July 1999-June 2000),* Report No. 471(55/1.0/9), National Sample Survey Organisation, New Delhi.

Government of India (2002d): *Tenth Five Year Plan (2002-2007)*, Planning Commission, New Delhi.

Government of India (2002e): *Report of the High Level Committee on Long-Term Grain Policy*, Ministry of Consumer Affairs, Food & Public Distribution, New Delhi.

Government of India (2006a): *Morbidity, Health Care and the Condition of the Aged NSS 60th Round (January - June 2004)*, Report No. 507(60/25.0/1), National Sample Survey Organisation, New Delhi.

Government of India (2006b): *Level and Pattern of Consumer Expenditure, 2004 –2005, NSS 61st Round (July 2004 – June 2005),* NSS Report No. 508(61/1.0)/1), National Sample Survey Organisation, Ministry of Statistics and Programme Implementation, New Delhi.

Government of India (2007a): *Perceived Adequacy of Food Consumption In Indian Households 2004-2005 NSS 61st Round (July 2004-June 2005)*, Report No. 512(61/1.0/5), National Sample Survey Organisation, New Delhi.

Government of India (2007b): *Poverty Estimates for 2004-05*, Press Information Bureau, New Delhi, India.

Government of India (2007c): *Nutritional Intake in India 2004-2005 NSS 61st Round (July 2004-June 2005)*, Report No. 513(61/1.0/6), National Sample Survey Organisation, New Delhi.

Government of India (2007d): *Economic Survey 2006-2007*, Ministry of Finance, New Delhi.

Government of India (2007e): *Public Distribution System and Other Sources of Household Consumption 2004-2005, Volume I, NSS 61st Round (July 2004- June 2005)*, *Report No*. 510(61/1.0/3), National Sample Survey Organisation, Ministry of Statistics and Programme Implementation, New Delhi.

Government of India (2008): *Eleventh Five Year Plan 2007-12 Volume II Social Sector*, Planning Commission, Oxford University Press, New Delhi.

Meenakshi, J V and Brinda Viswanathan (2005): "Calorie Deprivation in Rural India between 1983 and 1999-2000" in Angus Deaton and Valerie Kozel (ed.), *The Great Indian Poverty Debate*, Macmillan), New Delhi, pp 570-583.

Minhas, B.S., L.R. Jain and S. D. Tendulkar (1991); "Declining incidence of poverty in the 1980s: Evidence versus aretefacts", *Economic and Political Weekly*, Vol. XXVI, Nos. 27 & 28, pp. 1673-1682.

Nehru, Jawaharlal (1946): *The Discovery of India*, The John Day Company, New York.

Palmer-Jones, Richard, and Kunal Sen (2001): "On Indian Poverty Puzzles and Statistics of Poverty," *Economic & Political Weekly,* Vol. 36, No. 3, pp. 211-217.

Patnaik, Utsa (2004): "The Republic of Hunger", *Social Scientist*, Vol. 32, Nos. 9-10, pp. 9-35.

Patnaik, Utsa (2007): "Neoliberalism and Rural Poverty in India", *Economic & Political Weekly*, Vol. 42, No. 30, pp. 3132-3150.

Radhakrishna, R (1991): "Food and Nutrition : Challenges for Policy", *Journal of the Indian Society of Agricultural Statistics*, Vol. XLIII, No. 3, pp. 211-227

Radhakrishna, R (2005): "Food and Nutrition Security of the Poor: Emerging Perspectives and Policy Issues", *Economic & Political Weekly*, vol. 40, No. 18, pp. 1817-1821.

Radhakrishna, R, K Hanumantha Rao, C Ravi, and B Sambi Reddy (2004): "Chronic Poverty and Malnutrition in 1990s", *Economic & Political Weekly*, Vol. 39, No. 28, pp. 3121-3130.

Ray, Ranjan and Geoffrey Lancaster (2005): "On Setting the Poverty Line Based on Estimated Nutrient Prices: Condition of Socially Disadvantaged Groups during the Reform Period", *Economic & Political Weekly*, Vol. 40, No. 1, pp. 46-56.

Sukhatme, P. V. (1978): "Assessment of Adequacy of Diets at Different Income Levels", *Economic and Political Weekly*, Vol. 13, No. 31/33, pp. 1373- 1384

Sukhatme, P. V. (1981): "On Measurement of Poverty", *Economic and Political Weekly*, Vol. 16, No. 32, pp. 1318- 1324.

Suryanarayana, M H (1995): "Growth, Poverty and Levels of Living: Hypotheses, Methods and Policies", *Journal of Indian School of Political Economy*, Vol. VII, No. 2, pp. 203-255.

Suryanarayana, M H (1996): "Food Security and Calorie Adequacy Across States: Implications for Reform", *Journal of Indian School of Political Economy*, Vol. VIII, No. 2, pp. 203 – 265.

Suryanarayana, M H (1997): "Food Security in India: Measures, Norms and Issues", *Development and Change*, Vol.28, No. 4, pp. 771-789.

Suryanarayana, M H (2000a): "Public Policies, Social Development and Poverty Reduction: The Kerala Model" in Halvorson-Quevedo, Raundi and Hartmut Schneider (eds.) Waging the Global War on Poverty: Strategies and Case Studies, OECD, Paris, pp. 157-185.

Suryanarayana, M H (2000b): "How Real is the Secular Decline in Rural Poverty?" *Economic and Political Weekly*, Vol. XXXV, No. 25, pp. 2129-2139.

Suryanarayana, M H (2003a): "Nutrition Security in India: Problems and Policies", Prabhu, K. Seeta and R. Sudarshan (eds.) *Reforming India's Social Sectors: Poverty, Nutrition, Health & Education*, Social Science Press, New Delhi, pp. 171-202.

Suryanarayana, M H (2003b): "Policies for Nutrition: How Imperative are They?" in Dev, S. Mahendra, K. P. Kannan and Nira Ramachandran (eds.): *Towards A Food Secure India: Issues & Policies*, Institute for Human Development, New Delhi, pp. 406-432.

Suryanarayana, M H (2008a): "Agflation and the Public Distribution System", *Economic and Political Weekly*, Vol. XLIII, No. 18, pp. 13-17.

Suryanarayana, M H (2008b): "What Is Exclusive About 'Inclusive Growth'?" *Economic and Political Weekly*, Vol. 43, No. 43, pp. 91-101.

Suryanarayana, M.H. (2009): "Food Security: Beyond the Eleventh Plan Fiction", in India Gandhi Institute of Development Research (ed.): *Indian Development Report 2009* (submitted) (This is a revised version of the paper on food security presented in the plenary session of the International Conference on Health and Development organized by the School of Development Studies, Department of Economics, Kannur University, Thalassery and sponsored by the Indian Council of Medical Research, New Delhi, at Thalassery, 22-23 October 2008.

Suryanarayana, M H and D Silva (2007): "Is Targeting the Poor a Penalty on the Food Insecure? Poverty and Food Insecurity in India", *Journal of Human Development*, Vol. 8, No. 1, pp. 89-107.

Tendulkar, Suresh D., K. Sundaram and L.R. Jain (1993): *Poverty in India, 1970-71 to 1988-89*, ARTEP Working Papers, International Labour Organisation, Asian Regional Team for Employment Promotion, New Delhi.

Table 3.1: Poverty and Calorie Deprivation: Rural and Urban India

Sector	Rural		Urban	
Year	1983	2004-05	1983	2004-05
Incidence of Poverty (%)	45.61	28.30	42.15	25.70
Average per capita calorie intake (kcal)	2221	2047	2089	2020
Incidence of calorie deficiency (%)	68.75	85.05	60.82	64.77

Source: (1) Estimates of poverty are from GoI (1993, 2007b)
(2) Estimate of average per capita calorie intake are from GoI (1983, 2007c)
(3) Estimates of calorie deprivation are by the author based on GoI (1983, 2007c) with reference to the norms of 2400 kcal for the rural and 2100 kcal for the urban sector

Table 3.2 Percentage of *A /BPL* households by MPCE class and their reliance on the PDS: All India

Rural Sector				Urban Sector			
MPCE class	% of *A/BPL hhs*	% of consumption from PDS by *A/ BPL* hhs		MPCE class	% of *A/ BPL hhs*	% of consumption from PDS by *A/ BPL* hhs	
		Rice	Wheat			Rice	Wheat
0-235	48.8	30.27	35.84	0 – 335	33.4	41.94	31.25
235-270	44.3	27.90	28.43	335 – 395	28.3	38.79	30.61
270-320	40.8	27.97	29.51	395 – 485	26.4	33.34	32.18
320-365	38.3	26.95	26.44	485 – 580	19.9	37.04	33.34
365-410	33.9	26.40	30.39	580 – 675	17.8	35.25	28.67
410-455	33.1	25.51	28.01	675 – 790	11.6	32.56	22.98
455-510	31.0	27.91	27.99	790 – 930	10.1	34.28	20.84
510-580	25.7	27.28	27.65	930 – 1100	6.9	32.35	14.57
580-690	23.8	28.54	29.27	1100 – 1380	4.1	23.20	22.89
690-890	19.8	28.13	23.90	1380 – 1880	2.2	26.79	5.22
890-1155	15.2	27.43	18.07	1880 – 2540	1.5	17.36	8.91
1155 & more	12.0	21.85	24.03	2540 & more	0.9	25.35	30.27
All classes	29.4	27.40	28.16	All classes	11.3	34.95	28.08

Source: Estimates based on GoI (2007e)

Notes:

1) % of *A /BPL* hhs = Percentage of households with *Antyodaya* or *BPL* ration cards in each expenditure class

Table 3.3: Percentage shares of rice wheat and wheat in total cereals consumed: major states, rural and urban areas, 2004-05

Group R States (share of rice ≥ 75%)	% of rice in cereals consumed		Group W States (share of wheat ≥ 65%)	% of wheat in cereals consumed		Other states	% of rice in cereals consumed		% of wheat in cereals consumed	
	Rural	Urban		Rural	Urban		Rural	Urban	Rural	Urban
AP	92	91	Haryana	89	87	Bihar	55	50	41	49
Assam	95	89	MP	65	77	Gujarat	20	25	36	65
Chhattisgarh	96	75	Punjab	91	88	Jharkhand	75	51	22	49
Kerala	90	88	Rajasthan	67	89	Karnataka	49	58	10	18
Orissa	95	84	UP	66	75	Maharashtra	28	36	33	51
Tamil Nadu	93	91								
West Bengal	93	76								

Source: GoI (2006b; p. 26)

Table 3.4: State wise percentages of rural and urban population above specified levels of MPCE

State	Percentage of rural population with MPCE		State	Percentage of urban population with MPCE	
	At least Rs 690	At least Rs 890		At least Rs 1380	At least Rs 1880
Kerala	57	38	Kerala	28	15
Punjab	51	32	Punjab	27	14
Haryana	47	28	West Bengal	24	13
Gujarat	26	13	Gujarat	23	10
Andhra Pradesh	23	11	Maharashtra	23	13
Rajasthan	22	10	Haryana	22	11
Maharashtra	21	11	Tamil Nadu	22	11
Tamil Nadu	21	11	Karnataka	21	11
West Bengal	18	8	Assam	21	9
Assam	18	5	Andhra Pradesh	18	8
Uttar Pradesh	17	8	Jharkhand	17	8
Karnataka	13	6	Chhattisgarh	16	8
Madhya Pradesh	11	5	Rajasthan	15	7
Orissa	9	4	Madhya Pradesh	14	7
Chhattisgarh	8	3	Uttar Pradesh	12	6
Jharkhand	7	3	Orissa	8	3
Bihar	6	2	Bihar	7	3
All-India	20	10	All-India	20	10

Source: GoI (2006b; p. 15)

Table 3.5: Measures of Different Aspects of Poverty and Calorie Deficiency Across States: Rural Sector (1983)

State	P_0 (%)	P_1 (%)	P_2 (%)	Incidence of calorie Deficiency (C_0) (%)	Calorie Gap index (C_1) (%)	Severity of calorie Deficiency (C_2) (%)
Andhra Pradesh	27.05	5.88	1.76	72.18	13.27	3.61
Assam	42.09	8.09	2.25	81.89	16.35	4.37
Bihar	65.19	19.92	8.17	68.92	15.13	4.74
Gujarat	27.07	5.00	1.39	75.50	15.77	4.48
Haryana	19.21	3.63	1.07	49.04	8.02	1.91
Karnataka	35.93	9.63	3.56	64.30	14.30	4.76
Kerala	39.21	9.91	3.50	83.73	25.51	9.80
Madhya Pradesh	48.96	13.61	5.12	64.04	11.43	2.97
Maharashtra	45.28	11.35	3.85	77.99	14.25	3.49
Orissa	67.53	21.96	9.71	72.80	17.56	6.02
Punjab	14.31	2.42	0.65	40.35	7.27	2.13
Rajasthan	34.20	9.15	3.42	58.18	8.75	2.00
Tamil Nadu	53.60	17.02	7.23	87.18	27.21	10.69
Uttar Pradesh	45.51	12.31	4.55	57.51	10.36	2.75
West Bengal	62.24	20.59	9.23	77.36	20.84	8.05
All-India	43.39	11.90	4.49	68.75	14.09	4.15

Note: Estimates of consumption poverty ($\mathbf{P_0\ P_1\ P_2}$) are with reference to the Expert Group (1993) poverty lines and calorie deficiency deprivation are subsistence norms of 2400 kcal for the rural and 2100 kcal for the urban sector

Source: Suryanarayana (2003a)

Table 3.6: Measures of Different Aspects of Poverty And calorie Deficiency Across States: Urban Sector (1983)

State	P_0 (%)	P_1 (%)	P_2 (%)	Incidence of calorie Deficiency (C_0) (%)	Calorie Gap index (C_1) (%)	Severity of calorie Deficiency (C_2) (%)
Andhra Pradesh	36.74	9.78	3.72	65.28	10.74	2.75
Assam	23.44	5.15	1.62	56.76	9.13	2.45
Bihar	49.64	14.39	5.52	50.18	8.26	2.09
Gujarat	37.75	8.27	2.54	62.96	10.71	2.74
Haryana	19.62	3.98	1.24	41.52	7.28	2.66
Karnataka	40.26	12.28	5.09	52.45	10.27	2.94
Kerala	48.26	15.08	6.35	63.9	16.25	5.54
Madhya Pradesh	51.42	14.24	5.22	52.54	6.58	1.18
Maharashtra	37.55	11.32	4.64	67.82	11.06	2.52
Orissa	48.79	14.14	5.53	40.24	6.37	1.83
Punjab	22.6	4.85	1.51	54.51	11.13	3.36
Rajasthan	38.31	10.12	3.78	41.4	5.59	1.47
Tamil Nadu	44.56	13.51	5.64	75.34	18.97	6.49
Uttar Pradesh	49.32	14.26	5.43	61.71	9.81	2.25
West Bengal	30.71	7.75	2.77	57.91	9.95	2.76
All-India	38.08	10.46	4	60.83	10.5	2.67

Note: Estimates of consumption poverty (**P_0 P_1 P_2**) are with reference to the Expert Group (1993) poverty lines and calorie deficiency deprivation are subsistence norms of 2400 kcal for the rural and 2100 kcal for the urban sector

Source: Suryanarayana (2003a)

Table 4.1: Monthly Per Capita Consumer Expenditure (at current prices) by Decile Groups: Rural and Urban India

Decile group	1972/73	1983	1993/94	1999/2000	2004/05
Rural India					
0-10	16.26	42.66	116.13	215.38	228.18
10-20	22.70	58.85	154.86	277.95	297.56
20-30	26.90	70.00	177.55	320.19	342.40
30-40	30.86	77.46	201.32	360.03	386.36
40-50	35.56	90.40	224.29	397.95	430.34
50-60	38.14	102.11	250.09	444.58	482.78
60-70	45.61	111.73	282.82	496.79	543.25
70-80	50.02	131.88	324.94	566.62	630.40
80-90	63.20	164.80	395.37	687.66	769.22
90-100	112.46	276.91	686.62	1094.45	1477.32
All	44.17	112.68	281.40	486.16	558.78
Urban India					
	1972/73	1983	1993/94	1999/2000	2004/05
0-10	21.90	58.13	154.18	290.02	323.90
10-20	29.91	79.64	213.00	389.40	441.51
20-30	36.11	94.57	253.80	464.65	533.24
30-40	38.39	114.48	289.97	538.85	625.02
40-50	48.50	121.91	335.01	620.61	732.73
50-60	51.50	141.31	383.39	719.89	858.00
60-70	63.73	176.49	447.58	842.22	1016.95
70-80	72.56	195.86	541.54	1012.44	1226.39
80-90	96.38	257.47	695.23	1286.19	1600.04
90-100	174.32	464.74	1266.68	2384.93	3165.83
All	63.33	170.46	458.04	854.92	1052.36

Source: Author's estimates based on corresponding NSS estimates at current prices (GoI, 1979a, 1986a, 1986b, 1991, 1996a, 2001a & 2006b).

Table 4.2: Monthly Per Capita Consumer Expenditure (at 1972/73 prices) by Select Decile Groups: Rural and Urban India

Decile group	1972/73	1977/78	1983	1987/88	1993/94	1999/00	2004/05	Increase (%) between 1972/73 & 2004/05	Increase (%) between 1993/94 & 2004/05
Rural India									
0-10	16.26	16.92	19.18	22.05	22.69	26.45	25.76	58.41	13.51
10-20	22.70	23.97	26.46	29.36	30.26	34.13	33.59	47.97	11.01
20-30	26.90	28.89	31.47	34.39	34.69	39.32	38.65	43.68	11.41
30-40	30.86	31.83	34.83	38.28	39.34	44.21	43.61	41.33	10.87
40-50	35.56	36.80	40.65	42.71	43.82	48.86	48.58	36.61	10.85
0-100	44.17	48.90	50.67	55.09	54.98	59.69	63.08	42.80	14.72
Urban India									
0-10	21.90	21.00	23.38	24.30	25.93	30.22	28.45	29.91	9.74
10-20	29.90	29.80	32.03	32.92	35.82	40.57	38.78	29.70	8.28
20-30	36.11	35.73	38.03	38.57	42.68	48.41	46.84	29.71	9.75
30-40	38.39	40.92	46.04	44.01	48.76	56.14	54.90	43.01	12.59
40-50	48.51	46.75	49.03	51.08	56.33	64.66	64.36	32.68	14.25
0-100	63.33	65.26	68.55	71.41	77.02	89.07	92.44	45.96	20.02

Source: Author's (Suryanarayana 2009) estimates based on corresponding NSS estimates at current prices (GoI, 1979a, 1986a, 1986b, 1991, 1996a, 2001a & 2006b) and deflators implicit in the official poverty lines. Poverty lines from 1977/78 till 2004/05 are GoI estimates and corresponding estimates for 1972/73 are from Tendulkar *et al.* (1993).

Table 4. 3: Monthly Per Capita Food Expenditure (at current prices) by Decile Groups: Rural and Urban India

Decile group	1972/73	1983	1993/94	1999/2000	2004/05
Rural India					
0-10	13.42	32.89	84.90	144.44	154.46
10-20	18.68	44.60	112.93	183.51	197.31
20-30	21.93	52.40	128.62	207.55	221.81
30-40	24.92	57.47	143.85	232.98	247.31
40-50	28.26	65.90	157.74	254.11	270.99
50-60	30.09	72.62	173.51	279.16	297.27
60-70	34.79	77.98	190.58	306.46	326.57
70-80	37.49	87.86	212.99	341.89	365.74
80-90	45.22	103.25	244.60	395.87	415.81
90-100	66.79	142.23	327.96	542.03	578.74
All	32.16	73.72	177.77	288.80	307.60
Urban India					
	1972/73	1983	1993/94	1999/2000	2004/05
0-10	17.50	42.26	108.93	185.78	206.85
10-20	23.44	56.73	147.86	240.53	265.05
20-30	27.83	65.38	171.30	278.62	305.54
30-40	29.36	76.75	191.26	309.85	345.91
40-50	35.50	80.67	214.61	349.54	383.32
50-60	37.13	90.87	237.41	388.69	426.37
60-70	43.91	106.08	265.99	436.24	473.70
70-80	48.23	113.81	302.46	498.97	544.97
80-90	59.46	137.80	363.61	583.74	641.83
90-100	86.04	199.34	499.78	836.44	880.56
All	40.84	96.97	250.32	410.84	447.41

Source: Author's (Suryanarayana 2009) estimates based on corresponding NSS estimates at current prices (GoI, 1979a, 1986a, 1986b, 1991, 1996a, 2001a & 2006b).

Table 4.4: Monthly Per capita Cereal Consumption Expenditure: Rural & Urban All-India

Decile group	Rural all-India				Urban all-India			
	1972/73	2004/05		Increase (%) at constant prices	1972/73	2004/05		Increase (%) at constant prices
	At current prices	At current prices	At 1972/73 prices		At current Prices	At current prices	At 1972/73 prices	
0-10	9.75	75.18	11.96	22.70	10.085	80.45	11.13	10.35
10-20	13.04	87.49	12.99	-0.33	12.699	90.36	12.20	-3.93
20-30	14.81	91.99	13.68	-7.59	14.106	96.04	12.81	-9.21
30-40	16.33	95.72	14.25	-12.77	14.580	99.96	12.94	-11.27
40-50	17.75	99.29	14.85	-16.34	15.672	105.64	13.46	-14.12
50-60	18.53	102.68	15.22	-17.85	15.861	108.62	13.41	-15.44
60-70	20.18	107.20	15.49	-23.23	16.620	113.21	13.73	-17.40
70-80	21.08	111.65	15.87	-24.70	16.711	118.44	13.77	-17.57
80-90	23.46	114.49	16.47	-29.81	16.779	122.92	13.72	-18.25
90-100	26.78	128.40	17.50	-34.64	16.588	133.76	13.65	-17.73
All	18.17	101.41	14.97	-17.61	14.970	106.94	13.16	-12.06

Source: Author's (Suryanarayana 2009) estimates based on corresponding NSS estimates at current prices (GoI, 1979a & 2006b) and deflators are Laspeyers unit-value indices with 1972-73 as base.

Table 4.5: Unit values of cereals by Decile Group of Population: Rural & Urban All-India

Decile Group	Unit values								Increase (%) in unit values between 1972/73 and 2004/05			
	1972/73				2004/05							
	Rice	Wheat	Coarse cereals	Total	Rice	Wheat	Coarse cereals	Total	Rice	Wheat	Coarse cereals	Total
Rural India												
0-10	1.28	1.04	0.89	1.07	7.85	6.61	5.72	7.22	515.27	533.31	545.64	573.23
10-20	1.27	1.00	0.92	1.08	8.47	6.97	6.19	7.71	565.46	598.51	572.05	611.29
20-30	1.30	1.01	0.94	1.11	8.68	7.05	6.30	7.84	566.04	598.28	567.61	605.90
30-40	1.32	1.03	0.98	1.14	8.91	7.11	6.37	7.98	575.77	592.49	552.35	601.12
40-50	1.36	1.04	1.01	1.17	9.13	7.18	6.48	8.15	573.32	592.32	543.06	595.93
50-60	1.37	1.04	1.03	1.19	9.30	7.24	6.72	8.28	576.92	595.49	554.23	596.70
60-70	1.35	1.04	1.05	1.18	9.60	7.35	6.76	8.48	611.87	606.05	542.79	617.21
70-80	1.36	1.04	1.06	1.19	9.88	7.44	6.86	8.72	628.32	613.70	546.85	634.21
80-90	1.47	1.05	1.08	1.24	10.32	7.59	7.10	8.97	600.87	620.12	560.04	625.27
90-100	1.67	1.03	1.06	1.26	11.31	8.06	8.19	9.73	579.33	686.43	671.99	672.34
All	1.39	1.03	1.01	1.18	9.37	7.32	6.60	8.35	575.65	607.94	556.34	610.22
Urban India												
0-10	1.37	1.00	1.03	1.15	8.94	7.85	7.39	8.33	552.48	686.07	620.85	622.23
10-20	1.40	1.04	1.11	1.21	9.69	8.21	7.94	8.94	592.20	687.77	618.35	640.36
20-30	1.45	1.07	1.17	1.26	10.18	8.59	8.32	9.36	601.06	699.66	608.51	644.87
30-40	1.47	1.08	1.20	1.27	10.85	8.76	9.03	9.84	637.94	708.25	650.84	673.27
40-50	1.55	1.11	1.29	1.32	11.50	9.16	8.95	10.28	643.84	727.40	595.34	676.20
50-60	1.56	1.11	1.30	1.33	12.06	9.42	10.12	10.73	673.58	748.02	679.57	704.86
60-70	1.61	1.12	1.36	1.37	12.82	9.62	10.28	11.17	697.22	755.64	658.51	716.62
70-80	1.63	1.13	1.37	1.38	13.41	10.21	10.81	11.81	720.63	804.92	686.79	754.80
80-90	1.70	1.14	1.45	1.42	14.71	10.64	12.48	12.68	765.58	832.16	762.99	794.76
90-100	1.80	1.15	1.51	1.45	16.73	11.95	15.92	14.27	830.69	935.27	956.94	882.84
All	1.56	1.10	1.24	1.32	12.03	9.47	9.46	10.71	669.64	757.85	664.87	710.03

Note: Unite values measure the average cost per unit of cereals obtained as the ratio of value to quantity consumed of the cereal specified.

Source: Author's (Suryanarayana 2009) estimates based on corresponding NSS estimates at current prices (GoI, 1979a & 2006b).

Table 4.6: Cereal Consumption Basket across Decile Groups: Rural and Urban India

Decile group	Per capita cereal consumption (kg per month)								Increase (%) between 1972/73 and 2004/05			
	1972/73				2004/05							
	Rice	Wheat	Coarse cereals	Total	Rice	Wheat	Coarse cereals	Total	Rice	Wheat	Coarse cereals	Total
Rural India												
0-10	3.79	1.42	3.88	9.09	6.10	3.00	1.32	10.41	61.13	110.92	-66.08	14.59
10-20	5.06	2.25	4.72	12.03	6.33	3.56	1.46	11.35	25.02	58.56	-69.09	-5.64
20-30	5.75	2.59	4.99	13.33	6.37	3.97	1.39	11.73	10.92	53.15	-72.20	-12.00
30-40	6.33	3.03	4.99	14.35	6.41	4.08	1.52	12.00	1.20	34.51	-69.62	-16.39
40-50	6.83	3.41	4.92	15.16	6.59	4.14	1.45	12.18	-3.41	21.43	-70.58	-19.62
50-60	7.10	3.62	4.88	15.60	6.59	4.46	1.36	12.41	-7.19	23.20	-72.16	-20.46
60-70	7.68	4.24	5.15	17.07	6.72	4.55	1.38	12.65	-12.49	7.19	-73.20	-25.93
70-80	7.90	4.58	5.28	17.75	7.00	4.65	1.16	12.81	-11.38	1.50	-77.96	-27.87
80-90	8.01	5.44	5.51	18.96	6.66	5.00	1.10	12.76	-16.84	-8.10	-80.08	-32.71
90-100	7.47	8.22	5.57	21.26	6.72	5.54	0.94	13.20	-9.99	-32.67	-83.08	-37.92
All	6.59	3.88	4.99	15.46	6.55	4.29	1.31	12.15	-0.62	10.64	-73.81	-21.42
Urban India												
0-10	3.48	3.17	2.10	8.75	4.52	4.40	0.74	9.66	29.96	38.72	-64.64	10.46
10-20	4.47	3.93	2.12	10.52	5.08	4.36	0.67	10.11	13.63	10.94	-68.24	-3.89
20-30	4.90	4.38	1.95	11.23	5.06	4.63	0.57	10.26	3.35	5.63	-70.63	-8.59
30-40	5.02	4.56	1.88	11.46	5.18	4.43	0.54	10.16	3.25	-2.77	-71.09	-11.34
40-50	5.16	5.01	1.67	11.84	4.95	4.81	0.53	10.28	-4.14	-4.03	-68.32	-13.16
50-60	5.22	5.07	1.61	11.90	4.91	4.81	0.41	10.13	-6.06	-5.10	-74.57	-14.91
60-70	5.48	5.32	1.35	12.15	4.84	4.90	0.40	10.13	-11.75	-7.97	-70.16	-16.59
70-80	5.47	5.41	1.22	12.09	4.94	4.69	0.39	10.03	-9.58	-13.26	-67.68	-17.09
80-90	5.34	5.56	0.93	11.84	4.72	4.65	0.32	9.69	-11.73	-16.34	-65.32	-18.12
90-100	4.86	5.79	0.77	11.43	4.34	4.78	0.25	9.37	-10.73	-17.42	-67.58	-17.96
'All	4.94	4.82	1.56	11.32	4.85	4.65	0.48	9.98	-1.76	-3.61	-68.97	-11.81

Source: Author's (Suryanarayana 2009) estimates based on corresponding NSS estimates at current prices (GoI, 1979a & 2006b).

Table 4.7: Estimates of Per Capita Cereal Consumption: Rural & Urban All-India

(kg per 30 days)

Decile group	Rural India					Urban India				
	1972/73	1983	1993/94	1999/2000	2004/05	1972/73	1983	1993/94	1999/2000	2004/05
0-10	9.08	10.35	10.53	10.49	10.16	8.75	9.19	9.53	9.57	9.66
10-20	12.03	12.45	12.09	11.65	11.08	10.52	10.46	10.64	10.30	10.11
20-30	13.32	13.38	12.65	12.30	11.44	11.23	10.98	10.80	10.80	10.26
30-40	14.35	13.94	13.22	12.59	11.71	11.46	11.34	10.93	10.67	10.16
40-50	15.15	14.78	13.40	12.92	11.89	11.84	11.49	11.03	10.87	10.28
50-60	15.60	15.29	13.77	13.09	12.11	11.90	11.88	10.96	10.78	10.13
60-70	17.07	15.66	14.12	13.43	12.34	12.15	12.12	11.02	10.74	10.13
70-80	17.75	16.34	14.46	13.54	12.50	12.09	12.12	10.80	10.60	10.03
80-90	18.96	17.41	14.65	13.81	12.45	11.84	12.08	10.77	10.62	9.69
90-100	21.26	19.40	15.52	14.18	15.81	11.43	12.16	10.31	10.06	9.37
All	15.46	14.90	13.44	12.80	12.15	11.32	11.38	10.68	10.50	9.98

Source: Author's (Suryanarayana 2009) estimates; decile group wise estimates of cereal consumption obtained by linear interpolation from the NSS tables in GoI (1979a, 1986a, 1989a, 1991, 1996a, 2001a, & 2006b).

Table 4.8: Estimates of Energy Intake: Rural & Urban All-India (Kilocalories per capita per diem)

Decile group	Rural India						Urban India					
	1972/73	1983	1993/94	1999/2000	2004/05	Change (%)**	1972/73	1983	1993/94	1999/2000	2004/05	Change (%)**
0-10	1192.09	1356.31	1460.12	1491.48	1480.52	24.20	1298.70	1331.76	1443.50	1520.88	1510.50	16.31
^10-20	1591.90	1681.80	1731.32	1730.52	1681.42	5.62	1575.94	1588.29	1702.40	1731.16	1687.67	7.09
20-30	1783.40	1847.86	1850.00	1865.30	1800.00	0.93	1745.94	1724.00	1803.48	1912.56	1833.00	4.99
30-40	1944.00	1952.00	1971.66	1955.22	1882.45	-3.17	1802.18	1861.19	1896.79	1970.46	1856.41	3.01
40-50	2115.04	2111.53	2056.48	2049.15	1958.95	-7.38	1980.00	1912.41	1992.81	2092.92	1944.62	-1.79
50-60	2210.00	2229.56	2156.34	2170.62	2044.32	-7.50	2035.48	2046.00	2074.64	2188.10	2024.00	-0.56
60-70	2451.41	2322.00	2275.17	2287.78	2158.00	-11.97	2266.00	2221.13	2186.00	2298.70	2111.12	-6.83
70-80	2581.40	2506.92	2410.00	2403.00	2290.00	-11.29	2382.13	2294.20	2296.74	2467.69	2209.00	-7.27
80-90	2929.00	2779.53	2584.72	2582.54	2376.40	-18.87	2658.75	2500.71	2470.50	2536.00	2343.04	-11.87
90-100	3861.77	3422.49	3034.19	2954.39	2797.94	-27.55	3324.88	3410.30	2843.14	2841.53	2680.64	-19.38
All	2266.00	2221.00	2153.00	2149.00	2047.00	-9.66	2107.00	2089.00	2071.00	2156.00	2020.00	-4.13

** Changes between 1972/73 and 2004/05.

Source: Author's (Suryanarayana 2009) estimates based on GoI (1979a, 1983, 1986b, 1989b, 1996a,b, 2001a,c, 2006b & 2007c)

Table 4.9: Estimates of Protein Intake: Rural & Urban All-India (Gm. per capita per diem)

Decile group	Rural India						Urban India					
	1972/73	1983	1993/94	1999/2000	2004/05	Change (%)**	1972/73	1983	1993/94	1999/2000	2004/05	Change (%)**
0-10	33.83	39.52	36.88	39.61	40.46	19.60	36.88	38.14	40.60	42.45	43.00	16.59
10-20	45.13	48.44	45.01	47.02	45.98	1.88	45.01	45.15	47.24	47.47	47.46	5.44
20-30	50.66	52.56	48.83	50.53	50.10	-1.11	48.83	48.00	49.95	51.92	55.30	13.25
30-40	54.50	55.00	50.00	53.54	52.14	-4.33	50.00	51.95	52.50	54.06	52.78	5.56
40-50	58.76	59.34	54.20	56.17	54.03	-8.05	54.20	53.35	55.25	56.86	55.32	2.07
50-60	61.10	62.52	55.31	59.53	57.06	-6.61	55.31	57.00	57.32	59.62	56.10	1.43
60-70	67.61	65.00	59.90	62.96	60.20	-10.96	59.90	61.79	60.10	61.93	59.99	0.15
70-80	71.20	69.82	62.72	66.10	63.60	-10.67	62.72	63.63	63.14	65.04	61.30	-2.26
80-90	80.80	77.43	69.13	72.84	67.82	-16.06	69.13	68.80	68.10	68.90	64.47	-6.74
90-100	103.42	90.37	85.02	82.70	78.60	-24.00	85.02	82.19	77.81	76.76	74.29	-12.62
All	62.70	62.00	56.70	59.10	57.00	-9.09	56.70	57.00	57.20	58.50	57.00	0.53

Source: Author's (Suryanarayana 2009) estimates based on GoI (1979a, 1983, 1986b, 1989b, 1996a,b, 2001a,c, 2006b & 2007c)

Table 4.10: Estimates of Fat Intake: Rural & Urban All-India (Gm. per capita per diem)

Decile group	Rural India						Urban India					
	1972/73	1983	1993/94	1999/2000	2004/05	Change (%)**	1972/73	1983	1993/94	1999/2000	2004/05	Change (%)**
0-10	8.39	11.25	13.44	15.76	16.11	92.01	13.44	14.54	17.60	21.34	22.15	64.81
10-20	12.17	14.72	16.79	20.72	21.28	74.86	16.79	20.20	23.93	27.71	28.84	71.77
20-30	14.16	17.17	21.93	24.13	25.10	77.26	21.93	24.00	28.19	36.44	36.50	66.44
30-40	16.40	19.00	23.81	26.36	28.01	70.79	23.81	28.94	32.14	40.03	37.81	58.80
40-50	19.89	22.47	30.10	29.25	30.79	54.80	30.10	30.62	36.94	46.31	41.52	37.94
50-60	21.80	25.52	31.96	35.97	34.31	57.39	31.96	35.00	41.70	51.93	47.60	48.94
60-70	26.53	28.00	39.70	39.93	39.80	50.02	39.70	42.66	46.50	54.49	52.07	31.16
70-80	29.18	32.82	45.29	45.80	43.50	49.07	45.29	46.26	52.77	63.26	57.60	27.18
80-90	36.40	40.43	58.09	52.88	48.97	34.53	58.09	56.61	61.43	68.80	65.43	12.64
90-100	60.09	58.61	85.89	70.21	67.12	11.70	85.89	71.18	78.81	85.71	85.48	-0.48
All	24.50	27.00	36.70	36.10	35.50	44.90	36.70	37.00	42.00	49.60	47.50	29.43

Source: Author's (Suryanarayana 2009) estimates based on GoI (1979a, 1983, 1986b, 1989b, 1996a,b, 2001a,c, 2006b & 2007c)

Table 4.11: Percentage distribution of households by food availability status

Sector/round	% of households				
	Getting enough food everyday throughout the year	not getting enough food everyday		Not recorded	All
		Some months of the year	All months of the year		
Rural All-India					
NSS 61st round (July 2004-June 2005)	97.4	2.0	0.4	0.2	100
NSS 55th round (July 1999-June 2000)	96.2	2.6	0.7	0.5	100
NSS 50th round (July 1993-June 1994)	94.5	4.2	0.9	0.4	100
NSS 38th round (Jan – Dec 1983)	81.1	16.2	2.4	0.3	100
Urban All-India					
NSS 61st round (July 2004-June 2005)	99.4	0.4	0.1	0.1	100
NSS 55th round (July 1999-June 2000)	98.6	0.6	0.3	0.4	100
NSS 50th round (July 1993-June 1994)	98.1	1.1	0.5	0.3	100
NSS 38th round (Jan – Dec 1983)	93.3	5.6	0.8	0.3	100

Source: GoI (2001b, p.16 & 2007a; p. 22)

Table 4.12 (a): Measures of Nutritional Status across States: 2004-2005

	RURAL SECTOR							
	% expenditure on		per capita per day intake of			per consumer unit per day intake of		
	Food	Cereals	Calorie (Kcal)	Protein (gm)	Fat (gm)	Calorie (Kcal)	Protein (gm)	Fat (gm)
Andhra Pradesh	55.2	19.4	1995	49.8	33.5	2475	61.8	41.6
Assam	66	24.8	2067	52.7	26.7	2515	64.1	32.4
Bihar	64.8	27.1	2049	57.8	28.4	2560	72.3	35.5
Chhatisgarh	56.2	27.2	1942	47.4	19.9	2424	59.2	24.8
Gujarat	58	13.3	1923	53.3	50.9	2380	65.9	63
Haryana	48.6	8.6	2226	69.6	55.4	2738	85.6	68.1
Jharkhand	61.9	27.2	1961	51.2	22.8	2440	63.8	28.4
Karnataka	55.7	16.5	1845	48.8	33.9	2276	60.2	41.8
Kerala	45	11	2014	55.4	40.8	2549	70.1	51.6
Madhya Pradesh	52.9	18.1	1929	58.8	35.1	2386	72.7	43.4
Maharashtra	51.7	14.5	1933	55.7	41.5	2405	69.3	51.6
Orissa	61.6	28.3	2023	48.3	17.8	2512	59.9	22.1
Punjab	49.2	8.8	2240	66.7	58.7	2763	82.3	72.5
Rajasthan	54.8	14.5	2180	69.6	50.9	2714	86.7	63.3
Tamilnadu	52.4	15.5	1842	44.9	29.6	2294	55.9	36.9
Uttar Pradesh	53.6	17.6	2200	65.9	37.5	2743	82.1	46.8
West Bengal	58.7	23.4	2070	52	26.5	2545	64	32.6
All	55	18	2047	57	35.5	2540	70.8	44
Upper quartile			2070	58.8	41.5	2560	72.7	51.6

Source: GoI (2007c; p. 44).

Table 4.12 (b): Measures of Nutritional Status across States: 2004-2005

	Urban Sector							
	% expenditure on		per capita per day intake of			per consumer unit per day intake of		
	Food	Cereals	Calorie (Kcal)	Protein (gm)	Fat (gm)	Calorie (Kcal)	Protein (gm)	Fat (gm)
Andhra Pradesh	41.6	12.2	2000	50.9	43.2	2449	62.4	52.9
Assam	49.5	13.6	2143	55.9	36.8	2593	67.6	44.5
Bihar	51.1	17.2	2190	62.2	40.4	2683	76.1	49.5
Chhatisgarh	39	12.1	2087	53.9	37.2	2550	65.9	45.4
Gujarat	44.9	8	1991	57.3	63.5	2436	70.1	77.7
Haryana	41.4	6.9	2033	60.5	54.4	2487	74	66.6
Jharkhand	46.9	13.4	2458	69.5	53.8	3013	85.2	65.9
Karnataka	43.2	11.1	1944	52.2	43.3	2385	64	53.1
Kerala	40	8.4	1996	56.7	44.9	2534	72	57.1
Madhya Pradesh	38.9	9.8	1954	58.2	43.4	2397	71.4	53.2
Maharashtra	40.4	8.4	1847	52.1	50.1	2261	63.8	61.3
Orissa	49.9	16.8	2139	55.2	28.3	2596	67	34.4
Punjab	37.6	6.4	2150	63.4	61	2614	77	74.2
Rajasthan	41.6	9.6	2116	64	56.4	2586	78.2	69
Tamilnadu	42.7	10.3	1935	49.2	41.1	2394	60.8	50.8
Uttar Pradesh	45	11.4	2124	65.1	46.1	2598	79.7	56.4
West Bengal	43.4	11.3	2011	55.1	39.1	2467	67.6	48
All	42.5	10.1	2020	57	47.5	2475	69.9	58.2
Upper quartile			2139	62.2	53.8	2596	76.1	65.9

Source: GoI (2007c; p. 44).

Table 4.13: Incidence of Calorie Deficiency with reference to Alternative Norms: 2004-05

	Rural sector		Urban sector	
	Incidence of calorie deficiency w.r.t norm (per capita per diem) of		Incidence of calorie deficiency w.r.t norm of	
	2100 kcals	2400 kcals	2030 kcals	2100 kcals
Andhra Pradesh	67.49	89.37	56.65	63.62
Assam	53.58	86.35	39.15	50.57
Bihar	57.50	83.84	27.55	40.31
Gujarat	71.10	93.36	61.29	50.74
Haryana	45.70	62.40	64.72	55.59
Karnataka	81.93	94.21	71.06	64.35
Kerala	67.06	85.34	67.06	60.36
Madhya Pradesh	70.60	90.55	64.52	57.07
Maharashtra	73.60	90.10	84.70	78.37
Orissa	58.02	83.23	48.07	39.04
Punjab	42.68	69.00	48.72	40.50
Rajasthan	47.93	75.92	54.49	49.30
Tamil Nadu	78.77	93.17	73.04	66.15
Uttar Pradesh	47.38	74.62	47.74	39.72
West Bengal	56.08	82.29	65.40	54.73
All India	59.93	85.05	54.87	64.77

Source: Author's (Suryanarayana 2009) estimates (without any normalization for age-gender-activity parameters) based on GoI (2006b & 2007c).

Note: The subsistence norms are from Suryanarayana and Dimitri (2007)

Table 4.14: Morbidity Profile across States

Major state	Rural			Urban		
	PAP	PPC	IMR	PAP	PPC	IMR
Andhra Pradesh	90	36	71	114	47	35
Assam	82	58	73	83	48	38
Bihar	53	32	62	63	30	50
Chhattisgarh	69	38	-	72	31	-
Delhi						
Gujarat	69	29	68	78	29	37
Haryana	95	48	65	87	43	51
Himachal Pradesh	87	26	-	59	19	-
Jammu & Kashmir	70	30	-	78	34	-
Jharkhand	33	21	-	50	21	-
Karnataka	64	32	65	57	20	25
Kerala	255	103	11	240	100	8
Madhya Pradesh	61	32	90	65	36	56
Maharashtra	93	44	52	118	50	34
Orissa	77	49	91	54	30	56
Punjab	136	61	55	107	44	35
Rajasthan	57	23	81	72	27	55
Tamil Nadu	95	54	50	96	49	32
Uttaranchal	52	31	-	65	25	-
Uttar Pradesh	100	55	83	108	55	58
West Bengal	114	56	52	157	62	36
India	88	45	69*	99	44	40*

Notes:

(i) PAP: Number (per 1000) of persons reporting ailment for 2004-05

(ii) PPC: Number (per 1000) of persons reporting commencement of any ailment during the last 15 days for 2004-05

(iii) IMR: Infant mortality rat estimated for 2002 through the Sample Registration Scheme of the Office of the Registrar-General of India

Source: GoI (2006a)

Table 4.15: Correlation Matrix: Rural and Urban Sectors (2004-05)

Rural sector							
Variables	Per capita Calorie intake	Cal. HCR_ 2100	Cal. HCR_ 2400	Food. Avail. Status	PAP	PPC	IMR
Per capita calorie intake	1.00	(-) 0.98 (0.0000)	(-) 0.96 (0.0000)	(-) 0.51 (0.0517)	(-) 0.14	0.09	(-) 0.10
Cal. HCR_ 2100	(-) 0.98 (0.0000)	1.00	0.94 (0.00)	0.50 (0.057)	(-) 0.29	(-) 0.37	(-) 0. 21
Cal. HCR_ 2400	(-) 0.96 (0.0000)	0.94 (0.00)	1.00	0.48 (0.0687)	(-) 0.38	(-) 0.38	(-) 0.10
Food. Avail. Status	(-) 0.51 (0.0517)	0.50 (0.057)	0.48 (0.0687)	1.00	(-) 0.14	0.09	(-) 0.10
Urban Sector							
Variables	Per capita Calorie intake	Cal. HCR_ 2030	Cal. HCR_ 2100	Food. a Avail. Status	PAP	PPC	IMR
Per capita calorie intake	1.00	(-) 0.90 (0.0000)	(-) 0.88 (0.00)	0.39	(-) 0.21	(-) 0.11	0.50 (0.0562)
Cal. HCR_ 2030	(-) 0.90 (0.0000)	1.00	0.88 (0.0000)	(-) 0.35	0.37	0.23	(-) 0.65 (0.0083)
Cal. HCR_ 2100	(-) 0.88 (0.00)	0.88 (0.0000)	1.00	(-) 0.23	0.36	0.22	(-) 0.71 (0.0028)
Food. Avail. Status	0.39	(-) 0.35	(-) 0.23	1.00	(-) 0.18	0.04	(-) 0.19

Notes:

(i) Cal. HCR_2030 denotes percentage of population with per capita calorie intake per diem less than 2030 kcals

(ii) Cal. HCR_2100 denotes percentage of population with per capita calorie intake per diem less than 2100 kcals

(iii) Cal. HCR_2400 denotes percentage of population with per capita calorie intake per diem less than 2400 kcals

(iv) Food availability status refers to percentage number of households reporting adequate food consumption through out the year.

(v) Figures in parentheses are p-values, which are reported only for estimates, which are significant at least at a 10-per cent level.

Source: Author's estimates based on the NSS data (Suryanarayana 2009).

Table 4.16: Average per capita intake of calorie, protein and fat per diem over NSS rounds, by major states: Rural sector

State	Per capita per diem intake of														
	Calorie (Kcal)					Protein (gm)					Fat (gm)				
	27th round	38 th round	50th round	55th round	61st round	27th round	38 th round	50th round	55th round	61st round	27th round	38 th round	50th round	55th round	61st round
	(1972-1973)	(1983)	(1993-1994)	(1999-2000)	(2004-2005)	(1972-1973)	(1983)	(1993-1994)	(1999-2000)	(2004-2005)	(1972-1973)	(1983)	(1993-1994)	(1999-2000)	(2004-2005)
Rural															
Andhra Pradesh	2103	2204	2052	2021	1995	53.0	56.0	50.8	49.4	49.8	21.0	24.0	27.2	29.5	33.5
Assam	2074	2056	1983	1915	2067	53.0	52.0	49.5	47.7	52.7	15.0	18.0	21.0	22.3	26.7
Bihar	2225	2189	2115	2121	2049	65.0	65.0	60.2	58.7	57.8	17.0	20.0	23.0	26.5	28.4
Gujarat	2142	2113	1994	1986	1923	58.0	59.0	55.6	54.2	53.3	40.0	44.0	47.4	53.8	50.9
Haryana	3215	2554	2491	2455	2226	90.0	78.0	78.4	75.3	69.6	47.0	47.0	53.6	59.1	55.4
Karnataka	2202	2260	2073	2028	1845	57.0	60.0	55.1	54.2	48.8	23.0	26.0	28.6	36.6	33.9
Kerala	1559	1884	1965	1982	2014	38.0	47.0	50.8	52.4	55.4	19.0	32.0	32.7	38.8	40.8
Madhya Pradesh	2423	2323	2164	2062	1929	68.0	68.0	63.0	58.2	58.8	21.0	25.0	28.3	31.3	35.1
Maharashtra	1895	2144	1939	2012	1933	54.0	62.0	54.8	56.5	55.7	24.0	30.0	33.5	39.7	41.5
Orissa	1995	2103	2199	2119	2023	49.0	51.0	52.7	49.9	48.3	8.0	13.0	14.8	16.3	17.8
Punjab	3493	2677	2418	2381	2240	85.0	79.0	74.7	71.7	66.7	50.0	52.0	59.8	58.7	58.7
Rajasthan	2730	2433	2470	2425	2180	84.0	75.0	79.4	76.9	69.6	46.0	42.0	52.8	53.5	50.9
Tamil Nadu	1955	1861	1884	1826	1842	49.0	47.0	46.8	44.9	44.9	18.0	22.0	24.7	29.5	29.6
Uttar Pradesh	2575	2399	2307	2327	2200	76.0	73.0	70.4	69.7	65.9	28.0	29.0	35.5	37.6	37.5
West Bengal	1921	2027	2211	2095	2070	50.0	52.0	54.8	51.6	52.0	13.0	17.0	21.4	24.2	26.5
all-India	2266	2221	2153	2149	2047	62.0	62.0	60.2	59.1	57.0	24.0	27.0	31.4	36.1	35.5

Source: GoI (2007c, p. 54)

Table 4.17: Average per capita intake of calorie, protein and fat per diem over NSS rounds, by major states: Urban sector

State	Per capita per diem intake of														
	Calorie (Kcal)					Protein (gm)					Fat (gm)				
	27th round	38 th round	50th round	55th round	61st round	27th round	38 th round	50th round	55th round	61st round	27th round	38 th round	50th round	55th round	61st round
	(1972-1973)	(1983)	(1993-1994)	(1999-2000)	(2004-2005)	(1972-1973)	(1983)	(1993-1994)	(1999-2000)	(2004-2005)	(1972-1973)	(1983)	(1993-1994)	(1999-2000)	(2004-2005)
Urban															
Andhra Pradesh	2143	2009	1992	2052	2000	51.0	50.0	49.6	50.8	50.9	31.0	32.0	34.9	41.5	43.2
Assam	2135	2043	2108	2174	2143	56.0	52.0	53.5	56.5	55.9	25.0	25.0	30.8	38.7	36.8
Bihar	2167	2131	2188	2171	2190	61.0	61.0	61.4	61.0	62.2	25.0	26.0	32.7	34.2	40.4
Gujarat	2172	2000	2027	2058	1991	57.0	55.0	54.9	54.7	57.3	58.0	53.0	57.9	67.0	63.5
Haryana	2404	2242	2140	2172	2033	67.0	67.0	63.6	62.5	60.5	42.0	49.0	49.4	56.3	54.4
Karnataka	1925	2124	2026	2046	1944	46.0	55.0	53.1	53.5	52.2	32.0	36.0	37.6	45.1	43.3
Kerala	1723	2049	1966	1995	1996	44.0	51.0	52.4	55.2	56.7	27.0	38.0	37.0	42.9	44.9
Madhya Pradesh	2229	2137	2082	2132	1954	61.0	62.0	59.8	60.6	58.2	34.0	36.0	40.3	43.5	43.4
Maharashtra	1971	2028	1989	2039	1847	55.0	56.0	55.5	55.9	52.1	41.0	45.0	47.9	52.6	50.1
Orissa	2276	2219	2261	2298	2139	55.0	56.0	57.2	57.8	55.2	23.0	24.0	28.1	27.4	28.3
Punjab	2783	2100	2089	2197	2150	70.0	63.0	61.8	64.8	63.4	52.0	49.0	53.7	57.9	61.0
Rajasthan	2357	2255	2184	2335	2116	70.0	69.0	66.5	70.4	64.0	47.0	47.0	51.6	61.5	56.4
Tamil Nadu	1841	2140	1922	2030	1935	44.0	45.0	48.7	51.7	49.2	23.0	29.0	33.9	43.2	41.1
Uttar Pradesh	2161	2043	2114	2131	2124	62.0	62.0	63.2	62.0	65.1	35.0	34.0	41.2	45.5	46.1
West Bengal	2080	2048	2131	2134	2011	58.0	55.0	56.6	55.5	55.1	31.0	31.0	34.2	40.2	39.1
all-India	2107	2089	2071	2156	2020	56.0	57.0	57.2	58.5	57.0	36.0	37.0	42.0	49.6	47.5

Source: GoI (2007c, p. 54)

Table 4.18: Estimates of Energy Intake: Rural & Urban Andhra Pradesh (Kilocalories per capita per diem)

Decile group	Rural AP						Urban AP					
	1972/73	1983	1993/94	1999/2000	2004/05	Change (%)**	1972/73	1983	1993/94	1999/2000	2004/05	Change (%)**
0-10	1133	1430	1394	1377	1387	22.42	1289	1317	1410	1558	1489	15.52
10-20	1467	1738	1669	1666	1653	12.68	1733	1605	1639	1803	1612	-6.98
20-30	1692	1905	1775	1780	1764	4.26	1790	1759	1704	1873	1723	-3.74
30-40	1828	1967	1872	1858	1844	0.88	1801	1835	1805	1975	1789	-0.67
40-50	1907	2127	1921	1944	1934	1.42	2008	1855	1912	2033	1874	-6.67
50-60	2204	2237	2090	2032	2027	-8.03	2113	2000	2016	2097	2028	-4.02
60-70	2252	2289	2170	2133	2089	-7.24	2302	2143	2128	2250	2175	-5.52
70-80	2473	2460	2314	2275	2166	-12.41	2385	2231	2248	2357	2295	-3.77
80-90	2702	2697	2439	2411	2299	-14.91	2647	2446	2377	2509	2346	-11.37
90-100	3372	3191	2877	2734	2787	-17.35	3361	2898	2681	3105	2669	-20.59
All	2103	2204	2052	2021	1995	-5.14	2143	2009	1992	2156	2000	-6.67

** Changes between 1972/73 and 2004/05.

Source: Tables from 4.18 to 4.32 are author's estimates based on GoI (1979a, 1983, 1986b, 1989b, 1996a,b, 2001a,c, 2006b & 2007c)

Table 4.19: Estimates of Energy Intake: Rural & Urban Assam (Kilocalories per capita per diem)

Decile group	Rural Assam						Urban Assam					
	1972/73	1983	1993/94	1999/2000	2004/05	Change (%)**	1972/73	1983	1993/94	1999/2000	2004/05	Change (%)**
0-10	1410	1430	1463	1312	1573	11.56	1605	1310	1576	1624	1698	5.79
^10-20	1696	1694	1654	1542	1783	5.13	1779	1637	1762	1861	1781	0.11
20-30	1769	1787	1762	1720	1832	3.56	1775	1782	1866	1857	1912	7.72
30-40	1985	1869	1881	1760	1933	-2.62	2021	1858	1927	2314	1988	-1.63
40-50	2048	2001	1934	1837	1996	-2.54	2082	2045	2063	2184	2057	-1.20
50-60	2048	2128	2000	1962	2129	3.96	2107	2105	2132	2129	2113	0.28
60-70	2189	2128	2139	2086	2228	1.78	2170	2216	2162	2545	2137	-1.52
70-80	2245	2293	2207	2126	2302	2.54	2258	2216	2267	2550	2397	6.16
80-90	2464	2473	2289	2168	2389	-3.04	2572	2490	2463	2977	2601	1.13
90-100	2886	2757	2501	2637	2506	-13.17	2981	2770	2862	1699	2745	-7.92
All	2074	2056	1983	1915	2067	-0.34	2135	2043	2108	2174	2143	0.37

** Changes between 1972/73 and 2004/05.

Table 4.20: Estimates of Energy Intake: Rural & Urban Bihar (Kilocalories per capita per diem)

Decile group	Rural Bihar						Urban Bihar					
	1972/73	1983	1993/94	1999/2000	2004/05	Change (%)**	1972/73	1983	1993/94	1999/2000	2004/05	Change (%)**
0-10	1185	1284	1375	1467	1499	26.50	1361	1394	1473	1444	1604	17.85
^10-20	1486	1606	1676	1738	1701	14.47	1681	1701	1819	1689	1756	4.46
20-30	1700	1788	1788	1909	1771	4.18	1851	1788	1901	1858	1901	2.70
30-40	1897	1945	1968	1872	1912	0.79	1942	1865	2775	1952	2018	3.91
40-50	2021	2031	2030	2018	1976	-2.23	2065	2042	2492	2198	2168	4.99
50-60	2186	2212	2152	2104	2080	-4.85	2097	2118	2178	2236	2213	5.53
60-70	2394	2358	2269	2209	2177	-9.06	2337	2251	2314	2289	2270	-2.87
70-80	2619	2539	2420	2320	2268	-13.40	2397	2513	2484	2442	2198	-8.30
80-90	2947	2753	2568	2671	2435	-17.37	2671	2620	2584	2547	2295	-14.08
90-100	3814	3374	2904	2901	2670	-29.99	3267	3020	1861	3055	3477	6.43
All	2225	2189	2115	2121	2049	-7.91	2167	2131	2188	2171	2190	1.06

** Changes between 1972/73 and 2004/05.

Table 4.21: Estimates of Energy Intake: Rural & Urban Gujarat (Kilocalories per capita per diem)

Decile group	Rural Gujarat						Urban Gujarat					
	1972/73	1983	1993/94	1999/2000	2004/05	Change (%)**	1972/73	1983	1993/94	1999/2000	2004/05	Change (%)**
0-10	1255	1387	1339	1400	1381	10.04	1338	1362	1395	1461	1406	5.08
^10-20	1571	1678	1602	1674	1594	1.46	1596	1527	1599	1635	1686	5.64
20-30	1688	1755	1702	1727	1746	3.44	1677	1798	1749	1800	1832	9.24
30-40	1871	1868	1795	1830	1763	-5.77	1819	1798	1848	1887	1953	7.37
40-50	1901	2043	1881	1884	1829	-3.79	1894	1970	2005	1986	1962	3.59
50-60	2106	2127	1970	1965	2024	-3.89	2001	2020	2090	2134	2098	4.85
60-70	2191	2248	2165	2057	2062	-5.89	2529	2195	2171	2286	2085	-17.56
70-80	2628	2433	2287	2221	2098	-20.17	2529	2233	2256	2395	2254	-10.87
80-90	2789	2718	2399	2387	2223	-20.29	3046	2444	2448	2402	2325	-23.67
90-100	3422	2874	2801	2716	2511	-26.62	3291	2653	2709	2594	2308	-29.87
All	2142	2113	1994	1986	1923	-10.22	2172	2000	2027	2058	1991	-8.33

** Changes between 1972/73 and 2004/05.

Table 4.22: Estimates of Energy Intake: Rural & Urban Haryana (Kilocalories per capita per diem)

Decile group	Rural Haryana						Urban Haryana					
	1972/73	1983	1993/94	1999/2000	2004/05	Change (%)**	1972/73	1983	1993/94	1999/2000	2004/05	Change (%)**
0-10	1906	1649	1532	1359	1538	-19.31	1575	1280	1488	874	1374	-12.76
^10-20	2393	1985	1847	1739	1743	-27.16	1650	1848	1751	1797	1701	3.09
20-30	2555	2131	1959	2013	1890	-26.03	1646	1916	1962	1959	1770	7.53
30-40	2718	2243	2127	2203	1983	-27.04	2147	1987	2055	1934	1842	-14.21
40-50	2933	2340	2280	2362	2122	-27.65	2202	2121	2069	2057	2005	-8.95
50-60	3089	2511	2376	2618	2308	-25.28	2427	2281	2136	2160	2007	-17.31
60-70	3375	2741	2821	2628	2400	-28.89	2427	2334	2241	2469	2050	-15.53
70-80	3711	2909	2857	2676	2728	-26.49	2679	2655	2385	2440	2218	-17.21
80-90	4310	3354	3266	3185	2781	-35.48	3132	2911	2559	2349	2423	-22.64
90-100	5160	3677	3845	3767	2768	-46.36	4155	3087	2754	3680	2940	-29.24
All	3215	2554	2491	2455	2226	-30.76	2404	2242	2140	2172	2033	-15.43

** Changes between 1972/73 and 2004/05.

Table 4.23: Estimates of Energy Intake: Rural & Urban Karnataka (Kilocalories per capita per diem)

Decile group	Rural Karnataka						Urban Karnataka					
	1972/73	1983	1993/94	1999/2000	2004/05	Change (%)**	1972/73	1983	1993/94	1999/2000	2004/05	Change (%)**
0-10	1153	1262	1370	1371	1390	20.56	1339	1306	1309	1438	1446	7.99
10-20	1573	1571	1598	1566	1505	-4.32	1412	1524	1622	1614	1600	13.31
20-30	1793	1808	1774	1669	1654	-7.75	1549	1701	1731	1795	1698	9.62
30-40	1891	1952	1866	1790	1717	-9.20	1669	1802	1817	1914	1768	5.93
40-50	2092	2108	1973	2006	1772	-15.30	1769	1948	1990	1988	1867	5.54
50-60	2173	2368	2111	2124	1836	-15.51	1854	2173	2070	2088	1924	3.78
60-70	2491	2403	2246	2166	1923	-22.80	2146	2459	2217	2183	2061	-3.96
70-80	2554	2548	2409	2264	2013	-21.18	2252	2482	2327	2316	2137	-5.11
80-90	2819	2897	2557	2467	2191	-22.28	2447	2645	2442	2440	2345	-4.17
90-100	3480	3682	2827	2857	2448	-29.66	2814	3199	2735	2684	2593	-7.85
All	2202	2260	2073	2028	1845	-16.21	1925	2124	2026	2046	1944	0.99

** Changes between 1972/73 and 2004/05.

Table 4.24: Estimates of Energy Intake: Rural & Urban Kerala (Kilocalories per capita per diem)

Decile group	Rural Kerala						Urban Kerala					
	1972/73	1983	1993/94	1999/2000	2004/05	Change (%)**	1972/73	1983	1993/94	1999/2000	2004/05	Change (%)**
0-10	782	1032	1168	1150	1225	56.65	791	1086	1234	1241	1278	61.57
10-20	1000	1302	1493	1526	1550	55.00	1044	1319	1483	1506	1462	40.04
20-30	1138	1419	1620	1651	1705	49.82	1181	1415	1704	1714	1621	37.26
30-40	1264	1552	1746	1779	1782	40.98	1323	1673	1766	1822	1779	34.47
40-50	1347	1717	1897	1911	1889	40.24	1599	1788	1881	1970	1940	21.33
50-60	1569	1778	1989	2053	1939	23.58	1665	1895	1988	1991	2018	21.20
60-70	1631	1919	2172	2132	2130	30.59	1829	2202	2078	2139	2209	20.78
70-80	1798	2194	2231	2257	2408	33.93	2057	2308	2188	2304	2242	8.99
80-90	2158	2407	2533	2618	2758	27.80	2496	2752	2396	2454	2441	-2.20
90-100	2903	3121	2801	2742	2754	-5.13	3245	4054	2942	2810	2971	-8.44
All	1559	1844	1965	1982	2014	29.19	1723	2049	1966	1995	1996	15.84

** Changes between 1972/73 and 2004/05.

Table 4.25: Estimates of Energy Intake: Rural & Urban Madhya Pradesh (Kilocalories per capita per diem)

Decile group	Rural Madhya Pradesh						Urban Madhya Pradesh					
	1972/73	1983	1993/94	1999/2000	2004/05	Change (%)**	1972/73	1983	1993/94	1999/2000	2004/05	Change (%)**
0-10	1377	1495	1454	1454	1436	4.28	1495	1579	1526	1492	1405	-6.02
10-20	1787	1749	1700	1617	1596	-10.69	1743	1762	1721	1688	1683	-3.44
20-30	1966	1918	1851	1757	1691	-13.99	1884	1855	1839	1821	1718	-8.81
30-40	2110	2066	1947	1838	1767	-16.26	1941	1975	1913	1961	1777	-8.45
40-50	2213	2146	2075	1983	1841	-16.81	2078	2027	2001	1979	1907	-8.23
50-60	2430	2290	2194	2269	1872	-22.96	2152	2092	2129	2059	1959	-8.97
60-70	2514	2431	2303	1979	1956	-22.20	2375	2183	2177	2200	2054	-13.52
70-80	2823	2567	2457	2319	2225	-21.18	2507	2468	2325	2341	2237	-10.77
80-90	3071	2855	2631	2478	2356	-23.28	2671	2532	2496	2936	2275	-14.83
90-100	3939	3712	3028	2925	2552	-35.21	3444	2896	2692	2843	2424	-29.62
All	2423	2323	2164	2062	1929	-20.39	2229	2137	2082	2132	1944	-12.79

** Changes between 1972/73 and 2004/05.

Table 4.26: Estimates of Energy Intake: Rural & Urban Maharashtra (Kilocalories per capita per diem)

Decile group	Rural Maharashtra						Urban Maharashtra					
	1972/73	1983	1993/94	1999/2000	2004/05	Change (%)**	1972/73	1983	1993/94	1999/2000	2004/05	Change (%)**
0-10	1063	1540	1334	1466	1428	34.34	1197.	1400	1472	1502	1430	19.47
10-20	1420	1737	1532	1627	1550	9.15	1513.	1593	1645	1790	1588	4.96
20-30	1588	1851	1662	1786	1634	2.90	1676	1720	1765	1789	1663	-0.78
30-40	1695	1920	1765	1862	1748	3.13	1727	1789	1851	1972	1747	1.16
40-50	1819	2064	1854	1982	1826	0.38	1778	1886	1880	1951	1781	0.17
50-60	1959	2156	1921	2090	1903	-2.86	1919	2000	1949	1997	1833	-4.48
60-70	2056.	2230	2028	2146	2082	1.26	1994	2049	2089	2161	1935	-2.96
70-80	2152	2338	2111	2168	2400	11.52	2182	2218	2227	2259	2008	-7.97
80-90	2371	2544	2300	2366	2283	-3.71	2609	2696	2380	2374	2096	-19.66
90-100	2826	3059.	2882	2627	2476	-12.38	3115	2930	2632	2596	2389	-23.31
All	1895	2144	1939	2012	1933	2.01	1971.	2028	1989	2039	1847	-6.29

** Changes between 1972/73 and 2004/05.

Table 4.27: Estimates of Energy Intake: Rural & Urban Orissa (Kilocalories per capita per diem)

Decile group	Rural Orissa						Urban Orissa					
	1972/73	1983	1993/94	1999/2000	2004/05	Change (%)**	1972/73	1983	1993/94	1999/2000	2004/05	Change (%)**
0-10	914	1329	1446	1545	1481	62.04	1378	1354	1558	1739	1583	14.88
^10-20	1262	1584	1773	1632	1481	17.35	1662	1717	1932	1917	1720	3.49
20-30	1489	1760	1955	1823	1714	15.11	1831	1945	2022	2005	1919	4.81
30-40	1728	1933	2027	1911	1902	10.07	1917	2074	2135	2257	1964	2.45
40-50	1867	2008	2125	2111	1988	6.48	2121	2110	2207	2418	2080	-1.93
50-60	2028	2092	2291	2165	2073	2.22	2221	2241	2282	2291	2139	-3.69
60-70	2244	2251	2343	2294	2154	-4.01	2533	2339	2384	2407	2210	-12.75
70-80	2407	2321	2488	2348	2279	-5.32	2620	2437	2528	2481	2376	-9.31
80-90	2651	2526	2612	2539	2459	-7.24	2948	2668	2693	2538	2651	-10.07
90-100	3359	3226	2931	2824	2699	-19.65	3530	3305	2869	2928	2747	-22.18
All	1995	2103	2199	2119	2023	1.40	2276	2219	2261	2298	2139	-6.02

** Changes between 1972/73 and 2004/05.

Table 4.28: Estimates of Energy Intake: Rural & Urban Punjab (Kilocalories per capita per diem)

Decile group	Rural Punjab						Urban Punjab					
	1972/73	1983	1993/94	1999/2000	2004/05	Change (%)**	1972/73	1983	1993/94	1999/2000	2004/05	Change (%)**
0-10	1971	1524	1632	1371	1562	-20.75	1684	1255	1496	1481	1547	-8.14
^10-20	2552	1985	1858	1857	1799	-29.51	1977	1501	1672	1748	1767	-10.62
20-30	2780	2153	2041	1966	1911	-31.26	2152	1704	1825	1893	1911	-11.20
30-40	2905	2266	2235	2111	2009	-30.84	2191	1807	1918	2096	1973	-9.95
40-50	3293	2537	2337	2233	2092	-36.47	2535	1946	2023	2127	2021	-20.28
50-60	3333	2728	2469	2361	2271	-31.86	2535	2229	2131	2208	2162	-14.71
60-70	3736	2842	2469	2465	2320	-37.90	2836	2261	2188	2280	2248	-20.73
70-80	4031	3083	2723	2668	2545	-36.86	2981	2384	2368	2393	2434	-18.35
80-90	4614	3321	3140	3245	2848	-38.27	3443	2960	2498	2608	2549	-25.97
90-100	5715	4331	3277	3532	3044	-46.74	5496	2954	2771	3137	2888	-47.45
All	3493	2677	2418	2381	2240	-35.87	2783	2100	2089	2197	2150	-22.75

** Changes between 1972/73 and 2004/05.

Table 4.29: Estimates of Energy Intake: Rural & Urban Rajasthan (Kilocalories per capita per diem)

Decile group	Rural Rajasthan						Urban Rajasthan					
	1972/73	1983	1993/94	1999/2000	2004/05	Change (%)**	1972/73	1983	1993/94	1999/2000	2004/05	Change (%)**
0-10	1556	1612	1675	1715	1618	3.98	1589	1470	1572	1635	1460	-8.12
^10-20	1952	1910	1886	1952	1806	-7.48	1823	1815	1807	1917	1697	-6.91
20-30	2183	2078	2090	2073	1907	-12.64	1983	2001	1954	2030	1854	-6.51
30-40	2399	2154	2243	2217	1995	-16.84	2009	2052	2065	2098	1940	-3.43
40-50	2497	2227	2389	2316	2042	-18.22	2167	2121	2190	2181	2029	-6.37
50-60	2638	2387	2539	2433	2160	-18.12	2200	2188	2255	2296	2085	-5.23
60-70	2703	2498	2629	2543	2274	-15.87	2524	2368	2301	2418	2232	-11.57
70-80	3103	2709	2895	2699	2400	-22.66	2639	2449	2439	2547	2276	-13.76
80-90	3412	2880	2992	2778	2599	-23.83	2882	2804	2566	3118	2392	-17.00
90-100	4857	3876	3363	3524	3000	-38.23	3753	3283	2690	3110	3196	-14.84
All	2730	2433	2470	2425	2180	-20.15	2357	2255	2184	2335	2116	-10.22

** Changes between 1972/73 and 2004/05.

Table 4.30: Estimates of Energy Intake: Rural & Urban Tamil Nadu (Kilocalories per capita per diem)

Decile group	Rural Tamil Nadu						Urban Tamil Nadu					
	1972/73	1983	1993/94	1999/2000	2004/05	Change (%)**	1972/73	1983	1993/94	1999/2000	2004/05	Change (%)**
0-10	1109	980	1160	1197	1308	17.94	1125	1035	1166	1350	1425	26.67
^10-20	1397	1280	1477	1405	1464	4.80	1366	1301	1533	1542	1601	17.20
20-30	1593	1423	1564	1552	1581	-0.75	1461	1489	1608	1676	1697	16.15
30-40	1726	1610	1687	1633	1700	-1.51	1644	1589	1742	1796	1750	6.45
40-50	1856	1699	1814	1735	1798	-3.13	1656	1618	1826	1891	1879	13.47
50-60	2003	1821	1863	1847	1861	-7.09	1804	1867	1943	2017	1926	6.76
60-70	2080	1785	2083	1964	1989	-4.38	1902	1979	2060	2175	2017	6.05
70-80	2295	2207	2061	2092	2062	-10.15	2146	2077	2156	2282	2131	-0.70
80-90	2494	2366	2391	2220	2153	-13.67	2304	2381	2356	2515	2300	-0.17
90-100	2998	3440	2742	2615	2505	-16.44	3002	6065	2829	3055	2623	-12.62
All	1955	1861	1884	1826	1842	-5.78	1841	2140	1922	2030	1935	5.11

** Changes between 1972/73 and 2004/05.

Table 4.31: Estimates of Energy Intake: Rural & Urban Uttar Pradesh (Kilocalories per capita per diem)

Decile group	Rural UP						Urban UP					
	1972/73	1983	1993/94	1999/2000	2004/05	Change (%)**	1972/73	1983	1993/94	1999/2000	2004/05	Change (%)**
0-10	1635	1488	1613	1624	1552	-5.08	1413	1399	1483	1421	1498	6.02
^10-20	1929	1807	1839	1893	1778	-7.83	1658	1614	1746	1730	1726	4.10
20-30	2134	1957	1946	1982	1907	-10.64	1744	1727	1863	1796	1793	2.81
30-40	2191	2150	2058	2077	1979	-9.68	1982	1849	1975	1906	2154	8.68
40-50	2429	2230	2194	2181	2071	-14.74	2021	1955	2020	1972	2147	6.23
50-60	2429	2390	2299	2311	2162	-10.99	2167	1992	2034	2098	2091	-3.51
60-70	2805	2586	2424	2431	2274	-18.93	2210	2155	2199	2285	2250	1.81
70-80	2866	2689	2624	2584	2464	-14.03	2388	2272	2314	2423	2254	-5.61
80-90	3220	2981	2800	2821	2589	-19.60	2579	2427	2513	2732	2520	-2.29
90-100	4111	3712	3274	3365	3224	-21.58	3449	3037	2993	2948	2807	-18.61
All	2575	2399	2307	2327	2200	-14.56	2161	2043	2114	2131	2124	-1.71

** Changes between 1972/73 and 2004/05.

Table 4.32: Estimates of Energy Intake: Rural & Urban West Bengal (Kilocalories per capita per diem)

Decile group	Rural West Bengal						Urban West Bengal					
	1972/73	1983	1993/94	1999/2000	2004/05	Change (%)**	1972/73	1983	1993/94	1999/2000	2004/05	Change (%)**
0-10	863	957	1556.18	1449	1516	75.67	1221	1275	1530	1548	1516	24.16
10-20	1191	1403	1791.90	1645	1681	41.14	1491	1593	1782	1828	1735	16.36
20-30	1443	1610	1928.00	1848	1814	25.71	1715	1723	1873	1951	1822	6.24
30-40	1575	1779	2041.62	1935	1912	21.40	1826	1871	1987	1918	1896	3.83
40-50	1783	1918	2126.45	1992	1988	11.50	1907	1988	2054	2092	1976	3.62
50-60	1954	2056	2225.00	2114	2085	6.70	2092	2105	2171	2068	2036	-2.68
60-70	2049	2184	2335.67	2251	2171	5.95	2148	2195	2287	2220	2046	-4.75
70-80	2325	2305	2457.24	2351	2302	-0.99	2510	2266	2343	2285	2227	-11.27
80-90	2679	2693	2597.52	2500	2446	-8.70	2674	2455	2477	2424	2326	-13.01
90-100	3349	3364	3050.42	2865	2786	-16.81	3215	3008	2806	3006	2530	-21.31
All	1921	2027	2211.00	2095	2070	7.76	2080	2048	2131	2134	2011	-3.32

** Changes between 1972/73 and 2004/05.

Annexure I

Terms of Reference for Prof. M.H. Suryanarayana of Indira Gandhi Institute of Development Research, for Preparing a Background Paper Issues relating to Nutrition and Poverty for Expert Group to Review the Methodology for Estimation of Poverty

Prepare a paper and submit it to Planning Commission, not later than 30th of April, 2009. This paper will:

- Prepare a concept paper (including literature survey) on issues relating to nutrition (calorie, fat, protein and other nutrients) intake and its link with income/expenditure poverty;
- Based on the NSSO Rounds, study the relationship between consumption expenditure and calorie, fat, protein and other nutrients intake;
- Estimate expenditure (food as well as total) by socioeconomic categories like consumption quintiles keeping in view the calorie, fat, protein and other nutrients intake;
- Suggest value of minimum desirable expenditure that can be incorporated in the income/expenditure poverty line for meeting the required calorie, fat, protein and other nutrients intake along with the basis for arriving at the said norm. The suggested approach should be implementable and updatable both at national and state levels.