

HUNGER AND UNDER-NUTRITION IN POST-LIBERALISATION RURAL INDIA - A REVIEW

**DISSERTATION SUBMITTED TO THE JAWAHARLAL NEHRU UNIVERSITY
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE AWARD OF THE DEGREE OF
MASTER OF PHILOSOPHY**

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2008



DATE: 28/07/2008

CERTIFICATE

This dissertation entitled “HUNGER AND UNDER-NUTRITION IN POST-LIBERALISATION RURAL INDIA - A REVIEW” is submitted in partial fulfillment of six credits for the award of the Degree of **MASTER OF PHILOSOPHY (M. Phil.)** of this University. This dissertation has not been submitted for the award of any other degree of this university or any other university and is my original work.



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We recommend that this dissertation be placed before the examiners for evaluation.



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**To
The People who are fighting
hunger and injustice in the World**

ACKNOWLEDGEMENT

I thank my teacher and guide Prof. Mohan Rao for his guidance. I will remain grateful for the immense learning during this period of work.

I take this opportunity to thank the faculty members and students of CSM-CH, who helped shaping my perspective and made this work possible.

Special thanks to Dilip and Venkat, who spent their invaluable time discussing and helping me out in difficult arguments. Lekha, Yasir, Minakshi and Ramanik read the work and helped in bringing clarity in writing. Mr. Durai and Mr. Dinesh, were helpful in tracing out important studies. I thank them all for giving their time.

I am grateful to Mr. Harsh Mander, Mr. R. Kumaran, Sundar, Alvino, Ajay, Saroj Dash, Jaideep, Chitra Armugam, Abdul Shakeel, Saroj Kumar Dittal, Mr. P.V. Rajagopal, Dr. S.S. Shyamala, Dr. C. Muthuraja, Dr. J. Johnson Sundarajan, Dr. Arul Pragasam, Laxmi, James, Bernard Shah, Charles and many others who were inspiring and shaped my understanding over the years.

In the end, I express the gratitude to the University and UGC for the Central University Fellowship which enabled me to work in peace.

Date: 28 July 2008

M. Kumaran

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Chapter 1

Introduction

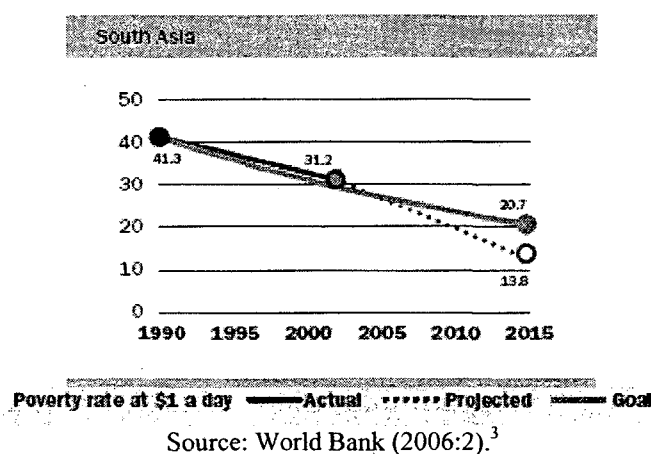
1.1 Background:

After the 1990s, literature on international poverty and hunger is drawing important ‘poverty reduction’ lessons from India. These studies mainly linked with international financial institutions, are convinced that ‘Indian Experience’ was turning out to be a success.

For instance, The World Bank’s 2006 report, while reviewing the progress in reduction in hunger and poverty in South Asia, comments that “...there has been progress. Extreme poverty in developing countries fell from 28 per cent in 1990 to 19 per cent in 2002” (World Bank 2006:2).¹

Giving a prominent role to India, in leading the poverty reduction, the report notes “In Sub-Saharan Africa the number of poor people has increased by a third, but accelerating growth in India has put South Asia on track to meet the goal” (World Bank 2006:2)² set by the United Nations under Millennium development goals.

Figure 1.1: Poverty reduction in South Asia since the 1990s



Based on this poverty reduction experience, the report promised hope for the poor in these countries, given that the chosen ‘development strategy’, prescribed by the

¹ World Bank (2006), ‘World Development Indicators 2006’, Washington, D.C.

² *ibid.*

³ *ibid.*

international financial institutions, remains in a similar track.

If economic growth rates in developing countries are sustained, global poverty will fall to 10 per cent by 2015— a striking success (World Bank 2006:2).⁴

The post-1990s Indian experience was highlighted and differentiated from earlier eras and the credit was given to ‘market liberalization policies’ and individuals like Mr. Manmohan Singh, were named for making bold choices for India, by studies such as Sachs (2005).⁵

India passed through four phases of growth in the twentieth century: low growth under the British Raj (1900-47), low growth under Nehru's License Raj (1947-70), faster growth with the advent of the Green Revolution (1970-91), and sustained high growth with market liberalization in the 1990s (1991-2000) (Sachs 2005:180).⁶

India, along with China, now seen as ‘awakened giants’, became successful replicable experiments for demonstrating the pro-poor impact of increasing growth rate led by pro-market policies. It was shown that growth rates of GDP and poverty rates in these countries were moving in opposite direction (Figure 1.2) (Chaudhuri et al 2007: Figure 6).⁷

Studies noted that “As a result of better and more market-oriented economic policies through much of the developing world -but especially in China and India- the number of poor people worldwide has fallen by 200 million or more since 1980, even as the world’s population has risen by about 1.6 billion.” (Stern 2004:15).⁸

Pro-market advocacy groups were glad to find a ‘ray of hope’ for the poor and deprived masses, within the neo-liberal frame of ‘development’ and they took up the task to educate others with such facts that countries like India which followed a pro-market approach, experienced a rate of reduction in poverty which was higher than increase in

⁴ *ibid.*

⁵ Sachs, Jeffrey D. (2005), ‘*The End of Poverty: Economic Possibilities for Our Time*’, Penguin Press, New York.

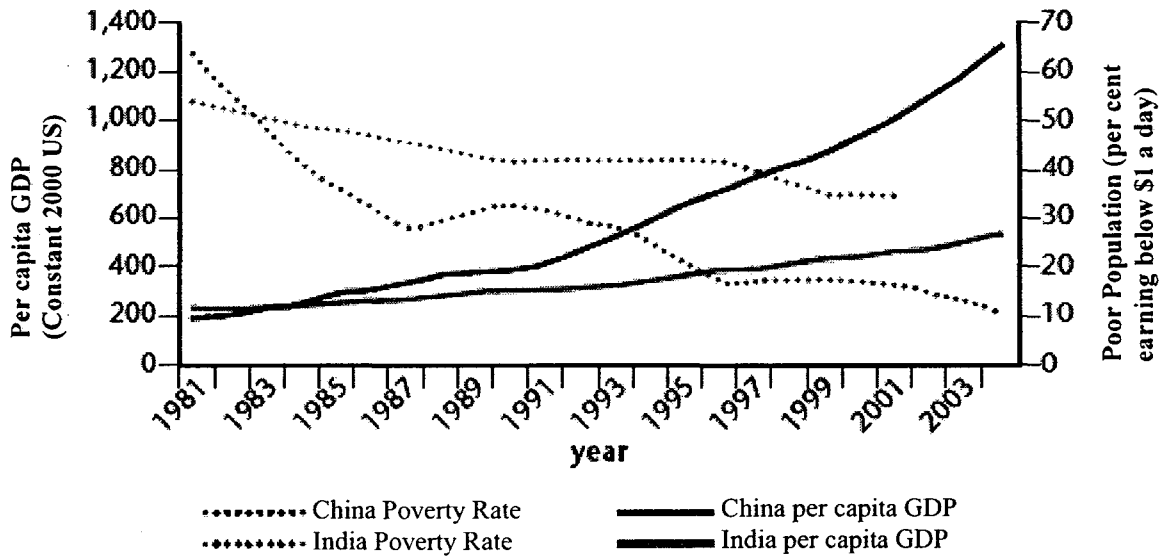
⁶ *ibid.*

⁷ Chaudhuri, Shubham and Martin Ravallion (2007), ‘Partially Awakened Giants: Uneven Growth in China and India’ in Winters, L. Alan and Shahid Yusuf (eds), ‘*Dancing with Giants: China, India, and the Global Economy*’ World Bank and the Institute of Policy Studies, Singapore, pp. 175-209.

⁸ Stern, Nicholas (2004), ‘Scaling Up: The Challenge of Monterrey’ in Tungodden, Bertil, Nicholas Stern, and Ivar Kolstad (eds), ‘*Annual World Bank Conference on Development Economics: Toward Pro-Poor Policies -Aid, Institutions, and Globalization*’ World Bank and Oxford University Press, New York, pp.13-41.

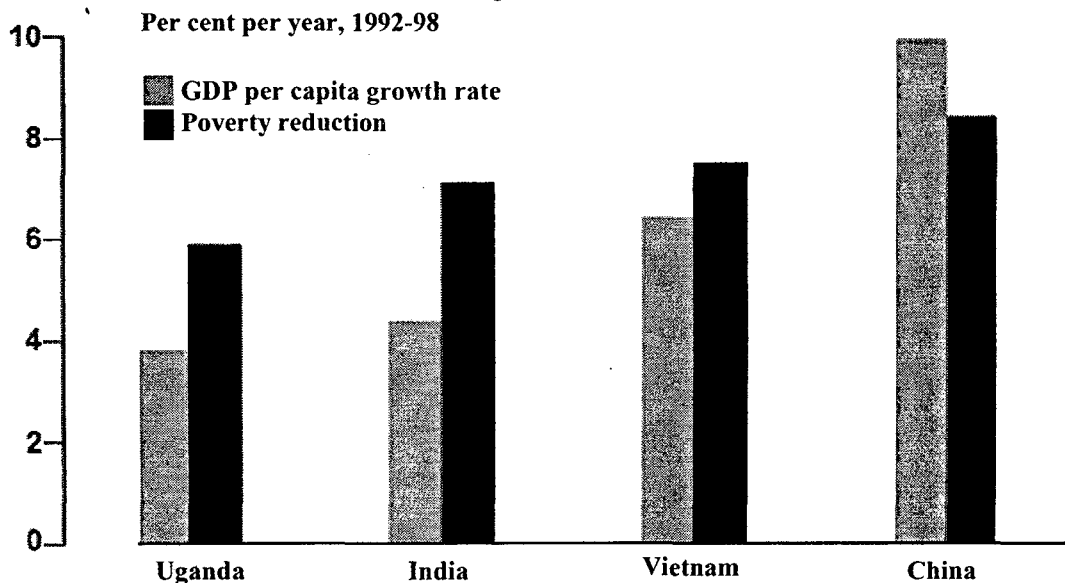
growth rate of GDP. This meant that the benefit of growth was trickling down to the poor (Figure 1.3) (ICC 2004).⁹

Figure: 1.2 Growth and Poverty Reduction, 1981–2003



Source: Chaudhuri et al (2007: Figure 6).¹⁰

Figure 1.3: Poverty reduction in Uganda, India, Vietnam, and China closely related to growth



Source: ICC (2004:19)¹¹ (Original source World Bank (2002), 'Globalization, growth and poverty', Washington DC.).

⁹ *ibid.*

¹⁰ Chaudhuri, Shubham and Martin Ravallion (2007), *op cit.*

¹¹ ICC (2004), 'Standing Up for the Global Economy: Key Facts, Figures and Arguments in Support of Globalization', International Chamber of Commerce, France.

In fact, standard confident prescription for seeing the 'end of poverty' was given to different countries.

In short, we need a strategy for scaling up the investments that will end poverty, including a system of governance that empowers the poor while holding them accountable. In each low-income country, it is time to design a poverty reduction strategy that can meet this challenge. (Sachs 2005: 243).¹²

Apart from the focus on the impact of growth on reducing poverty, the experiences of direct poverty reduction strategies through targeted schemes in India became an issue for the rigorous research at the international level for studies like Weiss (2005)¹³ and Srivastava, (2005) etc.¹⁴

However, this was all happening when we were seeing confusing and conflicting literature on poverty and hunger in India. On the one hand, there were a number of studies which gave a positive commentary on the trend in poverty and hunger and on the other hand there were also studies which fiercely debated the positive reading of the Indian performance and interpreted the trend in the exact opposite direction. They claimed that access to food had reduced and hunger had increased in post-1990 India.

Certain indicators of access to food and the extent of under-nutrition and poverty were central to this discourse and were being subjected to different interpretation by these studies. The observed calorie intake levels of the Indian population were both interpreted as sign of distress as well as of their well being. The opposing groups armed with differential interpretation of calorie intake level were, in turn, engaged in fierce debate on the direction of poverty trend.

The present study will attempt to give an account of literature arguing in favour of and against the increasing distress and under-nutrition argument. The approach will be to deconstruct the 'scientific facts' or the 'measures of hunger', which are used by these studies to infer an increase and decrease in hunger in India.

¹² Sachs, Jeffrey D. (2005), *op cit.*

¹³ Weiss, John (2005), 'Experiences with Poverty Targeting in Asia: An Overview', in John Weiss (ed), '*Poverty Targeting in Asia*', Asian Development Bank and Institute and Edward Elgar Publishing, U.K, pp. 1-33.

¹⁴ Srivastava, Pradeep (2005), 'Poverty Targeting in India' in John Weiss (ed), '*Poverty Targeting in Asia*', Asian Development Bank and Institute and Edward Elgar Publishing, U.K, pp. 34- 78.

We encountered four measures of hunger, which are widely used in the literature.

The first measure is based on mortality statistics which indicate starvation or acute hunger during the time of famine or other sudden shocks.

The second measure tries to capture people's experience of hunger (self-reported hunger), whereby people judge their own ability to fulfill the physiological urge to satisfy their hunger.

The third measure is based on biomedical understanding of hunger commonly referred as under-nutrition, which looks at hunger as non-achievement of a predetermined 'physiological requirement' or 'human potential'. Here, the physiological requirement is defined in terms of calorie (nutrient) norms and growth standards, reflected through different anthropometric measures. These, in turn, are used to measure the extent and trend in hunger among the population. The interpretation of these measures of hunger, depends on conceptualization of physiological requirement which is based on inter-linkage between (i) agent (human), (ii) nutrients and (iii) conditions which affect the interaction between agent and nutrients like health, sanitation, adaptation etc. Therefore, the interpretation of this measure is controversial and often generates heated debate as we will see in subsequent chapters.

The fourth measure includes, symptomatic factors where indicators such as household income and employment or national food inadequacy and economic growth are used to assess the extent and trend in hunger. This measure is also commonly used to triangulate the findings based on other measures discussed above.

Among these four measures, the post-1990 literature on hunger in India focuses exclusively on the last three measures¹⁵. Hence we will be assessing in detail the last three measures, as used in the literature, to give an account of the contending arguments (for and against distress) and to assess the relative strength and weakness of different arguments.

¹⁵ A notable exception is Chakravarty, Lalita (2001), 'Biological Stress and History from Below: The Millet Zone of India 1970-92' in Imrana Qadeer, Kasturi Sen and K.R. Nayar (eds.) '*Public Health and the Poverty of Reforms- The South Asian Predicament*', Sage, New Delhi, pp. 198-208.

1.2 The objectives of the study:

- (a) To study the post-liberalisation trend in hunger and under-nutrition in rural India through a review of literature and secondary data.
- (b) To assess the relative strength and weakness of contending, positive and negative, interpretation of trend in hunger and under-nutrition in rural India.

1.3 Chapterisation:

Including the present chapter and subsequent analysis and discussion, the study is divided into five parts.

The second chapter will assess the strength in the argument that food insecurity in its severest form has reduced in India. The third chapter will assess the trend in under-nutrition in rural India as found in different studies and will critically look at the interpretation of this trend in the literature. The fourth chapter will assess the trend in the real expenditure levels in rural India, in order to strengthen the findings of the above chapters. The fifth chapter will discuss the implications of the findings.

Chapter Two

Self-reported Hunger in India

2.1 Data on Self-reported Hunger in India

The thirty eighth NSSO round in 1983 made an attempt to statistically measure ‘hunger’ in India, by asking people’s perception about their hunger status. During this round of consumption expenditure survey, questions were added on availability of two square meals a day. The results showed that around 19 per cent of households in rural India and 7 per cent of households in urban India reported that they did not get adequate food through out the year.

However this question was not included in the 42nd round in 1987 (Deaton et al 2008)¹⁶ and neither was the results of 1983 NSSO round, reported in the Seventh (1985-1989) and Eight (1992-1997) Five Year Plan documents. We could not locate any official or non-officials reasons for not using this data and for not including this question in the forty third NSSO round. However such question was again included in subsequent quinquennial NSSO rounds since the Fiftieth NSSO round in 1993-94. The finding of the 1993-94 NSSO round on self-reported hunger was reported in a separate report titled ‘Reported Adequacy of Food Intake in India’ (NSSO 1997a).¹⁷

Table 2.1: Trend in self-reported hunger in India from 1983 to 2004-05

Year	Per cent of population reporting hunger	
	Rural	Urban
1983	18.54	6.33
1993-94	5.1	1.6
1999-2000	3.3	0.9
2004-05	2.4	0.5

Source: GoI (1993),¹⁸ NSSO (2001c)¹⁹ and NSSO (2007c).²⁰

¹⁶ Deaton, Angus and Jean Drèze (2008), ‘Nutrition in India: Facts and Interpretation’, Mimeo, Center for Health and Wellbeing, Princeton University. Downloaded from http://weblamp.princeton.edu/shw/papers/deaton_dreze_India_nutrition.pdf on 22/07/08.

¹⁷ NSSO (1997b), ‘Reported Adequacy of Food Intake in India: 1993-94- NSS 50th Round (July 1993 – June 1994)’, NSS Report No 415, National Sample Survey Organisation, Department of Statistics, Government of India, New Delhi.

¹⁸ GoI (1993), ‘Report of the Expert Group on Estimation of Proportion and Number of Poor’, Perspective Planning Division, Planning Commission, New Delhi.

¹⁹ NSSO (2001c), *op cit.*

²⁰ NSSO (2007c), *op cit.*

The data showed a drastic decline in self-reported hunger in rural India from 18.5 per cent to 5.1 percent. Similarly, the subsequent NSSO rounds (NSSO 2001c²¹ and NSSO 2007c)²² reported decline in proportion of people who did not have adequate food (Table 2.1).

After 1993-94, the data on self-reported hunger could be located in the Ninth Five Year Plan (1997- 2002) whereby it was inferred that "...hunger ratios less than the poverty ratio indicate that all the poor people do not remain hungry" (GoI 1997: 21).²³

2.2 How Data on Self-reported Hunger shaped the inference of academic studies

Similar to the Ninth Five Year Plan (1997-2002), many academic studies have drawn some inferences based on the data on self-reported hunger. These studies include, Deaton et al (2008),²⁴ Dyson (2007),²⁵ Suryanarayana et al (2007),²⁶ Viramani (2006),²⁷ Vyas (2005),²⁸

²¹ NSSO (2001c), '*Reported Adequacy of Food Intake in India:1993-94- NSS 50th Round (July 1993 – June 1994)*', NSS Report No 466, National Sample Survey Organisation, Department of Statistics, Government of India, New Delhi.

²² NSSO (2007c), '*Perceived Adequacy of Food Consumption in Indian Households 2004-2005- NSS 61st Round, July 2004- June 2005*', NSS Report No. 512, National Sample Survey Organisation, Ministry of Statistics and Programme Implementation, Government of India, New Delhi.

²³ GoI (1993), *op cit*.

²⁴ Deaton, Angus and Jean Drèze (2008), *op cit*.

²⁵ Dyson, T. (2001), 'World Food Trends: a Neo-Malthusian Prospect?', *Proceedings of the American Philosophical Society*, 145:4, 2001, pp. 438-455.

²⁶ Suryanarayana, M. H. and Dimitri Silva (2007), 'Is Targeting the Poor a Penalty on the Food Insecure? Poverty and Food Insecurity in India', *Journal of Human Development*, 8:1, March, 2007.

²⁷ Viramani, Arvind (2006), 'Poverty and Hunger in India: What is Needed to Eliminate Them', Working paper No. 1/2008-PC, Planning Commission, New Delhi.

²⁸ Vyas, V.S. (2005), 'From Elimination of Hunger to Food and Nutrition Security: Performance, Prospects and Policy Options in Selected Asian Countries' in V.S. Vyas (ed), '*Food Security in Asian Countries in the context of Millennium Goals*', Academic Foundation, New Delhi.

Drèze (2004),²⁹ Shariff (2004),³⁰ Debroy et al (2003),³¹ Pant (2003),³² Unni et al, (2002),³³ Dubey (2002)³⁴ and Mehta et al (2001).³⁵

Though these studies did not primarily rely on the data on self-reported hunger, they all used this data for deriving or supporting the main arguments in the study, which concerned issues related to food security and under-nutrition in India.

Many of these studies while judging the 'performance' of the Indian state in achieving food security or assessing the current status of food security, drew important inference based on self-reported data on hunger. The common implicit assumption of these studies was that self-reported data represents the food insecurity in its severest form. Therefore, these studies interpreted the decline in proportion of people reporting hunger, as decline in food insecurity in its severest form-hunger. This commentary on changing nature of food insecurity, also meant inferring legitimacy and success of developmental policy in addressing 'severe food insecurity', while 'much was left undone' in other front i.e., food and nutritional insecurity in its not so severe form.

The Deputy Chairman of the Planning Commission, Mr. K. C. Pant, during a conference in 2003, while setting the background to justify the approach of Tenth Plan, begun his inaugural address with a confident statement that

²⁹ Drèze, Jean (2004), 'Democracy and Right to Food', *Economic and Political Weekly*, 39:17, pp. 1723-1731.

³⁰ Shariff, Abusaleh (2004), 'Food and Nutrition Security in India: the Micro-Level Dimension' in Bruno Dorin and Thomas Jullien (eds), *Agricultural Incentives In India — Past Trends and Perspective Paths Towards Sustainable Development*; Manohar Publishers, New Delhi.

³¹ Debroy, Bibek and Laveesh Bhandari (2003), *'District-level Deprivation in the New Millennium'*, Konark Publishers, New Delhi.

³² Pant, K.C (2003), 'Inaugural Address, at Consultation on Towards Hunger Free India – Countdown from 2007' conducted by WFP, on 4th April, 2003.

³³ Unni, Jeemol and Uma Rani, (2002), 'Social Protection for Informal Workers: Insecurities, Instruments and Institutional Mechanisms', Mimeo, International Labour Office, Geneva, September 2002. Downloaded from <http://www.ilo.org/public/english/protection/ses/download/docs/informalworkers.pdf> on 22/07/08.

³⁴ Dubey, S.S. (2002), 'Review of the Country Status with Regard to Implementation of FVIMS and Identification of Future Action in India' Mimeo, Regional Expert Consultation of the Asia-Pacific Network for Food and Nutrition on the Status of FIVIMS Initiatives, November 19-22, 2002, Bangkok, Thailand.

³⁵ Mehta, Aasha Kapur and Amita Shah (2002), 'Chronic poverty in India: Overview study -Defining the nature of chronic poverty in India', Mimeo, Chronic Poverty Research Centre, UK. Downloaded from http://www.chronicpoverty.org/pubfiles/07mehta_shah.pdf on 22/07/08.

It is indeed ironic that hunger continues to be an issue in a country holding more than 50 million tonnes of food grains stock, **perhaps not hunger in its classical meaning**. Statistics shows that only a small percentage of our people do not receive two square meals a day. But hunger in terms of inadequacy of nutrition. It is perfectly possible to have a full belly and yet display every symptom of malnutrition. Our target of hunger free India has to be defined in this context ³⁶ (Pant 2003:1).

Similarly Drèze (2004),³⁷ while arguing for public action in ensuring right to food, sees the contemporary challenge in ‘nutrition emergency’. He notes that the “disturbing aspect of the nutrition situation in India is that it shows little sign of major improvement over time.” However making a ‘balanced judgment’ he notes in the following sentence “There is evidence of a steady decline of extreme hunger” (Drèze 2004:1724).³⁸ He elaborates the evidence in the end note

according to the National Sample Survey (unpublished data), the proportion of households that are not getting “two square meals a day throughout the year” declined from 19 per cent in 1983 to 3.3 per cent in 1999-2000 (Drèze 2004:1729).³⁹

Other studies, which draw a similar inference on changing nature of hunger in India, based on data on self-reported hunger include Vyas (2005),⁴⁰ Shariff (2004)⁴¹ and Dubey (2002).⁴²

Apart from these studies, there are some studies which make use data on self-reported hunger in important debates on poverty and under-nutrition.

Dyson (2007),⁴³ use the self-reported data on hunger to explain the recent reduction in cereal intake in India. He judges the recent decline in per capita cereal consumption in India as an outcome of voluntarily ‘reducing per capita food grain demand’. His claim is in direct contradiction with studies like Patnaik, (2004,⁴⁴ 2007⁴⁵) and Chand (2005)⁴⁶ that

³⁶ Pant, K.C. (2003), *op cit*.

³⁷ Drèze, Jean (2004), *op cit*.

³⁸ *ibid*.

³⁹ *ibid*.

⁴⁰ Vyas V.S, (2005), *op cit*.

⁴¹ Shariff, Abusaleh (2004), *op cit*.

⁴² Dubey, S.S. (2002), *op cit*.

⁴³ Dyson, T. (2001), *op cit*.

⁴⁴ Patnaik, Utsa (2007), ‘Neoliberalism and Rural Poverty in India,’ *Economic and Political Weekly*, 42:30, July 28, pp.3132–50.

⁴⁵ Patnaik, Utsa (2004), ‘The Republic of Hunger’ *Social Scientist*, 32:9–10, Sep–Oct, pp. 9–35.

⁴⁶ Chand, Ramesh (2005), ‘Whither India’s Food Policy: From Food Security to Food Deprivation’, *Economic and Political Weekly*, 40:12, March 12, pp.1055– 1061.

see this trend as an outcome of distress. However, Dyson supports his claim by using the data on self-reported hunger reported in Bansil (1999, 47). He infers that “Almost all Indian households report that they get “two square meals a day,” irrespective of what is indicated by external criteria” (Dyson 2007: 447)⁴⁷ and takes this evidence as a validation of the fact that reducing cereal intake is a result of declining demand and not distress.

Dyson (2007)⁴⁸ uses this evidence, as one among his arguments, to counter many recent studies which express worry over the declining per capita food grain production in the world. In this context he argues that adequacy of food grain production should be judged in relation to changing demand for food grains by the growing population.

Suryanarayana et al (2007), use the ‘two square meal statistics’ to analyse the desirability of targeting in public distribution system (PDS). The authors approach the question of desirability of targeting by assessing the extent of under-nutrition in India. Observing that there is evidence of mass under-nutrition if the population is assessed in terms of calorie adequacy, they ask “whether cereal/calorie shortfall is a question of voluntary choice or involuntary?” (Suryanarayana et al: 94).⁴⁹ Then using the data on self-reported hunger as important evidence, which indicates progress as opposed to calorie based measure of adequacy, they take the course of argument that the calorie adequacy is not desirable measure of under-nutrition and that decline in cereal and calorie intake is a voluntary choice. In this context, they notes that

NSS estimates...,” shows that “96.2 per cent of the rural and 98.6per cent of the urban households in India reported to have obtained adequate food (two square meals a day) throughout the year in 1999/2000 (Suryanarayana et al 2007: 94).

The authors conclude that “Hence, there would be little basis for the observation that PDS targeting has imperiled the food insecure” (Suryanarayana et al 2007: 94). Though their conclusion that public distribution system (PDS) targeting is not a problem is not entirely based on statistics on hunger, these statistics play an important and perhaps strongest role in strengthening their argument.

⁴⁷ Dyson, T. (2001), *op cit.*

⁴⁸ *ibid.*

⁴⁹ Suryanarayana. M. H. and Dimitri Silva (2007), *op cit.*

Deaton et al (2008), while assessing the factors leading to decline in average calorie intake in India, rule out the role of mass distress argued by some studies. These studies using calorie based estimates had showed that the proportion of people in distress is increasing over the years. Deaton et al, while reviewing the validity of calorie based estimates show that data on self-reported hunger, in direct contradiction, suggest a declining trend in distress over the years. Moreover the magnitude of the problem reflected by data on self-reported hunger was also in direct contradiction to the calorie deprivation measure. The authors note that “self-reported food adequacy is uncorrelated with calorie shortfall” (Deaton et al 2008: 12)⁵⁰ across rural households, states and NSS regions.

However the authors take the data on self-reported hunger “as suggestive rather than definitive” and note that there is a reason to cast “doubt on the validity of the hunger questions, or on the relevance of the calorie norms, or even both. (Deaton et al 2008: 12)⁵¹. In other words, the authors note that either the data on self-reported hunger is wrong or data in calorie intake is wrong. Both could not be true together. However in their conclusion the doubt cast of validity of calorie based measure prevails.

Mehta et al (2001) use the data on self-reported hunger to locate the groups which are facing severe food insecurity in India. Analyzing the inter-state and seasonal trend of self-reported hunger from NSSO 1993-94 round, they

concluded that hunger is a more serious problem in rural India and is especially severe in rural Orissa, West Bengal, Kerala, Assam and Bihar. Non-availability of two square meals a day peaks in the summer months from June to September with longer duration suffering in West Bengal and Orissa (Mehta et al 2001: 23)⁵²

Further, focusing on the lowest expenditure group in the rural areas they find that

the incidence of hunger among such groups assumes extremely high proportions in Assam, West Bengal, Kerala, Bihar, Orissa, Karnataka, Maharashtra, Uttar Pradesh and Tamil Nadu (Mehta et al 2001: 23)⁵³.

⁵⁰ Deaton, Angus and Jean Drèze (2008), *op cit*.

⁵¹ *ibid*

⁵² Mehta, Aasha and Amita Shah (2002), *op cit*.

⁵³ *Ibid.*

While observing “the high incidence of hunger in states that have a lower incidence of income poverty such as Kerala, Karnataka and Tamil Nadu” they take it as evidence “that hunger exists even in the supposedly better parts of India” and feel that “policy action is needed to address this” (Mehta et al 2001: 24).⁵⁴

Among all the literature cited above, Viramani (2006)⁵⁵ makes the strongest case using the data on self-reported hunger. The assumptions, which are implicit in most of the studies using this data, become explicit and vocal in this particular study.

Viramani, notes that

The proportion of households that were hungry during any part of the year, by this definition (the authentic voice of the poor in India) was 15.7 per cent in 1983, 4.5 per cent in 1993-4 and 2.1 per cent 1999-2000. In terms of individuals (assuming that every person in the household was hungry), we estimate that the number of hungry people declined from 15.1 per cent of total population (101 mil.) in 1983 to 4.4 per cent of population (37 mi.) in 1993-4 and further to 2 per cent of the population (18.5 mi.) in 1999-2000 (Viramani, 2006:9).⁵⁶

Further, validating the much contentious poverty statistics he notes,

In 1983, an estimated 33.9 per cent i.e. more than 1/3rd of the poor were hungry at some point in the year. This proportion declined to 12.2 per cent in 1993-4 and further to below 7.7 per cent in 1999-2000. Thus not only has poverty declined over the 1980s and 1990s, but the proportion of the poor who are hungry has also declined⁵⁷ (Viramani 2006:9-10).

Such interpretation leads the author to a direction where he could only conclude that

This is precisely what we would expect given that the consumption distribution has consistently improved for the bottom 40 per cent of the population” (Viramani 2006:10)⁵⁸... “The number of poor is very high because our population is very large, the second highest in the world. Contrary to hints, illusions and allegations, the large number of poor has nothing to do with income distribution. Our income distribution as measured by the Gini co-efficient is better than 3/4th the countries of the World. The consumption share of the poorest 10 per cent of the population is the 6th best in the world (Viramani 2006:19).⁵⁹

⁵⁴ *ibid.*

⁵⁵ Viramani, Arvind, (2006), *op cit.*

⁵⁶ *ibid.*

⁵⁷ *ibid.*

⁵⁸ *ibid.*

⁵⁹ *ibid.*

Interestingly, Viramani, confers ‘voice of poor’ status to the self-reported hunger when he asks the readers “Do we believe in “Voices of the Poor,” or don’t we?”⁶⁰ (Viramani 2006:9).

2.3. A Review of the Methodological Problems Involved in Use of Data on Self Reported Hunger:

We were able to identify three studies done by GoI (1993),⁶¹ Kundu (2001)⁶² and Deaton et al (2008)⁶³ which have attempted to explore the data on hunger and in the process had critiqued its methodological basis. The present study will not go into the details of their actual analysis of the data on hunger, as it considers that the data is not useful for generalization at any level, but will focus on the methodological critique provided by these studies.

The Expert Group (GoI, 1993), while evaluating the suitability of use of this data source for inferring the extent of poverty arrived at two critiques which are useful for the present context, i.e., how much this data could represent the extent of hunger in India.

First commenting on the limited reliability of the data as an objective measure the Expert Group notes:

It has to be kept in mind that the information regarding the adequacy or inadequacy of food for consumption, elicited through a single probing question, may not always be free from subjectivity and at the same time may not be adequately precise and objective. For instance the size of ‘square meal’ would differ not only from person to person but also from place to place (GoI 1993:53).⁶⁴

Second important aspect, noted by the Expert Group, relates to the problem involved in relying on the male head of households for the information on hunger experienced by other family members.

Very often, particularly in rural India, the head of the family, usually a man, who is the main respondent in the survey, would not be sufficiently aware of the quantity and content of meal left for his wife and other female members of the house. Therefore, this data would

⁶⁰ *ibid.*

⁶¹ GoI (1993), *op cit.*

⁶² Kundu, Amitabh (2006), ‘Food Security System in India: Analysing a Few Conceptual Issues in the Contemporary Policy Debate’ in Nisha Srivastava and Pravesh Sharma (eds), ‘*Protecting the Vulnerable poor in India: The role of social safety net*’ WFP, New Delhi, pp. 114-137.

⁶³ Deaton, Angus and Jean Drèze (2008), *op cit.*

⁶⁴ GoI (1993), *op cit.*

probably give only a broad idea about the perceptions of the people on adequacy of food GoI (1993:54).

Kundu (2006), objects to use of this data for the same reason. He notes:

Researchers as well as policy makers believe that the figures grossly under-estimate hunger due to the reluctance on the part of the head of the households in publicly admitting their incapacity to provide for their respective families (Kundu 2006: 120).⁶⁵

Deaton et al (2008) note other reasons for treating the data ‘as suggestive’ and not ‘definitive’,

the phrasing of the question is not identical in different years, there may be translation issues, and the changes from 1983 to 1993–94 are suspiciously large in several states such as Bihar and Madhya Pradesh⁶⁶ (Deaton et al 2008: 11).

2.4 Strengthening the Methodological Critique of Data on Self Reported Hunger:

We felt that the critique provided by these studies, though providing important pointers, still leaves room for a more intriguing critique which is attempted here.

It is important to note that the purpose of the critique is neither to question the possibility of subjective perception of hunger nor to evaluate the strength and weakness of qualitative measures in relation to the ‘objective’ quantitative measures of hunger. Neither is the purpose here to show the impossibility of quantification of hunger. This could be viewed as an exercise in futility.

The purpose here is to first assess, the methodology of collecting information on self-reported hunger, within the parameters which is generally acceptable for critiquing the survey based qualitative research and then to evaluate the desirability of making ‘objective generalization’ out of this information.

Recognising the problem involved in ‘single probe’:

A review of the qualitative studies on hunger shows the difficulty in collecting such information which the NSSO survey claims to have collected with a single question and

⁶⁵ Kundu, Amitabh (2006), *op cit.*

⁶⁶ Deaton, Angus and Jean Drèze (2008), *op cit.*

a single probe. First of all, a deep sense of shame is observed in the experience of hunger, as noted by Piaseu et al (2004)⁶⁷ in a study on poor people's perception of food situation in urban slums in Thailand. From one of the in-depth interviews administered to a woman, the study quotes "When we don't have money, we close the door, sleep, and starve the whole day. We feel shame and don't dare to ask other people for food" (Piaseu et al 2004:613).⁶⁸

When such experiences in themselves are painful, shameful and extremely private, it would be near impossible to collect such extremely private information in surveys involving single probe. The problem becomes more prominent especially when little is usually done to build rapport or to address the interviewer-respondent in-equal relationship in larger surveys. The level of trust between researchers and respondents is found to be an important factor determining the willingness of the food-insecure households to allow their deprivation to be observed (Graham 2003).⁶⁹

Ethnographies, even after spending considerable time, acknowledge the difficulty associated with eliciting information on hunger. Graham (2003),⁷⁰ sharing the experience of fifteen months long ethnography in a small farming community in the southern Peruvian highlands, notes that "Even after twelve months of research and numerous visits with each of the households, I was still unprepared for the anxiety, shame, and profound insecurity villagers attempt to hide their deprivation from each" (Graham 2003:156).⁷¹ Recognizing that the "process of collecting quantitative data is itself a socio-cultural process" (Graham 2003:143),⁷² the study suggests that researchers must recognize that people may find it difficult to fully articulate the experiential dimensions of hunger either out of a lack of awareness or a wish to conceal their insecurity. Interview data may insufficiently capture these aspects of hunger that are revealed through observations when people feel the most vulnerable.

⁶⁷ Piaseu, N, Belza, B and Shell-Duncan, B. (2004), 'Less Money Less Food: Voices from Women in Urban Poor Families in Thailand', *Health care for women international*, 25:7, pp.604-619.

⁶⁸ *ibid.*

⁶⁹ Graham, Margaret A.(2003), 'Adaptation of the Weighed Food Record Method to Households in the Peruvian Andes and Ethnographic Insights on Hunger', *Field Methods*, 2003, 15: 2, pp. 143-160.

⁷⁰ *ibid.*

⁷¹ *ibid.*

⁷² *ibid.*

Thus, first of all while analysing the data of self-reported hunger from NSSO, one has to recognize the limitation of the process involved which, rules out hunger for all those people who did not report hunger while responding to a single question.

Problems involved in reframing survey questions:

Secondly, such large scale qualitative survey which attempt to collect perception of people through structured questions and compare the trend, administer the same questions and attempt to pose the questions to the respondents in a similar way, to different respondents and over different periods (Murphy 1998: 113).⁷³ However the survey under scrutiny has violated this basic principle.

The question to elicit information of hunger was reframed in different ways in different survey periods, as noticed by Deaton et al (2008).⁷⁴

In 1983, the question posed to the respondent was

Do all members of your household get two square meals a day? (NSSO 1993:Appendix B-Schedule 10).⁷⁵

However, in 1993-94 NSSO round,

A question was asked to the sample households/informants whether the members of the households got adequate food to eat; throughout the year, during only some months of the year or not usually (NSSO 1997b: 12)⁷⁶.

In 1999-2000 and 2004-05 the question was changed to

Do all members of your household 'get enough food every day'? (NSSO 2007c: Schedule 1.0: Consumer Expenditure, p-1.0:2)⁷⁷

⁷³ Murphy, E.R, Dingwall, D, Greatbatch, S. Parker and P. Watson (1998), 'Qualitative Research Methods in Health Technology Assessment: A Review of Literature', *Health technology assessment*, 1998, 2:16, pp.1-276.

⁷⁴ *ibid.*

⁷⁵ NSSO (1993), 'Distribution of Households and persons by Household Monthly Per Capita Expenditure for different calorie intake levels- NSSO 38th Round- January- December 1993', NSS Report No. 387, National Sample Survey Organisation, Department of Statistics, Government of India, New Delhi, March 2006.

⁷⁶ NSSO (1997b), *op cit.*

⁷⁷ NSSO (2007c), *op cit.*

The consecutive NSSO rounds asked additional question to those households, who reported availability of sufficient food only in some months of the year. They also recorded the information on the seasonal hunger (months when they did not have adequate food) (See table 2.2).

In other words, while showing the trend in number of people experiencing and reporting hunger, the survey actually compares perception revealed for two different questions. As we already noted, the reported decline in self-reported hunger was steep from 1983 to 1993-94.

Table 2.2: The nature of question used to probe hunger in NSSO survey

Perception of household regarding sufficiency of food				
1. do all members of your household 'get enough food every day'? <i>(yes: every month of the year-1, some months of the year -2; no: no month of the year-3)</i>				
2. if code is 2 in item 1, during which calendar months did any member of the household not 'get enough food every day'? <i>(applicable month codes may be recorded in the box spaces: Jan-01, Feb-02, Mar-03, Apr-04, May-05, Jun-06, Jul-07, Aug-08, Sep-09, Oct-10, Nov-11, Dec-12)</i>				
3. whether information on item 1 was actually obtained from the informant <i>(yes-1, no-2)</i>				

Source: Reproduced from NSSO (2007c: Schedule 1.0: Consumer expenditure, p- 1.0: 2)⁷⁸

This steep decline was also seen as a puzzle by Deaton et al (2008).⁷⁹ In all likelihood, this puzzle seems to be explained by the fact that respondents were answering two different questions in the NSSO rounds conducted in these two periods.

Ideally, when the questions are re-framed in studies attempting to study the trend in people's perception, it should be backed by statistical evidence to prove that meaning conveyed by the different question, and hence the response, are not much different.⁸⁰ However no such attempts were made by the NSSO surveys.

⁷⁸ *ibid.*

⁷⁹ Deaton, Angus and Jean Drèze (2008), *op cit.*

⁸⁰ For example in United states' attempt to measure hunger, through a set of questions based on qualitative indicators which convey a similar meaning to most of the people, took over 10 years with a government committee set for this purpose. See, issue of 'Journal of Nutrition', Feb,1999 ;129(2S Suppl),, which includes six articles on this experience.

Problems involved in collecting information without contextual clues:

The third requirement, for the large scale surveys collecting qualitative responses, is to ensure that contextual clues are recorded in the field and are analysed, in order to make sense of the collected data and check its validity.

This becomes necessary as no amount of training can make different interviewers ask questions in a similar standardized way. The interview process involving the social interaction between interviewer and respondent will not allow such standardized questions or interactions (Murphy et al 1998:114).⁸¹

Further, the entire result of such surveys depends upon the perspectives of respondents/interviewers. Different perspective will lead to different interpretation of the question, which cannot be clubbed or aggregated. As Warren (2002)⁸² quoting Campbell (1998) notes “Both research and respondents-speak to each other view, not from stable and coherent standpoints, but from varied *perspectives*. These include the structured and historically grounded roles and hierarchies of their society, particularly those of gender, race, and class”⁸³ (Warren 2002:84) “Perspectives relevant to the qualitative interview encompass the social positions that emerge in the interview itself, apparent in talk and interaction between interviewer and respondent”⁸⁴ (Warren 2002:84).

For instance, the respondent, assuming the masculine role may find it difficult to share the information on the inability to feed his family members. As Sharp (2001),⁸⁵ in his review of in-depth participatory work on poverty and food insecurity in different countries, notes “The role of family ‘breadwinner’ is everywhere highly charged with social and cultural meaning, however the role is gendered or otherwise socially determined, and however the ‘bread’ is actually won. Inability to fulfill that role is

⁸¹ Murphy, E.R, Dingwall, D, Greatbatch, S. Parker and P. Watson (1998), *op cit*.

⁸² Warren, Carol A B. (2002), ‘Qualitative Interviewing’. In J. Gubrium and J. Holstein, (eds.), ‘*Handbook of interview research*’, Sage publications, Thousand Oaks, CA, pp. 83–101.

⁸³ *ibid*.

⁸⁴ *ibid*.

⁸⁵ Sharp, K. (2001), *Voices of Hunger: A Desk Review of Issues Arising from Participatory Analysis of Poverty and Food Insecurity –DIFID*.

described in many of the assessments reviewed as a source of great stress, as well as shame and loss of self-respect”⁸⁶ Sharp (2001:10).

Due to the role played by differing perspective, which influence the response, the collection of perception (in yes and no answer), would require qualification of ‘contextual information’. In the absence of such contextual clues, such as in the NSSO survey, there is a high risk of misinterpreting the information (Murphy 1998: 15).⁸⁷

Further studies, such as one by Chung (1999),⁸⁸ which have used both qualitative and quantitative methods, in their study on food security in south India, note that the qualitative questions or indicators which are useful at one place may not be useful at an other place as they convey different meaning for people who themselves have differing experiences. Therefore, the study noted “Our experimentation with quantitative and qualitative methods for indicator development indicated that there was little overlap between the results derived from each method” (Chung 1999:93).⁸⁹ Similarly,

“Indicators suggested through qualitative techniques, however, are not generalisable beyond the communities in which they are developed.....qualitative experience suggests that many indicators represent coping strategies that are very location-specific; an in-depth understanding of the local culture is needed to identify and interpret any given indicator” (Chung 1999:90).⁹⁰

Perhaps the importance of cultural sensitive and probing would explain the results of the community specific studies on hunger, which reveals a high percentage of people reporting hunger. A study by the CEFS (2005)⁹¹ that covered a sample of 1000 randomly selected tribal households from 40 sample villages in Rajasthan and Jharkhand found that 25.2 per cent of surveyed tribal households reported not having two-square meal in the previous week of the survey. 24.1 per cent of the surveyed tribal households did not have two square meal in the previous month of the survey and around 99 per cent of the tribal households were not able to manage two square meal at some point of time (at varied level) during the previous year.

⁸⁶ *ibid.*

⁸⁷ Murphy, E.R, Dingwall, D, Greatbatch, S. Parker and P. Watson (1998), *op cit.*

⁸⁸ Chung, Kimberly, Lawrence Haddad, Jayashree Ramakrishna, and Frank Riely (1997), ‘Alternative Approaches to Locating the Food Insecure: Qualitative and Quantitative Evidence from South India’, Discussion paper.22, Food Consumption and Nutrition Division, IFPRI, Washington, D.C

⁸⁹ *ibid.*

⁹⁰ *ibid.*

⁹¹ CEFS (2005), ‘Political Economy of Hunger in Adivasi Areas’, Mimeo, Centre for Environment and food security, New Delhi.

The importance of contextualizing the information could be also demonstrated with the help of a macro level example. The survey results of NSSO showed high prevalence of hunger in states with higher human development and income such as Kerala and Tamilnadu when compared to other poor states such as Bihar, UP and Rajasthan. The paradox of relatively high health and human development indicators in these states along with high prevalence of hunger, could be resolved by contextualizing it with the fact that these states are also considered to have good public action as reflected in functioning of PDS (Swaminthan, 2000)⁹² and ICDS (Drèze, 2005).⁹³ Now, it would not be difficult to agree that varying level of awareness over rights would affect the articulation of the problem.

However the contextual clues may fail due to the fact that perspective related to hunger could be also shaped by physiological factors. In other words, by applying the reasoning of modification of 'small by healthy' hypotheses' (which we will discuss in detail in later chapters), one can say that the population which faces hunger for long times actually adapts to the limited quantity or quality of food. The physiological urge to eat (sense of hunger) initially felt by people after sudden decline in food intake would be normalized in long time due to their compulsion to adapt. Similarly, with passing time once socially unacceptable food or socially unacceptable ways of gathering food may change to become a way of life.

If such processes operate, then, even with similarly impoverished condition and hunger, in each consecutive survey, less and less people will report hunger. In other words, the trend in felt perception of hunger would be misleading here. Reduced reporting of hunger is not due to reduction in hunger but because people have accepted it as a way of life. This could be one important way to make sense of low per cent of people reporting hunger in India.

Problem involved in Pre-judgment:

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Apart from these difficulties associated with collecting data on perception on hunger, the NSSO survey methodology faces another fundamental problem of power conferred on the interviewer to judge the respondents without administering the relevant question.

⁹² Swaminthan, Madhura (2000), '*Weakening Welfare : The Public Distribution of Food in India*' Leftword, New Delhi.

⁹³. Drèze, Jean (2004), 'Universalisation with Quality: ICDS in a Rights Perspective' *Economic and Political Weekly*, 41:34, August 26, 2006, pp.3706-3715

Field studies on hunger and poverty note the difficulty of interviewers' pre-judgment and try their best to control them. On the other hand the NSSO survey has encouraged and institutionalized such pre-judgment and has misrepresented the results as 'reported' adequacy of food intake.

In the NSSO survey not all the sample respondents are asked the question related to hunger. The interviewer judges the respondents and poses the question only to those households who she/he perceives to be in risk of hunger. The surveys before 2004 did not report on the number of respondents who were assumed not to face hunger without being asked. In 2004, where this information is provided, it is notable that around 56 per cent of the respondents were not interviewed but only judged⁹⁴ to arrive at a conclusion that they did not face hunger. Moreover the question of self-reported hunger actually comes in the beginning of the survey, even before asking demographic and consumption details from the respondents (NSSO 2007c).⁹⁵ Therefore, the manner in which judgment on hunger was made is a disturbing puzzle.

Any standard book on qualitative research would show innumerable problems associated with this methodology. Experience of field studies shows that observation alone would lead to faulty interpretation and conclusion. For instance a collaborative ethnography on hunger in Bolangir, Orissa documents the experience on conditions which leads to faulty conclusion (CES 2007).⁹⁶

Foremost amongst the barrier, documented by the study, included judgment based on the physical assets around the respondent, including house and cattle etc. At some instances, even when the researchers could locate food grain bags inside the house, the respondents were reporting that they were not able to eat a filling meal. Such responses were common even from places where husbandry such as cows and goats were found. The collaborative process enabled some disbelieving researchers to recognize that in many instance the house was constructed under poverty alleviation scheme, which compulsorily had to be a *pakka* house. Similarly, food grains were rationed for season which perpetually experience drought. Similarly, the hens and goats around the house

⁹⁴ Out of 79,298 households, the enumerators judged by themselves that 36258 (52per cent), were food secure, being in doubt with other 43040 households they asked them the question.

⁹⁵ NSSO (2007c), *op cit*.

⁹⁶ CES (2007), 'Hunger among Aged, Single Women and People with Disability in Orissa, Andhra Pradesh and Rajasthan' Mimeo, Centre for Equity Studies, New Delhi.

were buffer or insurance measure. Households reported to have consumed them once or twice a year. The rest was for sale during difficult times, which was always looming. Similarly, the judgment based on observation is often proved wrong when non-observables such as saving for paying back debt, health cost, marriage in family are elicited through detailed interview.⁹⁷

Unexplained disorderliness in the data:

Apart from these issues, the most problematic aspect of the survey includes the inherent discrepancies and disorderliness in the data. Despite the limited proportion and size of the sample which reported hunger, a sense of orderliness is infused in the NSSO report through aggregation and classification based on different social groups and monthly per capita expenditure (MPCE) group. Following a similar approach of inferring from small sample, we located serious disorder in the data, by checking the percentage of respondents from higher MPCE groups who have reported hunger. There were twelve MPCE groups, for which information was given separately. The tabulation followed in the report did not allow this exercise to be undertaken for all states. However where such exercise could be undertaken, the results were quite striking. In most of the states, a high proportion of the respondents who reported hunger came from top richest MPCE group. Fifty per cent of the respondents in Haryana who reported hunger came from highest MPCE groups. Similarly, the figures were 40 per cent (top 4 MPCE groups), 50 per cent (top 5 MPCE groups), 56 per cent (top 5 MPCE groups), 100 per cent (top 5 MPCE groups), 50 per cent (top 4 MPCE groups), 100 per cent (top 7 MPCE groups), 40 per cent (top 3 MPCE groups), 25 per cent (top 6 MPCE groups) for Andhra Pradesh, Madhya Pradesh, Arunachal Pradesh, Nagaland, Pondichery, Rajasthan, Tripura, and Kerala respectively.⁹⁸

⁹⁷ The method employed by the study was that the ethnographers, involving insiders and outsiders collaborate and discuss their daily field observation and construct the meaning together. During such process of construction, the study was able to document the barriers which will not allow the ethnographers to see hunger in a family.

⁹⁸ In AP out of ten household who reported to experience hunger, at least four turn out to be from top four MPCE group. Similarly in Arunachal Pradesh out of nine households five turn out to be from top MPCE group. Haryana out of two households, one from top most MPCE group reported to experience hunger. Similarly in Kerala out of twelve households, at least three households were from top six MPCE group. In M.P out of six households, three were from top five MPCE group. Nagaland all three, respondents were from top five MPCE group. In Pondichery out of four households, two were from top four MPCE group. In Rajasthan all two, were from sixth and seventh MPCE group respectively. Tripura out of five households, two were from top 3 MPCE group.

To sum up, the disorderliness observed in the data as well as the methodological problems associated with comparing responses of different questions, collection of personal experiences through single probe without contextual clues to take into account factors affecting the response (like awareness, sex of the respondent, state and local specific culture etc.) and pre-judgment by the interviewer etc, give us very strong reason to abandon the efforts to assess trend or extent of the problem with help of the available data. Once we recognize the limitation of this data source, we are also able to see the error in inference drawn by many studies based on this data that food insecurity in its severest form is reducing in India

Chapter Three

Examining the Trend in Under-nutrition in Post-1990s

3.1 Official Calorie Requirement Norm

The 1958 ICMR (Indian Council for Medical Research) Nutrition Advisory Committee was the first attempt in Independent India to recommend revision of energy allowances for Indians. In order to take into account the varied energy requirement according to age, sex, nature of work and special needs like pregnancy and lactation, the Committee used factorial activity break up method.⁹⁹ The estimates were based on studies on Basal Metabolic Rate (BMR)¹⁰⁰ and energy cost of activities performed by Indians (Rao, 2004).¹⁰¹ The Committee gave its recommendation for different age and activity groups (table 3.1). It was also possible to estimate the calorie requirements based on age, taking into account the growth requirements and based on special needs during pregnancy and lactation for foetal growth and milk secretion.

Table 3.1: Total Daily Requirement of Energy (Kcal) for adult workers, per person per day (Recommendation of 1958 ICMR Nutrition Advisory Committee)

	Sedentary	Moderate	Heavy
Man (55 kg)	2400	2800	3900
Woman (45 kg)	1800	2200	3000

Source: (Rao, 2004).¹⁰²

Though the Committee recommended energy requirement for different groups, it did not provide the weighted average requirement for the ‘whole population’ in India which could be used as an average norm to assess the adequacy of average calorie intake of the Indian population as observed in NSSO surveys. Such average norms for the population in rural and urban India were given by the 1979 Task Force on Projection of Minimum Needs and Effective Consumption Demand (GoI, 1993¹⁰³ and Patnaik, 2007¹⁰⁴). The

⁹⁹ Total energy allowance is calculated by adding different components of estimated energy requirement like BMR, physical activity and thermic effect of food etc. We will see this in detail in latter sections

¹⁰⁰ Basal Metabolic Rate (BMR), gives us the minimum energy required by the body for resting tissues or when a body is in a post absorptive state and in physical and emotional rest.

¹⁰¹ Rao, B.S. Narasinga (2004), ‘Energy Requirements of Indians’ in NFI (2004), ‘Towards national nutrition security’, Compendium of papers presented in silver jubilee symposium, 29th November – 1st December, 2004, Nutrition Foundation of India, New Delhi, pp. 101- 109.

¹⁰² *ibid.*

¹⁰³ GoI (1993), ‘Report of the Expert Group on Estimation of Proportion and Number of Poor’, Perspective Planning Division, Planning Commission, New Delhi.

¹⁰⁴ Patnaik, Utsa (2007), ‘Neoliberalism and Rural Poverty in India,’ *Economic and Political Weekly*, 42:30, July 28, pp.3132–50.

Task Force used the Census data and classifying the population into 16 groups based on age, sex and activity, derived an average norm of 2435 and 2095 Kcal per person, for rural and urban India. This was rounded off as 2400 and 2100 calories per person requirement. These prescribed calorie intake levels for rural and urban areas were used to compute the poverty line income and estimate the proportion of people below the poverty line during 1972-73.¹⁰⁵ The Planning Commission still uses this energy norm as official minimum calorie requirement for urban and rural areas.

Table 3.2: Energy Requirement of Indian recommended by 1958 ICMR Advisory Group and 1989 ICMR Expert Group

		Energy Requirement of Indian Adult by Activity – Break-Up Method 1958 ICMR Advisory group		Energy Requirements of Indian Adults in BMR Units 1989 ICMR Expert Group	
		Kcal			
		Men	Women	Men	Women
	Sedentary	2400	1800	2424	1872
	Moderate	2800	2200	2878	2223
	Heavy	3900	3000	3780	2925
	Reference Weight	(55 kg)	(45 kg)	(60 kg)	(50 Kg)
Average requirement	Rural	2435 (rounded off to 2400)*		Not available	
	Urban	2095 (rounded off to 2100)*		Not available	
	Total	Not available		2200	

Note: * Average figures given by 1979 Taskforce of Planning Commission
Source: Compiled from Rao, (2004)¹⁰⁶

The next revision of energy allowances in India was done by 1989 Expert Group of the ICMR. The Expert Group raised the reference weights to 60 kg for adult men and 50 Kg for adult women. The new RDAs were different from earlier recommendations due to improved method of estimation and use of higher reference weight. They were lower than the earlier ones for activities involving heavy work but were higher for activities involving moderate and sedentary work (Rao, 2004)¹⁰⁷ (table 3.2). The Expert Group also recommended a weighted average of energy requirement of 2200 Kcal per capita per day for the entire population in India, after taking into account the age, sex and activity

¹⁰⁵ Recently Patnaik, Utsa (2007), has expressed doubts on the calorie norm used for estimating the poverty line in 1973-74. The author points out that the relevant nutritional data for 1973-74 were not published and made available for public scrutiny. Review of studied providing evidences for 1970-71 suggested that the calorie norm used would have been 2200 kcal instead of 2400 kcal.

¹⁰⁶ Rao, B. S. Narasinga (2004), *op cit*.

¹⁰⁷ Rao, B.S. Narasinga (2004), *op cit*.

difference (Nawani, 1994).¹⁰⁸ It is not clear whether studies were carried out to reach this figure or whether it is a theoretical calculation (Sagar, 2005).¹⁰⁹

However there is no way of comparing the average calorie requirement given by 1979 Task Force (which was based on 1958 ICMR Advisory Group recommendation) and 1989 Expert Group recommendation. The 1989 Expert Group gave the requirement for all-India level, whereas the 1979 Task Force gave the recommendation separately for urban and rural areas.

Table 3.3: Dietary Guidelines in Selected Asian Countries

Country	Title of Guidelines	Year	Endorsing Unit	Approaches*
China	Chinese Dietary Guidelines for Chinese Residents	1997	Chinese Nutrition Society	1
India	Dietary Guideline for Indians Foundation to Nutrition and Health	1998	National Institute of Nutrition	1-6
Indonesia	13 Core Messages for a Balanced diet	1995	National Development and Planning Coordinating Board	1
Japan	Guidelines for Health Promotion Dietary Guidelines	1985	Ministry of Health and Welfare	1, 2, 3, 5
Korea	National Dietary Guidelines	1990	Korean Nutrition Society/ Ministry of Health and Welfare	1, 2, 4
	Proposed Dietary Guidelines for Malaysia	1996	Ministry of Health	1, 2, 3
Malaysia				
Philippines	Nutritional Guidelines for Filipinos (National Guidelines Committee)	1990	Department of Science and Technology	1-5
Singapore	Guidelines for a Healthy Diet	1993	National Advisory Committee on Food and Nutrition, Ministry of Health	1
Taiwan	Dietary Guidelines for the Population	1995	Department of Health	1
Thailand	The Thai Dietary Guidelines for Better Health	1995	The Division of Nutrition, Department of Health, Ministry of Public Health	1

Note: * 1 = Nutrition expert

s and nutrition scientists views. 2 = Review of former guidelines. 3 = from food groups. 4 = from consumption/nutrition survey. 5 = Definition of nutritional objectives. 6 = Economic data.

Source: Bermudez et al (2008: Table: 22.6)¹¹⁰

¹⁰⁸ Nawani, NP (1994), 'Indian Experience on Household Food and Nutrition Security- Regional Expert Consultation', Mimeo, FAO-UN, Bangkok, Thailand, downloaded from <http://www.fao.org/docre/x0172e/x0172e11.htm> on 22/07/08.

¹⁰⁹ Sagar, Alpana (2006), 'Consumed by calories' *Info Change News and Features*, October 2006, downloaded from , <http://www.infochangeindia.org> on 22/07/08.

¹¹⁰ Bermudez Odilia I., Johanna T. Dwyer, Winifred Yu, and Linda G. Tolstoi (2008), 'Dietary Guidelines Around the World: An Update', in Carolyn D. Berdanier, Elaine B. Feldman and Johanna Dwyer (eds), *Handbook of Food And Nutrition* (Second edition), CRC Press, London, pp. 429-450.

On the whole it would be important to note that the estimation of dietary requirement in India is most systematic as shown in the table 3.3. A comparison with selected Asian countries shows that India is the only country among the selected countries to fulfill all the six criteria selected by the authors to review the rigorousness of estimation of RDAs.

To sum up, the official recommended energy allowances for Indians are available for different age, sex and activity groups. After independence they were revised in 1958 and 1989 by ICMR Advisory Group and ICMR Expert Group. The 1989 Expert Group, while raising the reference weights for adult men from 55 kg to 60 kg and for adult women from 45 kg to 50 kg, recommended relatively lower energy allowances for activities involving heavy work and relatively higher energy allowances for activities involving moderate and sedentary work. However the weighted average of energy requirement for the rural and urban population is not provided by these Groups.

Therefore the only source, where we get rural and urban weighted average calorie norm, remains 1979 Task Force on Projection of Minimum Needs and Effective Consumption Demand. The 2400 kcal for rural areas and 2100 kcal for urban areas recommended by this Committee are still officially used by the Planning Commission as the minimum calorie requirements.

3.2 Controversies over Calorie Norms- A Brief Review of Adaptation Argument:

Even before the average calorie requirement for rural and urban areas was given by the 1979 Task Force, there were many studies which made use of the concept of the minimum calorie requirement in poverty studies. These studies assumed that the section of population which is not able to attain the minimum calorie requirement ought to be poor. Therefore, finding an appropriate calorie cut off which could be basis for identifying percentage of the population who are poor and undernourished became their preoccupation.

Fierce debates on setting appropriate calorie cut off for identifying poor started since the 1960s. Chaubey (1997)¹¹¹ in his review of the early studies using calorie norms to

¹¹¹ Chaubey, P.K (1997), 'Evolution of Poverty Indicators in India: A Historical Perspective', *IASSI Quarterly*, 15:4.1, pp. 91-107

estimate poverty, notes that calorie norms, used to determine distress level or poverty line, range from 1900 to 2780 for adult male (See table 3.4).

The author notes that one of the earliest studies by Patwardhan (1960) used the norm (2780 kcal from men) suggested by WHO. Later Sukhatme (1965) critically looking at 1985 ICMR Advisory Committee norms, suggested an average norm of 2100 kcal which would take into account the age, sex, work and climatic difference. However he allowed a variation of 7 to 10 per cent for wastages and suggested an average calorie requirement which would range between 2250 kcal to 2300 kcal.

Table 3.4: Calorie norms used in selected early studies

Author/ Agency	Calorie Norms used by different studies
National Planning Committee (1938)	2400-1800
FAO	2223 Per capita
WHO	2780 Per consumption unit
Patwardhan (1960)	2780 Man, 2080 Women
Sukhatme (1965) (physiological)	2100 per capita
Sukhatme (1965) (with allowances for wastage)	2250-2300 per capita
Bardhan (1970)	2100 per capita
Dandekar and Rath (1971)	2250 per capita
Sukhatme (1977)	1900 per capita

Source: Chaubey, (1997: 99-100)¹¹².

Later Dandekar and Rath (1971)¹¹³ chose to use the mean calorie intake of 2250 kcal. However, Sukhatme (1982), (quoted in Rao, 1985)¹¹⁴ questioned the use of mean calorie intake, as the minimum calorie requirement. The author argued that due to intra-personal variation in calorie intake, not all individuals would require mean calorie intake. In other words, a single norm assumed in conventional method is considered erroneous as calorie requirement for an individual body varies due to two reasons.

(1) The environment which determines the calorie requirement keeps changing and the body responds to it and is always in the process of adjustment. For instance, the body

¹¹² *ibid.*

¹¹³ Dandekar, V.M. and N. Rath (1971), 'Poverty in India - I', *Economic and Political Weekly*, 6:1, pp.25-48.

¹¹⁴ Rao, Kamala S. Jaya (1985), 'Blessed are the Small in Size - if they are Indians', *Medico Friend Circle Bulletin*, 115, July 1985, pp. 1-7.

responds to state of (a) health, (b) climate and (c) physical activity, (and on the social conditions which, in turn, determine them) which are always changing.

(2) Even with the given environment, the body also has a capacity to adapt physiologically to suit the given environment and is always in the process of adaptation to suit new environmental condition, through varying calorie intake. Therefore, the earlier logic of more calorie requirement due to increased physical activity is not simple anymore as the body also has the capacity to adapt with a similar level of calorie intake for increased physical activity.

Thus Sukhatme argues that given the ever variable calorie requirement, a population at any point of time would be in the process of adjustment and adaptation to new conditions. Therefore the safe reference minimum calorie requirement capturing this process of adjustment and adaptation (rather than a point in this process) would be found around the mean energy intake between -2 SD and + 2 SD. In other words, the mean intake of population, could not serve as reference calorie intake, as it would be merely one among the different norms falling in the range.

The policy implication of this understanding, according to the author, was that population with calorie intake levels between -2 SD and +2 SD were not to be considered as undernourished. The more radical but operational policy suggestion was that of using 1900 kcal as reference point for measuring under-nutrition. The author argues that the use of higher calorie level will lead to overestimation of undernourished population and this error would be least at 1900 kcal.

However, Rao (1985)¹¹⁵ notes that if the calorie norm suggested by Sukhatme was used then the proportion of undernourished would reduce significantly (15-20 per cent as against 46 per cent estimated by Dandekar and Rath). However, this would be puzzling because the under-nutrition in India involving thin and stunted adults is so visible and pervasive.

¹¹⁵ *ibid.*

In order to solve this puzzle Sukhatme, offered another argument, while justifying use of 1900 kcal norm, which became the real point of contention for long time (Rao 1985).¹¹⁶ This argument, in turn, became the larger justification behind the suggested low calorie norm. Sukhatme simply stated that being thin and stunted does not always mean undernourishment and substantiated his claim with a concept of physiological adaptation.

He explained physiological adaptation as a process whereby the human body adjusts the body weight and 'energy conversion efficiency' according to the availability of food. In other words, if the food availability and intake reduces over long period of time then the human body will simultaneously adjust to a smaller body size. The smaller body size, in turn, will be more efficient in converting food intake into energy and could perform a work, which would require more food intake for a person with bigger size and stature. Hence according to the author the population, with small stature and low calorie intake, should not be considered as under-nourished. (Edmundson and Sukhatme 1990).¹¹⁷

Similarly, he explains social adaptation as a parallel process whereby a person copes by using the limited energy intake in most necessary physiological function. Here, work which earns income/food and thereby prepares the body for next day labour is undertaken at the cost of forgoing other important social, cultural and recreation activities. (Edmundson and Sukhatme, 1990).¹¹⁸

Based on these two concepts it is concluded that

Both physical and social adaptation occurs in peoples with low energy intakes. Poor individuals and populations with low food intakes may be small and lean, yet they work long and hard and are extremely efficient at converting food energy into physical work. Those who eat less sometimes work harder. (Edmundson and Sukhatme 1990:276)¹¹⁹

In this way Sukhatme, implicitly recognized the role of poverty and associated factors such as poor health and environmental condition which forces the body to adapt physiologically. However, according to him, in short run the lower body weight and

¹¹⁶ *ibid.*

¹¹⁷ Edmundson, W. C. and P. V. Sukhatme (1990), 'Food and Work: Poverty and Hunger?', *Economic Development and Cultural Change*, 38:2, Jan., 1990, pp. 263-280

¹¹⁸ *ibid.*

¹¹⁹ *ibid.*

stature (reached after long term adaptation) should not be viewed as undernourishment as it is not detrimental to the human body (Sukhatme, 1982, quoted in Rao, 1985).¹²⁰

Thus according to this viewpoint, estimates of proportion of under-nourished population based on officially specified calorie norm are “grossly misinterpreted” diagnosis and inferences such as “impaired labour power”, “permanent states of hunger” or “starvation” should be avoided (Edmundson, and Sukhatme, 1990).¹²¹

Sukhatme continued to advocate this understanding for long time and wrote dissent note as a member of Expert Group on Estimation of Proportion and Number of Poor set by the Planning Commission in 1993, when several other members recommended the continued use of poverty line income method, originally based on 2400 kcal in rural and 2100 kcal in urban areas.

Rao, (1985)¹²² notes that, back in 1980’s Sukhatme’s critique led Dandekar to respond that Sukhatme is ‘confused’ and should distinguish between under-nutrition and poverty. Dandekar, rejecting the suggestion to use 1900 kcal calorie norm -assumed to be associated with the minimum error in estimating undernourished population, noted that overwhelming evidence is not required to set a calorie cutoff.

Gopalan (1983,¹²³ 1987¹²⁴) defended the 2400 kcal calorie norm based indicator of poverty and under-nutrition based on three arguments:

- (a) Low body weight and stunting, associated with low intakes, is an indication that people could not reach their growth potential and hence is essentially a sign of nutritional distress.
- (b) As there is a strong correlation between calorie intake and intake of other nutrients such as protein, the low level of calorie intake would also lead to low level of protein intake, which strongly affects the growth potential of children.

¹²⁰ Rao, Kamala S. Jaya (1985), *op cit*.

¹²¹ Edmundson, W. C. and P. V. Sukhatme (1990), *op cit*.

¹²² Rao, Kamala S. Jaya (1985), *op cit*.

¹²³ Gopalan, C. (1983), ‘Measurement of Undernutrition: Biological Considerations’ *NFI bulletin*, July, 1983.

¹²⁴ Gopalan, C. (1989), ‘Reviews and Comments: ‘Adaptation’ to ‘Chronic Energy Deficiency’ *NFI bulletin*, April, 1989.

- (c) Reference individuals, who are permanently subsisting on lower than 2400 kcal calorie intake, are actually losing an important physiological attribute or adaptive mechanism of ability to vary their intake when they face nutritional distress. Therefore, even if intra-individual variation in calorie intake is taken as a physiological attribute (as Sukhatme argues), the individuals are losing an important physiological attribute or adaptive mechanism.

Based on these observations Gopalan concluded that “*Adaptation, ... does not represent a stage of normalcy, but one of ‘strategic metabolic and functional retreat’ in response to stress, a device which may help victims to ward off the catastrophe of death but which, unfortunately, will not help him ‘live’ a normal life of activity and productivity*” (Gopalan, 1983: 5). Therefore he recommended the continual use of official minimum calorie requirement norm.

The argument of Sukhatme based on intra-personal variation of calorie requirement has also been challenged by Osmani (1992).¹²⁵ He notes that Sukhatme confuses between variations in energy requirement for healthy and economically unconstrained population (termed as *spontaneous variation*) and variation in energy requirement for economically constrained population (termed as *adaptive variation*). Osmani points out that though Sukhatme suggests that the calorie range and cut off point based on studies on *spontaneous variation*, he ignores it and treats them as if they are based on *adaptive variation*. The process range based on *spontaneous variation* is not valid since scientific evidence does not lend support to the concept of *spontaneous variation*.

However, Osmani (1993)¹²⁶ interprets Sukhatme’s concept of adaptation differently from Gopalan. For Osmani, the question that Sukhatme was addressing pertained to calorie variation that permits maintaining the existing weight or ‘adaptation in efficiency’. According to him, the ‘growth potential’ argument and critique given by Gopalan, incorrectly assumes that Sukhatme has argued that a person adapts with reducing his intake as well as weight. However, the position taken by Osmani is similar to Gopalan as he finds no settled scientific basis behind the thesis of ‘adaptation in efficiency’ or adaptation through reduction in weight.

¹²⁵ Osmani, S.R. (1992), ‘Some Controversies in the Measurement of Under nutrition’ in S.R. Osmani (ed), ‘*Nutrition and Poverty*’, Oxford University Press, New Delhi.

¹²⁶ *ibid.*

Shetty (2004)¹²⁷ notes that recently, with availability of new evidence, the debate on physiological adaptation was considered as settled by the FAO/WHO/UNU Expert Consultation on “Human Energy Requirements”, 2001. The Consultation reviewed the scientific evidence accumulated over the last 20 years, and concluded that though metabolic adaptation and improvements in metabolic efficiency may occur during energy restriction of individuals, these were trivial and could not be the basis for setting up RDAs or minimum calorie requirement. The Consultation noted that there were obvious costs to such adaptation, like increased risk of infection and disease. Further, observing that ‘behavioral adaptation’ (such as Sukhatmes’ social adaptation) was an important mechanism and manifested differently leading to reductions in socially desirable activities, the Consultation noted that such costs to the individual and to society should not be normalized in recommendations of energy requirements.

To sum up, since the 1960’s, the belief in ‘possibility of human adaptation’ has resulted in attempt to reduce the official minimum calorie requirement norm. However by the early 1990s there was an understanding at both national and the international levels that even if such a possibility existed, it is not desirable under an economically constrained environment. This meant that use of official minimum calorie norm of 2400 kcal for the rural population and 2100 kcal for the urban population in India continues to be approved till date.

3.3. Data Source for Assessing Calorie Adequacy of Indian Population- NSSO Consumption Expenditure Rounds:

The National Sample Survey Organization (NSSO) provides the main data sources for assessing the trend in under-nutrition based on household level consumption statistics. The relevant comparable survey rounds of NSSO consist of seven quinquennial rounds since the 1972-73 (table 3.5). The survey with “roughly 5-year intervals” is useful “for assessing the impact of economic, agricultural and food distribution related interventions on food consumption over time in different states, in urban and rural areas, and in

¹²⁷ Shetty, Prakash (2004), ‘Assessing Human Energy Requirements’ in NFI (2004), ‘Towards national nutrition security’, Compendium of papers presented in silver jubilee symposium, 29th November – 1st December, 2004, Nutrition Foundation of India, New Delhi, pp. 93- 100.

different income groups” (Ramachandran 2008: 1)¹²⁸ by triangulating the consumption trends with other macro-economic and socio-economic status.

The consumption expenditure information is collected for a 30 day reference period on a list of food and non food items.¹²⁹ The approximate number of food items included in the survey range from 160 food items in 1983 to 140 food items in 1999/2000 (Sharma et al, 2004: 2).¹³⁰

Table 3.5: NSSO consumption expenditure rounds

Round	Year	Period
27th round	1972-73	October 1972- September 1973
32nd round	1977-78	July 1977-June 1978
38th round	1983	January -December 1983
43rd round	1987-88	July 1987-June 1988
50th round	1993-94	July 1993-June 1994
55th round	1999-2000	July 1999-June 2000
61st round	2004-2005	July, 2004-June, 2005

Source: Chand, et al (2002: 4)¹³¹ and NSSO (2007)¹³²

The respondents are asked about the quantity of food items consumed and the response is recorded in the survey sheet. However, the time taken for collecting such detailed information is not clear. Researchers feel that this is done in a single interview (Ramachandran 2004: 4).¹³³ After the quantities consumed for the reference period is recorded in the survey sheet, the information is converted into (a) monetary value based

¹²⁸ Ramachandran, Prema (2008), ‘Changing Food Consumption Patterns in India’, *NFI Bulletin*, 29:2, April 2008, pp. 1-5.

¹²⁹ In 1999-2000, same respondents were given both 7 day and 30 day recall periods for food items , which gave incomparable estimated between 1999-2000 and earlier thick NSSO rounds. See Sen, Abhijit (2000), ‘Estimates of Consumer Expenditure and its Distribution: Statistical Priorities after NSS 50th Round’, *Economic and Political Weekly*, 35:51, pp.4499-4518; Sen, Abhijit and Himanshu (2004), ‘Poverty and Inequality in India – I’, *Economic and Political Weekly*, 39:38, pp.4247-4263; and Sen, Abhijit and Himanshu (2005), ‘Poverty and Inequality in India: Getting closer to the truth’, www.macrosan.org;

¹³⁰ Sharma, Rekha and J.V. Meenakshi (2001), ‘Micronutrient Deficiencies in Rural Diets’ in M.D. Asthana and Pedro Medrano (ed), ‘Towards Hunger Free India : Agenda and Imperatives : Proceedings of National Consultation on ‘Towards Hunger Free India New Delhi 24-6 April 2001’, Manohar, New Delhi.

¹³¹ Chand, Rattan and G. C. Manna (2002), ‘An Integrated Summary of Employment and Unemployment Survey Results, NSS Fifty-Fifth Round (July 1999 - June 2000)’, *Sarvekshana*, 25: 2 -3, October 2001 – March 2002, p-4

¹³² NSSO (2007), ‘Nutritional Intake In India 2004-2005: NSS 61st Round, July 2004- June 2005’, Report No. 513(61/1.0/6), Ministry of Statistics and Programme Implementation, Government of India, May 2007.

¹³³ Ramachandran, K. (2004), ‘Nutrition monitoring and surveillance’ in NFI (2004), “Towards national nutrition security, Compendium of papers presented in silver jubilee symposium, 29th November – 1st December, 2004, Nutrition Foundation of India, New Delhi, pp. 134- 140.

on preceding year price of each commodity and (b) nutrient value based on the nutrient quality of each commodity.

The results are available in the form of two separate reports on (a) level of consumption expenditure based on monetary value of the recorded items and (b) nutrient intake based on nutrient content of the recorded items. We will be exhaustively using the tables in these reports which allow comparison based on 12 monthly per capita expenditure (MPCE) groups.¹³⁴

As the expenditure data in NSSO is collected at the household level and not the individual level and are reported as 'per capita per day calorie intake', let us first examine whether this would pose any special problems in (a) assessing the adequacy of calorie intake at any point of time and (b) assessing the trend in calorie intake.

Assessment of adequacy of average calorie intake based on NSSO data:

As discussed earlier, the minimum average calorie requirement that is presently available to assess the adequacy of average calorie intake is based on (a) weighted distribution of age-sex- activity distribution of population and (b) RDAs suggested by ICMR for each groups. Table 3.6 presents the 'homogeneous' groups in column I (which require a similar calorie requirement), estimated proportion of each homogeneous' group in the total population - according to the Task Force - in column II and recommended calorie intake for each of the groups as recommended by ICMR in column III.

Based on the information provided in these columns, the average calorie requirement of 'all individuals' in the rural population is estimated (last row in column IV), which is officially rounded off to 2400 kcal. This average calorie requirement based on '*all individuals*' in the rural population could be now used to assess the adequacy of observed average calorie intake of the rural population which is based on '*households level*' calorie intake data.¹³⁵

¹³⁴ More detailed tabulation and analysis is possible with the unit level data on quinquennial consumption expenditure rounds, which is available on request from NSSO. However though the reports of NSSO are available free of cost, the cost of unit level data for last five round data is around Rs. 40,000.

¹³⁵ This practice seems to be fair as there would be only marginal error or difference in estimation based on individuals and households at all India level at a given time point.

Table 3.6: Minimum calorie requirement of different 'Homogeneous group': their share in the total population and minimum average calorie intake: Rural India

Column I	Proportion of people in each group	Calorie requirement per individual	Share in average calorie requirement for each groups
Column I	Column II	Column III	Column IV
(1) Children			
(a) Less than 1 year	2.72	650	17.68
(b) 1 to 4 years	8.21	1200	98.52
(c) 4 to 7 years	7.99	1500	119.85
(d) 7 to 10 years	7.47	1800	134.46
(e) 10 to 13 years	7.46	2100	156.66
(2) Adolescents: 13-15 years			
(a) Boys	2.37	2500	59.25
(b) Girls	2.22	2200	48.84
(3) 15 years and above			
(i) Workers: Male			
(a) Heavy	22.63	3900	882.57
(b) Moderate	2.13	2800	59.64
(c) Sedentary	2.66	2400	63.84
(II) Workers: female			
(a) Heavy	10.88	3000	326.4
(b) Moderate	0.93	2200	20.46
(c) Sedentary	0.59	1900	11.21
(4) Non-workers:			
(a) Male	3.92	2400	94.08
(b) Female	17.82	1900	338.58
Average calorie norm	(100.00)		2432.04

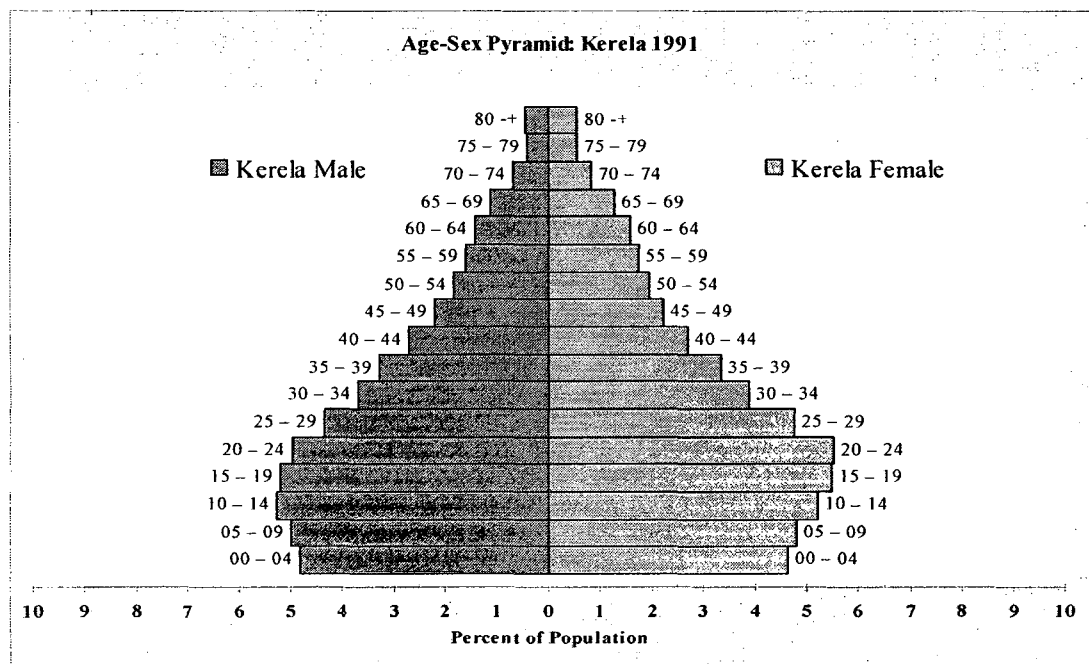
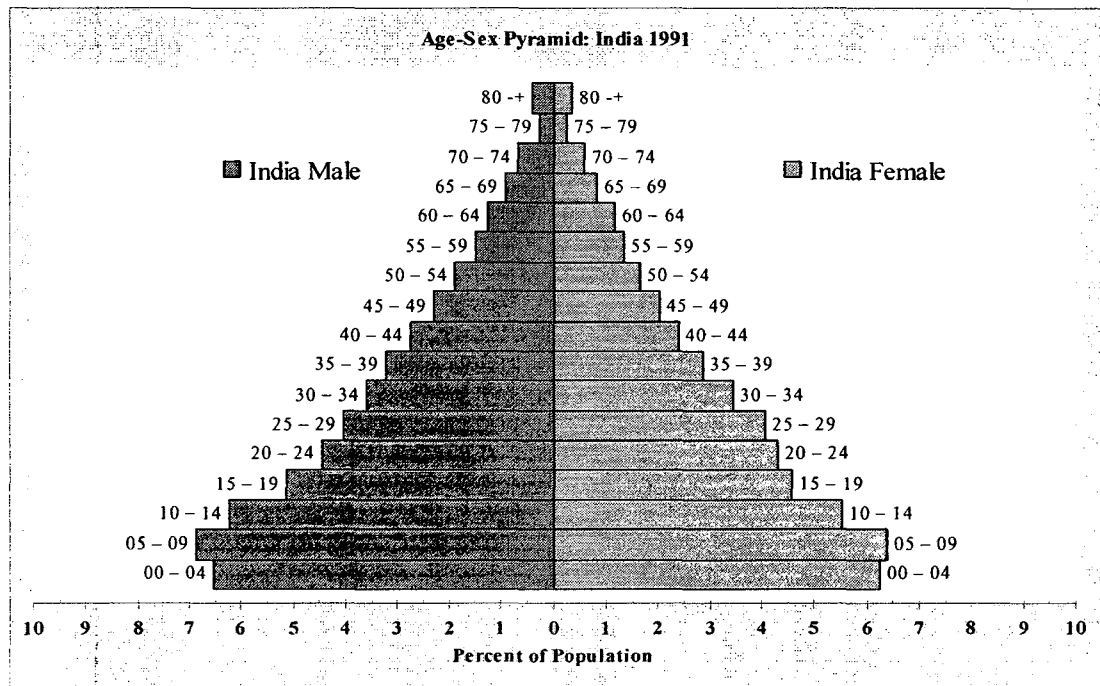
Source: Computed based on Manna (2007: table 4)¹³⁶

However, if we use the average calorie norm of 2400 kcal to assess the observed average calorie of the smaller population group such as children, adults engaged in the sedentary work and adults engaged in the heavy work etc., we will overestimate or underestimate the calorie gap. Similarly, if we have to assess the average calorie intake of a population group which have a different proportion of the 'homogeneous groups' than observed for the all India rural population (for eg. States), we have estimate the minimum calorie requirement for the population using the method shown in table 3.6.¹³⁷

¹³⁶ Manna, G.C (2007), 'On Calibrating the Poverty Line for Poverty Estimation in India', *Economic and Political Weekly*, July 28, 2007, pp. 3108-3115.

¹³⁷ Apart from this factor, local food choice based on local culture and taste formed by historical availability of food among other factors, would not allow neat assessment of calorie adequacy of different individual states based on *average Indian calorie requirement*.

Figure 3.1 Age-Sex Pyramid in India and Kerala in 1991



Source: Based on 1991, Census of India.

For instance a look at the figure 3.1, shows different demographic composition of Kerala and India. The age sex pyramid for Kerala gives higher proportion of female and the population above 15 years (which is treated as adult population by the 1958 ICMR Advisory Committee), than Indian population. Apart from this, the proportion of the population engaged in heavy, medium and sedentary occupation would not be same in Kerala as in India. Therefore we need to estimate the calorie requirement norm for Kerala separately, in order to assess the calorie adequacy in the state. Similarly, the

lower MPCE groups in rural areas would consist of higher proportion of (a) adult men and women engaging in moderate and heavy work, (b) morbidity levels and (c) lactating and pregnant women owing to high fertility etc. This, in turn, would mean that the required weighted minimum average calorie for lower MPCE groups in rural areas would be higher than 2400 kcal.

Therefore attempts to assess average calorie intake at state level and among different MPCE group level or to identify the proportion of people with inadequate calorie intake, requires one to justify that how state level average calorie requirement or MPCE level calorie requirement is not very different from average Indian calorie requirement.

Assessment of calorie intake over a period of time based on NSSO data:

While assessing the trend in actual observed average calorie intake, one needs to assess how much of the trend is due to reduction or an increase in average calorie *requirement* and how much of the trend is explained by other factors. Over the years, if the proportion of 'homogeneous groups' change, the average calorie requirement might increase or decrease. Similarly, if the RDAs required for each 'homogeneous group' changes over the years, it would have impact on the average calorie requirement. In such case, continuing the use of 2400 kcal (rural) and 2100 kcal (urban) would also mean over-estimation or under-estimation of calorie gap at a particular time point.

As noted earlier, two official attempts have been made during 1979 and 1989, to estimate calorie requirement at national level, but due to comparability problem one is not able to ascertain whether the average calorie requirement has changed over this time point. However we were able to locate a non-official attempt to estimate the average calorie requirement for rural and urban Indian population in 1999-2000. Manna (2007)¹³⁸ following the approach of 1979 Planning Commission Task Force and RDAs based on 1989 ICMR group, arrives at an average calorie requirement of 2350 kcal (rural) and 2142 kcal (urban) for 1999-2000. When compared to 2400 kcal (rural) and 2100 kcal (urban) recommended by 1979 Planning Commission Task Force, the average requirement estimated by Manna (2007),¹³⁹ is only marginally lower for rural areas and marginally higher for urban areas. However this difference might be due to the use of

¹³⁸ Manna, G.C (2007), *op cit.*

¹³⁹ *ibid.*

RDAs prescribed by 1989 ICMR Expert Group rather than RDAs prescribed by the 1949 ICMR Advisory Group, based on which the average calorie requirement for 1979 was calculated by the Planning Commission Task Force. Therefore, the marginal decline in average calorie requirement in rural areas might be due to the use of revised methodology where estimation error in calculating the recommended calorie allowances for adults involved in heavy work was corrected/ reduced and the reference weight was increased (see table 3.2). In other words, due to use of two different RDAs arrived at by using different methods,¹⁴⁰ one could not infer that the average *requirement* has reduced by 150 kcal for rural India during 1979 and 1999-2000.

As the available literature on the subject has not engaged in any systematic attempt to assess the trend in average calorie requirement,¹⁴¹ a brief attempt is made here to analyse the factors which could have increased or decreased the calorie requirement.

One way of doing this is to check whether the proportion of adult population engaged in heavy, moderate and sedentary work has increased over the years or not. This assumes importance as many studies on post 1990 trend in under-nutrition are that sedentary work and life style is increasing in India, as we will note later. Now, if the proportion of heavy and moderate workers has increased over the years in the population, then we could infer that the average Indian calorie requirement has increased over the years. On the other hand, if we find the proportion of sedentary and moderate workers have increased over the years in population, we could infer that the average Indian calorie requirement has decreased over the years

A look at table 3.7 will show that the proportion of adults engaged in heavy work has increased substantially between 1979 and 1999-2000 estimates. However, one must note that the Task Force in 1979 treated the population in below 15 age group as adults and then estimated proportion of the adult population engaged in heavy, moderate and sedentary work. The later work by Manna (2007) provides the proportions using a similar method but for 19 years and above population (table 3.7). Normally, if we remove 15 – 18 years population from the work force, the proportion of population

¹⁴⁰ The lower RDAs for heavy workers arrived at by ICMR (1989), is not due to reduction in calorie requirement for this group over years, but it was more due to use of different estimation method.

¹⁴¹ Surprisingly all inference on trend in reducing calorie requirement are based on interpretation on trend in actual calorie intake. Further 'reducing calorie requirement' argument is hypothesized when the actual calorie trend could not be explained.

engaged in heavy work would decrease. In other words, the estimate of heavy workers by task group for 1979 would be an under-estimate when it is compared to estimate by Manna (2007). Therefore, not all increase in the proportion of adults involved in heavy work estimated by Manna (2007) would be due to changes in occupational pattern. However, in order to address the overestimation in Manna (2007) even when we assume that none among the 15-18 age groups in 1999-2000 was engaged in heavy work (which is highly unlikely), we still find that the proportion involved in heavy work in 1999-2000 was more than in 1979.

Table 3.7: Proportion of adult workers engaging in Sedentary, Moderate and Heavy workers in 1979 and 1999-2000- Rural India

	1979 Task Force estimate*	1999-2000 Estimate by Manna (2007)**
(I) Workers: Men		
(a) Sedentary	3.88	2.66
(b) Moderate	3.32	2.13
(c) Heavy	16.71	22.63
(II) Workers: Women		
(a) Sedentary	0.76	0.59
(b) Moderate	1.26	0.93
(c) Heavy	7.84	10.88
(9) Non-Workers:		
(a) Men	3.17	3.92
(b) Women	17.48	17.82
Other homogeneous groups	(14 yrs and below) 38.44	(18 yrs and below) 45.6

Note: * (15 yrs and above)

** (19 yrs and above)

Source: Based on Manna (2007)

Another factor which could affect the average calorie requirement is the sex-ratio in the adult population. If the sex ratio decreases in the adult population then the average calorie requirement should also decrease. However the impact of decrease in sex ratio would be offset if the women are increasingly involved in heavy work which requires more calories. A look at the table 3.7, show that this has happened over the years as the proportion of women involved in heavy work has increased substantially between 1979 and 1999-2000. While the proportion of women in the specified age group decreased from 50.2 per cent in 1979 to 49.1 per cent in 1999-2000, the impact was more than offset due to an increase in proportion of women involved in heavy work from 14.4 per cent to 17.7 per cent.

The other factors which could have changed the calorie requirement include (a) the nature of non- occupational activity, (b) energy intensity of specific occupation, (c) changing health status of people, (d) average height and weight of the population, (e) proportion of children in the total population and (e) proportion of pregnant women and lactating women.

The possible impact of three factors, i.e., the nature of non- occupational activity, energy intensity of specific occupation and health status of people, is quite difficult to judge. On the one hand, increasing infrastructure facilities like rural roads, transport facilities, drinking water supply and electrification would have reduced the non-occupational activity and mechanization would have done so within specific occupation (Rao, 2000¹⁴², Deaton et al 2008).¹⁴³ On the other hand, the increasing pressure and degradation of natural resources like ground water (GoI 2007: Table 1.5),¹⁴⁴ forest resources and common property resources (Mehta et al 2000)¹⁴⁵ would have increased some non-occupational activities. Similarly, a marginal increase in average height and weight in Indians over a period of time (Shatrugana 2001)¹⁴⁶ would increase the energy needs for similar work. Increasing exercise, aerobics and engagement in sports by the population which is hitherto assumed as lazily sedentary would also have lead to an increase in energy needs. Similarly, under conditions of growing open unemployment, casualisation of work force, and growth of unorganized sector, the labour force would increasingly face powerlessness and would accept extracting working and living conditions.

Therefore the impact of these factors cannot be clearly established till field studies focus on these issues in detail. Similarly, it would be difficult to judge the impact of improving health services on calorie requirement. On the one hand, improved health services would have reduced the instance of morbidity and ill-health and hence would have reduced the

¹⁴² Rao, C.H. Hanumantha (2000), 'Declining Demand of Food grains in Rural India: Causes and Implications', *Economic and Political Weekly*, 35:4, pp 201-06.

¹⁴³ Deaton, Angus and Jean Drèze (2008), 'Nutrition in India: Facts and Interpretation', Mimeo, Center for Health and Wellbeing, Princeton University. Downloaded from http://weblamp.princeton.edu/shw/papers/deaton_dreze_india_nutrition.pdf on 22/07/08.

¹⁴⁴ GoI (2007a), "*Report of the Expert Group on Agricultural Indebtedness*", Banking Division, Department of Economic Affairs, Ministry of Finance, Government of India, July 2007.

¹⁴⁵ Mehta, J. and S. Venkatraman (2000), 'Poverty Statistics: Bermicide's Feast', *Economic and Political Weekly*, 35:27, pp. 2377-81.

¹⁴⁶ Shatrugna, Veena (2001), 'Body Weights – Role of Nutrition', *Medico Friend Circle Bulletin*, Nov-Dec 2001

calorie requirement (Deaton et al 2008).¹⁴⁷ However, at the same time the improved health services would increase the period of morbidity over a life time (with reducing mortality and increasing life expectancy). Therefore, the longer 'in-treatment time' or morbidity period induced by improved access to medical care would have played a role in increasing the calorie requirement of the population. Similarly, with decline in the fertility rate, the proportion of pregnant women and lactating women would have also decreased and led to reduction in calorie requirement (Deaton et al 2008).¹⁴⁸ However the role of increasing lactation (breast feeding) period should not be ignored. Similarly, the decrease in proportion of 0-14 children from 39.6 per cent in 1981 to 33.6 per cent in 2001,¹⁴⁹ would have increased the average calorie needs of the population.

To sum up, based on the brief assessment of factors affecting average calorie requirement we can say that there are equally strong contending factors which could have both increased and decreased the average calorie requirement. Thus there is no rationale in inferring that calorie intake is reducing due to decrease in requirement over long period of time in India. Similarly, it would be equally erroneous to say that the calorie requirement has increased over the years.

Given the above discussed limitation, at best we can continue the usage of 2400 kcal as average calorie requirement for rural areas, based on the understanding that different factor which have played a role in increasing and decreasing average calorie requirement could have nullified each other.

3.4. The adequacy of calorie intake in rural India:

As discussed earlier, we would be using 2400 kcal as average minimum calorie requirement to assess the actual calorie intake in rural India. This average calorie intake level is also the officially prescribed calorie intake level and was also used to compute the poverty line income and estimate the number of people below the poverty line during 1972-73.¹⁵⁰ Based on results of NSSO survey in 2004-05, we find that the average rural calorie intake is 2047 kcal and is less than recommended intake by 353 Kcal (table 3.8).

¹⁴⁷ Deaton, Angus and Jean Drèze (2008), *op cit*.

¹⁴⁸ *ibid*.

¹⁴⁹ Including rural and urban area.

¹⁵⁰ Recently Patnaik (2007), has expressed doubts about the calorie norm used for estimating the poverty line in 1973-74. The author points out that the relevant nutritional data for 1973-74 were not published

Table 3.8: Average Calorie Intake in 2004-05 and Recommended Calorie Intake

	Rural India			Urban India		
	Average Calorie intake	Recommended Intake	Calorie Gap	Average Calorie intake	Recommended Intake	Calorie Gap
2004-05	2047 Kcal	2400 Kcal	353 kcal	2020 Kcal	2100 Kcal	80 Kcal

Source: NSSO (2007)¹⁵¹

By using the method used in 1972-73, (Patnaik, 2007)¹⁵² finds that 87 per cent of people in rural India consume less than 2400 Kcal. As this method is used on data based on per capita household calorie intake, it will lead to two problems.

Overestimation of calorie deficit households:

Among the households identified as calorie deficient, some would have lower calorie requirement and some would have higher calorie requirement, depending on age-sex-activity composition of the household. Therefore, such a method is based on the assumption that in fairly large number of sample, the proportion of households with higher calorie requirement (wrongly included as calorie sufficient) and proportion of households with lower calorie requirement (wrongly included as calorie deficient) would be more or less same and hence would nullify each other. Hence the estimated proportion of calorie deficit people using direct method would be true and will only have marginal error.

Another parallel assumption made by such a method is that the average calorie requirement is also derived from a population where the proportion of individuals with lower than average calorie requirement would be more or less similar to proportion of individuals with higher than average calorie requirement. However this assumption is problematic. Even when the average calorie requirement was stipulated by Task Group in 1979, the proportion of individuals with less than 2400 kcal requirement were 55 per

and made available for public scrutiny. Review of studied providing evidences for 1970-71 suggested that the calorie norm used would have been 2200 kcal instead of 2400 kcal.

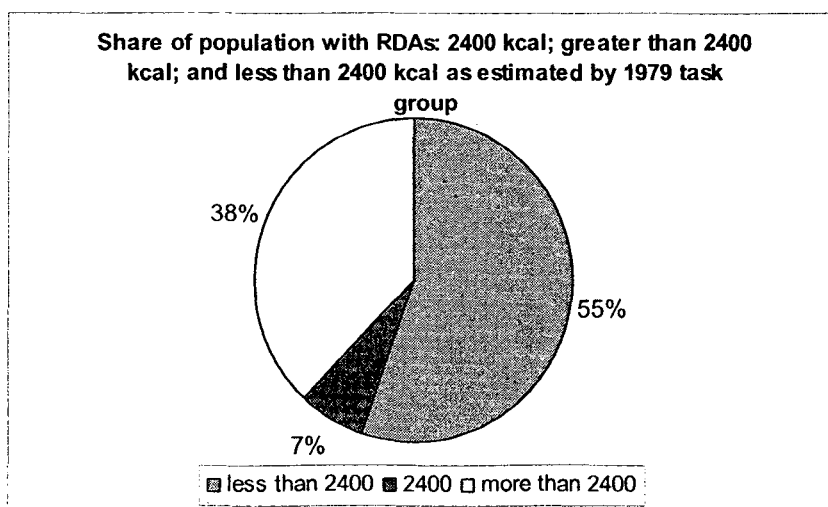
¹⁵¹ NSSO (2007), *op cit.*

¹⁵² Patnaik, Utsa, (2007), *op cit.*

cent and those individuals with more than 2400 kcal requirement was 38 per cent (Figure 3.2).

Therefore the use of the uniform 2400 kcal as a cutoff, would overestimate the proportion of calorie deficient individuals in a population. Over the years this overestimation would increase. For instance, using the proportion of different calorie group estimated by Manna (2007), one finds that the proportion of individuals who consume less than the average calorie intake (2286 kcal) is 61 percent.

Figure 3.2



Source: Computed based on Manna (2007: table 4)¹⁵³

Underestimation of calorie deficient population:

It would be useful to remember that the per capita per day calorie intake reported by NSSO is based on household level information on calorie intake. Therefore, the individual differences in the consumption inside the household are not captured by the NSSO data. Suppose that many households showing adequate calorie intake, have women and children who get less than required RDAs,¹⁵⁴ then the use of calorie cut-off method would underestimate the proportion of calorie deficit individuals.

Due to this problem of overestimation and underestimation of calorie deficient population, it would be very difficult to arrive at the proportion of population who are calorie deficient. Therefore, we refrain from using the calorie cut-off method to assess

¹⁵³ Manna, G.C (2007), *op cit*.

¹⁵⁴ this is possible when men gets more than the calorie requirement

the trend in calorie deficiency and will restrict our selves to interpretation of trend in average calorie intake. Patnaik (2007) argues the same for official poverty line which is indirectly based on calorie intake measures.

the all-India and state estimates of poverty obtained by the Planning Commission and by individual academics who follow the same method, cannot be validly compared over time and statements about rise or decline in poverty cannot be made. Nor at any given point of time, can the states be compared with respect to their extent of poverty (Patnaik 2007: 3138).

3.5 Trend in average calorie intake:

Having argued that over the years, calorie norm of 2400 kcal for rural areas remains relevant in measuring the calorie adequacy, in this section we assess the trend in per capita per day average calorie intake of rural India.

Assessment of trend for strictly comparable NSSO surveys since the 1983 shows a declining trend in calorie intake. The marginal 7 kcal decline experienced between 1983 to 1987-88, has caught tempo after 1987-88. From 1987-88, when the calorie intake was at 2240, the intake level has steadily decreased to 2047 kcal in 2004-05. The calorie intake data for 1999-2000 is not included in the table due to methodological problems associated in change in recall period in 1999-2000.¹⁵⁵

Table 3.9: Trend in average calorie intake (kcal) in Rural India based on NSSO rounds
(Per capita per day intake)

Year	Calorie intake level
1983	2240
1987-88	2233
1993-94	2152
2004-05	2047

Source: Various rounds of NSSO surveys

¹⁵⁵ Inclusion of 1999-2000, shows that calorie intake declined steeply between 1999-2000 and 2004-05 and during the same period, it also shows that average MPCE for 7 low MPCE groups delined, the share of food to non-food expenditure actually increased for 5 MPCE groups. In other words, inclusion of 1999-2000, wrongly overestimates the distress after 1999-2000 and underestimates the distress from 1993-94 to 1999-2000.

Patnaik, (2007)¹⁵⁶ points out that during the same period the calorie intake at poverty line was also declining. The calorie intake at poverty line was 2170 kcal in 1977-78, 2060 Kcal in 1983, 1980 Kcal in 1993-94 and 1820 Kcal in 2004-05.

3.6. Interpretation of declining calorie intake in the academic literature:

Interpretation of income- calorie intake mismatch:

Interestingly, for a long time studies did not focus on the reason behind the declining calorie intake. Earlier studies were focused on estimation of people below the poverty line using the 2400 kcal and similar cutoff points. One of the earliest studies on poverty in India by Dandekar et al (1971)¹⁵⁷ used this calorie cutoff method to estimate the poverty line income and identify people below the poverty line. The authors, based on NSSO survey in 1960-61, listed the distribution of 12 income groups and identified the income group which did not attain the minimum calorie requirement. The population which was below the identified income group was taken as people below the poverty line.

Other studies following this, focused on the limitation of this approach. They mainly focused on the fact that the identified poverty line does not neatly separate calorie deficient population from the calorie sufficient population. Shah, (1983),¹⁵⁸ first pointed this out for the state of Kerala. The author's analysis was based on two data sources. First being a survey conducted by Protein Food Association (PFA)¹⁵⁹ of India for year 1967-68 in Kerala and second is based on the data for Kerala in NSSO 26th round in 1971-72.

¹⁵⁶ Patnaik, Utsa, (2007), *op cit*.

¹⁵⁷ Dandekar, V.M. and N. Rath (1971), *op cit*.

¹⁵⁸ Shah, C. H. (1983), 'Food Preference, Poverty and the Nutrition Gap', *Economic Development and Cultural Change*, 32:1, pp. 121-48.

¹⁵⁹ The PFA survey had a sample size of 836 urban and 540 rural households. Data was collected at individual level and all individuals in a household could not be covered. Data collection focused on collection of intake figures for 101 food items based on 24 hrs recall period through using calibrated measures (rice and milk etc), and quantity (idlies etc),. The intake figures at individual level were converted into nutrient values based on ICMR tables on nutrient contents of the different food items. Income data was available only for group of households. Similarly, expenditure and price data was not collected in the survey. For different income groups available in the data were (i), below Rs.100 per month (Lower),; (ii), Rs.100 – Rs. 199 per month (lower middle),; (iii), Rs.200- Rs. 299 per month (middle),; and (iv), Rs.300 and above per month (upper),.

Based on the PFA data, Shah found that calorie deficit (also adequate) people were found across all low and high income groups, though the proportion of calorie deficit people was relatively higher in lower income groups. Based on statistical analysis on this cross-section data, the author found that when the income level increased fivefold the response observed in calorie intake was very low, with reduction in percentage of the calorie deficient population from 64 per cent to 44 percent.

Similarly based on NSSO 26th round (1971-72), which had 608 and 570 household samples in rural and urban Kerala respectively, the author compares the consumption pattern of calorie deficit households in different expenditure groups. He finds that after a certain level of expenditure there were both calorie deficient and calorie adequate households. In rural areas the expenditure groups above the lowest two expenditure groups had both calorie deficient and calorie adequate households.

Kakwani (1989)¹⁶⁰ also points out that there is no monotonic relationship between calorie intake and total expenditure (or MPCE). Using NSSO 1971-72 consumption data he ranks the consumer units based on calorie intake per diem and finds that the number of under nourished are much higher than what Dandekar (1981)¹⁶¹ have estimated indirectly. While Dandekar was also concerned with identifying the households which consumed less than 2780 kcal, he used an indirect method of determining the expenditure group which consumes less than 2780 kcal and counting the number of households corresponding this expenditure group and below. This method used by Dandekar excluded all calorie deficit households above this expenditure group (poverty line group) and included all the calorie sufficient people below this expenditure group.

The mismatch between calorie intake and income level (usually inferred based on the consumption expenditure), was noted widely after the 1990s and the issue received attention from some studies such as Rohini Nayyar (1991) (quoted in Patnaik (2007)¹⁶²), Expert Group (GoI, 1993),¹⁶³ Mehta et al (2000),¹⁶⁴ Brinda et al. (2001),¹⁶⁵ Palmer-Jones

¹⁶⁰ Kakwani, Nanak (1989), 'On Measuring Undernutrition', *Oxford Economic Papers*, New Series, 41:3, July, 1989, pp. 528-552.

¹⁶¹ Dandekar, V. M. (1981), 'On Measurement of Poverty', *Economic and political Weekly*, 16:30, July 25, pp. 1241-1250.

¹⁶² Patnaik, Utsa, (2007), *op cit.*

¹⁶³ GoI (1993), *op cit.*

¹⁶⁴ Mehta, J. and S. Venkatraman (2000), *op cit.*

et al (2001),¹⁶⁶ Meenakshi et al (2003),¹⁶⁷ Patnaik (2004,¹⁶⁸ 2007¹⁶⁹), Ray and Lancaster, (2005),¹⁷⁰ Coondoo et al. (2005),¹⁷¹ Subramanian (2005),¹⁷² Dev (2005),¹⁷³ Sen (2005)¹⁷⁴ and Guruswamy et al (2006).¹⁷⁵

However many of these studies did not go into the reasons for declining calorie intake. They delved into the details of expenditure (income) -calorie mismatch as it was important for a larger debate on correct poverty line estimation. Some of the above mentioned studies such as Mehta et al. (2000),¹⁷⁶ Patnaik (2004,¹⁷⁷ 2007¹⁷⁸) and Ray et al., (2005)¹⁷⁹ used the calorie cut off method to directly estimate the proportion of the calorie deficient population and showed that official poverty ratios are underestimates as they leave out a large number of calorie deficient people. The evidence of gap between deprivation based on calorie intake and indirectly based on poverty line income/expenditure which was initially linked to a calorie norm was used to challenge the existing poverty line and the declining trend in income poverty observed by other studies.

Other studies, such as Brinda et al. (2001),¹⁸⁰ Meenakshi et al (2003),¹⁸¹ Dev (2005),¹⁸² Srinivasan (2007),¹⁸³ used this evidence to argue for a need to look beyond calories and

¹⁶⁵ Vishwanathan, Brinda and J.V. Meenakshi (2001), 'Calorie Intake Patterns of Rural Indian Households: Evidence from National Sample Survey Data', *medico friend circle bulletin*, 290-291, Nov-Dec 2001, pp.11- 14

¹⁶⁶ Palmer-Jones, Richard, and Kunal Sen, 2001, 'On Indian Poverty Puzzles and Statistics of Poverty,' *Economic and Political Weekly*, 36:3, January 20, pp.211-7.

¹⁶⁷ Meenakshi, J.V. and B. Vishwanathan (2003), 'Calorie Deprivation in Rural India', *Economic and Political Weekly*, 38:4, pp. 369-375.

¹⁶⁸ Patnaik, Utsa (2004), 'The Republic of Hunger' *Social Scientist*, 32:9-10, Sep-Oct, pp. 9-35.

¹⁶⁹ Patnaik, Utsa (2007), *op cit*.

¹⁷⁰ 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 and Political Weekly*, 40:1, pp.46-56.

¹⁷¹ Coondoo, D, A. Majumder, G. Lancaster and R. Ray (2005), 'Alternative Approaches to Measuring Temporal Changes in Poverty with Application to India', mimeo, University of Tasmania, Hobart, downloaded from www.utas.edu.au/economics, January, 2, 2008

¹⁷² Subramanian, S. (2005), 'Unravelling a Conceptual Muddle: India's poverty statistics in the light of basic demand theory', *Economic and Political Weekly*, 40: 1, pp.57-66.

¹⁷³ Dev, S. Mahendra (2005), 'Calorie Norms in Poverty', *Economic and Political Weekly*, 40:8, 2005, pp 789-792

¹⁷⁴ Sen, Pronab (2005), 'Of Calories and Things: Reflections on Nutritional Norms, Poverty Lines and Consumption Behaviour in India,' *Economic and Political Weekly*, 40:43, 2005, pp. 4611-8.

¹⁷⁵ Guruswamy, Mohan and Ronald, Joseph Abraham (2006), 'Redefining Poverty A New Poverty Line for a New India' *Economic and Political Weekly*, 41:25, June 24, 2006, pp. 2534-2541

¹⁷⁶ Mehta, J. and S. Venkatraman (2000), *op cit*.

¹⁷⁷ Patnaik, Utsa (2004), *op cit*.

¹⁷⁸ Patnaik, Utsa (2007), *op cit*.

¹⁷⁹ Ray, Ranjan and Geoffrey Lancaster (2005), *op cit*.

¹⁸⁰ Vishwanathan, Brinda and J.V. Meenakshi (2001), *op cit*.

revise the current methodology behind poverty line estimation. However these studies did not agree with direct method of estimating the proportion of the undernourished population using a calorie cut off. In other words, these studies did not agree with the policy implication of studies by Mehta et al. (2000),¹⁸⁴ Patnaik (2004,¹⁸⁵ 2007¹⁸⁶) and Ray et al., (2005)¹⁸⁷ that after 1990s the condition of the larger population in India is deteriorating as evident by increasing number of people below the poverty line. They, instead, limited their agreement to the fact that presents official method of indirectly estimating poverty line based on calorie norms is getting absurd and argued for setting a poverty line which, not only includes calorie needs but, also accounts for other nutrients and non- food basic needs.

Therefore, all of these studies whether or not making growing distress argument take, a similar stand that the present poverty line estimation is erroneous. However we have to make an important distinction here. The studies which do not agree with growing distress argument, also, do not agree that *poverty is not declining in rural India* and hence do not subscribe to the argument that post 1990's 'development strategy' has pushed more people into poverty. What they subscribe to is that irrespective of development strategy we should broad base the definition of poverty line bundle by expanding the list of necessities.

These studies point out that the indicator of increasing rural distress is based on the direct calorie cutoff based estimation of the calorie deprived population, which cannot be true due to three reasons:

- (a) there were significant number of calorie deprived people in higher income groups (Brinda et al (2001),¹⁸⁸ Srinivasan (2007),¹⁸⁹ Meenakshi et al (2003),¹⁹⁰
- (b) states with high development indicators have highest proportion of calorie deprived people (Dev, 2005),¹⁹¹ and

¹⁸¹ Meenakshi, J.V. and B. Vishwanathan (2003), *op cit.*

¹⁸² Dev, S. Mahendra (2005), *op cit.*

¹⁸³ Srinivasan, T.N. (2007), 'Poverty Lines in India: Reflections after the Patna Conference', *Economic and Political Weekly*, 42:41, October 13, 2007

¹⁸⁴ Mehta, J. and S. Venkatraman (2000), *op cit.*

¹⁸⁵ Patnaik, Utsa (2004), *op cit.*

¹⁸⁶ Patnaik, Utsa (2007), *op cit.*

¹⁸⁷ Ray, Ranjan and Geoffrey Lancaster (2005), *op cit.*

¹⁸⁸ Vishwanathan, Brinda and J.V. Meenakshi (2001), *op cit.*

¹⁸⁹ Srinivasan, T.N. (2007), *op cit.*

¹⁹⁰ Meenakshi, J.V. and B. Vishwanathan (2003), *op cit.*

¹⁹¹ Dev, S. Mahendra (2005), *op cit.*

(c) the ‘ minimum calorie norm’ used for such estimation is questionable (Brinda et al (2001),¹⁹² Srinivasan (2007),¹⁹³ Meenakshi et al (2003),¹⁹⁴ Dev (2005).¹⁹⁵

However as we pointed out above, the use of average calorie intake as a cut-off for identifying the proportion of calorie deprived households, would obviously result in overestimation of calorie deprivation for some households and underestimation for some households. Therefore, obviously the seemingly calorie deprived would also lie in higher expenditure group and seemingly calorie adequate households would also lie lower income group. Similarly, we also noted the problem in using the average calorie norm at state level. Therefore, the argument of highly developed states with low calorie intake may not be a puzzle at all, unless we arrive at state specific calorie requirement figures.

Interpretation of Changing Consumption Pattern and Declining Cereal Intake:

What needs to be really done to counter the mass distress argument is to provide explanation for the decreasing average calorie intake in the rural population. Attempts in this direction were made by some studies on changing consumption pattern. However the main focus of these studies is not the calorie intake trends. These studies mainly attempt to explain the changing consumption pattern and in the process explain declining calorie intake.

The research question for most of these studies is how does the consumption pattern change with an increasing real income level and a declining share of food expenditure? In other words, the basic presumption before the enquiry actually begins is that the real income has improved and distress has reduced. This presumption is held despite the fact that NSSO estimates of expenditure which are usually taken as Income may involve dis-savings involving asset depletion and expenditure incurred out of borrowing (Patnaik, 2007). Further, such presumption narrows down the scope of analysis. The categorical assumption of increasing welfare, ends up linking the *increase* as well as *decrease* in the consumption to increasing income after customarily checking the role of change in price and availability. When decline in the consumption of certain items is not explained by price or availability the usual task permissible under such restricted frame becomes two

¹⁹² Vishwanathan, Brinda and J.V. Meenakshi (2001), *op cit.*

¹⁹³ Srinivasan, T.N. (2007), *op cit.*

¹⁹⁴ Meenakshi, J.V. and B. Vishwanathan (2003), *op cit.*

¹⁹⁵ Dev, S. Mahendra (2005), *op cit.*

fold. Firstly, some goods are treated as 'inferior goods' which people substitute for other 'superior goods' when their real income increases. Secondly, without ascribing inferior or superior status to food items, the shift in the consumption pattern is simply ascribed to voluntary shifts due to change in taste and preference. Though the method of analysis differs ranging from simple tabulation to complex econometric estimation, the frame of analysis is the same.

Thus the empirical assumption of increasing real income rules out any possibility of recognizing the distress indicators reflected in reduced consumption of certain commodities. In this section, we will first review how studies explained the absolute and relative reduction in the consumption of cereals over the years, without changing the assumption of improved real income. This assumes importance because the reduced cereal intake explains the food diversification as well as the reduction in average calorie intake.

Firstly, studies made a distinction between lower MPCE groups and higher MPCE groups. They noted that the intake has been increasing for the lower MPCE groups and decreasing for the higher income group. Therefore, according to these studies, the decrease in cereal intake by higher income groups explained overall reduction in average cereal intake.

Meenakshi, (2000)¹⁹⁶ who studies the trend in the consumption pattern in India during 1972-73 to 1993-94, based on NSSO data,¹⁹⁷ like other studies first shows that the real expenditure, the share of food expenditure in total expenditure and the share of non-cereal products in food expenditure have increased over the years in all income quartiles. Against this background the author examines the reason for reducing average per capita consumption of cereal (PCC) during this period. The author notes that though the per capita consumption of cereal (PCC) declined in average from 15.3 Kg per month in 1972-73 to 13.4 Kg per month in 1993-94 in rural areas, it remained stable around 11kg

¹⁹⁶ Meenakshi, J.V. (2000), 'Food Consumption Trends in India: A Regional Analysis' in N. Krishnaji and T.N. Krishnan (eds), *Public Support for Food Security: The Public Distribution System in India*, Sage, New Delhi: pp.28-75

¹⁹⁷ She analyses the trend with by classifying the states into six regions based on food production, food price, food availability and taste and looks at differences based on income quartiles and residence (rural-urban),.

to 12kg for the poorest quartile in rural areas.¹⁹⁸ In other words, at all India level the reduction in average per capita cereal intake has declined due to reduced consumption of higher income groups.

However, the author observes that the trend in per capita cereal consumption (PCC) was not uniform in all states. The trend showed a declining consumption in poorest quintile despite increased income and relative decline in cereal price in three regions including Central region (Madhya Pradesh and Rajasthan), Uttar Pradesh (which was taken as a separate region) and Northern region (Haryana, Himachal Pradesh, Punjab and Delhi). In three other regions including Western (Gujarat, Karnataka and Maharashtra), Eastern (Bihar, Orissa and West Bengal) and Southern region (Andhra Pradesh, Kerala and Tamilnadu), the per capita consumption of cereal (PCC) was increasing among the poorest 25 percent.

It is at this point that the author makes sweeping generalizations and hypothesizes that the declining per capita consumption of cereal in some states could be attributed to demonstration effect. Further, pointing out that the scope for 'demonstration effect' also exists in lower MPCE groups in some states, the author doubts that these people are really poor. Based on this understanding, Meenakshi also expresses the doubt that poverty could be over estimated in these regions. In other words, when the author finds that the poorest 25 per cent are decreasing their cereal consumption in certain states she reinterprets it as indicator of reducing distress in these states, to suit her larger assumption of increasing welfare and makes no attempt to explore the empirical assumption of increasing welfare inferred based on the evidence of increasing real expenditure. On the other hand, the author observing the increasing per capita consumption of cereal (PCC) of poorest 25 per cent in some states notes that in some of these regions per capita consumption could be clearly inadequate and those vulnerable to chronic hunger could be found here.

In other words, in two set of states experiencing similar trend in the real income, the author inferred distress condition in one set of states merely because the poorest 25 per cent were increasing their cereal intake. In the other states, where the poorest 25 were decreasing their cereal intake they were being conferred the status of non-poor. Thus the

¹⁹⁸ The author notes that the stability in the per capita consumption of cereal (PCC), of poorest quartile was also observed by George, PS (1979), during 1960-70.

explanation for decline in average per capita cereal intake becomes more complex. The higher income groups and lower income groups in some states who were not so poor led the overall decline in average cereal intake as they were decreasing their per capita cereal consumption, because of the real income induced substitution of low priced 'inferior food' like coarse grain with high prices 'superior food' according to changing taste and preference. The fallacy involved in this statement does not need further explanation.

Further, Meenakshi supports the argument of 'non-poor lower MPCE groups' in some states with the food diversification argument. By using a linear expenditure system model which incorporates regional specificity and changes in taste, the author observes that "switch towards preferred food in diet is occurring at much lower levels of income than one might expect... even the poorest 25 per cent in many regions- who are well below the poverty line and in most areas and therefore presumably have inadequate nutrition- are making choices in favour of quality over quantity, contrary to what one might expect." (Meenakshi, 2000: 65).

Similarly, Radhakrishna et al. (1992) (quoted in Radhakrishna et al, 2005)¹⁹⁹ point out that cereal decline has been most in prosperous states like Punjab and Haryana and give 'change in taste and preference' as a reason for declining average per capita cereal consumption since the early 1970's. The authors see the operation of taste and preference in terms of shift from cereal to non-cereal items and from 'coarse' to 'fine' cereals.

However, the explanation of decreasing average per capita cereal intake as a voluntary act of higher MPCE groups and lower MPCE groups reaping the benefit of growth in some state is challenged by the results of other studies on the consumption patterns.

Firstly, though reducing average intake of the rural population as a whole was true, the explanation that it was due to reduction in cereal intake by higher income group is erroneous till 1983. The reduction in cereal intake by higher income group is more of a statistical artefact due to overestimation of cereal and calorie intake of higher income

¹⁹⁹ Radhakrishna, R. (2005), 'Food and Nutrition Security of the Poor: Emerging Perspectives and Policy Issues', *Economic and Political Weekly*, 40:18, pp. 1817-1823.

groups by previous surveys and reduction in overestimation by later surveys (Suryanarayana, 2002).²⁰⁰

Srinivasan (2000)²⁰¹ shows with help of NSSO data that in 1971-72, 19 per cent of the sample households exceeded 4000 kcal intake while 6 per cent had less than bare minimum 1500 kcal intake. Disagreeing with these extreme figures, he notes that

If the theory of energy requirement and the data are taken at face value, 6% of rural households in India are at the verge of death and nearly 20% are obese! There is no independent evidence whatsoever to corroborate this (Srinivasan 2000:273).

He explains the discrepancy based on the fact that

Meals provided by employers as part of wages and consumed by agricultural workers were sometimes recorded as consumption of the employer households and not as that of the employee households, thereby overstating their consumption and understating the consumption of the worker households (Srinivasan 2000:273).

NFI (2006)²⁰² also notes that the per capita cereal consumption, which stood at 26.2 kg per day in 1973-74 NSSO survey results, was much higher than the per capita cereal consumption reported by surveys of National Nutrition Monitoring Bureau (NNMB). In fact, the NNMB, in its decades of experience, never recorded per capita cereal consumption higher than 12 kg, for the high income groups. Therefore, the steep decline in cereal consumption in high income group (top 30 percent) during 1973-74 to 1999-2000 is not due to reduction in actual cereal intake, but due to correction in overestimation.²⁰³

On the other hand the exclusion of cooked meal taken by lower income groups from employers' household in NSSO surveys would mean "that food grain consumption of the employee households who are generally poor labour households in the rural sector would be underestimated" (Suryanarayana 2002:6).²⁰⁴ Suryanarayana, (2002),²⁰⁵ reviewing different studies, shows that the percentage of in kind wage payment have come down

²⁰⁰ Suryanarayana, M.H. (2002), 'Poverty in India Misspecified Policies and Estimates', *UN-WIDER Discussion Paper*, No. 2002/15, January 2002.

²⁰¹ Srinivasan, T.N. (2000), 'Poverty and Undernutrition in South Asia', *Food Policy*, 25, pp. 269-282

²⁰² NFI (2006), 'Double burden of malnutrition in India, Memo, National Nutrition Foundation, New Delhi. Downloaded from [http:// nutritionfoundationofindia.res.in/pdfs/doubleburden.pdf](http://nutritionfoundationofindia.res.in/pdfs/doubleburden.pdf) on 22/07/08.

²⁰³ However the report, fails to note the increase in poor peoples consumption as statistical artefact.

²⁰⁴ Suryanarayana, M.H. (2002), *op cit*.

²⁰⁵ *ibid*.

and share of the labour households in all rural households increased over the years with casualisation of the labour force. This meant that the consecutive survey by NSSO, which shows an increase in cereal consumption and hence calorie intake, may not mean that these low income groups are increasing their cereal and calorie intake. This apparent increase in the consumption of cereals and calorie intake could be a result of substitution of cooked meal from employer's house with cereals purchased with monetary wage. In other words, when poor people purchase cereals from market instead of getting cooked meal as wage from employer's house, the consumption is captured by NSSO surveys as an increase in cereal and calorie intake.'

Based on this understanding, Suryanarayana (2003)²⁰⁶ concludes that the improving trend in calorie intake and cereal consumption of the poor till 1983 could be mere statistical artefact. Further, according to the author, the diversification observed in poor people's consumption pattern could be a result of this trend. The households which were earlier consuming non-cereal food at employers home would now purchase them for their own consumption. In other words, food diversification does not involve increasing consumption of non-cereal high cost food, but it only meant that earlier these items consumed in employers' home were not reflected in NSSO surveys and they are reflected now as they are purchased from the market.

Apart from the argument of reducing over-estimation of cereal intake by higher MPCE, there are certain other trends which challenge the line of argument put forward by Meenakshi, (2000)²⁰⁷ and Radhakrishna et al. (1992) (quoted in Radhakrishna, 2005²⁰⁸). These trends are reported by Suryanarayana (2000)²⁰⁹ and Dayal, (1993).²¹⁰

Suryanarayana, (2000)²¹¹ finds that from 1961-62 to 1987-88 the low availability of coarse grains, which was previously produced for self consumption, led to increasing market dependence. This, in turn, explains the decreasing cereal intake in many states that were previously dependent on coarse cereals.

²⁰⁶ *ibid.*

²⁰⁷ Meenakshi, J.V. (2000), *op cit.*

²⁰⁸ Radhakrishna, R. (2005), *op cit.*

²⁰⁹ Suryanarayana, M.H. (2002), *op cit.*

²¹⁰ Dayal, Edison (1993), 'Regional Changes in Food Poverty in India', *GeoJournal*, 30:2, pp. 167-177

²¹¹ Suryanarayana, M.H. (2002), *op cit.*

Based on the results of earlier studies on determinants of calorie intake such as CDS (1975) and Krishnan, T.N (1992), Suryanarayana notes that production was an important determinant of calorie intake in rural areas. These studies had earlier pointed out that relationship between production and calorie intake was found significant in rural areas and not in urban areas across states because the urban poor largely depend on the market for cereals and not on production for self consumption. Testing this hypothesis with NSSO data during 1961-62 to 1987-88 for different states, the author found that till 1961-62, the food available for self consumption at rural areas played a significant role in determining calorie intake as food production in rural areas significantly explaining the consumption.²¹²

He argues that this relationship in rural areas had weakened over the years due to changing composition of production with declining share of coarse cereals. Further, the change in production pattern had also made the poor dependent on the market. The author corroborates the argument on market dependency with evidence provided by Vaidyanathan, (1986) and Sen and Gosh, (1993) who show changes in the labour market involving decrease in self employment, increase in wage labour and increase in casualisation. The author explains the weakened link between the production and the consumption with this trend of increasing market dependency.

In other words, the decline in cereal intake of poor was largely explained by the declining production of coarse cereals. With declining availability of the coarse cereals, people now had to depend on other costly cereals available from the market. However as these cereal were costly, people had to reduce the quantity consumption and could never reach the previous levels of quantity consumption.

To sum up, the author found that the changing preference of the consumption pattern towards superior cereal was “largely dictated by availability rather than choice” (Suryanarayana 2000: 110).²¹³ Therefore, cereal intake was declining due to this involuntary reliance on high priced cereals even at very inadequate level of calorie intake.

²¹² The relationship was also significant during drought year in 1983 and 1987 and not for any other years after 1961-62.

²¹³ *ibid.*

The interpretation of reducing cereal intake by low MPCE groups in certain states as indicator of welfare by Meenakshi, (2000)²¹⁴ also stands challenged as all these states except Himachal Pradesh, face decreasing availability of coarse cereals.

The interpretation of decreasing cereal intake by lower MPCE groups in certain states by Meenakshi, (2000)²¹⁵ and in 'prosperous' states by Radhakrishna et al (1992) (quoted in Radhakrishna, 2005)²¹⁶ also stands challenged by Dayal, (1993)²¹⁷ who notes that the actual calorie intake has reduced in these 'prosperous' states during 1973-1983, as income did not trickle down to the poor. He argues that the impressive record in increasing food production and agriculture growth, in states like Haryana, Punjab, Rajasthan, and Uttar Pradesh, had not trickled down to increase calorie intake of the poor people in these states. The author explains that "Apparently, most of the increases in labour productivity must have been achieved through adoption of labour saving technology otherwise it would have reduced the incidence of food poverty" (Dayal, 1993: 176).²¹⁸ Further, the author cites supporting studies by Srivastava (1971), Etienne (1973), Bhardhan (1973), Dev (1988) and Paul (1990) that the proportion of poor increased in several green revolution areas.

To sum up, before 1990s, the reduction in average per capita cereal consumption cannot be simply explained as voluntary decision by people in high MPCE groups (as well as, by people in low MPCE groups in some well-off states). The reducing production of coarse cereals, which was largely used for self-consumption earlier, has played a significant role in forcing people to rely on high cost cereal varieties from the market and thereby forced to reduce the overall cereal consumption.

Interpretation of changing consumption pattern after 1990s:

The post 1990s trend in the consumption pattern could be assessed with help of three NSSO surveys held in 1993-94, 1999-2000 and 2004-05. However as we have already noted, the results of 1999-2000 have problems of comparability. As we can observe from the table 3.10, the average monthly per capita consumption expenditure of poorest eight

²¹⁴ Meenakshi, J.V. (2000), *op cit.*

²¹⁵ *ibid.*

²¹⁶ Radhakrishna, R. (2005), *op cit.*

²¹⁷ Dayal, Edison (1993), *op cit.*

²¹⁸ *ibid.*

MPCE groups increased from 1993-94 to 1999-2000 and then decreased from 1999-2000 to 2004-05. If true, this trend will mean, strong evidence of deterioration of the condition of the majority of the population.

Table 3.10: Average MPCE (Rs.) at constant (1993-94) prices in Rural areas

Percentile group	Average MPCE (Rs.) at constant (1993-94) prices		
	1993-94 Uniform reference period	1999-2000 Mixed reference period (M)	2004-05 Uniform reference period
0 - 5%	100	121	114
5% - 10%	131	153	145
10% - 20%	153	176	169
20% - 30%	178	203	195
30% - 40%	200	228	221
40% - 50%	222	252	246
50% - 60%	249	281	275
60% - 70%	282	313	310
70% - 80%	325	358	359
80% - 90%	398	433	442
90% - 95%	500	537	570
95% - 100%	872	849	1116
all	281	307	319

Source: NSSO (2006: Table P7)²¹⁹

Table 3.11: Average MPCE (Rs.) at constant (1993-94) prices in Rural areas (mixed reference period) – 1999-2000 and 2004-05

Percentile group	Average MPCE (Rs.) at constant (1993-94) prices- based on based on the mixed reference period (M)	
	1999-2000 Mixed reference period (M)	2004-05 Mixed reference period (M)
0 - 5%	121	137
5% - 10%	153	169
10% - 20%	176	193
20% - 30%	203	220
30% - 40%	228	245
40% - 50%	252	271
50% - 60%	281	299
60% - 70%	313	333
70% - 80%	358	380
80% - 90%	433	455
90% - 95%	537	569
95% - 100%	849	938
all	307	331

Source: NSSO (2006: Table P7)²²⁰

²¹⁹ *ibid.*

²²⁰ *ibid.*

However, when we look at the comparable figures for the year 1999-2000 and 2004-05, we find that this inference is not true. The average monthly per capita consumption expenditure of all MPCE groups has increased from 1999-2000 to 2004-05 (table 3.11).

This, in turn, also means that any inference based on the trend from 1993-94 to 2004-05 would be also not true. Hence, we will not go into the details of the studies relying heavily on 1999-2000 NSSO results, but would note certain arguments made by them against the distress argument posed by Mehta et al. (2000),²²¹ Patnaik (2004,²²² 2007)²²³ and Ray et al (2005).²²⁴ It would be also important to note here that many of these studies continued to interpret changes in the consumption pattern by enquiring into the impact of the 'increasing real expenditure'.

Voluntary diversification of the food basket

One of the main arguments by studies which went against the distress arguments concerned the voluntary diversification of the food basket through reducing the consumption of the low cost cereals and substitution with the costlier food items. The main line of argument by NFI (2006)²²⁵, Shariff et al (2003),²²⁶ Suryanarayana et al (2007),²²⁷ Meenakshi et al (2003)²²⁸ and Ramachandran (2008)²²⁹ was that food diversification is increasing both in low and high income groups. This could be attributed to change in taste and preference and thereby not explained by price trend. In other words, while observing food diversification they were able to rule out the role of distress as the diversification was accompanied by the increasing calorie intake in lower income group.

As these studies have observed, trend from 1993-94 to 1999-2000 shows, the cereal intake is reducing for all MPCE groups except the poorest MPCE group. Similarly, trend

²²¹ Mehta, J. and S. Venkatraman (2000), *op cit.*

²²² Patnaik, Utsa (2004), *op cit.*

²²³ Patnaik, Utsa (2007), *op cit.*

²²⁴ Ray, Ranjan and Geoffrey Lancaster (2005), *op cit.*

²²⁵ NFI (2006), *op cit.*

²²⁶ Shariff, Abusaleh, Prabir K. Ghosh and Abhilasha Sharma (2003), 'Food and Nutritional Status of the Poor in India: A State Level Analysis', Mimeo, National Council of Applied Economic Research, New Delhi, May, 2003

²²⁷ Suryanarayana. M. H. and Dimitri Silva (2007), 'Is Targeting the Poor a Penalty on the Food Insecure? Poverty and Food Insecurity in India', *Journal of Human Development*, 8:1, March, 2007.

²²⁸ Meenakshi, J.V. and B. Vishwanathan (2003), *op cit.*

²²⁹ Ramachandran, Prema (2008), *op cit.*

in a longer time period from 1993-94 to 2004-05 also exhibits a similar declining trend in all except the lowest MPCE group (table 3.12). Therefore despite the problem of comparability, the diversification argument given by these studies hold true for the time period between 1993-94 and 2004-05.

Table 3.12 Per capita cereal consumption in quantity terms since the 1993-94 in different percentile classes of population (ranked by MPCE): all-India rural

Year	Monthly per capita cereal consumption (kg) in population percentile class in rural India											
	0-5	5-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-95	95-100
1993-1994	9.68	11.29	12.03	12.63	13.19	13.33	13.72	14.07	14.41	14.59	14.98	15.78
1999-2000	9.78	11.15	11.64	12.27	12.56	12.89	13.03	13.36	13.45	13.67	13.73	14.19
2004-05	9.88	10.87	11.33	11.7	11.98	12.16	12.37	12.61	12.77	12.72	12.77	13.5

Source: NSSO (2006: Table P18)²³⁰

However, the increasing trend in calorie intake for many MPCE groups between 1993-94 and 1999-2000, as noted by these studies, is erroneous. The increasing calorie intake observed in 7 low MPCE groups from 1993-94 to 1999-2000 is result of overestimation (table 3.13). When we take a longer time period from 1993-94 to 2004-05, we find that the calorie intake was increasing only for the poorest MPCE group.

Table: 3.13 Per capita household calorie intake since the 1993-94 in different MPCE groups: all-India rural

Year	Monthly per capita household calorie intake in MPCE groups												Average calorie intake
	1	2	3	4	5	6	7	8	9	10	11	12	
1993-94	1327	1583	1721	1850	1968	2048	2154	2271	2410	2592	2804	3262	2153
1999-2000	1383	1609	1733	1868	1957	2054	2173	2289	2403	2581	2735	3178	2149
2004-05	1376	1575	1679	1800	1885	1962	2042	2158	2290	2380	2568	3018	2047

Source: NSSO (1996),²³¹ NSSO (2001)²³² and NSSO (2007)²³³

²³⁰ NSSO (2006), 'Level and Pattern of Consumer Expenditure in India: NSS 61st Round, July 2004- June 2005', NSS Report No 508, National Sample Survey Organisation, Ministry of Statistics and Programme Implementation, Government of India, New Delhi, December 2006.

²³¹ NSSO (1996), 'Nutritional Intake in India: NSS 50th Round (July 1993 - June 1994)', NSS Report No 405, National Sample Survey Organisation, Department of Statistics, Government of India, New Delhi., October 1996.

²³² NSSO (2001), 'Nutritional Intake in India: NSS 55th Round (July 1999 - June 2000)', NSS Report No 471, National Sample Survey Organisation, Ministry of Statistics and Programme Implementation, Government of India, New Delhi., May 2001.

²³³ NSSO (2007), *op cit*.

Therefore if the dietary diversification argument without distress, given by these studies, is to hold true, then one has to re-interpret the declining calorie intake in low MPCE groups as an indicator of welfare.

However before reviewing the literature commenting on declining calorie intake, it is important to note that there were some works during this period which attributed the diversification led by declining cereal intake to price change.

Chand, (2005)²³⁴ noted that price of cereals increased substantially after 1990s. The author shows that the rate of price rise at wholesale level, retail level and PDS shops was much higher in post 1990's than during the previous decade (table 3.14). Further, the increase in PDS price was substantially higher than increase in whole sale and retail price, directly hitting the population dependent on Public Distribution System. The rise in Public Distribution System price showed here is due to an increase in Above Poverty Line price under dual pricing system, which would have affected more than 60 per cent of the population, many of them being the poorest due to error in targeting (Mane 2006).²³⁵

Table 3.14: Growth Rates in Different Types of Prices - Rice and Wheat
(Per cent/annum)

Commodity price	1980-81 to 1989-90	1990-91 to 1999-00
Wheat		
Wholesale price	5.67	9.48
Retail price	6.62	8.88
PDS price	3.74	11.85
Rice		
Wholesale price	5.24	9.24
Retail price	7.36	8.69
PDS price	5.80	12.96

Source: Chand (2005: 1057)

Subramanian (2005)²³⁶ while exploring the conceptual basis of the poverty line used in India, notes that rate of increase in cereal price was greater than rate of increase in other

²³⁴ Chand, Ramesh (2005), *op cit.*

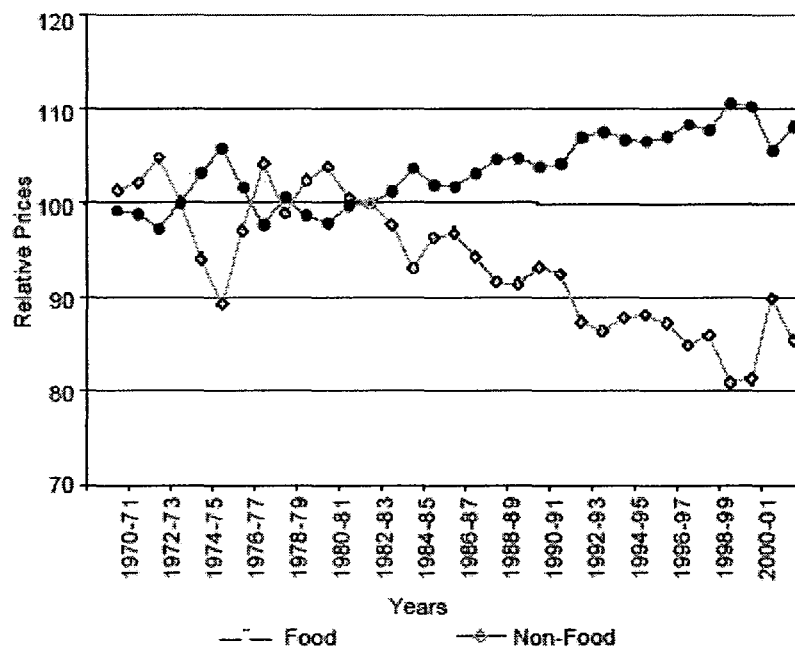
²³⁵ Mane, Rahul Prahlad (2006), 'Targeting the Poor or Poor Targeting: A Case for Strengthening the Public Distribution System of India', *Journal of Asian and African Studies*, Aug 2006; 41:4, pp. 299-317

²³⁶ Subramanian, S. (2005), *ibid.*

poverty line commodity bundle from 1993-94 to 1999-2000. The author argues that this implies the substitution effect from cereals to other poverty line commodity bundles, due to relative rise in cereal price rather than increase in income.

Radhakrishna (2005,²³⁷ 2006²³⁸) and Radhakrishna et al (2004,²³⁹ 2007²⁴⁰) also observed the role of rise in relative price of food and showed that post 1990s food price increased more than non food price.

Figure: 3.3 Trend in Relative Prices of Food and Non-Food in Rural India



Source: Radhakrishna et al (2004:3126)²⁴¹

The author/s used smaller sample surveys by NSSO between 1990 and 2000 which showed declining calorie intake of lower income group as against the quinquennial NSSO rounds (1993-94 and 1999-2000). Further, the data also revealed (a) decline in growth of the real per capita total expenditure (PCE), for the bottom 30 per cent in rural

²³⁷ Radhakrishna, R. (2005), *op cit*.

²³⁸ Radhakrishna, R. (2006), 'Food Consumption and Nutritional Status in India: Emerging Trends and Perspectives', Keynote Paper for presentation at the 66th Annual Conference of the Indian Society of Agricultural Economics, November 8, 2006.

²³⁹ Radhakrishna, R; Hanumantha, Rao, K, Ravi, C, Reddy, B Sambi (2004), 'Chronic Poverty and Malnutrition in 1990s', *Economic and Political Weekly*, 39:28, July, 2004.

²⁴⁰ Radhakrishna, R and C. Ravi. (2007), 'Emerging Nutritional Trends in India and their Implications', in Amiya Kumar Bagchi and Krishna Soman (eds), *Maladies, Preventives and Curatives- Debates in Public Health in India*, Tulika Books, New Delhi, pp. 140-156.

²⁴¹ Radhakrishna, R; Hanumantha, Rao, K, Ravi, C, Reddy, B Sambi (2004), *op cit*.

area, (b) decline in the food expenditure in all MPCE group. Based on the evidence the author explained the declining cereal intake and calorie intake in post 1990s as price effect²⁴² due to distress.

However the argument of relative rise in food price cannot hold true after 2000 as Deaton et al (2008)²⁴³ show that relative food price declined steeply after 2000 till 2005. But this would not mean that the food security situation improved after 2000. In fact, both increase and decrease in relative price of food affects the rural poor and reduces their consumption. The distinction made by Sen (1981)²⁴⁴ between landless agricultural labour and small/marginal cultivators or share-croppers will be useful here. While the former group, exclusively depending on the labour power would face distress with the rise in food grain prices, the later would face distress when the relative food price which, in turn, decides their purchasing power, declines.

Therefore, if the period before 2000, would have been distressful to the rural wage laborers, the later period would be distressful to small and marginal cultivators. Perhaps such neat distinction could not be made here as the condition of farmers, could be precarious due to other reasons as well. Patnaik (2008), talks of “expenditure deflating policy” under neo-liberalism, whereby the lack of public expenditure necessary to revitalize the “rural productivity and employment” in a stagnant agricultural economy has led to precarious condition of cultivators. Patnaik (2008), also notes the reducing per capita food grain output and availability during this period (figure 3.4).

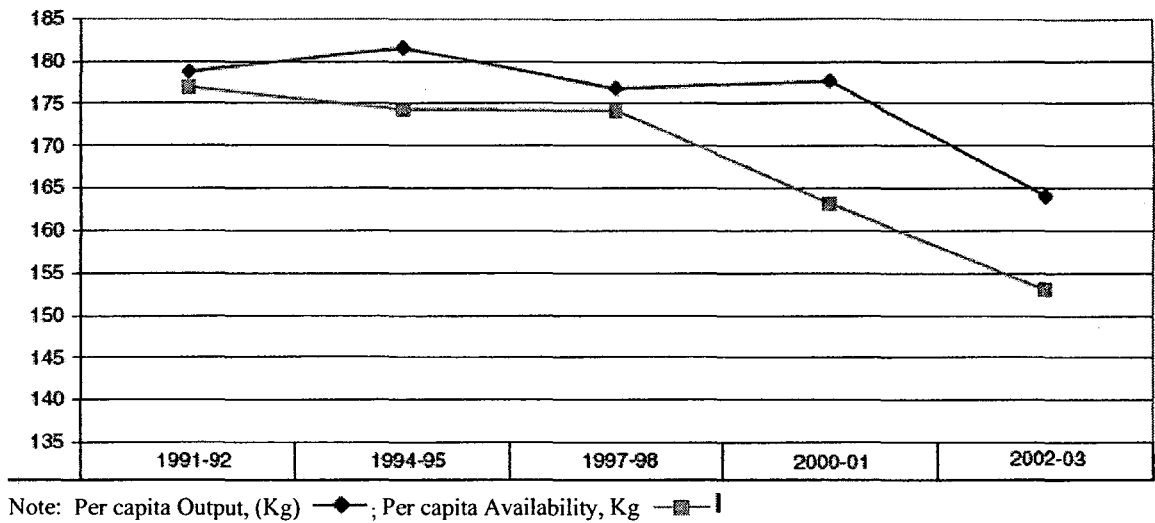
The reducing food grain production and availability, on the other hand, also has important implication for small and marginal cultivators, who significantly depend on own-farm production for the consumption. Over the last three rounds the size of land holdings is reducing, resulting in larger proportion of small and marginal holders in rural areas (figure 3.5).

²⁴² However the comparison between NSSO quinquennial rounds in 1993-94 and 1999-2000, does not show decline in per capita calorie intake among poorest 30%. Though it shows decrease in per capita cereal intake.

²⁴³ Deaton, Angus and Jean Drèze (2008), *op cit*.

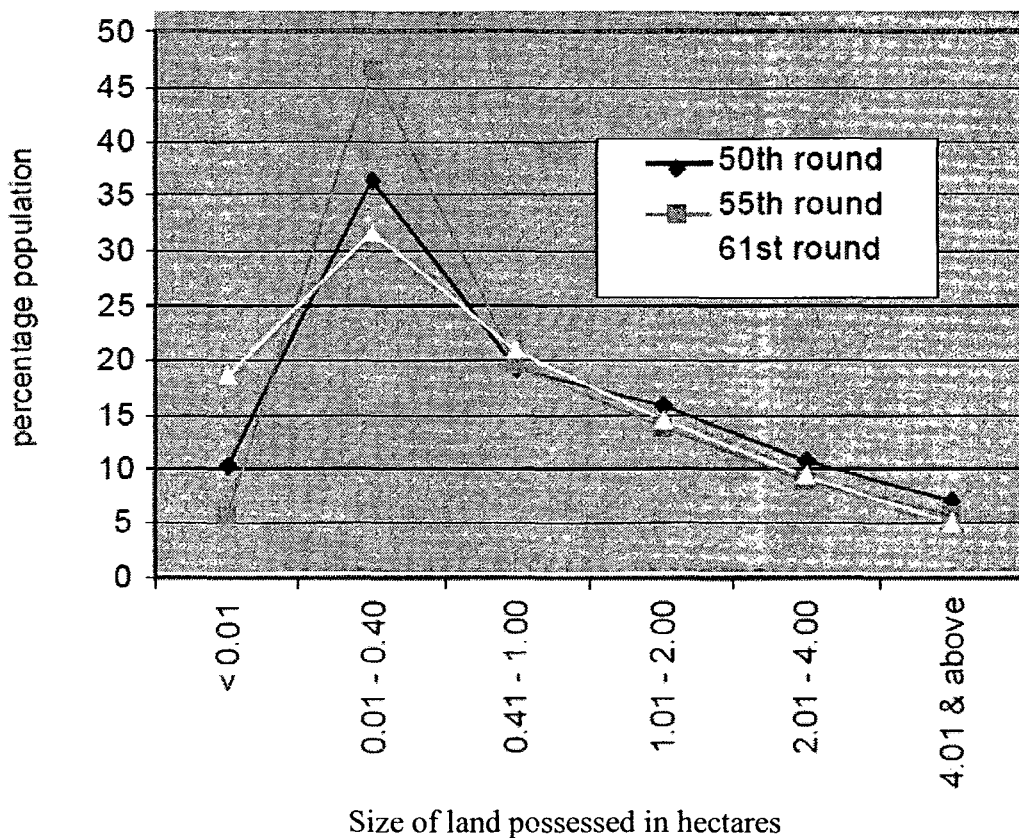
²⁴⁴ Sen, Amartya (1981) '*Poverty and famines-An Essay on Entitlement and Deprivation*', Oxford University Press, New Delhi.

Figure 3.4: Annual per Capita Output and Availability of Food grains in Kilograms, Triennial Average Ending in Specified Years



Source: Patnaik (2007: Chart 1)

Figure: 3.5 Percentage distribution of persons in rural India by size class of land possessed during 50th, 55th and 61st rounds



Source: NSSO (2007: Chart 4.3)²⁴⁵

²⁴⁵ NSSO (2007b), 'Household Consumer Expenditure Among Socio-Economic Groups: 2004 - 2005: NSS 61st Round, July 2004- June 2005', NSS Report No 514, National Sample Survey Organisation, Ministry of Statistics and Programme Implementation, Government of India, New Delhi, August, 2007.

Together with this trend, the declining growth rate in cropping area under food grains after 1981 (Table 3.15), could mean that small and marginal farmer are losing the security and stability of own-farm food grains, which could ward off the effect of food price rise.

Table 3.15: Growth rate of area under major crop in India 1980-81 to 2000-01

Crop	Growth rate of cultivated area	
	1980-81 to 1990-91	1990-91 to 2003-04
Coarse Cereals	-1.34	-1.58
Total Cereals	-0.26	-0.25
Total Pulses	-0.09	-0.87
Foodgrains	-0.23	-0.44
Sugarcane	1.44	1.41
Oilseeds	1.51	-1.07
Cotton	-1.25	0.82
Non-Foodgrains	1.12	-0.09

Note: Compound Annual Growth Rate.

Source: GoI (2007),²⁴⁶ Originally from Ministry of Agriculture, Area and Production of Principal Crops in India, Various Years

Apart from rise in relative price argument, the basis of interpretation of voluntary food diversification argument can also be critiqued. Deaton et al (2008) notes

according to NFHS-2 data for 1998-99, only 55 per cent of adult women in India consume milk or curd at least once a week, only 33 per cent eat fruits at least once a week, and 28 per cent get an egg (International Institute for Population Sciences, 2000, p. 242). Seven years later, the NFHS-3 survey yielded the same figure for “milk or curd” (55 per cent), and only slightly higher figures for fruits and eggs—40 and 32 per cent respectively (International Institute for Population Sciences, 2007a, p. 299) (Deaton et al 2008: 62).²⁴⁷

Deaton et al (2008),²⁴⁸ reviewing the work of Sharma (2006), also note that

“comparison of NSS data for 1983 and 1999-2000,” show “that the decline of food intake is not confined to calories or proteins, but also applies to many other nutrients (fat being the main exception..)” (Deaton et al 2008:7).

²⁴⁶ GoI (2007), *op cit.*

²⁴⁷ Deaton, Angus and Jean Drèze (2008), *op cit.*

²⁴⁸ *ibid.*

When we look at the head count ratios of deprivation in intake of different nutrients, a similar trend is observed (Table 3.16).

Table 3.16 Head Count Ratios of Nutrient Deprivation

	Per cent of households with below-RDA intakes	
	1983	1999/2000
Calorie	66	74
Protein	52	60
Fat	80	71
Thiamine	19	21
Riboflavin	77	82
Niacin	30	32
Vitamin C	66	44
Carotene	80	81
Iron	65	83

Source: Sharma, et al (2001)²⁴⁹

Studies note that intake of fat found among poor is not predominantly from high price fat sources. Shetty (2002)²⁵⁰ notes that estimate from the NNMB show that ‘invisible fat’ available in cereals, pulses, tubers and vegetables have formed significant portion of fat intake for the poor. The visible fat from animal source formed insignificant part of their diet, much lower than other income groups. The trend between 1993-94 and 1999-2000, noted by Ali (2005) show that the contribution of livestock and livestock products, in average fat intake reduced from 31.6 per cent in 1993-94 to 28.8 per cent in 1999-2000 in rural India. This is despite increase in production of livestock and livestock product during this period and the fact that “over 70 per cent of rural households own some livestock and a majority of livestock owning households are small, marginal and even landless households” (Ali, 2007: 149).²⁵¹

This evidence is further corroborated with the data on share of expenditure incurred in non-cereal food items, which show that the share of expenditure on non-cereal food in total consumption expenditure either declines or remained constant, except for vegetables and fruits which showed marginal increase from 1993-94 to 2004-05 (table 3.17).

²⁴⁹ Sharma, Rekha and J.V. Meenakshi (2001), *op cit*.

²⁵⁰ Shetty Prakash S (2002), ‘Nutrition transition in India’, *Public Health Nutrition*: 5:1A, pp.175–182.

²⁵¹ Ali, Jabir (2007), ‘Structural Changes in Food Consumption and Nutritional Intake from Livestock Products in India’, *South Asia Research*, 27: 2, pp. 137-151

Table: 3.17 Expenditure on food items as per cent of total consumer expenditure in rural India

Food items	Per cent expenditure in total consumer expenditure	
	1993-94	2004-05
Gram	0.2	0.1
Cereal substitutes	0.1	0.1
Pulses and products	3.8	3.1
Milk and products	9.5	8.5
Edible oil	4.4	4.6
Egg, fish and meat	3.3	3.3
Vegetables	6	6.1
Fruits and nuts	1.7	1.9

Source: NSSO (2006)²⁵²

Review of these mutually supporting evidence leads us to the conclusion that the marginal increase in non-cereals items in the food basket was all utilized to fill the calorie gap created by decline in cereal consumption but still could neither prevent decline in calorie intake nor could prevent decline in protein and nutrient intake.

In other words, the inference drawn on voluntary dietary diversification by studies is not so much due to the increase in per capita quantity consumption of non-cereal costly food items. But it was because of reducing per capita quantity intake of cereals, which automatically increased the share of non-cereal items. In fact, none of the studies reviewed by us give the trend in per capita quantity consumption of non-cereal items. The evidence cited in support of diversification is always reported in per cent share of cereals and non cereals in total calorie or protein intake.

This means that the inferred 'change in taste and preference' was not due to an increase in quantity of 'preferred' non-cereals but due to decrease in the quantity consumption of cereals. To further explain, if a poor person, who is eating three *roti* (bread) and one onion for food, reduces the consumption to two *roti* (bread) and one onion due to either distress caused by reduction in income or increasing price of wheat, it is interpreted as dietary diversification by the studies. In other words, to demonstrate the evidence for distress the poor person has to reduce his onion first and then *roti* (bread).

²⁵² NSSO (2006), *op cit.*

Further, any increase in per capita quantity of non-cereals observed in a few income groups, could not be explained by giving convenient role to 'taste and preference' and without contextualizing it in the changing socio-economic condition. For instance, with the decrease in share of food grains in cropping area, if the cropping share of vegetable improves, then an increase in vegetable consumption due to availability of own-farm production or as in-kind wage and barter from nearby farmers, does not mean voluntary diversification or reduction in distress condition.

Similarly, if a family in the village now and then starts consuming non-cereal food and increases its consumption because of child's insistence (who is now introduced to vegetables, pulses or eggs in ICDS and mid day meal in schools), then it cannot be taken as evidence that the families' distress has reduced. Such impact on children, in fact, was an objective of school meal scheme started in England, who were to taught about what "a dinner ought to be" and to inculcate in them "wise feeding habits" as they grow up (Vernon, nd).²⁵³

Further, the prescribed diet by health workers to pregnant and lactating women to give birth to a healthy surviving child or impact of baby food advertisement which 'educates' the parents about the risks involved in not consuming the baby food etc has to be taken into factor while assuming 'voluntary change in taste and preference'. Further, the increase in proportion of heavy workers as showed in table 3.6 could have increased the consumption of certain non-cereal items to avoid illness and risks associated with working under hot sun or with new machines which generate heat.²⁵⁴

The point we are making here is that with changing socio-economic conditions there are compelling reasons that the diet should be really diversified with an increase in quantity consumption of certain non-cereals food items. The fact that this is not happening after 1990s itself is a symbol of distress.

However it would be absurd to suggest the econometricians to include these factors in the consumption pattern analysis, due to difficulty involved in quantifying these factors. Similarly, it would be equally absurd practice if these studies on consumption pattern

²⁵³ Vernon, James (nd), 'The Ethics of Hunger and the Assembly of Society: The Techno-Politics of the School Meal in Modern Britain', *The American Historical Review*, 110:3, downloaded from <http://www.historycooperative.org/journals/ahr/110.3/vernon.html> on April 2007

²⁵⁴ Personal observation.

treat every change in the consumption not explained by price or income as 'voluntary change in taste and preference'

Reducing calorie need:

We noted earlier that some studies are interpreting the trend in calorie intake from 1993-94 and 1999-2000 as indicator of welfare. This, in turn, had allowed these to 'discover' voluntary diversification for large section of population. However the findings of 2004-05 NSSO survey showed that the calorie intake was declining in 11 out of 12 MPCE group. After the availability of comparable survey result (2004-05), it became clear that the increasing calorie intake in many MPCE groups, as evident in 1999-2000, was merely a result of overestimation.

In other words, the studies, which earlier interpreted decreasing calorie intake as an indicator of welfare, now, need to explain that how the declining calorie intake at low MPCE groups, observed in 2004-05, could be considered as welfare.

A review of the studies, making the 'reducing calorie need' argument, reveals a weak and debatable basis for assuming a reduction in calorie intake.

Vishwanathan et al (2001) after noting that discrepancy between calorie intake and income based measures due to use of 2400 kcal norm note that "Of what sanctity then, is the 2400 kilocalories per day? We, as social scientists, are singularly ill-equipped by our training to take sides on the debate over the norm. We use it in this paper because we believe it to reveal some important information, and to highlight the need for greater debate and clarity on this issue." (Vishwanathan et al 2001:13)²⁵⁵

After two years the authors without providing much basis note with more confidence that "There is therefore a renewed need to reevaluate nutritional norms.... There is an informal – albeit unwritten – understanding, that the 2400 norm is 'too high.' Meenakshi et al (2003:375).²⁵⁶

²⁵⁵ Vishwanathan, Brinda and J.V. Meenakshi (2001), *op cit.*

²⁵⁶ Meenakshi, J.V. and B. Vishwanathan (2003), *op cit.*

However, as we noted earlier in detail, there is not much foundation for the unwritten understanding that 2400 calorie norm is an overestimation.

Similarly, Dev (2005),²⁵⁷ after observing that use of 2400 calorie cut-off method to estimate the calorie deprived population gives ‘absurd results’, where states with high development indicators and low poverty ratios have highest proportion of calorie deprived people, note that “Because of changes in lifestyles, technology and infrastructure, there is also a feeling that the 2,400 calorie norm may be high” (Dev 2005:790).²⁵⁸

However, as we noted earlier, the discrepancy between calorie intake and income is quite expected. The discrepancy will be observed or could also increase, when the average calorie requirement is unchanging and constant. Therefore, this argument discussed above does not provide any convincing reason for us to believe that calorie requirement over the years have reduced.

Few other studies hypothesize reduction in manual labor and sedentary lifestyle as reason for reducing calorie intake. Increasing rural infrastructure, mechanization and electrification (Rao, 2000),²⁵⁹ urban lifestyle (Shariff et al 2003)²⁶⁰ and ‘changed lifestyle’ (Ramachandran, 2008)²⁶¹ are cited as factors leading to declining average calorie intake.

Deaton et al (2008)²⁶² hypothesize the role of increasing health leading to effective conversion rate of calorie and role of durable goods and increased drinking water supply in reduction of physical activity requirement in rural India. However the authors note that more conclusive study is needed to verify these hypotheses.

Similarly, the 10th Plan also argues that the reduction in physical activity calls for lower energy needs in all energy groups and notes the need for revising the existing RDAs.

²⁵⁷ Dev , S. Mahendra (2005), *op cit.*

²⁵⁸ *ibid.*

²⁵⁹ Rao, C.H. Hanumantha (2000), *op cit.*

²⁶⁰ Shariff, Abusaleh, Prabir K. Ghosh and Abhilasha Sharma (2003), *op cit.*

²⁶¹ Ramachandran, Prema (2008), *op cit.*

²⁶² Deaton, Angus and Jean Drèze (2008), *op cit.*

Ray (2007)²⁶³ notes that the argument of declining calorie requirement “does not have much operational significance since, to my knowledge, no serious physiological study exists, at least in the Indian context that seeks to scientifically quantify and revise the calorie requirements over time”²⁶⁴ (Ray, 2007:338).

After extensive search of literature on this issue we also corroborate the conclusion arrived at by Ray (2007).²⁶⁵ After our earlier analysis of changes in population and occupational structure over the years, we are more confident that such a reduction in average calorie requirement is not evident at all.

Tenth Plan: revisiting old debates on appropriate calorie norm:

The Tenth Plan had completely avoided any discussion on the overall trend based on the indicators of calorie intake, despite the issue receiving considerable attention from academic literature. Further, apart from hypothesizing reduction in activity rates, the Tenth Plan has also chosen to critique the existing RDAs and hence challenge the nutritional foundation of calorie norms.

Although the Plan document did not explicitly state a new lower desired average calorie intake, it did not consider the declining average calorie intake trend as worrying. Further, it hoped that new research would throw light on the desirability of existing calorie norms.

As discussed earlier, the RDAs recommended by ICMR is based on in-depth nutritional studies which observe the nutritional intake of individuals belonging to different age group and sex and engaged in different activities. Based on these studies, the ICMR is in position to estimate the differential energy cost for the BMR, age, sex and activity level, which together leads to estimation of RDAs.

The most important component of RDA, Basal Metabolism is measured in terms of Basal metabolic rate (BMR) or resting energy expenditure (REE), “which is the energy expenditure when the individual is in a ‘complete state of rest’ with a constant body

²⁶³ Ray, Ranjan (2007), ‘Changes in Food Consumption and the Implications for Food Security and Undernourishment: India in the 1990s’, *Development and Change*, 38:2, pp. 321–343.

²⁶⁴ Ray, Ranjan (2007), *op cit*.

²⁶⁵ *ibid*.

temperature and has been fasting for at least 13 hours” (Dasgupta, 1993, quoted in Ayalew (2003:7).²⁶⁶ Now, BMR varies in individuals depending upon the body composition, growth needs and age, physical and mental health and pregnancy status etc. Hence in theory, if the impact of each of these factors on BMR is estimated from the study population, then BMR for different individuals with different body composition, growth needs and age, physical and mental health and pregnancy status can be predicted based on appropriate equations. “Although no equation for predicting REE can be completely accurate,” ... they can... “predict REE with sufficient accuracy to serve as a first step in determining group or individual requirements.” (Pellet 2000: 894).²⁶⁷ Among the different variables discussed above, “weight is the major variable and may, together with age and sex, be sufficient for predictive purposes.” (Pellet 2000: 894)²⁶⁸

Therefore BMR is predicted by ICMR for different age and sex groups with reference to a particular weight. To illustrate, to estimate RDA for a sedentary male in 18-30 age group (29 years) with 60 kg weight, one would first arrive at the energy requirement based on age-sex specific metabolic activity in relation to the person’s weight ($14.5 \times 60 \text{ kg} = 870 \text{ kcal}$). Then the estimated energy requirement for age-sex specific activity (such as playing time for children and reduced activity level after retired adults etc) is added to already arrived figure and BMR is arrived at ($870 \text{ kcal} + 645 \text{ kcal} = 1515 \text{ kcal}$). Once BMR is calculated, then predicted BMR is multiplied with BMR units for occupational activity level and the total energy requirement is calculated ($1515 \text{ kcal} \times 1.9$ (sedentary activity) = 2878.5 kcal).

While estimating RDA for adult groups, ICMR uses a standard weight and does not take into account the weight difference within specific age groups (see table:3.18).

This is done to set growth standards in a developing country and to ensure that RDA is not associated with morbidity risk. The 1989 ICMR Expert Group had set the standard adult weight at 60 kg for male and 50 kg for female.

²⁶⁶ Ayalew, Tekabe (2003), ‘The Nutrition-Productivity Link and the Persistence of Poverty’, IDPM - UA discussion paper, University of Antwerp, Belgium, downloaded from <http://www.ua.ac.be/dev> June 2003,

²⁶⁷ Pellett, Peter L. (2000), ‘Energy and Protein Metabolism’, in Kenneth F. Kiple and Kriemhild Conee Ornelas (eds), *The Cambridge World History of Food: Volume I*, Cambridge University Press, Cambridge, pp. 888-913

²⁶⁸ *Ibid.*

The Tenth Plan picked up this point and raised its objection against the use of higher reference weight by ICMR. As we can see from the table, the median Indian weight for adult male and female was lower at 53.1 kg and 45.2 kg (See table 3.19).

Table: 3.18 Reference body weight (kg) of Indians of different Age groups

	Age (years)	Reference body weight (kg)	
		Male	Female
Infants	0 – ½	5.4	5.4
Children	½– 1	8.6	8.6
	1 – 3	12.61	11.81
	4 – 6	19.2	18.69
	7 – 9	27	26.75
	10 – 12	35.54	37.91
Adolescents	13 – 15	47.88	46.66
	16 – 18	57.28	49.92
Adults	20 – 50	60	50

Source: ICMR (2002)²⁶⁹

Table 3.19 Percentile weights (kg) of Indian adult men and women

	Percentile					Median	SD
	5	25	50	75	95		
Men	41.1	47.3	52	57.3	69.2	53.1	8.5
Women	34.5	39.7	43.9	49.8	60.2	45.2	8

Source: Planning Commission (2002: table 4.1)

It is true that use of lower reference weight would statistically reduce the calorie requirement for the different activity-age-sex groups. “Persons with large (or small) bodies require proportionately more (or less) total energy per unit of time for activities such as walking, which involve moving mass over distance.” Pellet (2000: 896).²⁷⁰ Sagar (2006)²⁷¹ quotes two ICMR studies, which showed that a sedentary adult male with an average weight of 54 Kgs, needs 2,221 kcal/day (41.5 kcal per kilo) whereas working male with an average weight of 46.1 Kgs engaged in moderate work needs only 2,180 kcal/day (47.3 kcal/kilo). The author notes that the average weight of 46.1 kg which permits the person to perform work at relatively lower calories is 25 per cent less than the reference weight (60 Kgs).

²⁶⁹ ICMR (2002), ‘Nutrient Requirements and Recommended Dietary Allowances for Indians’, NIN, Hyderabad.

²⁷⁰ Pellett, Peter L. (2000), *op cit.*

²⁷¹ Sagar, Alpana (2006), *op cit.*

How would the move to reduce reference weight explain the trend in reducing calorie intake? We find that reduction in reference weight would have no role in explaining declining trend in calorie intake. To illustrate, if we were examining the trend from 1993-94 to 2004-05, the reduction in actual calorie intake cannot be attributed to reduction in actual weight during this period. If it did so then it would be the singular most important indicator of distress.

To understand this further we need to make distinction between, (a) change in RDA or average calorie norm due to use of different estimation method and (b) change in RDA or average calorie norm due to reducing calorie requirement.

As an example of change in RDAs due to improved knowledge in nutritional science, we can take the different recommended energy allowance given by 1958 ICMR Advisory Group and 1989 ICMR Expert Group. These two groups gave different RDAs for different activity group (see table 3.2). As we noted earlier, the new RDAs were lower than the earlier ones for activities involving heavy work but were higher for activities involving moderate and sedentary work. This did not mean that energy requirement for moderate and sedentary work has increased over the years and neither did it mean that energy requirement for heavy work has decreased over the years. Similarly, the 1989 ICMR Expert Group, treated (10–18) age group as adolescents and (19 and above) age group as adults as against (13-15) age group and (15 and above) considered as adolescents and adults in ICMR (1959). These changes led to significant changes in RDAs for (15- 18) age group, who were newly treated as adolescents. Though their RDA in 1989 was now higher than sedentary adults keeping in view their growth potential, many of them previously included as heavy workers experienced decline in RDAs.

Now, even if we assume that desirable minimum average energy requirement for rural India computed based on these RDAs increases (or decreases) from 1959 to 1989, this in no way means that average intake requirement of people in rural India has increased (or decreased). However this will have an impact on the inference on (a) calorie gap, i.e., the gap between desirable and actual calorie intake, and (b) head count ratio, i.e., proportion of people below the desirable calorie intake. Further, while assessing the trend in calorie

gap or proportion of calorie deprived people, say for example 1971-72 and 2004-05, the revised desirable calorie needs have to be worked out using a similar method.

In other words, we want to make it clear that reduction in RDAs due to change in reference weight is distinct from reduction in average calorie requirement and the Tenth Plan (and neither the Mid Term Review of Tenth Plan), apart from making a passing hypothesis on reducing activity, gives any justification for blatantly ignoring the evidence of reducing calorie intake in rural India.

Though any reduction in RDAs based on lower reference weight will not impact the interpretation of trends, but they would have adverse affects on two counts.

First of all it may have ‘great historical impact’. At one strike the Planning Commission can reduce the poverty ratio in 1972-73, which was indirectly based on RDAs estimated with higher reference weight (55 kg for male and 45 kg for women). Secondly, these revised RDAs could be used to argue for lower poverty ratios (and hence ‘resource burden on social sector’) or at least could be used to at least pacify the demands for raising the poverty lines which is increasingly being advocated by many studies.

Secondly, this move will be a historical reversal. At times when the adaptation argument was at peak at international level in deliberations of FAO/WHO/UN, the policy approach in India favored the ‘growth potential’ argument. Now, when the debate is considered settled at FAO/WHO/UN level (as we noted earlier in detail), the adaptation argument is reinvented at policy level in India albeit in a very indirect manner. As Qadeer et al (2005:364)²⁷² points out that the logic that a stunted persons getting more than required calories would become obese “is being stretched to argue that we do not need a reference person but the actual average”

Qadeer et al (2005)²⁷³ further notes the nutritional risks associated with lower RDAs and points out that there is no informed knowledge about the risks involved with a particular level of adaptation in India. Based on the discussions of the WHO Expert Consultation on RDAs in 1985, the authors note that there are different kinds and levels of adaptation

²⁷² Qadeer, Imrana and Anju, P. Priyadarshi (2005), ‘Nutrition Policy: Shifts and Logical Fallacies’ *Economic and Political Weekly*, 40:05, January 29, 2005, pp. 358-364

²⁷³ *ibid.*

which also mean varying and different risks, including high risk of morbidity, forced low physical activity and slowing of BMR. Ideally, an RDA which involves low risk of morbidity and which permits high level of physical activity is to be chosen, for which no sufficient studies exist in India. Given this limitation, the author notes that, the haste to change the RDAs citing morbidity associated with obesity could normalize dietary intake status which could involve morbidity risks for poor people.

To sum up, in this chapter, we first found that the average calorie intake of the rural population is much less than the desired calorie norm of 2400 kcal. We also showed that there is no evidence to prove that the decline in calorie intake is due to the decline in calorie requirement. Hence over the years the calorie norm remains valid. Thus, the declining calorie intake in rural India, after 1990s, is a worrying trend.

However, many of the studies did not take it seriously. They interpreted the changing consumption pattern, involving reduction in cereal intake (which was responsible for decline in calorie intake), as a voluntary decision and hence as a positive indicator. However we found that voluntary food basket diversification argument does not have much basis. Over the years, there was not only reduction in calorie intake but also reduction in protein and other nutrients (except fat). Further, there are also reasons to view food diversification as a forced change.

Similarly, other studies critiqued the increasing distress argument by pointing out fallacies involved in estimates of calorie deprived population based on direct calorie cutoff method. However we pointed out that a critique of estimates based of the calorie deprived population would not be useful in ruling out increasing rural distress. The most relevant indicator, which need to be explained here is decreasing calorie intake in 11 out of 12 MPCE groups after 1990s.

However all the attempts to explain reducing calorie intake, either takes one back to reducing calorie requirement hypothesis or to reinvent the adaptation argument. We had earlier pointed out there is no basis to accept the hypothesis of the reducing calorie needs. Similarly, adaptation argument does little to help in explaining the reducing calorie intake in last 15 years.

Chapter Four

Increasing rural distress and declining average calorie intake:

Based on the review of literature and examination of secondary data, in the last chapter we had come to a conclusion that there is no convincing argument to counter the mass rural distress argument which is supported by the observed decline in average calorie intake in the rural population.

However, ruling out the role of positive developments in explaining the decline in rural average calorie intake may not by itself be considered a sufficiently robust approach to conclude that the rural population is facing distress or nutritional deprivation. One must triangulate this evidence of distress with other macro-level indicators and in the process should explain that why positive development indicated by some macro-level indicators is not true. An exhaustive attempt in this direction is beyond the scope of the present work. Therefore, we limit our focus to an important indicator - real per capita consumption expenditure - which as we noted earlier, led many studies to form an empirical assumption of improving welfare and then interpret the consumption pattern accordingly.

4.1 Trend in the real consumption expenditure and other related indicators since the 1990s:

Normally, an increase in the consumption expenditure over the years should mean that more goods and services are at the disposal of an individual or population. To check whether the increasing expenditure really means this, one checks for price rise and fall and reports real consumption expenditure. Table 4.1, presents such data based on NSSO reports since the 1983. As we can observe from the table, the average per capita monthly expenditure in rural areas has increased since the 1983.

A similar exercise undertaken for 12 MPCE groups, shows that the trend in Average MPCE groups for all 12 groups, registered an increase at constant price from 1993-94 to 2004-05 (Table 4.2). However, even here, the increase in the real expenditure is more in higher income group, with nine low MPCE groups registering less than the growth in the average real expenditure.

Table 4.1: Trends in Rural all-India average per capita consumption, 1983 to 2004-05

Year	MPCE (Rs.) at current prices	Consumer Price Index- Agricultural Labour*
1983	112.31	227
87-88	158.1	289
93-94	286.1	520
99-00	486.16	833
2005-04	558.78	922

Notes: *Based on the CPI-AL series with base 1972-73=100

Source: NSSO (2006).²⁷⁴

Table 4.2: Trend in Average MPCE (Rs.) for 12 MPCE groups from 1993-94 to 2004-05

MPCE groups	Average MPCE (Rs.) at constant (1993-94) prices	
	1993-94	2004-05
0 - 5%	100	114
5% - 10%	131	145
10% - 20%	153	169
20% - 30%	178	195
30% - 40%	200	221
40% - 50%	222	246
50% - 60%	249	275
60% - 70%	282	310
70% - 80%	325	359
80% - 90%	398	442
90% - 95%	500	570
95% - 100%	872	1116
all	281	319

Source: NSSO (2006).²⁷⁵

Economists have also worked out a standard consumption pattern (in terms of share of food expenditure) associated with high and low level of real income, based on empirical observations, supported by theoretical underpinnings. Therefore, “the share of the budget devoted to food has been a measure of well being since Engel first noted the proposition that wealthier families devoted a smaller share of their budget to food than poorer families.” (Logan, 2007:6).²⁷⁶ Based on this understanding they also infer that when income really increases, the extra income has to be spent relatively more on non-food

²⁷⁴ NSSO (2006), ‘Level and Pattern of Consumer Expenditure in India: NSS 61st Round, July 2004- June 2005’, NSS Report No 508, National Sample Survey Organisation, Ministry of Statistics and Programme Implementation, Government of India, New Delhi, December 2006.

²⁷⁵ *ibid.*

²⁷⁶ Logan, Trevon D. (2005), ‘The Transformation of hunger: The Demand for Calories Past and Present’, NBER Working paper 11754, National bureau of economic research, Cambridge, November 2005

expenditure.²⁷⁷ In other words, “the share of total spending devoted to food falls as total spending increases, i.e., that the total expenditure elasticity of demand for food is less than one.” (Ravallion, 2000:355).²⁷⁸

Therefore if the observed increase in the real expenditure as reflected by consequent NSSO rounds is also accompanied by increasing share of non-food expenditure, then one could be doubly sure that the real expenditure is increasing. This indeed, has happened over the years as shown in table 4.3.

Table 4.3 Share of food expenditure in MPCE groups from 1993-94 to 2004-05

MPCE groups	Per cent Share of Food Expenditure in Total Consumption Expenditure	
	1993-94	2004-05
1	72.86	68.5
2	73.29	67.2
3	72.97	66.3
4	72.45	64.8
5	71.54	64.0
6	70.42	62.9
7	69.42	61.6
8	67.45	60.1
9	65.55	58.0
10	61.74	53.9
11	57.05	49.8
12	42.47	33.7
All	63.17	55.0

Source: NSSO (2006)²⁷⁹ and NSSO (1996a).²⁸⁰

4.2 How good is the Consumption expenditure an indicator of human well being?

There could be situations when an increase in the real expenditure and share of non-food may not indicate ‘real’ welfare or human development. The classical error committed by many studies assuming every increase in monetary income as increasing welfare is that they fail to examine the reasons behind each change in the consumption pattern

²⁷⁷ However this would not happen in extremely low income level as noted by Ravallion, Martin (2000), ‘Prices, wages and poverty in rural India: what lessons do the time series data hold for policy?’, *Food Policy* 25, pp. 351–364.

²⁷⁸ Ravallion, Martin (2000), ‘Prices, Wages and Poverty in Rural India: What Lessons do the Time Series Data Hold for Policy?’, *Food Policy* 25, pp. 351–364.

²⁷⁹ *ibid.*

²⁸⁰ NSSO (1996a), ‘Level and Pattern of Consumer Expenditure in India: NSS 50th Round (July 1993 – June 1994)’, NSS Report No 402, National Sample Survey Organisation Department of Statistics, Government of India, New Delhi, May 1996.

involving inclusion/exclusion and increase/decrease of goods and in a non-critical and simplistic way interpret every inclusion and increase as indicator of positive development. This would be akin to interpreting increasing military expenditure of a nation as a progressive development, while not recognizing the fact that increasing military expenditure is a forced response to the sudden war and conflict in the region, which is beyond the control of individual nation. In such situation when the expenditure and share of social sector reduces, it is clearly a sign of negative development.

Similarly, an increase in expenditure on certain commodities would not add to well being of the *household or individual*. The logic here is very simple. Suppose a wage labour after losing the employment opportunity in the village gets a work in nearby town with an additional 10 Rs wage per day, but if his daily expenditure increases on travel by Rs. 10, his position cannot be better than earlier. In other words, the labourer is forced to incur the expenditure on travel to *maintain* the current level of expenditure on other items. The expenditure on travel here is an 'instrumental expenditure' incurred to maintain the existing expenditure on 'basic needs'.

Now suppose after a year, the daily wage of the worker increases by another Rs. 5, but the transport cost increases by Rs. 10. Now, though the worker has to increase his expenditure, his over all well being will reduce as he will have to squeeze out his budget on other household requirement to finance the addition Rs. 5 on travel. If the household under discussion is already in abject poverty and all of his household expenditure consists of basic needs and other 'instrumental needs' essential for acquiring basic needs then the impact of budget squeeze would be on one among the different basic needs such as food, health and education.

Though this daily life example come handy to explain the concept of 'instrumental expenditure', in macro-level consumption expenditure analysis there is no easy way to delineate the expenditure increase due to rise in 'instrumental expenditure' and expenditure rise which has contributed to increase in well being.

4.3 Assessing the extent of ‘instrumental expenditure’ in total expenditure:

It may seem that one easy way to rule out the negative role of instrumental expenditure is to check whether the expenditure on basic necessities such as food, water, health, education, and energy, etc have increased or not.

If we find that expenditure on all of the basic needs has increased, then it clearly would mean that the increase in expenditure has had a clear role in increasing the well-being of people. On the contrary if the expenditure on basic needs is decreasing or stagnant then one has the reason to doubt the welfare impact of expenditure increase.

As we saw earlier, the share of expenditure on food in rural India is decreasing since the 1993-94 accompanied with the decline in calorie intake, which is far below the minimum calorie requirement. The analysis in the subsequent section showed that such reduction and stagnation in the consumption of basic non-food needs is observed from 1993-94 to 2004-05, especially for low MPCE groups.

The following section will also show that how forced social adaptation by Indian population after 1990s is misinterpreted by different studies as an indicator of well being.²⁸¹ There is evidence that some of these changes are to cope with adverse consequences of changing socio-economic conditions and development strategy which has pressurized the population to reduce their calorie intake. The studies which have failed to take into account the compulsions created by changing socio-economic condition, have simplistically linked the ‘distressful changes’ to selected indicators like increasing ‘real income’ and have inferred well being.

4.4 Trend in share of non-food expenditure items:

Table 4.4 gives the range of fluctuation of the share of non-food expenditure in total expenditure as reported by NSSO during 1983-84 and 1993-94 and during 1993-94 and 2004-05. The lower range refers to the year when the items’ share in total expenditure dipped at lowest during the three reference years and higher range refers to the year

²⁸¹ The perspective, which informs these studies that infer well-being through the same indicator which actually signals distress, looks at the consumption pattern and choice as an economic choice in a reductionist way.

when the items share in total expenditure was at peak during the three reference year. A comparison of two periods viz., 1993-94 to 2004-05 and 1983-84 to 1993-94, show that there are three non-food expenditure heads which are noticeably different and where the share of expenditure has increased considerably. These are (a) fuel and light, (b) miscellaneous goods and services and to some extent the (c) durable goods. The upper range for fuel and light increased from 7.5 per cent during 1983-84 and 1993-94 to 10.2 per cent during 1993-94 and 2004-05. Similarly, for miscellaneous goods and services the upper range increased from 17.3 per cent to 23.4 per cent and for durable goods, the increase in upper range was from 2.7 to 3.4.

When we analyse the share of expenditure on fuel and light, medical services, transport, education and rent in total expenditure, they together increased from 19.1 per cent in 1993-94 to 33.6 per cent in 2004-05 (Patnaik 2007).²⁸²

Table 4.4: Share of non-food expenditure items in total consumption expenditure- Range between 1983-84 to 1993-94 and 1993-94 to 2004-05

Non-food items	Range of share in non-food expenditure items in total consumption expenditure	
	1983-84 to 1993-94	1993-94 to 2004-05
Pan, tobacco and intoxicants	3.0 to 3.2	2.7 to 3.2
Fuel and light	7.0 to 7.5	7.4 to 10.2
Clothing	5.4 to 8.6	4.5 to 5.4
Footwear	0.9 to 1.00	0.8 to 0.9
Misc. Goods and services	12.0 to 17.3	17.3 to 23.4
Durable goods	2.3 to 2.7	2.6 to 3.4
Total Non-food	34.4 to 36.0	36.8 to 45.0

Source: NSSO (1997),²⁸³ NSSO (2001b)²⁸⁴ and NSSO (2007a).²⁸⁵

²⁸² Patnaik, Utsa (2007), 'Neoliberalism and Rural Poverty in India,' *Economic and Political Weekly*, 42:30, July 28, pp.3132-50.

²⁸³ NSSO (1997), 'Consumption of Some Important Commodities in India: NSS 50th Round (July 1993 - June 1994)', NSS Report No 404, National Sample Survey Organisation, Department of Statistics, Government of India, New Delhi, March, 1997.

²⁸⁴ NSSO (2001b), 'Consumption of Some Important Commodities in India, : NSS 55th Round (July 1999 - June 2000)', NSS Report No 461, National Sample Survey Organisation, Ministry of Statistics and Programme Implementation, Government of India, New Delhi, July, 2001.

²⁸⁵ NSSO (2007a), 'Household Consumption of Various Goods and Services in India, 2004-05: NSS 61st Round, July 2004- June 2005, Vol. I: Major States and All-India', NSS Report No 509, National Sample Survey Organisation, Ministry of Statistics and Programme Implementation, Government of India, New Delhi, April, 2007.

4.5 Fuel and light

The expenditure head, 'fuel and light' has received some attention from the literature on calorie debate in India. Mehta et al (2000)²⁸⁶ link the decreasing access and availability of common property resources, including fuel-wood, over the years to the increasing consumption expenditure on fuel and light. In other words, the authors argue that people are increasingly forced to rely on the market for these necessities, which they accessed without much monetary cost earlier.

Both Ray (2007)²⁸⁷ and Patnaik (2007)²⁸⁸ in agreement quote Mehta et al (2000). Patnaik (2007) also cites the increasing expenditure share on fuel and light since the 1993 as an evidence for supporting the claim of Mehta et al (2000).

The consumption pattern of Fuel and light in rural India:

Different commodities included in the 'fuel and light' head, for which information is collected in NSSO survey are coke, firewood and chips, electricity, dung cake, kerosene – PDS, kerosene - other sources, matches, coal, LPG, charcoal, candle and gobar gas. If the households were using some other commodities as source of fuel then it was recorded as 'other fuel'. It does not include the cost of fuel (petrol, mobile oil, diesel, etc.) for power-driven transport and animal feed for animal drawn carriage under this head.

Table 4.5 shows the relative share of rural monthly average expenditure on these commodities for the year 2004-05. As we can observe, the firewood and chips, electricity, dung cake, kerosene, coal, and LPG together account for 94.7 per cent of total expenditure under 'fuel and light' expenditure head in rural areas during 2004-05. Fuel wood and chips had the highest share of 42 percent, followed by electricity (20.3 percent), kerosene (12.9 percent) and dung cake (11.5 percent).

²⁸⁶ Mehta, J. and S. Venkatraman (2000), 'Poverty Statistics: Bermicide's Feast', *Economic and Political Weekly*, 35:27, pp. 2377–81.

²⁸⁷ Ray, Ranjan (2007), 'Changes in Food Consumption and the Implications for Food Security and Undernourishment: India in the 1990s', *Development and Change*, 38:2, pp. 321–343.

²⁸⁸ Patnaik, Utsa, (2007), *op cit.*

Table 4.5: Percentage share of different items in total fuel and light expenditure 2004-05
Rural- All India

Items included in fuel and light expenditure head	Value (Rs)	Percentage share in total fuel and light expenditure
Coke	0.09	0.2
Firewood and chips	23.9	42.0
Electricity	11.55	20.3
Dung cake	6.56	11.5
Kerosene - PDS	4.94	8.7
Kerosene - other sources	2.37	4.2
Matches	0.92	1.6
Coal	0.2	0.4
LPG	4.53	8.0
Charcoal	0.04	0.1
Candle	0.23	0.4
Gobar gas	0.11	0.2
other fuel	1.42	2.5
Fuel and light: total	56.84	100.0

Source: NSSO (2007a)²⁸⁹

Table 4.6: Share of households using different sources of energy as primary source in different states in rural India

	Firewood and chips (A)	Dung cake (B)	A+B	LPG (C)	Others Incl. Coke and coal (D)	No cooking arrangement (E)
Andhra Pradesh	80.3	0.1	80.4	14.4	1.6	3.6
Assam	92.4	0	92.4	6.9	0.7	0
Bihar	49.8	33.4	83.2	1.7	14.9	0.2
Chattisgarh	92.3	2.4	94.7	1.5	2.5	1.3
Gujarat	73.4	0.8	74.2	10.5	11	4.3
Haryana	56.4	19.2	75.6	19.1	4.4	0.9
Jharkhand	82.8	1	83.8	1.4	13.8	1
Karnataka	89.7	0	89.7	6.5	2.1	1.7
Kerala	79.1	0	79.1	18.2	0.8	1.9
Madhya Pradesh	90.7	3.8	94.5	3.8	1.2	0.5
Maharashtra	74.9	0.3	75.2	14.9	8.2	1.7
Orissa	79.7	5.8	85.5	2.9	10.1	1.5
Punjab	31.4	33.3	64.7	24.2	10.7	0.4
Rajasthan	94.1	0.3	94.4	5.1	0.5	0
Tamilnadu	80.9	0	80.9	13.4	2.8	2.9
Uttar Pradesh	66.7	26.5	93.2	4.8	1.7	0.3
West Bengal	73.3	3.6	76.9	4.3	17.9	0.9
all-India	75	9.1	84.1	8.6	6	1.3

Source: NSSO (2007a).²⁹⁰

²⁸⁹ NSSO (2007a), *op cit.*

²⁹⁰ NSSO (2007a), *op cit.*

Though the per cent share of expenditure on fuel wood and chips is only 42.0 in fuel and light expenditure head, if we take into account only the cooking fuel²⁹¹ we find that expenditure on firewood and other traditional low cost fuel consist of 80 per cent of the total expenditure on cooking fuel.

The Increasing trend in the consumption of firewood and other subsistence fuel: a sign of distress:

Over the years, if the perceived rise in the real income were true, then one would have expected that percentage of households relying on firewood and chips would have drastically reduced. However subsequent rounds of NSSO surveys show only marginal substitution. Between 1999-2000 and 2004-05, only one per cent of households ceased to use firewood and chips. Infact, the quantity of firewood and chips, consumed over the years has increased as shown in the Table 4.7. The average quantity of other major traditional fuel, dung cake, which depends on livestock have also increased during this period.

Table 4.7: Average quantity of firewood and chips and dung cake consumed over the years since the 1987-88

Year	Firewood and chips		Dung cake	
	(in kg)	Per cent increase	(in kg)	Per cent increase
1987-88	16.24		NA	
1993-94	17.27	6.34	3.23	NA
1999-2000	17.7	2.49	5.45	68.73
2004-05	21.44	21.13	6.6	21.10

Source: NSSO (2007a)²⁹²

Though the average quantity of LPG consumed also increased from 0.22 kg to 0.4 kg from 1993-94 to 2004-05, the benefit of this increase was restricted to few upper MPCE groups whose income definitely increased after 1990s. Normally, one would have expected substantial increase in quantity consumed as well as in percentage of households relying on LPG as primary energy source, especially after improvement in supply and availability after 1990s and as the price of LPG was stable during the two survey periods, i.e., 1993-94 and 1999-2000 (see table 4.8).

²⁹¹ Here we exclude expenditure on electricity, candle, matches and half of the expenditure on kerosene,

²⁹² *Ibid.*

Table 4.8: Monthly Wholesale Price Index of LPG Cylinder in India (Base Year: 1993-94 = 100)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1994				100	100	101.1	101.1	101	101	102.1	101.1	102.9
2004	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	100.8
2005	104.6	104.6	104.6	104.6	104.6	104.6	104.6	104.6	104.6	104.6	104.6	104.6

Source: Indiastat.com, accessed on 24.06.07, Original source: Ministry of Commerce and Industry, Government. of India.

The average consumption quantity of other major energy source, kerosene during this period 1993-94 and 2004-05, had decreased. This might be due to two reasons. Firstly, increase in PDS kerosene price and exclusion due to targeted PDS. Secondly, kerosene is also used for lighting. Hence increasing electrification of villages would have decreased the use of kerosene for lighting purpose.

Increasing distress for poor due to precarious supply conditions and increasing average consumption of firewood:

Rural households do use multiple source of energy and studies suggest that households switch over from one energy source to another source depending upon many factors. Pandey notes “The share of fuelwood, crop residue and dung cake in total cooking fuel varies considerably, and depends largely on availability, and cost in terms of time required for collection. For example, fuelwood is largely used when forest/tree resources are easily accessible, dung cake where animal husbandry is an important occupation and crop residue where such residue are available due to type of the crop and intensive cultivation” (Pandey 2002: 21).²⁹³

In the light of this understanding one would expect the households, especially those who are experiencing increasing ‘real expenditure’, to switch over to other costly fuels given the fuel wood availability crisis. Studies on fuel wood use and consumption actually show that there are two main sources of fuel wood collection for rural households, forest resources and non-forest common property resources. Pandey (2002)²⁹⁴ in his review of studies on fuel wood use in India shows that the access to fuel wood from forest resources is reducing over the years. The author notes that “Measures taken by the

²⁹³ Pandey, Devendra (2002), ‘Fuelwood Studies in India, Myth and Reality’, Mimeo, Centre for international forestry research, Indonesia.

²⁹⁴ *ibid.*

Government to conserve biodiversity and existing forest resources has resulted in an increase of restricted areas where removal of fuel wood is not permitted. The ban on felling trees in many forests has reduced the production of round wood from forests with a consequent adverse impact on recorded fuel wood production” (Pandey, 2002: 22).²⁹⁵ Though, based on studies done in Kerala and Haryana, the author notes the scope of meeting the fuelwood needs from non-forest areas, this would not be promising given the overall reduction in access to common property resources, which include non-forest areas, as shown by Mehta et al (2000).²⁹⁶

Despite the availability crisis a large section of people could not successfully switch over to other costly fuel sources (Table 4.9). Only the richest MPCE groups had enough income to switch over to costly fuels. Between 1993-94 and 2004-05, around 10 per cent of the households from the richest 3 MPCE groups (10th to 12th) ceased to rely on firewood and chips as primary source of energy. Substantial section of people (2nd to 9th MPCE group) could not afford successful switching over from firewood and chip. In these MPCE groups only minor adjustment was observed. The better off among these MPCE groups, (6th to 9th MPCE) were able to marginally switch over, with 1 to 3 per cent of households ceasing to rely on fuel wood and chips as primary source. Similarly, the worse off among these MPCE groups, (2nd, 3rd, and 5th MPCE group) had households switching back to firewood and chips as primary source (around 1 per cent).

Table 4.9: Percentage of households relying on firewood and chips as primary fuel in different MPCE groups – 1993-94 and 2004-05

Year	MPCE groups												All
	1	2	3	4	5	6	7	8	9	10	11	12	
1993-94	79.1	80.9	81.0	82.1	81.1	81.8	81.4	80.2	79.9	75.0	71.6	58.2	78.2
2004-05	78.4	81.9	82.8	81.8	81.5	79.7	80.0	79.3	76.4	68.6	57.6	43.3	75.0

Source NSSO (1997)²⁹⁷ and: NSSO (2007a)²⁹⁸

The analysis undertaken till now shows that the majority of households started or continued to depend on firewood and chips as primary source of fuel. However it does not indicate the true extent of substitution of other costly sources by firewood and chips.

²⁹⁵ *ibid.*

²⁹⁶ Mehta, J. and S. Venkatraman (2000), *op cit.*

²⁹⁷ NSSO (1997), *op cit.*

²⁹⁸ NSSO (2007a), *op cit.*

For instance, earlier in 1993-94, 80 per cent of cooking fuel, used by households primarily relying on firewood and chips, would have consisted of fire wood and chips. In 2004-05, these households primarily relying on firewood and chips could have increased the share of firewood and chips in their total cooking fuel to 90 percent.

It seems that this has happened when we look back at the table 4.7. We can observe from the table that the average quantity consumption of firewood and chips in k.g. has increased by around 21 per cent from 1993-94 to 2004-05. This increase in quantity consumption happened when the average proportion of households who relied on firewood and chips as primary source was almost stagnant.

The increase in quantity consumption of firewood and chips, at the time of availability crisis would mean that relatively better-off among the poor would have increased the quantity consumed with pressure of increasing usage of firewood and chips falling directly on poorest,²⁹⁹ who would face difficulty in collecting it from common property resources or have to pay higher price in the market.

However no detailed tables were available in the NSSO reports to assess on trend in quantity consumption in each MPCE groups. So such an exercise could not be undertaken in to check this. Having noted this, we also find strong evidence of increasing distress among poorest 1st MPCE group. Among this MPCE group, the number of household primarily relying on firewood and chips has actually reduced. This reduction was not substituted by an increase in the consumption of other traditional fuels. Infact, the per cent of household relying on other traditional low cost fuel as primary source also reduced substantially. A worrying trend which explained this decrease is that many households among the poorest MPCE group are increasingly not having need for fuel as they have ceased to cook. The NSSO rounds revealed that the per cent of households in this poorest MPCE group which reported as not having any cooking arrangements increased from 1.4 per cent in 1993-94 to 8.5 per cent in 2004-05, signaling growing destitution among this income group. For the rest of 92.5 per cent of household in 1st

²⁹⁹ Studies also show that both poor and non-poor rely heavily of common property recourses. The per cent share of households, from lower income deciles, which did not purchase fuel wood but either collected them free or used home grown fuel wood, was only slightly higher than the higher income deciles. ((World Bank, (2003), 'Access of the Poor to Clean Household Fuels in India', ESMAP, The World Bank Washington, DC),

MPCE group, having found no evidence of substitution, there is a strong likelihood that many of them would have decreased the consumption of any cooking fuel.

Underestimation of growing distress in the trend in expenditure on ‘fuel and light’

Given the high reliance of rural households on fuel wood and the fact that much of fuel wood comes from home produce (agriculture residue and homestead trees) and as free collection from common property resources a large proportion of the expenditure on fuel recorded in NSSO is actually based on imputed value of homestead collection, calculated at ex farm prices, and the value of free collection, imputed at local retail prices. The NSSO round in 1993-94, reports that only 12.6 per cent of the total fire wood consumed by the rural households was purchased from the market. The rest of the fire wood was free collection (54.8 percent) and home produce (32.6 per cent).³⁰⁰ The NSSO survey on common property resources in 1998 (NSSO 1999),³⁰¹ also shows that common property resources are mainly used for fuelwood collections. Table 4.10 shows that the value of collection from C.P.Rs was highest for fuel wood, among different materials.

Table 4.10: Percentage distribution of value of collections from CPRs by category of materials in India

Items collected from CPRs	Percentage distribution of value
Fuel wood	58
Fodder	25
Other	17
All	100
Average value of collections (Rs)	693

Source: NSSO (1999)³⁰²

If substantial portion of fuelwood collected does not involve cash purchase from the market, then consumer expenditure is actually inflated and includes free collection as well. Now, when suddenly the households lose their access to free resources and are

³⁰⁰ No detailed tables are available in 1999-2000 and 2004-05 NSSO reports to assess the extent to which free collection and home produce has decreased in these years

³⁰¹ NSSO (1999), 'Common Property Resources in India, NSS 54th Round, January 1998 – June 1998, NSS Report No. 452', National Sample Survey Organisation, Ministry of Statistics and Programme Implementation, Government of India, New Delhi, December 1999.

³⁰² *Ibid.*

forced to rely on cash purchase from the market for fuel wood and other complementary sources, it may not reflect much in total expenditure recorded in the NSSO survey.³⁰³

Therefore while examining the trend in expenditure on fuelwood, even if the expenditure is constant over the years, it would imply that households are actually increasing their expenditure on fuelwood. The findings of consecutive NSSO rounds show that the condition is worse. The expenditure on fuel wood in subsequent rounds is actually increasing steeply.³⁰⁴ This means that the actual increase in expenditure will be much larger.

4.6: Miscellaneous goods and services:

The other non-food expenditure head, whose share in total consumption expenditure increased substantially from 14.5 per cent in 1987-88 to 23.4 per cent in 2004-05, is miscellaneous goods and services. The major sub-heads which account for 84.2 per cent of increase in expenditure on 'miscellaneous goods and services', include expenditure on medical care, education, conveyance and consumer services. The increase in expenditure in these heads was observed across income groups.

Education:

Under the Educational expenditure head, the NSSO consumption survey includes expenditure on (a) fees paid to educational institutions (e.g., schools, colleges, universities, etc.), (b) other fee such as tuition fees, game fees, library fees, etc, (c) private tutors/tuition fee, (d) expenditure on journals, newspapers, paper, magazines, novels, other fiction, pen, pencil, etc and (e) expenditure on Internet other than telephone charges.

³⁰³ Given the shift from home produce/CPRs to cash purchase from market, the recorded expenditure would increase marginally to the extent that ex farm prices are different from the retail price.

³⁰⁴ The percentage increase in average expenditure on firewood and chips is around 122 per cent between 1993-94 and 2004-05, when the increase in quantity of firewood and chips consumed is around 24 per cent during the same period. Though these reported per cent increase is based on nominal expenditure the increase is substantially more than the increase in average monthly consumption round in the same period.

Panchamukhi (1990), Tilak (1996a, 1996b) and PROBE (1999) (quoted in Chandrasekhar et al, 2006³⁰⁵) show that free government education is a myth and sending children to government schools also involve substantial cost. Based on the findings of these studies we could infer that the items relevant to poor people who send their children to attend government schools would mainly consist of (a) private tutors/tuition fee, and (b) expenditure on journals, newspapers, paper, magazines, novels, other fiction, pen, pencil, etc.

Some of the above mentioned studies also find that actual direct expenditure on education is much higher than that reported by NSSO surveys. One of the reasons for lower direct cost found in NSSO surveys could be that cost of uniform and transportation is not included under education head. Though school books, uniforms and special scholarships are announced by state government there are many problems with implementation of these schemes. Similarly, the expenditure on education incurred by the richer MPCE groups accessing private schools would also be underestimated in NSSO surveys, due to payments of donations etc. Donation and similar forms of payments is considered as transfer payment and not expenditure in the NSSO consumption expenditure surveys. The underestimation of educational expenditure would be more when we consider the indirect cost such as loss of wage labor and transportation etc.

Table 4.12: Share of expenditure on education in total consumption expenditure among different MPCE groups in rural area

Year	MPCE groups												All
	1	2	3	4	5	6	7	8	9	10	11	12	
1993-94	0.44	0.62	0.64	0.80	0.84	1.03	1.08	1.30	1.51	1.81	2.28	2.18	1.45
2004-04	0.83	1.10	1.19	1.57	1.70	1.69	2.07	2.12	2.47	3.33	3.59	4.46	2.67

Source: NSSO (2006)³⁰⁶

As observed from the table 4.12, the share of expenditure on education in total consumer expenditure has increased from 1.45 per cent to 2.65 per cent during 1993-2004. The share has increased in all MPCE groups. The percentage increase in nominal expenditure

³⁰⁵ Chandrasekhar, S. and Mukhopadhyay, Abhiroop, (2006) 'Primary Education as a Fundamental Right: Cost Implications', downloaded from SSRN: <http://ssrn.com/abstract=945320> on 22/07/08.

³⁰⁶ NSSO (2006) *op cit*.

was around 250 per cent for all income groups, except the top (12th) income group where the expenditure increased by 356 percent.

However, during the same period, from 1993-94 to 2004-05, the number of households who reported any consumption under education head reduced from 492 per thousand to 402 per thousand. This means that the increasing nominal expenditure and share of education expenditure is not due to *more children* accessing education but due to increasing expenditure by each household. This finding is puzzling in the light of positive picture painted in official reports.

The Ministry of Human Resource Development in a celebratory mode reported that

Under Sarva Shiksha Abhiyan we have not only been able to improve access to 98% at primary level but have also been able to reduce out of school children to 3-4% of 6-14 age cohort. During the X Plan the basic infrastructure has improved through the opening of 1.87 lakh schools, appointment of 8.12 lakh teachers, construction of 1.70 lakh buildings and 7.13 lakh additional classrooms. Also, 1.72 lakh drinking water facilities and 2.18 lakh toilets have been created. Due to the efforts made under the SSA, the access to schools has improved to 98% of habitations at primary level and 86% at upper primary level. The Sarva Shiksha Abhiyan has improved enrolment by 25 million between 2001 to 2005, thereby reducing the out of school children to 3-4%, hardest to reach in the 6-14 age group. The dropout rates at primary level are declining and that of girls is declining more sharply. The gender parity has improved from 0.81 (2001-02) to 0.93 at the elementary stage of education. The transition rate from primary to upper primary (class V to VI) has improved to 83.72% (GoI, 2008:1).³⁰⁷

Similarly, the Working Group of Planning Commission reports that “from about 320 lakh in 2002-03, the number of out of school children had reduced to 70.5 lakh based on reports of States and UTs in March 2006” (GoI 2007:21).³⁰⁸ The report further notes the success in (a) reducing drop out rates, (b) reducing gender gap and (c) addressing caste based exclusion.

Studies based on attendance rates in schools also confirm the official claim of success. Sankar (2007),³⁰⁹ analysing the 42nd (1986/87), 52nd (1995/96), 55th (1999/2000) and 61st (2004/05) NSSO rounds, finds that “there is a sharp reduction in the number of children

³⁰⁷ GoI (2008), ‘Towards Expansion of Access, Equity And Improvement Of Quality In Education- Overview Of The Annual Report 2007-08’, Press release, Ministry of Human Resource Development. Press Information Bureau (PIB), New Delhi, Thursday, May 08, 2008.

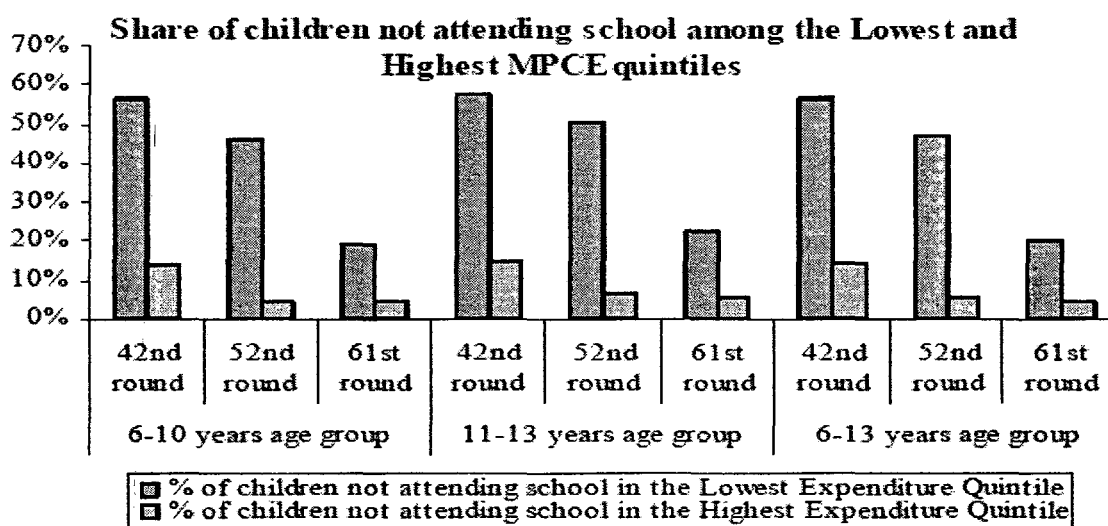
³⁰⁸ GoI (2007), ‘Report of Working Group on Elementary Education and Literacy for the 11th Five Year Plan’, Planning Commission, Government of India, New Delhi.

³⁰⁹ Sankar, Deepa (2007), ‘What is the Progress in Elementary Education Participation in India During the Last Two Decades? An Analysis Using NSS Education Rounds’, Mimeo, South Asia Human Development Unit, The World Bank, April 2007.

not attending schools as well as their share in total child population... Similarly, increase in the number and share of children attending among girls, and socially and economically marginalized groups have been quite impressive” (Sankar, 2007: 34)³¹⁰ (See figure 4.1).

Similarly, Kingdon, based on NFHS survey between 1993 and 1999 notes that in “short 6-year period, school attendance among rural 6-10 year old girls and boys increased by 20 and 12 percentage points respectively, these are very substantial increases” ³¹¹ (Kingdon, 2007:9).

Figure: 4.1



Source: Sankar, (2007.)³¹²

In one way the reducing percentage of households reporting expenditure on education , observed in NSSO round 2004-05, is consistent with the picture painted by official sources and other studies reviewed above. It simply means that expansion and increase of public infrastructure has reduced the number of people who had to spend on education earlier. We will see below that this explanation cannot be true. However before doing so it is important to note that the increasing public expenditure on education argument completely fails to explain the increasing educational expenditure and share even in lower MPCE, when the number of households reporting to have incurred any expenditure on education has reduced.

³¹⁰ *Ibid.*

³¹¹ Kingdon, Geeta Gandhi (2007), ‘The progress of school education in India’ Working Paper, No. GPRG-WPS-071, Global Poverty Research Group, downloaded from <http://www.gprg.org/> on 22/07/08.

³¹² *Ibid.*

The only change after 1990's which explain this is increasing privatization and rising cost of education. Kingdon (2007), shows that the share of private schools in total enrolment during 1993 and 2006 increased significantly (See table 4.13). The author based on her previous studies (Kingdon, 1996a, Drèze and Kingdon, 1998) notes that the official surveys have grossly underestimated the increasing private share in enrolment because of two reasons. Firstly, the participating government schools do not have incentive to report the actual lower enrolment due to risk of transfers or losing jobs. Secondly, an estimated 51 per cent of private unrecognised schools are not represented in the official surveys (Muralidharan and Kremer, 2006 quoted in Kingdon, 2007), which, in turn, leads to under-estimation of the enrolment share of private schools by around 67 per cent (see table 4.13).

Table 4.13: Enrolment share of private schools in rural areas captured in official and unofficial sources: 1993 – 2006

	Official Source		Based on unofficial large household survey	
	1993	2006	1993	2006
Primary	2.8	5.8	10.1	19.5
Junior/middle	6.5	11.1	7.9	20.4
Secondary	6.8	14.3	10.1	22.8

Note: 1993 official data is based on results of Sixth All India Education Survey (NCERT, 1998) and 2006 official data based on Seventh All India Education Survey, 2007

Household survey based on NCAER survey 1993-94 and ASER2006 survey (Pratham, 2007)

Source: (Kingdon, 2007).³¹³

Table 4.14: Share of recognized private schools in total enrolment increase

Rural	1978 - 1986	1986 - 1993	1993-2002
Primary	2.8	18.5	24.4
Middle	7.2	12.8	23.2
Secondary	5.8	15.8	30.9

Source: (Kingdon, 2007)³¹⁴ Author's own calculations based on enrolment by school management-type in the All India Education Surveys for various years (NCERT, 1982, 1992, 1998, 2006).

Another striking finding reported in Kingdon (2007) is that share of private school in recent increase in enrolment is significant. The author estimates that around 24 to 30 per

³¹³ *Ibid.*

³¹⁴ *Ibid.*

cent of the increase in total enrolment during 1993-2002, is accounted by private recognized schools in rural areas (Kingdon, 2007).³¹⁵

Kingdon, (2007),³¹⁶ based on review of Pradhan and Subramaniam (2000), PROBE Team (1999) and Tooley and Dixon (2005) also notes that even the poor people tend to use the private schooling.

However if the logic of improved government spending and infrastructure expansion reviewed above is true then, why should poor people spend on private education? This question led us to review the literature on nature and pattern of government expenditure on public schooling.

Firstly, the percentage of public expenditure on education to GDP has been steadily reducing for the past 15 years since the 1990's except during 1999-2001 (Sadgopal, 2007).³¹⁷ However still there is a clear increase in the real expenditure on education on elementary education till 2000-01 (Anuradha et al, 2008).³¹⁸ After this period the real expenditure has been more or less constant (See figure 4.2). However, when we look at expenditure on secondary education it is constant through out 1994-95 and 2002-03. Jha, shows this through analyzing the per child education expenditure trend (Jha, 2005).³¹⁹

Therefore the increase in total education expenditure has been feeding into elementary education till 2000. During this period the expenditure on secondary education has been neglected and private schooling could have proliferated more due to this neglect. However after 2000, the expenditure on elementary education as well as on secondary education has not increased. Further, Jha (2005) points out the step decline in per head real expenditure on higher education since 2000-01 (Jha, 2005).³²⁰ Therefore, there was a clear scope given for expansion of private schooling at all level during this period.

³¹⁵ *ibid.*

³¹⁶ *ibid.*

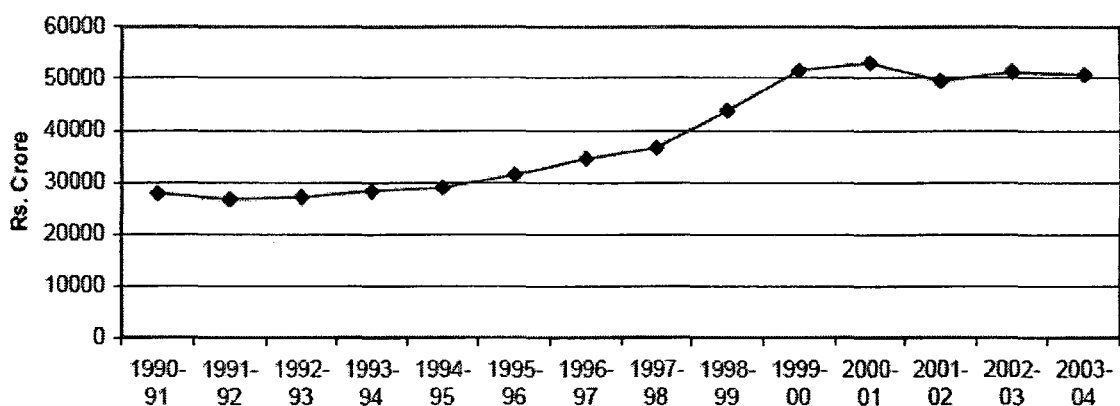
³¹⁷ Sadagopal, Anil, (2007), 'World Bank Policies Relating to School Education in India' Paper presented in World Bank Tribunal, Held in JNU, New Delhi, September 21-28, 2007, Independent People's Tribunal on the World Bank Group in India, New Delhi.

³¹⁸ Anuradha De and Tanuka Endow (2008), 'Public Expenditure on Education in India: Recent Trends and Outcomes', RECOUP Working Paper No.18, Collaborative Research and Dissemination1 (CORD), New Delhi.

³¹⁹ Jha, Praveen (2005), 'Withering Commitments and Weakening Progress- State and Education in the Era of Neoliberal Reforms' *Economic and Political Weekly*, 40:33, August 13, 2005, pp. 3677- 3690

³²⁰ *ibid.*

Figure 4.2
Expenditure on Elementary Education by Education Departments (inconstant prices)



Source: Anuradha et al. (2008)³²¹

Though the public expenditure slackened after 2000, the major gains in education indicators are clearly visible only after 2000-01 (Sankar, 2007).³²² GoI (2007a), also reports the major improvement in performance of education indicated after 2000 (GoI, 2007a).³²³

Therefore the major gains in education indicators coincide with the period when the government expenditure was not increasing and private schools were proliferating. Though one could resort to the argument of time lag in benefits of government investment, the convincing answer is found in Govinda et.al, (2007)³²⁴, who notes that much of the government expansion in education after 1990s came at cost of diluting the quality of education.

enrolment in full-fledged formal primary schools, private as well as Government, may not fully account for the big jump in the overall enrolment of children in primary schooling in recent years. In fact, steep reduction in out-of-school children seems to be mainly due to expansion of small schools. Many of them are run by lowly paid single teachers who are employed locally on contract basis. While some of these are single room single teacher Government schools, some of such schools are run under EGS/ AIE scheme introduced at the time of implementation of DPEP, which has continued under SSA. These EGS and Alternative Schools (AS) are located mostly in smaller habitations, which are not eligible for having

³²¹ Anuradha De and Tanuka Endow (2008), *op cit.*

³²² Sankar, Deepa (2007), *op cit.*

³²³ GoI (2007a) *op cit.*

³²⁴ Govinda, R. and Madhumita Bandyopadhyay (2007), 'Access to Elementary Education in India: Country Analytical Review'. National University of Educational Planning and Administration, NUEPA, New Delhi, 2007

*formal primary schools according to the existing norms of population and distance (Govinda and Biswal, 2006), (Govinda et.al, 2007:12).*³²⁵

Similar view of expansion through severely compromising quality of education both on account of infrastructure and teachers, to increase the enrolment rates is also noted by Sadgopal (2007).³²⁶ In our review of literature we found no studies presenting the data or claim which proves otherwise.

The focus of government on such low infrastructure, low quality and low cost school also meant the increase in expenditure on elementary education was entirely spent on these new schools. This also means that whatever meager capital expenditure was made would have been used in these schools. Jha, (2005) shows that the per cent of capital expenditure in total education expenditure of central government ranged between an extremely low 0.2 to 0.5 per cent between 1993-94 and 2005-06³²⁷ except during 1994-95 when it was 10.3 per cent (Jha, 2005).³²⁸ Therefore, the proliferation of new kind of government schools, perhaps with help of this meager share of capital expenditure, would have left the already existing *full-fledged formal primary schools* without any funds for infrastructure improvement. The pathetic infrastructure in government schools, unfilled vacancies, and absenteeism of de-motivated teacher is well recorded by PROBE Team, (1999), (quoted in Kingdon, 2007).³²⁹ This is perhaps the reason for no impact of improvement in expenditure increase on elementary education performance such as completion rates, as found by Sankar, (2007)³³⁰ and the non-improvement in learning achievement as confirmed by Pratham (2004) (quoted in Jha, 2005),³³¹ which found that 25 per cent of all school children up to age of 14 years could not write a dictated sentence.

This deterioration in condition of *full-fledged formal government primary schools* would, in turn, explain the increasing proliferation of private schools (especially private unaided schools) and their increasing share in enrolment as noted above. In other words, poor people are now provided with option of choosing between (a) informal low cost schools,

³²⁵ *ibid.*

³²⁶ Sadagopal, Anil, (2007), *op cit.*

³²⁷ 2004-05 Revised Estimates and 2005-06 Budgetary Estimates

³²⁸ Jha, Praveen (2005), *op cit.*

³²⁹ Kingdon, Geeta Gandhi, (2007), *op cit.*

³³⁰ Sankar, Deepa (2007), *op cit.*

³³¹ Jha, Praveen (2005), *op cit.*

(b) under-funded and poorly performing full-fledged elementary schools and (c) private unrecognized schools.

Those poor who choose private schools are, in turn, faced with the burden of high expenditure and those poor who shifted from full-fledged elementary schools to informal low cost schools would save the expenditure incurred by them earlier.³³² These two simultaneous trends explain the trend observed in NSSO data from 1993-94 to 2004-05, when the number of people reporting expenditure on education reduced and the average cost of education reported by fewer household increased.

In other words, with reducing options for quality public education, many households opted for new low quality government schools. This clearly does not support the increasing real expenditure trend for low MPCE groups assumed by many studies. On the other hand those poor who opted for private unaided schools had to incur additional expenditure squeezing out their budget on other necessities as is evident through reducing calorie intake after 1993-94.

Medical expenditure:

The information on medical expenditure of households is collected separately under two sub-heads. Under “non-institutional medical care” sub-head, information on last 30 days household expenditure on (a) medicine, (b) professional fees or payments made to doctor, nurse, hospital, nursing home etc, (c) clinical tests, including X-rays, ECG, pathological tests etc and (d) family planning appliances, is included. The other sub-head called, ‘Medical care-institutional’ provides expenditure on the above mentioned expenditure and other similar expenditure, if they were incurred during in-patient treatment in a hospital, nursing home, or other medical institution during last 365 days.

From 1993-94 to 2004-05, the share of total medical expenditure in total consumer expenditure increased from 5.43 per cent to 6.61 percent.³³³ Within this head, the per

³³² This also points out to the low quality of education in these new low infrastructure schools which led to substantial increase in enrolment, but reduction in number of people reporting education expenditure on any of necessities like books and stationary, uniform etc. This is either a worrying development or a result of some sudden improvement in delivery of the necessities of education free of cost in state government schools for which no evidence exists.

³³³ However the comparison of NSSO rounds on Morbidity Health Care and the condition of the aged in 1994-95 and 2004, shows a rise of 50% in average expenditure on medical care (GoI),.

cent share of expenditure on institutional medical care increased by more than 100 per cent from 0.90 per cent to 1.79 per cent and the share of expenditure on non- institutional medical care increased merely by 6 per cent from 4.53 to 4.82 per cent (Table 4.15).

However when we look at MPCE groups, the increase in share of expenditure on institutional medical care was entirely contributed by the richest twelfth MPCE group, which increased its share from 3.65 per cent to 8.67 percent. In fact, the poorest nine MPCE groups decreased the share of expenditure on institutional medical care from 77 per cent to 26 percent. The tenth and eleventh MPCE groups increase the share marginally by around 15 percent. The more worrying trend is revealed by value of expenditure on institutional medical care, which even at current price exhibits decline in seven low MPCE groups.

Table 4.15: Value and Per cent Share of Institutional and Non- Institutional Medical Expenditure In Total Consumption Expenditure in Total Consumption Expenditure in Rural Areas- 1993-94 and 2001-04

MPCE groups	Per cent share in total consumption expenditure				Value in current price			
	Medical institutional		Medical non-institutional		Medical institutional		Medical non-institutional	
	1993-94	2001-04	1993-94	2001-04	1993-94	2001-04	1993-94	2001-04
1	0.09	0.05	2.16	2.06	0.09	0.1	2.19	4.12
2	0.07	0.02	2.62	2.88	0.09	0.04	3.44	7.31
3	0.15	0.05	2.92	3.03	0.23	0.15	4.49	9
4	0.12	0.05	3.24	3.50	0.22	0.17	5.77	11.98
5	0.15	0.04	3.54	3.53	0.31	0.17	7.11	13.69
6	0.19	0.08	3.58	3.96	0.42	0.35	8.03	17.1
7	0.27	0.10	3.92	4.19	0.68	0.47	9.84	20.19
8	0.24	0.18	4.58	4.73	0.68	0.97	12.93	25.7
9	0.51	0.38	4.67	5.36	1.65	2.37	15.15	33.82
10	0.59	0.67	5.33	5.76	2.34	5.23	21.07	44.67
11	1.01	1.21	5.76	6.61	5.02	12.07	28.72	66.05
12	3.65	8.67	5.90	5.60	31.98	169.57	51.61	109.65
All	0.90	1.79	4.53	4.82	2.52	10.03	12.76	26.93

Source: NSSO (2006)³³⁴ and NSSO (1996a)³³⁵

Similarly, in the case of “non-institutional medical care”, in the low five MPCE groups the share of expenditure in total consumer expenditure was almost stagnant and the sixth to tenth MPCE groups experienced marginal increase.³³⁶

³³⁴ *ibid.*

³³⁵ NSSO (1996a) *op cit.*

As observed from the table 4.15, the trend shown in share of institutional and non-institutional medical care shows the fallacy of the raising real income of all MPCE groups in rural India.

We have, till now, discussed the expenditure levels on medical care, which is a merely a proxy for the access to health care services. Consecutive NSSO rounds on morbidity in rural areas during 1995-96 and 2004-05 show that despite increase in average expenditure, the proportion of people who know that their ailment³³⁷ is serious but still could not seek treatment³³⁸ increased from 12.9 per cent in 1995-96 to 19 per cent in 2004-05 (NSSO 2006).³³⁹ This means that the increase in expenditure on medical care could be due to rise in the cost of accessing medical care, rather than increase in access. Further, if this is the case with the average population, one could expect that the untreated morbidity would have increased severely in the case of lower MPCE groups, given the declining institutional expenditure and stagnancy in non-institutional medical expenditure in lower MPCE groups observed earlier.

The morbidity data collected by the NSSO is considered as severely under-reported and is particularly so in the case of low income groups and women (Dilip 2005³⁴⁰ and Sen, 2002).³⁴¹ Further, the non-official micro field studies have reported much higher level of untreated ailments (Dilip, 2005).³⁴² Therefore, if the actual extent of morbidity is considered then the proportion of untreated ailments would be much higher than what is reported above. Data on sources for financing hospitalization expense (included in institutional medical expenditure) further gives the evidence for distress. Dilip (2005)³⁴³ analyzing the NSSO data for 1995-96 shows that 79.8 per cent of the expenditure for

³³⁶ In case of the richest 12th MPCE group the share of expenditure on non-institutional care decreased marginally, reflecting their health seeking behavior (as well as impact of corporate hospitals), which is increasingly dependent on in-patient care.

³³⁷ Percentage spells of ailments untreated during last 15 days

³³⁸ As per the survey definition, untreated ailments included self-medication and home remedies and no recourse to health care.

³³⁹ NSSO (2006a), '*Morbidity, Health Care and the Condition of the Aged, Jan.-June, 2004, NSS 60th Round*' Report No. 507, National Sample Survey Organisation, Department of Statistics, Government of India, New Delhi, March 2006

³⁴⁰ Dilip T.R. (2005), 'Extent of Inequity in Access to Health Care Services in India' in Gangolli, Leena V, Ravi Duggal and Abhay Shukla (eds), '*Review of Healthcare In India*', Centre for Enquiry into Health and Allied Themes (CEHAT), Mumbai, January, 2005, pp.247- 268

³⁴¹ Sen, Gita Aditi Iyer, and Asha George (2002), *op cit*.

³⁴² Dilip T.R. (2005), *op cit*.

³⁴³ *ibid*.

hospitalization in rural India is financed by either borrowing, dis-saving or sale of assets (Table 4.16)

Table 4.16: Sources for financing hospitalization expense on Inpatient Care Treatment in Rural India by the households

Source	Rural
Current income	11.4
Borrowings	38.8
Dis-savings	31.8
Sale of assets	9.2
Other sources	7.8
Employer	0.8
Other agencies	0.2
Total	100.0

Source: Dilip, T.R (2005: table 7), Originally based on 52nd Round (1995-96) NSS data

ERF (2006) quoting the 2004 “Report of the Commission on Farmers’ Welfare”, by Government of Andhra Pradesh notes that “recent studies of agrarian distress have also found that health expenditures have been significant in causing or increasing the indebtedness of farmers, which has, in turn, been a proximate cause of farmers’ suicides” (ERF, 2006:11)³⁴⁴

Despite the fact that the proportion of households who incur hospitalization expense is only 1.4 per cent (institutional expenditure) according to 2004-05, NSSO survey, the impact of such expenses could be long lasting as most of these debts are financed through private non-institutional money lenders who charge high rates of interest (Table 4.17).

Table: 4.17 Interest Rates charged for Cultivator Households in 2002

Interest rate	Per cent of indebted cultivators
Up to 15 percent	4.8
15 to 30 percent	39.2
Above 30 percent	38.2
Nil	17.4
Total	100.0

Source: GoI (2007a),³⁴⁵ Original source NSSO, Household Indebtedness in India, All India Debt and Investment Survey (January-December 2003), NSS 59th Round, Report No. 501, 2005.

³⁴⁴ Economic Research Foundation (2006), ‘Government Health Expenditure in India: A Benchmark Study’, Mimeo, Economic Research Foundation, New Delhi, August 2006

³⁴⁵ GoI (2007a), *op cit.*

Give such high interest rates the increase in the proportion of households borrowing or selling assets to finance hospitalization expenditures in rural and urban India, from 40 per cent to 52 per cent from 1995-96 to 2004, as pointed out by Duggal (2007)³⁴⁶ is a serious indicator of distress.

To sum up, though the expenditure on medical care has increased on average, this increase is a result of increasing expenditure of few richest MPCE groups. After the 1990's the expenditure on Institutional medical care has decreased for many low MPCE groups. Similarly, the expenditure on non-Institutional medical care has remained stagnant for low MPCE groups. Moreover, the actual distress is not reflected by expenditure data. The increasing cost of medical expenditure after 1990's has, in fact, forced people to reduce their health care seeking levels. The worst affected group here would be poor households. After 1990s, the deteriorating government health services (Hammer et al 2007)³⁴⁷ and increasing cost in accessing government hospitals (see table 4.18)³⁴⁸ has resulted in distress situation "people especially in rural areas have two options, either they spend their valuable money going to the private sector or they quietly sit at home and die" (Devdasan, 2006:6).³⁴⁹

Table 4.18: Average Medical Expenditure (Rs.) per Hospitalization Case

	1995-96	2004
Government Hospitals	2,080	3,238
Private Hospitals	4,300	7,408
Any hospitals	3,202	5,695

Source: NSSO (2006a)³⁵⁰

³⁴⁶ Duggal, Ravi (2007), 'Poverty and Health: Criticality of Public Financing' *Indian Journal of Medical Research*, 126, October 2007, pp 309-317.

³⁴⁷ Hammer, Jeffrey; Yamini Aiyar and Salimah Samji (2007), 'Understanding Government Failure in Public Health Services', *Economic and Political Weekly*, 42:40, October 6, 2007, pp.4047-49.

³⁴⁸ Sen, Gita Aditi Iyer, and Asha George (2002), 'Class, Gender, and Health Equity: Lessons from Liberalizing India' in Sen, Gita Asha George and Pirooska Ostlin (eds), *Engendering International Health The challenge of Equity (2002)*, The MIT press, Cambridge; based on results of 1986-1987 and 1995-1997 NSSO rounds, using the data on medical treatment and hospitalization, find that the cost of accessing public health institutions increased manifolds at much higher rate than increase in cost at private health institutions. Mainly Inpatient charges at government hospitals increased at a higher rate, on which the poor depend more and spend substantial part of their income.

³⁴⁹ Devadasan, N (2006), 'Health Financing : Protecting the Poor', *Indian Journal of Community Medicine*, 31:1, January - March, 2006, pp 6-9.

³⁵⁰ NSSO (2006a), *op cit*.

GoI (2006)³⁵¹ based on results of NSSO survey on morbidity health care and the condition of the aged in 2004, notes that despite “an increase by nearly 50 per cent in health expenditures in urban and rural areas as compared to the last survey conducted in 1994-5” there was a “a near stagnation in the utilization of public facilities with a sharp fall in Bihar”.

8.

However the high cost in private hospital (Qadeer, 2000,³⁵² 2007)³⁵³ and Rao (2005),³⁵⁴ either prevents the majority of people from accessing it or leaves them bankrupt.

4.7 Impact of non-food expenditure:

In the previous section the analysis of certain non-food items revealed increasing cost of the non-food items. The increase in cost in some of the cases like cooking fuel was induced by availability crisis and in other cases like education and health was due to deterioration of government services and increasing privatization. The increasing cost, on the other hand, has different implications. In the cases of some commodities like cooking fuel the increasing cost had to be borne by even the low MPCE groups resulting in increasing share of cooking fuel expenditure in total expenditure, except in the case of poorest MPCE groups where many households are increasing not using any cooking fuel. The other non-food consumption head which, more or less shows a similar trend is ‘expenditure on conveyance’. Within this head the increase in per cent share was observed in all MPCE groups, with the percentage increase being more or less same in all groups.

In other cases like education and health, the rising cost has led to increase or stagnation in the respective share of expenditure in many MPCE groups. However this trend is accompanied by actual overall reduction in access to these services. This happened in education services, through declining access to ‘full-fledged government school

³⁵¹ GoI (2006), ‘Report of the Working Group on Health Care Financing Including Health Insurance for The 11th Five Year Plan’, Ministry of Health and Family Welfare, GoI, New Delhi, October 2006.

³⁵² Qadeer, Imrana (2000), ‘Health Care Systems in Transition III- The Indian Experience’ *Journal of Public health medicine*, 22:1, pp. 25-32.

³⁵³ Qadeer, Imrana (2007), ‘Status of Health Services in India: An Overview’ in *Wada Na Todo Abhiyan*, (2007), ‘The Status Of Health and Education In India- Critical Questions in the Nation’s Development’, New delhi, pp. 32-69.

³⁵⁴ Rao, K. Sujatha; Madhurima Nundy and Avtar Singh Dua (2005), ‘Delivery of Health Services in the Private Sector’, in GoI (2005), ‘Financing and Delivery of Health Care Services in India’ *National Commission on Macroeconomics and Health*, Ministry of Health and Family Welfare, Government of India, 2005, pp. 89-124.

education' and in health care services through declining access to any health services, as reflected in data on untreated morbidity and reduced real expenditure in Institutional medical expenditure for many MPCE groups.

Table 4:19: Share of expenditure on conveyance in total expenditure in different MPCE groups from 1993-94 to 2004-05

MPCE groups	Per cent share in total consumption expenditure	
	1993	2004
1	0.997	1.453
2	0.945	1.513
3	1.058	1.773
4	1.274	1.928
5	1.385	2.275
6	1.525	2.555
7	1.758	2.739
8	1.965	3.148
9	2.212	3.536
10	2.756	4.495
11	3.325	5.580
12	4.345	6.188
All	2.370	3.764

Source: NSSO (1997)³⁵⁵ and: NSSO (2007a)³⁵⁶

These two broad trends explain the declining trend in calorie intake. Firstly, they provide direct support to the 'reducing calorie intake due to distress' argument as, the basic non-food needs such as education and health also registered decline in many low MPCE groups.

Secondly, in all the non-food items discussed above, the increase in expenditure share due to rise in cost would have played a role of squeezing out the budget on food expenditure. In the case of health and expenditure, the rising cost has had the impact on household budgets in such a way that despite decreasing access to these services, the share of combined expenditure incurred on these heads increased in the total budget. This is an expected out come as these heads represent basic needs and could not be reduced beyond a point, even when their price rise. Further, rising cost in some heads like 'cooking fuel' and conveyance, did not reduce the usage or increased their usage and was reflected more in terms of increasing share in total budget. This happened perhaps as

³⁵⁵ NSSO (1997), *op cit.*

³⁵⁶ NSSO (2007a), *op cit.*

neither the consumption of cooking fuel and nor of conveyance, could be adjusted downward in short run, due to their linkages with food (cooking fuel) and employment (conveyance).

Having observed these trends, now we will go into the question as to why households chose to spend more on some expenditure heads when they reduced or left unchanged their access to some basic non- food needs and actually reduced their calorie intake. This goes against the 'conventional logic', which expects that impact of any distress will be reflected on food items only at the end. To be more precise, the household is expected to reduce its calorie intake (which it gets from cheapest food source) only after it has exhausted all other possibilities of reducing expenditure on other basic items such as non- cereal food, housing and education. In fact, the poverty line estimation over the years is based on this implicitly assumed criterion. Only once, in 1972-73, it did identify the expenditure level which allowed people to access the minimum calorie intake and declared it as poverty line income. All households below this level of expenditure were in distress as they have reached a stage when after exhausting every possible reduction in other basic needs they in the end were now forced to reduce the calorie intake below the desirable level. This expenditure level also indicates a stage where households were left with a level of non-food consumption which is bare minimum as it was not possible to reduce the non-food basic needs further. After identifying this level of distress poverty line expenditure, the Government adjusted it for inflation (i.e., after taking into account the rise and fall of price of different commodities in their 1973-74 consumption basket) and after every quinquennial NSSO expenditure round, the expenditure level equivalent to 1973-74 poverty line expenditure level is identified and proportion of people below this expenditure level are considered as 'official poor'. However at this poverty line 'income', the households decreased their calorie intake in all subsequent years till 2004-05 (Patnaik, 2007). Despite this, the poverty line income remains un-revised as another reverse logic might be assumed now. If the households increase their non-food expenditure above the minimum non-food expenditure indirectly identified in 1972-73 and were violating the fundamental criterion of distress by not reducing the share of non-food basic needs (and rather increasing it) before decreasing calorie intake and the share of the food expenditure, they would not be poor.

Going by this logic, we can also positively view the trend from 1993-94 to 2004-05, and celebrate the increasing trend in the real expenditure and declining trend in poverty.

However, as we saw earlier, the reducing calorie intake in rural India cannot be justified as positive indicator. Similarly, with the assumed increase in income, (a) the sudden reduction in expenditure on institutional medical services, (b) stagnation in non-institutional medical care expenditure, (c) actual reduction in morbidity treatment and (d) reduction in access to quality schooling, cannot be expected. On the other hand, access to these services should have increased with raising income and declining poverty.

This paradox brings our attention back to the question of basic and instrumental needs. Earlier we noted that there might be cases when increase in expenditure is due to rise in instrumental expenditure like conveyance and may not contribute to household welfare. We also looked at the possibility of ruling out the role of 'instrumental expenditure', in inflating real expenditure by simply checking whether the expenditure on basic necessities such as food, water, health, education, and energy, etc has increased or not.

We also found the answer for this question. This means that we also have support for another argument that all increase in expenditure in the household budget does not mean that the welfare of the households have increased. As we have found that the access to basic needs has certainly not increased, we now elaborated on the negative role played by 'instrumental expenditure' in inflating the real expenditure. Two expenditure heads clearly, fit our description of "instrumental expenditure". First among this is expenditure on cooking fuel. The role played by cooking fuel in enabling to make the food edible cannot be debated much. As Patnaik (2007)³⁵⁷ notes "Food and cooking fuels are jointly demanded since no one can eat raw food, and with a real income which is constant or declining, a part of food expenditure has to be enforcedly reduced to buy fuel" (Patnaik 2007: 3147).

The second expenditure head which would fit the description of 'instrumental expenditure' is conveyance. In the case of cooking fuel, increase in cost triggered by availability crisis, explained its role in squeezing out the expenditure on other household budget heads, However, in the case of conveyance, it seems that its "instrumental role" was more in terms of maintaining or finding new employment options for the distress

³⁵⁷ Patnaik, Utsa (2007), *op cit.*

households. We call them distress households, because the increasing expenditure on mobility by rural casual workers, migrant labours and other non-farm employment have not helped them to increase their consumption of basic necessities. The increasing open employment after 1990s pointed out by Patnaik (2007)³⁵⁸ and decreasing share of agriculture in providing employment opportunity (GoI, 2007),³⁵⁹ would also partly explain the growing conveyance expenditure where people have to get mobile to grasp any employment opportunity outside their village in non-farm sectors.

Therefore it seems that this increase in expenditure on conveyance was necessary in maintaining existing consumption basket or preventing drastic decline in it. Thus these items have actually played an investment role and are not strictly 'consumption'. As we have not elaborated on this with evidence we shall retain this argument as a hypothesis.

However we have still not answered the question as to why the households chose to decrease calorie intake as a last option or why the household decrease the other non-food basic and thus increase the calorie intake. To answer this question we have to first understand that many of the basic needs discussed earlier, themselves adopt complex 'instrumental roles'. To illustrate, if we take the basic need for food, expenditure on health plays an important instrumental role in deciding the ability of the human body to work and earn food.³⁶⁰ Now given the importance of health status in achieving food requirements, one could see that a household would allocate its limited budget in such a way that both food needs and health needs would be met in the long term. This would mean that in the short term, there exists a possibility of reducing food consumption in favour of other 'instrumental consumptions' such as health and conveyance, with a hope to prevent any disastrous decline in food access in long term.

Once we accept the scope for adjustment within the food and non-food needs, we will briefly analyse two other factors determining the expenditure on non-food basic needs. First among this is availability of services and second is 'social dependence' on certain non-food basic needs.

³⁵⁸ *ibid.*

³⁵⁹ GoI (2007), *op cit.*

³⁶⁰ Similarly, food itself plays an important instrumental role in maintaining health and deciding the ability to work and earn food. Therefore such empirical and theoretical classification of consumption basket into basic and instrumental needs would be not free from problems.

One would not disagree that non-food basic needs quite naturally would depend on the availability of some infrastructure on which one can spend. As the infrastructure facilities, like school and primary health services increases, the expenditure on them also increases. To illustrate this, we have to go way back in 1972-73, and assume that if the rural India then was suddenly given the choice of present infrastructure and subsidised public services like schools, mid-day meal, primary health centers and district hospital with advanced diagnostic facilities. Wouldn't with such facilities and visible benefits of health and education in terms of saving life of a family member, of curing some disease and of escaping poverty with help of education, have had many of the households squeeze their existing budget on other basic needs such as food? The next question which follows is that how would one judge the reduced calorie intake due to squeeze in household budget in 1972-73? If the same poverty line estimation method were used, then one could be doubly sure that with present level of infrastructure facilities the households attaining the expenditure level which enables access to the minimum calorie intake would be substantially more than the estimated below the poverty line population in 1972-73. In other words, the comparison of present level of household expenditure/budget (with new scope for incurring this additional expenditure on health and education) with the household expenditure/ budget of a time when such facilities did not exist and inferring an increase in the expenditure level, involves visible logical fallacy.³⁶¹ At the same time it also explains that we can only judge whether food expenditure or non-food expenditure has increased at the cost of each other only when we know the minimum threshold expenditure incurred on both. We had 'scientifically' established a threshold for food in terms of calorie but such thresholds for non-food which depends availability of infrastructure, which is in itself variable over a time period. So comparing a constant scientific threshold (food) with a threshold based on 1972-73 non-food services availability and inferring that the non-food consumption is increasing when the calorie intake is decreasing, involves a logical fallacy. Perhaps, the gap between the non-food basic needs, shaped by availability, and its actual consumption is increasing at a much faster rate than calorie gap.

The second factor, which would determine the expenditure on these basic non-food needs, is the social dependence on these services. To illustrate this, let us assume that

³⁶¹ In order to avoid confusion, we would like to clearly state that we are not talking about relative poverty here but are having in mind the 'irreducible core of absolute deprivation in the concept of poverty' as referred by Sen (1981:24), *op cit.*

health and education services which were earlier provided by government are suddenly privatised and their cost increase substantially. Would the person who earlier used to cure his diseases from public health centre suddenly stop accessing them now? Normally, the person may try her/his best not to do so but will end up reducing his access to health services and will try her/his best to squeeze out from the budget of other basic needs to finance health care. Therefore, once the household is socially dependent on non-food basic needs it would be difficult for him to reduce accessing these services in order to maximize his calorie requirement.

To strengthen the argument above we would also briefly discuss the scope for reduction in food and calorie intake, available with human beings.

Field studies on food security have noted this practice and refer them as ‘coping strategies’. A review of studies conducted in different countries found this core similarity in experience of poor households and “though food was commonly described as the primary preoccupation, respondents also worried about how to balance the demands for food with other basic needs”(Coates et al 2006: 1442s).³⁶² Similarly, Mander (2007)³⁶³ in his qualitative study in eight villages in Orissa, Rajasthan and Andhra Pradesh notes that poor households in anticipation of seasonal fluctuation always reduced (rationed) their food intake to save for the worse times. The reduction in food expenditure was an important coping mechanism to deal with anticipated withdrawal of women labour due to pregnancy and lactation and became necessary when some important rituals such as marriage were to be conducted.

Similarly State *Human Development Report* of Orissa while reviewing the study done by World Food Programme, recognizes the strategies of poor in limiting the “frequency and quantity” of food intake and “Maternal buffering: The practice of a mother deliberately limiting her own intake in order to ensure that her children get enough to eat” (Government of Orissa 2004:54).³⁶⁴

³⁶² Coates, Jennifer, Edward A. Frongillo, Beatrice Lorge Rogers, Patrick Webb, Parke E. Wilde, and Robert Houser (2006), ‘Commonalities in the Experience of Household Food Insecurity across Cultures: What Are Measures Missing’, *The Journal of Nutrition*, 0022-3166/06, pp. 1438s- 1448s.

³⁶³ Mander, Harsh (2008), ‘Living with Hunger: Deprivation Among the Aged, Single Women and People with Disability’, *Economic and Political Weekly*, 43:17, April 26, 2008

³⁶⁴ Government of Orissa (2004), ‘State Human development Report’, Bhubaneswar.

Another study in Rajasthan, found that even ‘very poor household’ while facing harvest shocks “radically cut consumption to maintain assets, and only in the second year of harvest failure do such households normally choose to erode their very limited capital base (Jodha (1990) in his study quoted in Sinha et al (2002: 206)³⁶⁵.” Sinha et al (2002)³⁶⁶ further note when the poor people are pushed to the extreme of eroding capital base their position worsens over the long run. It is in fear of this worsening of condition that these households would undertake reduction in present food consumption.

The bio-medical basis for ability to reduce calorie intake is well present in adaptation argument reviewed earlier, where it was noted the capacity of the physiological capacity of the human body to adapt to lower calorie intake. The authors, supporting the adaptation argument also give a useful concept of social adaptation, whereby the ‘human body’ undertakes complementary social adaptation to adjust to low calorie intake. While critiquing the studies who assume social adaptation strategies as laziness or voluntary low activity period, Edmundson et al (1990),³⁶⁷ quoting the work of Myrdal and White, note that these authors were critical of the view that working time of under-employed in rural economy meant just time spent in cultivation and other time was spent in idleness. After examining field studies on relationship between work and nutrition, the authors substantiate the view of Myrdal and White by noting that “although the work performed may be technologically inefficient, and the economic benefit per unit of work time is often low, all the detailed activity records which exists indicate that men and especially women in developing societies work long hours.” (Edmundson et al 1990:266).³⁶⁸ However stress involved in hard work is balanced through “absence from village dance, sports, marriage, and pilgrimage trips”. which...“may not be only due to social reasons but a physiological adaptation for preserving energy for work” (Edmundson et al, 1990:276).³⁶⁹

³⁶⁵ Sinha, Saurabh, Michael Lipton and Shahin Yaqub (2002), ‘Poverty and ‘Damaging Fluctuations’: How do they Relate?’, *Journal of Asian and African Studies*, 37, pp. 186-243

³⁶⁶ *ibid.*

³⁶⁷ Edmundson, W. C. and P. V. Sukhatme (1990), ‘Food and Work: Poverty and Hunger?’, *Economic Development and Cultural Change*, 38:2, Jan., 1990, pp. 263-280

³⁶⁸ *ibid.*

³⁶⁹ *ibid.*

In other words, “the reason for spending less time in activities related to social, cultural and recreation activities could be also due to longer working hours required for securing necessary wage in the existing labor market condition (Edmundson et al:276).³⁷⁰

The example of long working hours and less social activity is important as it also points that this period of adaptation is also accompanied by efforts to overcome the crisis and reduced food intake and buffering is a complementary strategy adapted in the hope to overcome the crisis. When we elaborate the list of such strategies, we will find an important place for “instrumental expenditure” discussed above whereby such expenditure are incurred to maintain or overcome the present distress condition. One can compare such increase in expenditure to the strategy of increasing working hours in order to drive the detrimental affect of both these strategies. Though these strategies seem to be an indicator of increasing welfare, they are really a practice of coping with distress.

Perhaps the rural-urban migration would be the best example to further substantiate such strategies. Gopalan (1989), while reviewing contribution of nutritional studies to public policy, notes that

NNMB’s data has shown that urban slum-dwellers are no better off than rural landless labourers and harijans, as far as energy intake is concerned. As Kamala Jaya Rao (NFI Bulletin, October 1985 and January 1986) points out after an analysis of the NNMB data -- “urban migration has apparently not helped the rural poor to achieve a better food intake” Gopalan (1989: 2).³⁷¹

In other words, the difference between the real expenditure levels and share of the non-food items between rural poor and urban poor consists of the ‘instrumental expenditure to overcome the distress’, which does not result in any increase in calorie intake.

To sum up, the studies reviewed above provide strong support to our earlier argument that reduction in calorie intake is socially and physiologically possible and most practiced strategy among the poor. However such strategies accompanied by other

³⁷⁰ *ibid.*

³⁷¹ Gopalan, C (1988), ‘NNMB - Its Importance to Nutrition Research and National Planning’, *NFI bulletin*, April 1988

distress strategies involving “instrumental” expenditure, which form a part of the ‘real expenditure’, are being wrongly diagnosed as indicators of welfare.

Chapter 5 Discussion

In the earlier chapters, we produced evidence of decreasing calorie intake and increasing distress in rural India. A quick review of more direct indicators of under-nutrition, such as anthropometric measure of under-nutrition in children, life expectancy and Infant mortality rates further strengthens our earlier findings.

It seems that the trend in these biological stress indicators have started responding to the reducing calorie intake after 1990s. After 1990s, the trends in these indicators indicate stagnancy when compared to 1980's.

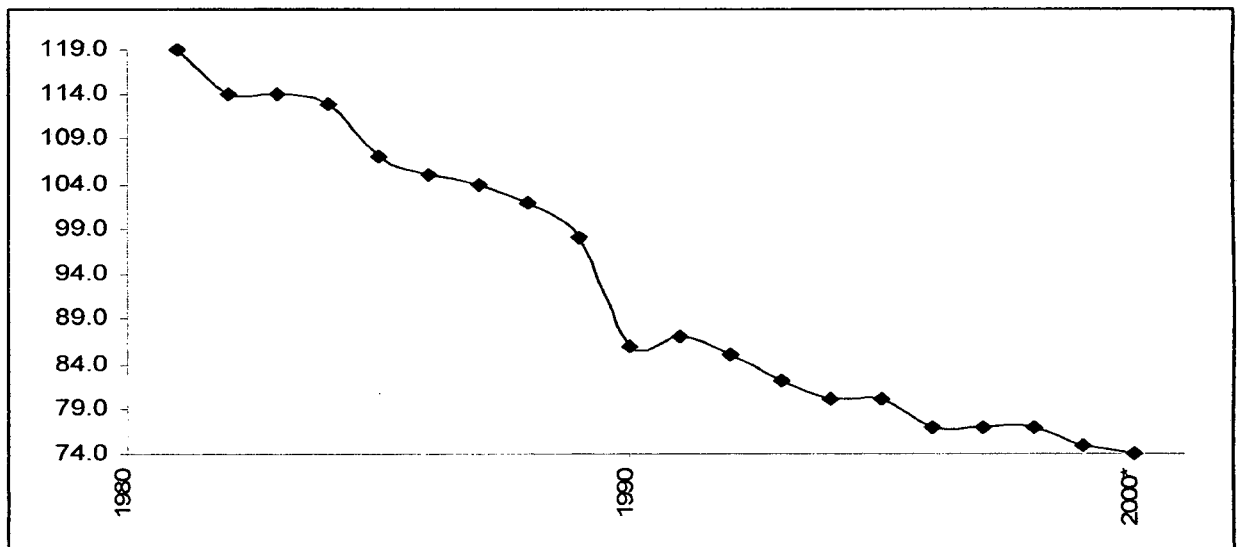
Rao (2000) reviewing the trend in Infant Mortality rate (IMR) notes

there has not been an improvement in infant and child survival of the range anticipated, and indeed that the 1990s, with the onset of liberalisation, have witnessed their stagnation. The rate of decline of the IMR and U5MR has sharply decelerated. The percentage decline in IMR between 1971 and 1981 was 14.7; between 1981 and 1991 it was even more marked at 27.3 per cent. However, in the period 1991-99 there was a marked stagnation, with the rate of decline in the IMR at 10 per cent. (Rao 2000:260).³⁷²

A look trend in rural India also shows the virtual stagnancy in IMR in post 1990's when compared to earlier period (figure 5.1). Similarly, when we look at the life expectancy of male in rural India, which is considered to be sensitive to distress, we find that after 1990s, the progress has been almost stagnant (see figure 5.2). Whereas the period before 1990s saw leaps in life expectancy, the improvement in recent two time periods (1993-1998 and 1998-2004), hovered around 63 and 64 years.

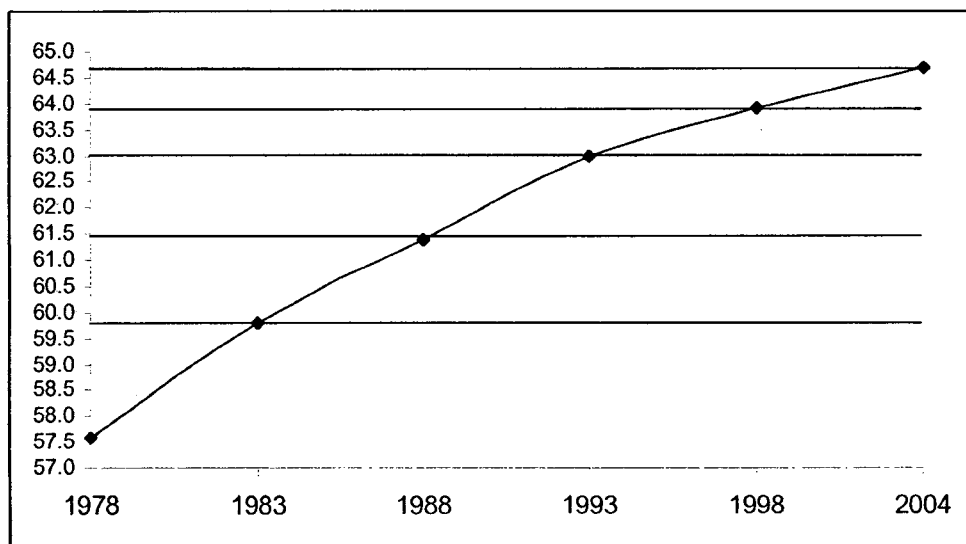
³⁷² Rao, Mohan (2000), 'Cairo Door Ast? Population Policies and their Context in India after LCPD,' *Indian Journal of Gender Studies*, 13:2, pp. 247- 274.

Figure 5.1 Trend in IMR in rural India in pre and post 1990's



Source: Indiatat.com, accessed on 24.07.08, originally from Registrar General of India.

Figure 5.2: Expectation of Life at age 1 in rural male



Source: Indiatat.com, accessed on 24.07.08, originally from Registrar General of India.

Though strictly comparable results are not available to assess the relative trend in child under-nutrition in pre and post 1990s, the trend after 1990s is itself revealing. The proportion of underweight children declined by only one percentage point per year between 1992-3 and 1998-9 (from 53 to 47 per cent), according to the first and second National Family Health Surveys (NFHS-1 and NFHS-2). However even this rate of decline stagnated after 2000. The recent NFHS-3 in 2004-05 found that the proportion of

underweight children is still at 45.9 per cent. Infact, NFHS -3, showed that wasting among children increased after 2000.

Given the alarming status experienced by the rural population in India, the neglect by state and social science literature to recognize these, reflects the agenda of larger neo-liberal politics.

In fact such distress conditions are not only restricted to India but is experienced all around the world in poor nations and poor people inside all nations, where neo-liberal policies are being adopted.

As Athreya et al (2006) note,

Changes in the global economy over the last three decades have been accompanied by dramatic reversals in health gains made in the post-second World War period. While some countries have witnessed stagnation in health indices, others have seen declines. At the same time, what is termed the health divide – between rich nations and poor nations, and between the rich and poor within countries- is increasingly remarkable. For example, the gap in the under-five death rate between the rich countries and the poor, considered as sensitive indicator of social and economic development, has widened from a ratio of 7.8 in 1978 to 12.5 in 1998.

It is widely accepted that these widening health inequalities are the consequences of the imposition of the World Bank and IMF-led policies of structural adjustment (Athreya et al 2006:25).³⁷³

However these signals of distress are misrepresented in the dominant literature. This misrepresentation by dominant literature is made easy because of the highly inadequate system of nutrition monitoring. For instance in India, nutrition monitoring system consisting of National Institute of Nutrition and National Nutrition Monitoring Bureau, has not even able to produce the required routine comparable surveys to assess the nutrition trend in India, despite decades of existence. As a result studies infer the trend in chronic energy deficiency in adults (reflected by BMI status) from incomparable surveys (Ramachandran, 2008³⁷⁴, Deaton 2008³⁷⁵).

³⁷³ Athreya, V.B and Mohan Rao (2006) 'Education and Health in the Draft Eleventh Plan Approach Paper', *Social Scientist*, 30:9-10, pp. 20-33.

³⁷⁴ Ramachandran, Prema (2008), 'Changing Food Consumption Patterns in India', *NFI Bulletin*, 29:2, April 2008, pp. 1-5.

³⁷⁵ Deaton, Angus and Jean Drèze (2008), 'Nutrition in India: Facts and Interpretation', Mimeo, Center for Health and Wellbeing, Princeton University. Downloaded from http://weblamp.princeton.edu/chw/papers/deaton-dreze_india_nutrition.pdf on 22.07.2008

Without availability of such hard scientific facts, the erroneous interpretation of existing facts becomes not very difficult. We had earlier noted the representation of Indian 'poverty reduction' experience in such literature. These studies are playing a dangerous politics of supporting the neo-liberal path of 'development' at any cost. In order to divert the attention of masses from the failures of neo-liberal policies, the dominant literature is constructing the social problems in a way where the facts about growing distress have no place. In such literature,

Firstly, neo-liberal path of social organization is constructed as a natural irreversible course in an evolutionary stage.

Secondly, based on certain chosen indicators reflecting reducing poverty and hunger it is constructed that this chosen path is leading to a better world.

Thirdly, the construction also leads to widespread acknowledgement that fluctuations, growing inequality and failure of trickle down are necessary evils and need to be addressed with direct schemes which could promote equity.

Such social constructions of problem, in turn, bypasses the question such as 'what causes hunger?' and diverts the attention to the question such as 'Why hunger and poverty is not reducing at the required pace?' In such formulation the cause for hunger becomes, either non-adherence to neo-liberal path of growth or lack of state efforts (or appropriate technical effort) to directly attack the problems created by the 'necessary evils'. Thus, in the end, the possible solution is deterministically constructed and only way to attack hunger and poverty becomes state social security schemes.

Such conceptualization of hunger and poverty is also found in India. Many studies on hunger and under-nutrition during last two decades were formulating their enquiry with a perspective that there has been an overall progress in post liberalization era. This led to formulation of research questions, with two central issues, which concerned the slow progress in 'eradication' of hunger and poverty in India compared to other countries - usually China and Sub-Saharan Africa and widening disparity in poverty and hunger within India, where the growing inequality between different states became the preoccupation.

Two central assumptions behind such enquiry were that (a) the state was not doing enough or (right kind of effort) to mitigate the negative fallouts of post-liberalisation 'development' strategy and (b) despite recent performance of the Indian economy the government is not taking adequate direct measures to address hunger.

In other words, the ability of the State to address hunger was always seen in terms of food and nutrition schemes. The commentaries of academic studies based on measuring five yearly progress in hunger and poverty is always followed by reiterating the need for expanding and improving state schemes. The core problem is always identified as unwillingness of the government to expand or use the right kind of programmes. That is to say strategy for speeding up the inferred 'slow progress' in eradication of poverty and hunger was always seen in only in terms of improving state schemes. The scope for alternative development strategy is explored only by few studies.

The state also seems to be willing to respond in terms of 'schemes', which does not disturb the neo-liberal path of progress. On the one hand, in early 1990s, the state chose to reduce deficit financing and curtailed funding and resource allocated for (a) schemes like the Public Distribution System, (b) rural development and (b) subsidies to farmers, and on the other hand, in early 2000, it also planned and executed the massive expansion of certain schemes like (a) Integrated Child Development Services, and (c) National Employment Guarantee Scheme. Further, it showed the evidence of 'political will' to improve the implementation of these schemes by introducing National Right to Information Right Act and in fact, it lately ended up spending substantially higher subsidies, in Targeted Public Distribution System that what it spent on Universal Public Distribution System.

Again it is important to note that according to narratives of the State and much academic literature all these changes after 2000 is not due to increasing distress in rural India, but because the Centre, now has more resources than before and because it is concerned about the 'slow progress' in indicators of hunger and poverty.

In other words the dominant politics today has resulted in unquestioned implementation of regressive neo-liberal policy adopted by the Indian state.

The misreading of distress condition however has dire consequences. The majority of people in rural India will be silently allowed to live and die in hunger without much protest. This section of population, even before 1990s, has not received the real benefits of Indian Independence. But after 1990s they have become totally dispensable.

As we saw in earlier chapters, the calorie intake of many low MPCE groups was increasing before 1990s. Though the combined effect of increasing calorie intake and improvement in access to health services helped the people in improving life expectancy and reduce mortality rates, but it did not help them to gain much height or weight for decades. A review of NNMB studies during 1977 and 1996 undertaken by Shatrugna (2001), gives clear evidence in this regard. After observing a average weight gain of 1.25 Kg to 2.5 kg at each age group, the author notes that

It is disturbing that adult women and men have been surviving with mean weights of around 43 kg and 50 kg respectively since the last 50 years, far below the desirable weights of 56 and 69 kg. To make things worse, it is important to remember that because these are mean weights, it is to be expected that approximately half the population in India have even lower weights than these, (weights as low as 38 kg) a condition very close to chronic energy deficiency or starvation (Shatrugna 2001:2).³⁷⁶

Similarly, the author found that the average height of children from 1977 to 1996 experienced no secular increase in heights or a minimal increase of 1 cm. Comparing the weight and height gain in high income groups in India, the author notes that there is a clear potential to improve height and weight of Indian population as reflected by the considerable weight gain by high income groups, captured by the field studies. However there is a huge gap between actual and potential weight and height of average Indian. In other words, the under-nutrition condition is severely distressing which is still forcing generations to remain stunted and remain thin, as they cannot engage in the similar level of hard work if they grew taller and heavier, given the low level of the calorie intake.

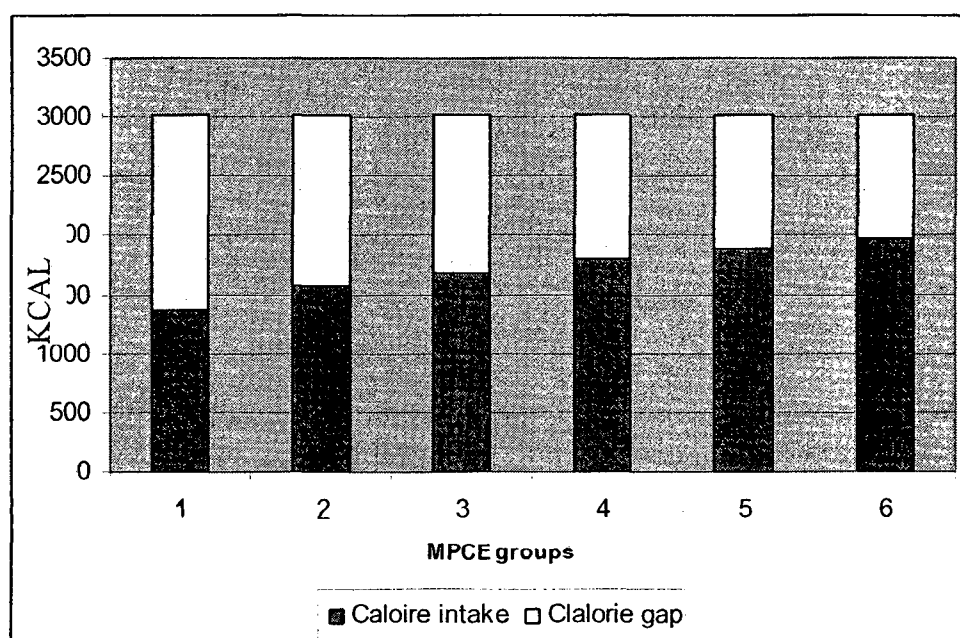
The observed trend in calorie intake, weight, height, life expectancy and mortality before 1990s reflects the nature of political economy and production system where all increase in food intake and health services, was kept at a rate where it was only enough to enable laboring people to remain productive, work for longer years and to respond to the

³⁷⁶ *ibid.*

increasing work requirements of the production system, while they remained stunted and thin all along laboring for the riches of few.

Even now the gap between the observed calorie intake of rich and poor indicates no possibility of improving the weight, height and wellbeing of the population. The figure 5.3 shows the calorie gap of the poorest six MPCE groups in rural India, which also indicates the potential of the poor to increase the calorie intake. Here the calorie gap is calculated based on the difference between the calorie intake of the reference MPCE group and the richest MPCE group.

Figure 5.3: Calorie gap in poorest six MPCE groups in rural India 2004-05

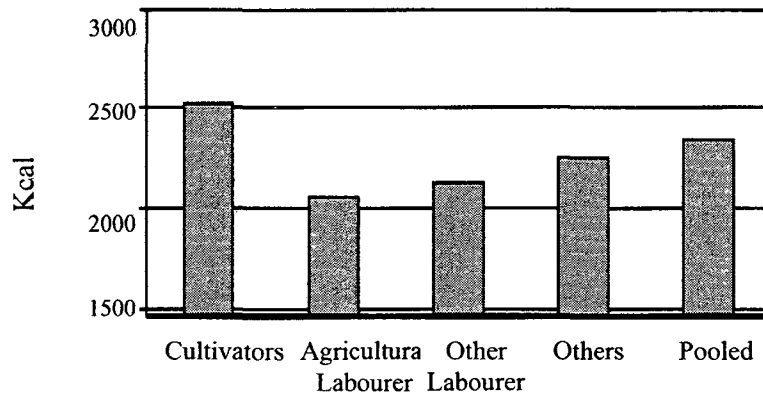


Source: NSSO (2007)³⁷⁷

The data collected by the NNMB for 1996, reported in the Tenth Plan document also shows the calorie gap between different occupational groups (Figure 5.4). As observed from the figure, the agriculture labourers and other labourers who, normally engaged in relatively heavy manual work had to perform the work with the lowest observed calorie intake and much below the prescribed calorie norms for heavy workers.

³⁷⁷ NSSO (2007), 'Nutritional Intake In India 2004-2005: NSS 61st Round, July 2004- June 2005', Report No. 513(61/1.0/6), Ministry of Statistics and Programme Implementation, Government of India, May 2007.

Figure: 5.4: Calorie intake levels of different occupational groups and calorie gap between them in 1996



Source: 10th Plan document.

However despite existence of huge calorie gap, the post-liberalisation period has led to decline in calorie intake of majority of population, who face low income levels and already have very low level of calorie intake. This reflects the larger changes in structure of International production system and political economy in liberalisation era, where manual labour in traditional form is increasingly becoming dispensable. Hence the need to maintain the labour force is no more the imperative as before. However while people struggle by exploring the limits of adaptation possibilities, any form of discontent is being addressed with the old Roman policy- '*panem et circensus*'- of distributing bread among poor to placate the discontent.

The need of the hour is to further deconstruct the neo-liberal construct which hides the growing despair and distress in rural India, by analysing the structural factors which have increased distress in rural India. The nature of research question needs to change substantially. From the faulty questions such as why under-nutrition is not reducing when the real income is increasing etc, the attention of the public policy and research should be immediately diverted to (a) the calorie gap between different sections of the population and (b) on role of unhealthy adaptation in camouflaging human distress. Therefore, the nature of research questions should focus on the structural barriers which have prevented decades of development policy to reduce the calorie gap between rich and poor. In other words, the question should revolve around the inability to reduce gap in access to the fundamental human requirement- Food.

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