



Exploration of the myth of diversification of Indian diets and the reality of rising calorie deprivation

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ABSTRACT

There are understandable concerns over the state of nutrition of Indians, especially the poor in the wake of declining daily per capita dietary energy consumption. Notwithstanding these, a section of the academia and the governments of the day have tried to explain this as 'voluntary diversification of diets' by Indians in favor of high value foods by compromising cereal calories. Such explanations have directly fed into contentions that estimates of malnutrition in the country are a clear overestimate resulting from application of wrong standards.

This paper examines the veracity of these claims by placing reliance on established laws of changes in food consumption with changes in material conditions of life to see if the observed changes in India's case are in accordance with these laws and thereby supportive of the claims made by the government and a section of scholars in this regard. Our investigation shows these claims are myths that are tailored to suite the convenience of the powers that be while the falling dietary energy consumption in India remains a matter of serious concern.

Keywords: Indian nutrition, Indian development paradigm, NSSO

INTRODUCTION

The development policy paradigm in India has been witness to a contentious debate over country's food security and the problem of hunger over the past few years. The household consumption data collected over successive rounds of NSSO show that per capita dietary energy consumption in the country has been falling. Table 1 gives the trends in consumption of total calories and calories derived from cereals over different rounds of NSSO for successive years.

A persistent decline in the total dietary energy consumption and in consumption of cereal calories can be observed in case of the top quartile since 1983, and in case of the lower three quartiles from 1987-88 till 2004-05. It is noteworthy that this period has also been the period of the neoliberal economic reforms in the country and is the period to which the aforementioned debate on hunger refers to.

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Table 1: Total and cereal calorie consumption by decile and quartile of per capita expenditure, rural India, 1983 to 2004–05 across different National Sample Survey rounds

Year	Bottom decile	Bottom quartile	Second quartile	Third quartile	Top quartile
Total calories					
1983	1,359	1,580	2,007	2,328	3,044
1987–88	1,488	1,683	2,056	2,334	2,863
1993–94	1,490	1,659	2,000	2,251	2,702
1999–2000	1,496	1,658	1,978	2,250	2,707
2004–05	1,485	1,624	1,900	2,143	2,521
Year	Bottom decile	Bottom quartile	Second quartile	Third quartile	Top quartile
Cereal calories					
1983	1,150	1,309	1,589	1,738	1,974
1987–88	1,221	1,359	1,598	1,715	1,894
1993–94	1,203	1,316	1,504	1,591	1,690
1999–2000	1,197	1,289	1,591	1,509	1,566
2004–05	1,189	1,259	1,690	1,430	1,471

Source: Deaton A and Jean Dre`ze. Economic & Political Weekly, February 14, 2009; Vol 44 (7)

It is well known that there is variation in patterns of direct and indirect cereal consumption as a society moves up the development ladder. With rising affluence indirect consumption of cereals in the form of animal products forms a sizable part of the diets.¹ Accordingly, there is lesser variation in the diets of those lower down the social ladder and the poor often derive large part of their calories through direct food grain consumption, unable to afford the costlier animal products, vegetables and fruits as they are. However, in case of India, during the period of the economic reforms, it is not just the cereal calories that declined, but there has been a decline in the total dietary energy consumption as well. This decline is particularly intriguing against the backdrop of the claims that poverty in India declined during the reform years.

Understandably, this has fuelled a debate over the state of nutrition of Indians, especially the poor. Some authors have argued upfront that high levels of malnutrition in the country are an overestimate and a result of applying standards that are not in accordance with genetic, environmental, cultural

and geographical factors; implying thereby that Indians, especially the children, have more or less been consuming diets in accordance with the physiological needs as governed by their essentially smaller body size.² Another section of academia and the official policy establishment have tried to explain the declining dietary energy consumption through the theory of 'voluntary diversification of diets' by Indians in favor of high value foods by compromising cereal calories. The food stocks that kept increasing during this period, lent further credence to the contention that decline in dietary energy consumption was despite availability of food and hence voluntary.

The Economic Survey 2001–2002 reports that the excess of food stocks that existed then represented a "problem of plenty."³ It said, "the growth rate of superior cereals have been higher than the population growth owing to allegedly too high administered prices of rice and wheat (as an incentive for the farmers), and stocks have built up because all consumers voluntarily wish to reduce their intake of cereals and rather consume fruits,

vegetables and animal products (milk, eggs, chicken etc.) as their income rises.”⁴ Further, it is said that “the poor seem to have opted for some diversification in consumption providing a more nutritious diet though not necessarily adequate energy.”⁵

As opposed to these views, there is another opinion which acknowledges that hunger is a widespread problem in the country that requires urgent intervention; however, there are differing opinions within this school as to the causes of the observed decline in dietary energy consumption. Utsa Patnaik believes it to be due to decline in the purchasing power of the people i.e. rising poverty; others like Jean Dreze have described this as a multifactorial phenomenon owing to increasing mechanization, declining morbidity in face of increased availability of safe water, sanitary conditions and healthcare etc. However they all seem to believe that the problem is not of dearth of food, but that of its distribution.

Here we take a closer look at whether ‘diversification of dietary intake’ explains the observed decline in daily dietary calories during the period of neo-liberal economic reforms. We shall look at the changes in food and non-food expenditure patterns to examine their consistency with well-established laws of food consumption and draw conclusions as to the veracity of ‘diversification of diet’ thesis.

CONTEXTULIZING THE DECLINING DIETARY ENERGY CONSUMPTION

The observed decline in the consumption of dietary calories despite claimed decrease in poverty is not only counter intuitive but runs contrary to the fact that there is hardly a country around the world where social and economic progress has meant a decline in calorie consumption. Even the World Health (WHO) projections (Table 2) show that dietary calories across different regions of the world, including South Asia, have been increasing (WHO, 2010).⁶

Table 2: Global and regional per capita food consumption (kcal per capita per day)

Region	1964-66	1974-76	1984-86	1997-99	2015	2030
World	2358	2435	2655	2803	2940	3050
Developing countries	2054	2152	2450	2681	2850	2980
Near East and North Africa	2290	2591	2953	3006	3090	3170
Sub-Saharan Africa	2058	2079	2057	2195	2360	2540
Latin America and Caribbean	2393	2546	2689	2824	2980	3140
East Asia	1957	2105	2559	2921	3060	3190
South Asia	2017	1986	2205	2403	2700	2900
Industrialized countries	2947	3065	3206	3380	3440	3500
Transition countries	3222	3385	3379	2906	3060	3180

Source: WHO (2010)⁶

As to the other reasons that have been offered to explain the decrease in dietary energy consumption such as improvement in means of transport, better roads even to remote areas, easier availability of cooking fuel, increasing mechanization of agriculture, decrease in fertility rates and hence lesser need for increased dietary allowances for pregnant and lactating women, expansion in availability of piped water and

improvement in sanitary conditions that have reduced morbidity and thereby the need for extra calories during diseased condition,⁷ there is no denying that all these factors impact on dietary energy needs, but each of these factors needs to be examined in the overall perspective. For example, mechanization of agriculture with increasing concentration of land in a few hands could very well mean that vast numbers of rural

poor who depend on agriculture for a living are thrown out of work and pushed down the poverty line, thus unable to afford enough food. Given their numbers in India, this section of landless agricultural workers and marginal peasants alone could pull the average calorie consumption down.

Angus Deaton and Jean Dreze have argued - "Under-nutrition levels in India remain higher than for most countries of sub-Saharan Africa, even though those countries are currently much poorer than India, have grown much more slowly, and have much higher levels of infant and child mortality."⁷ Given these facts it would amount to an irrational behavior for people to opt for 'diversification of diets' at the cost of remaining undernourished and thereby endangering the very prosperity which is supposed to have afforded them 'voluntary choice for diversification' in first place. While some people might behave irrationally sometimes, but it is difficult to presume that all the people in the country, cutting across expenditure classes (Table 1) could have behaved so irrationally for so long. This mandates extreme caution while accrediting the observed decline in dietary calories to any kind of 'voluntary choice'.

Further, while defining poverty lines in 1973-74 the Government of India prescribed the minimum dietary energy norms of 2400 and 2100 calories per capita per day for rural and urban poverty lines respectively.⁸ The poverty lines were defined as the 'minimum income' that could be "considered adequate to ensure minimum energy requirements for an active and healthy life and also minimum clothing and shelter. It did not include expenditures on health and education, which are to be provided by the State as per the Indian Constitution." It was further stated that "the minimum itself should be revised upwards with economic progress."⁸ Given this, if the economic reforms had resulted in increasing prosperity, this should have resulted in upward revision of the initial minimum calorie norms for poverty. But the developments have been much in the reverse direction.

We have more and more people consuming less and less calories. The poverty head count as measured by the initial calorie norms, have consistently increased since the launch of the Neoliberal Economic Reforms both in the rural and the urban India.^{9,10} Using NSSO data Utsa Patnaik demonstrates that the population in rural areas consuming less than 2, 400 calories was 87 percent, while the population consuming less than 2, 100 calories in urban areas was 64.5 percent in 2004-05 (NSSO 61st round).^{9,10} By way of an explanation Patnaik says – "a very large increase in the inequality of income distribution during the nineties owing to income deflationary policies impacting the poor, and also in the poor being institutionally denied access to grain since 1997-98 owing to the misconceived targeting system under which large numbers of the actually poor are not being identified as such and are not being issued ration cards for accessing cheap food."³

Further, the Tendulkar Committee set up by the government in 2009 to 'Review the Methodology for Estimation of Poverty' de facto brought down the poverty line level calorie consumption to a much lower level. Because of the methodology of estimation adopted by the Committee, not only did the MPCE suggested by the Committee as the new poverty line become a subject of public ridicule (for being extraordinarily parsimonious) but it actually corresponded to a per capita calorie intake of 1776 and 1999 in urban and rural areas respectively.¹² In support of this the Committee cited that – "This actual intake is very close to the revised calorie intake norm of 1770 per capita per day currently recommended for India by the Food and Agriculture Organization (FAO)."¹² It is another thing that FAO's assessment of 1770 calories per capita per day for India is a national statistical average for 'minimum dietary energy requirement' per capita per day for sedentary life style. The poor however can hardly afford the luxury of a sedentary life style. Ironically this coup de tat against poverty was staged under the garb of moving away from calorie based poverty norms because the Committee argued that along with food the people have to incur expenditure on essentials like education, healthcare, housing,

clothing, fuel and other services. Hence, a Poverty Line Consumption Basket (PLCB) which would be inclusive of consumption expenditure incurred on these goods and services and food was proposed.¹² Logically speaking, one would have expected a much higher poverty line in terms of MPCE (monthly per capita expenditure), which as we have noted was not the case. These facts mentioned here directly link the observed decline in dietary energy consumption to the new definition of new poverty lines and this in our opinion is very problematic.

ANALYSING POVERTY AND THE CHANGING DIETARY PATTERNS

Anyhow, we first need to have a clearer understanding of the declining dietary energy consumption. Sticking to the initial calorie norms of 2400 and 2100 calories for rural and urban poverty lines, Utsa Patnaik has estimated rural and urban poverty to be 87% and 64.5% respectively. There are other estimates as per same calorie norms which agree with these figures.^{7, 13} NCEUS, 2007 also presented very high levels of poverty in the country (nearly 77 percent overall).¹⁴ The question then arises - how do we account for the seeming affluence that is clearly visible by way of unprecedented levels of consumerism, in the face of such high levels of poverty? Alternately, if indeed affluence of the people has increased, then how come their calorie consumption levels are falling and there is stagnation in nutritional outcomes in the country?

We need first draw a distinction between nutritional poverty and income poverty there is a possibility that expenditure on food may not command preference beyond the basic level due to either the pressure of consumerist culture which may entice people to divert a real increase in income towards non-food consumer items or even for other necessary expenditures like education or increasing health care costs. This means that nutritional poverty may not necessarily imply income poverty as well.

Such a demarcation acknowledges that poor nutrition could be due to factors other than income poverty and that there is a need to study

the factors that influence people's spending preferences vis a vis food or other factors impacting dietary energy intake. This perspective is lost in a rather over simplified conceptualization that food is the most basic human need; that people would channelize their resources first towards the satisfaction of this basic need along with the need for housing and clothing; and then divert resources towards other spending preferences. This scenario could be largely true of absolute poverty where physical sustenance is the first priority and the income elasticity for food is much more; however, the better off sections, upon satisfaction of their basic hunger would tend to diversify their consumption pattern for various reasons. For example, due to increasing withdrawal of the State from providing necessities like education, health and other social services, people have to divert substantial portions of their incomes for such expenditure of necessity. They may yet like to have more wholesome food, much beyond the minimum dietary energy requirement, provided there is sufficiency of resources.

However, is this premise borne out by empirical data? Additionally, is the 'diversification of diets theory' empirically sound? This enquiry can be guided by some well-established laws of food consumption.

Laws of Change in Food Consumption

The two most important laws used to study changes in food consumption patterns are the Engel's law and the Bennet's law.

Engel's law

The Engel's law holds that in a society the proportion of expenditure on food is higher for the poor than that for the rich, while at aggregate level poorer countries spend a larger proportion of their GDP on food than the wealthier ones; for example in the United States this proportion is around 10%, while it can be as high as 50% for very poor countries.¹⁵

Engels himself said:

"This natural law can be stated as follows - The poorer the individual, a family, or a people, the greater must be the percentage of the income

necessary for the maintenance of physical sustenance, and again of this a greater portion must be allowed for food.¹⁶

Secondly, although there is a decrease in the proportion of expenditure on food, *the per capita expenditure on food rises* with increasing per capita incomes as people tend to *consume higher value foods*.¹⁵

What is important to note here is that consumption of higher value foods is accompanied by higher per capita expenditure on food and not a reduction in calories consumed.

Bennett's law

Bennett's law states that as there is economic growth, the proportion of calories in the diet derived from cheaper foods e.g. cereals, roots and tubers declines, while the share of calories from costlier foods like vegetables, fruits, milk and meat increases. Bennett argued that – "General economic development and change in the composition of regional diets.....in the direction of wider variety and greater expense, go hand in hand and are not separable one from the other."¹⁷

Poleman proposed an extension to Bennett's law to account for the dietary changes in a developing country situation. He suggested that a change from cheaper cereals to more costly cereals is likely to occur first before there is a changeover to non-cereal foods.¹⁸ In the Indian context this would mean a shift from the coarse cereals to the superior cereals namely wheat or rice or both.

It is said that evidence of such substitutions could be interpreted as indicative of 'perceived nutritional adequacy.'¹⁹

Pattern of Dietary Changes during the Period of Economic Reforms

In this section we present disaggregated data on changes in per capita per day calorie consumption and monthly per capita expenditure on food and non-food items through the period of economic reforms. All the data presented here is obtained from different rounds (50th round in 1993-94

through 66th round in 2009-10) of NSSO on household expenditure.²⁰⁻²⁷

Notes for the figures in this section:

- We have analyzed here the consumption expenditure data only for rural India. Even though there is considerable poverty, malnutrition and hunger in the urban India, but rural India is the one that forms the forte of these problems; hence the consumption data from rural areas was deemed best for illustrating the argument of this paper.

Even otherwise the trends in consumption of and expenditure on food in urban areas are very similar to those in rural areas;⁶ meaning thereby that the analysis of MPCE on food for urban areas will only be a minor variant of similar analysis for rural areas. The only exception here is the conspicuous consumerism and ostensible affluence of the urban areas which does not seem to be reflected adequately in the NSSO data.

- The consumer expenditure data for the different NSSO rounds has been obtained from the respective NSSO reports.²⁰⁻²⁷
- Till the 62nd round the NSSO data is disaggregated into 12 MPCE classes, which has been reconstituted into three classes (lower, intermediate and upper) of 4 MPCE classes each by taking weighted average of the separate expenditure classes.¹⁸⁻²³ From the 64th round, the data is disaggregated into 10 fractile classes, which have again been reconstituted into 3 classes – lower (the lower 4 fractiles), intermediate (middle 3 fractiles) and the upper (top 3 fractiles) by taking average of the fractiles.²⁶
- Beginning from the 50th round (1993-94 consumer data), subsequent rounds were chosen with a gap of two rounds; thus the last round with 12 MPCE classes was 62nd round (2005-06 data).²⁰⁻²⁵ Round 64 was chosen because it is the first NSSO round that gives consumer data by MPCE fractiles.²⁶ Round 66

being the latest, was chosen to provide updated data; unfortunately though it does not give disaggregated consumer data by fractiles / classes.²⁷

- The expenditure on food is classified into three categories:
 1. Food grains: includes cereals, gram, pulses and their products.
 2. High value foods: includes milk and milk products, egg, fish and meat, vegetables, fresh and dry fruits.
 3. Beverages and processed food – These include tea, coffee, mineral water, soft drinks, fruit juice (not prepared at home), soda water, other beverages such as cocoa, biscuits, cakes, pastries, pickles, sauce, jam, jelly, and other salted refreshments and sweets not prepared at home

Food items like cereal substitutes, edible oil, sugar, salt and spices have been left out as the concentration was largely on food grains and higher value foods. Any deviation from this has been specified at the appropriate place.

- The non-food expenditure is categorized into following heads:
 1. Pan, tobacco and intoxicants.
 2. Fuel and light.
 3. Clothing and footwear.
 4. Miscellaneous goods and services – these include expenditure on education, medical expenditure (institutional and non-institutional), conveyance, other services, toilet articles and sundry articles.
 5. Durable goods.

Changes in per capita per day calories

Table 1 above shows that there has been a consistent decline in the daily calories across the expenditure quartiles since 1987-88. The fact that this data is disaggregated by quartiles, and that there is a decline even in the top quartile is of particular significance. A decline in average calorie consumption of all expenditure classes can be deceptive as this can easily mask a handsome increase in the top classes by a steep decline in the lower classes; but a decline even in the top quartile compels us to look carefully for the reasons of the same.

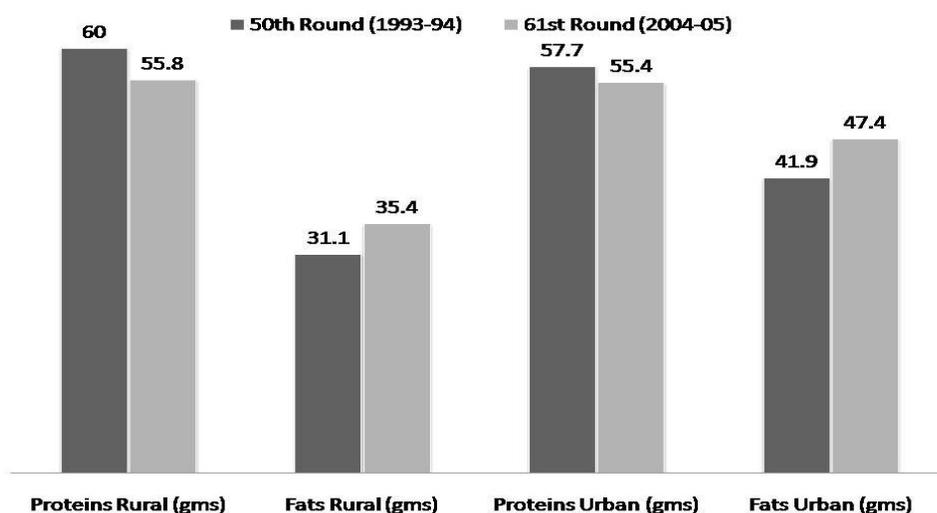


Figure 1: Average change in consumption of proteins and fats per capita, per day (all India)

Associated with the decline in total calories, Fig 1 shows that there has, on an average been a decline in consumption of dietary proteins (all MPCE classes taken together) through the period of economic reforms. Even though we do not have quartile wise decrease in consumption of dietary proteins, but it is improbable that in the top

expenditure quartile the consumption of dietary proteins (from animal products like milk and meat & eggs) would have increased in the presence of a decline in dietary calories. This fact puts a question mark over the 'diversification of diet' and 'voluntary reduction in cereal calories' thesis.

Variation in food and non-food expenditure

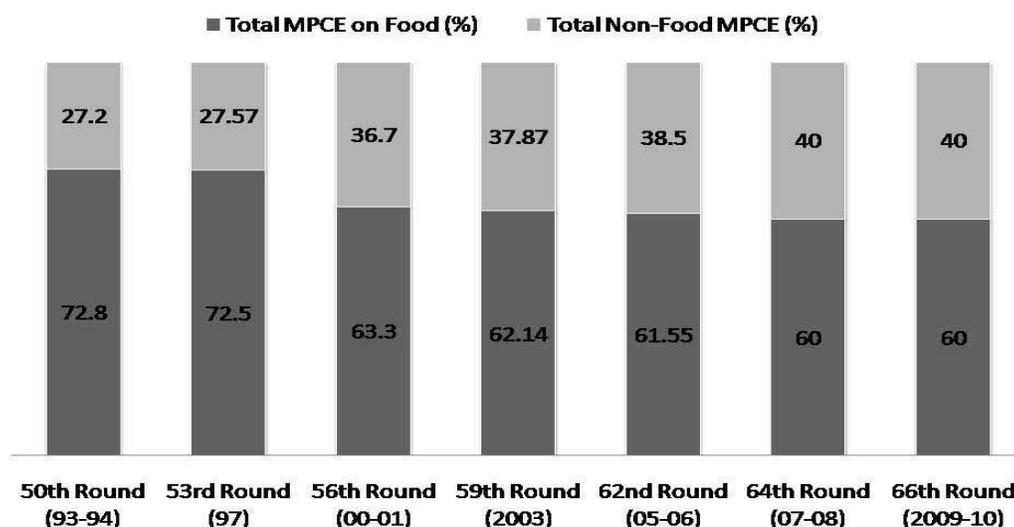


Figure 2a: Variation in food and non-food expenditure(% of total MPCE among lower MPCE classes (rural India)

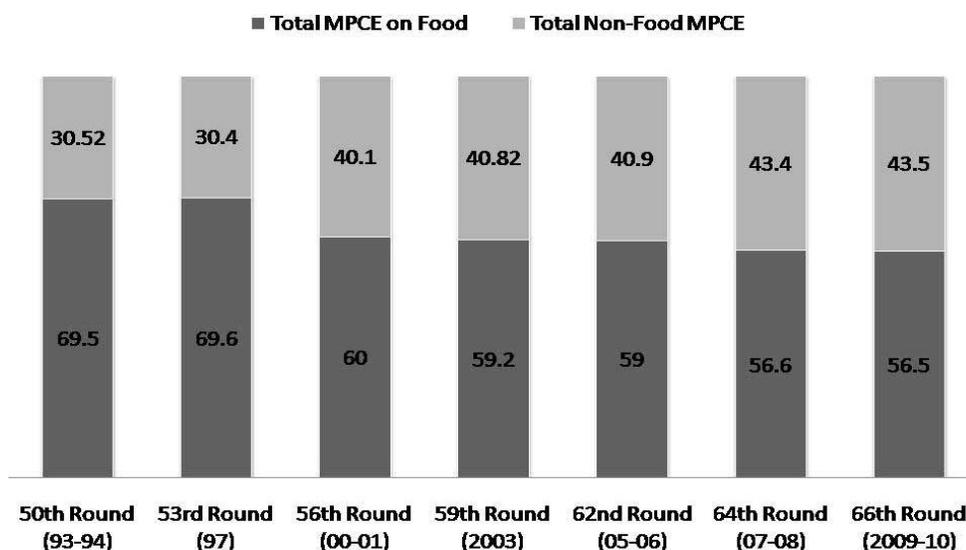


Figure 2b: Variation of food and non-food expenditure (% of total MPCE) in intermediate MPCE classes (rural India)

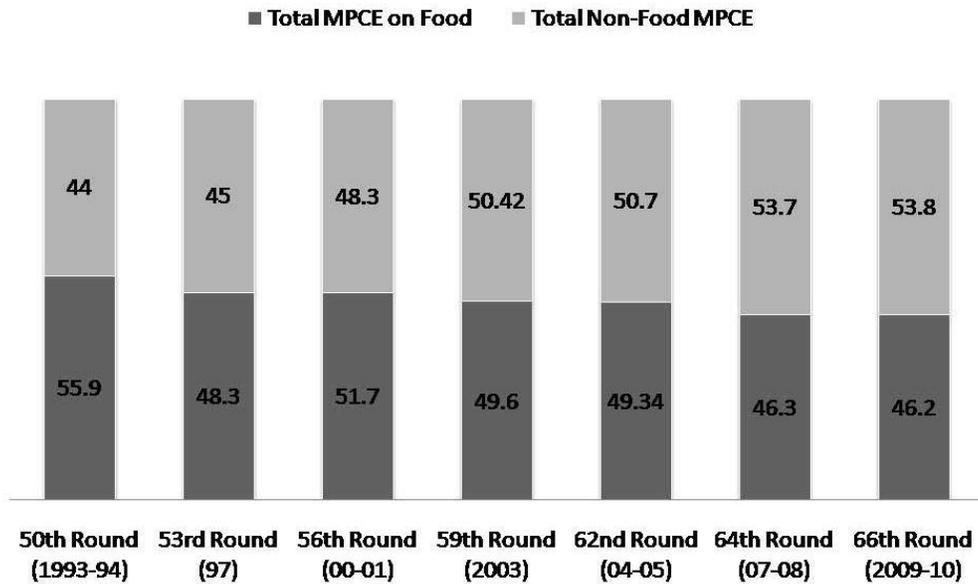


Figure 2c: Variation of food and non-food expenditure (% of total MPCE) in Upper MPCE classes (rural India)

Figures 2a, 2b and 2c show the variation in food and non-food expenditure across different MPCE classes. It can be seen from the figures that since the around in 2000-01, there has been at best, a marginal change in the proportions of food and non-food expenditures for the lower and the intermediate MPCE classes, while the change is only slightly more in the upper MPCE classes for the same period. What is more worrisome is that while the low income countries (<15% of per capita US income) spent on an average 47% of the budget on food,²⁷ the corresponding figure for even the higher expenditure classes in India was 48.3% in 1997, while the expenditure on food for the intermediate and the lower expenditure classes amounted to as high as 69.6% and 72.5%, respectively.

For the year 2005 the proportion spent on food by the low income countries was 48.5% (USDA, 2011), while that for the upper, intermediate and lower expenditure classes in India in 2005 was 49.34%, 59% and 61.5% respectively. During the period from 1995 to 2005, the expenditures on food seem to have increased across the World; this increase being from 13% to 20% for the high income

countries and from 29% to 31% for the middle income countries.^{28, 29}

For diversification of diets due to increasing prosperity of the people under the economic reforms to be true the following conditions need to be satisfied here – the share of expenditure on food in the overall expenditure should be decreasing in accompaniment to overall increase in the per capita consumption of food as dictated by Engle’s law. Figures 2a, 2b and 2c show that even though the proportion of expenditure on food has declined since 1993-94, this decline has become very sluggish since 2000-01 and has been virtually stagnant in case of the lower and the intermediate expenditure classes. The fact that the expenditure on food for even the highest expenditure classes in India is more than the average expenditure of food in case of low income countries is a pointer to the level of prosperity that has come about in India. Even though the per capita expenditure on food may have increased due to inflation in food prices, but there certainly has been no increase in per capita consumption of food. These findings suggest that the Engle’s law is borne out in as much as there is lesser expenditure on food as we move up the expenditure classes;

however, there is minimal decrease in the proportion of expenditure on food for different expenditure classes through the period of

neoliberal economic reforms. These changes hardly point towards the possibility of any meaningful 'diversification of diets.'

Variation in consumption of different types of foods

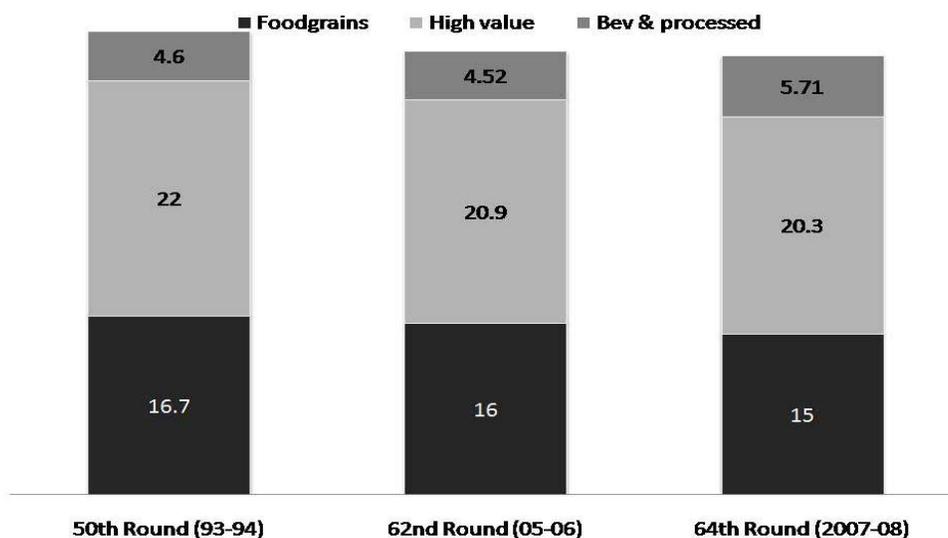


Figure 3a: Variation in expenditure on different types of food (% of total MPC) across upper MPCE classes (rural India)

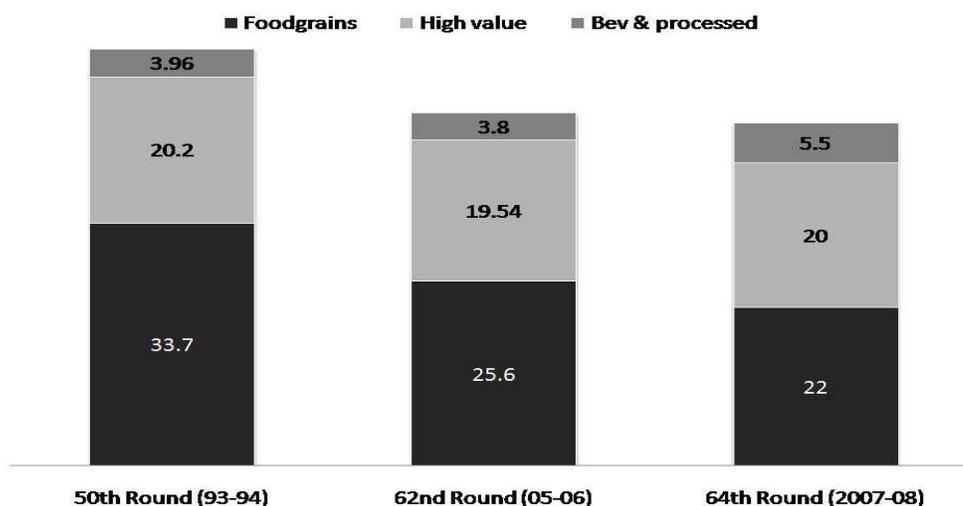


Figure 3b: Variation in expenditure on different types of food (% of total MPCE) Across intermediate MPCE classes (rural India)

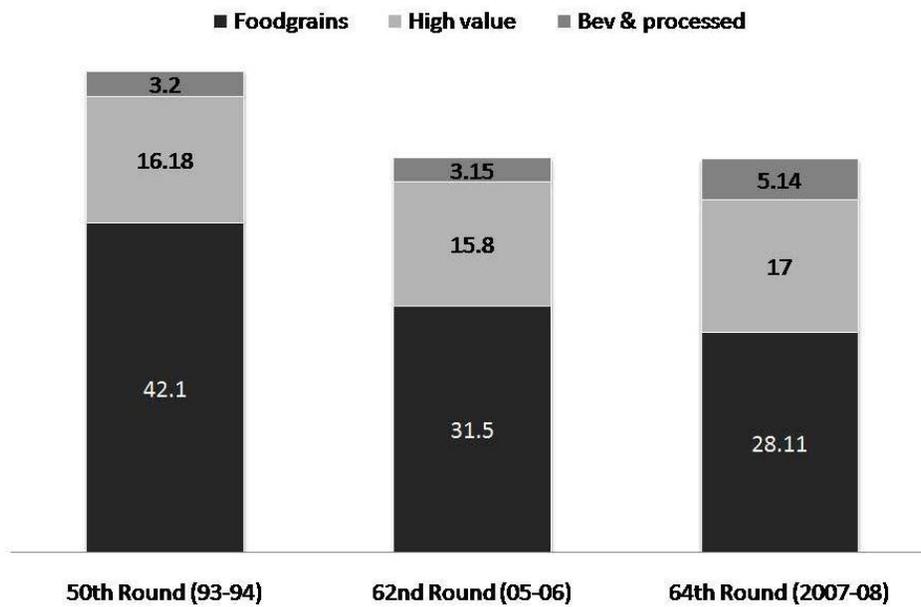


Figure 3c: Variation in expenditure on different types of food (% of total MPCE) across lower MPCE classes (rural India)

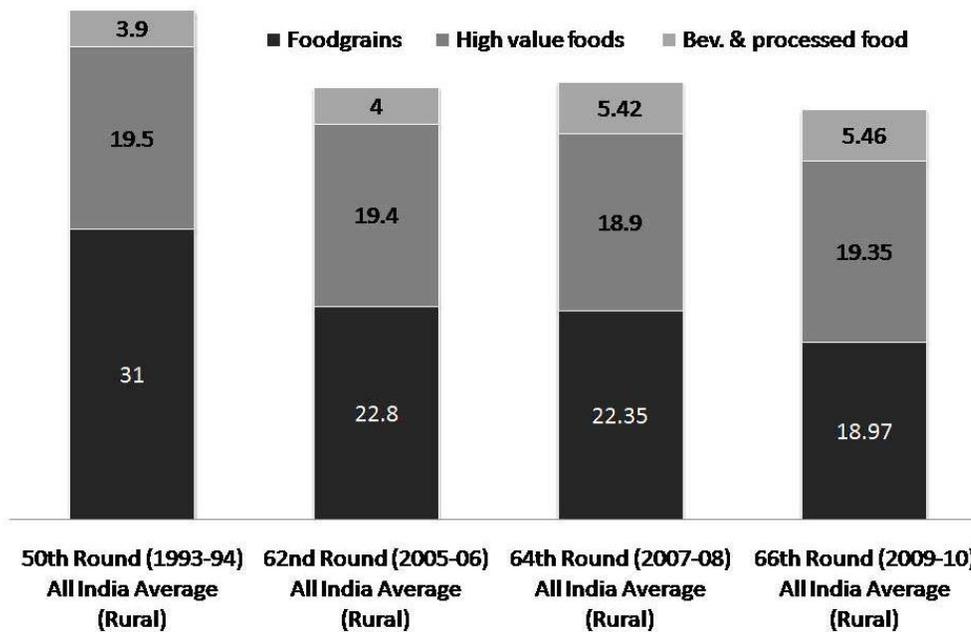


Figure 3d: Variation in pattern of expenditure on food items (all India average, rural)

Figures 3a, 3b, 3c and 3d show the variation in the consumption of different food items during the reform years in India from 50th NSS round in 1993-94 to 66th round in 2009-10.

It is clear from figures 3a, 3b and 3c that there has definitely been a fall in consumption of food grains across all MPCE classes, while with regard to the high value foods there was a marginal decline for the upper classes, and their consumption in the intermediate and the lower classes remained stagnant. Simultaneously, an increase was registered in the consumption of beverages and processed foods across all classes.

The decline registered in the consumption of food grains for the lower, middle and upper classes was 33.25%, 34.7% and 10.18% respectively; while the respective increases in the consumption of beverages and processed foods was 60%, 38.9% and 24%. Thus, for the intermediate and the lower classes, while food grains remained the principle source of dietary calories, their contribution to the total dietary calories declined dramatically without any compensatory increase in higher value calories. Simultaneously, given the composition (these are in all likelihood items like potato wafers etc. rather than cakes and pastries) of commonly consumed beverages and processed foods, the substantial increase in their consumption is unlikely to have been nutritionally rewarding.

The pattern of changes in the average expenditure of all classes (Fig 3d) on different food items through different rounds is closer to that observed for the intermediate and lower MPCE classes.

The Bennett’s law is true in as much as a greater share of the calories of the higher expenditure classes is coming from higher value foods. However, the proportionate decline in expenditure on food grains can hardly be said to be ‘voluntary’ especially as there is no compensatory increase in expenditure on higher value foods. What is tenable though is that not only was the purchasing power of majority of people compromised to afford them an increased supplement of costlier calories, but they were hard pressed to even maintain their quota of the cheaper calories from the staple food grains as an increasing portion of incomes got diverted towards the consumption of beverages and processed foods. As indeed a senior executive of a transnational food corporation put it – “to the dismay of many would-be benefactors, the poorer the malnourished are, the more likely they are to spend a disproportionate amount of whatever they have on some luxury – like a flavored soft drink or smoke – rather than on what they need”³⁰

This diversion of incomes towards increased consumption of beverages and processed foods seems to have had other harmful impacts as well. We can see from figure 1 that consumption of fat has increased both in the rural and the urban areas between the 50th and the 61st NSSO rounds. However, in proportionate terms the share of expenditure on edible oils has decreased over the years as can be seen from Table 3.

Table 3: Variation in expenditure on edible oils through different rounds

NSSO Round	Expenditure on edible oil (% of MPCE)	
	All India (Rural)	All India (Urban)
50 th Round (1993-94)	4.4	4.4
61 st Round (2004-05)	4.6	3.5
66 th Round (2009-10)	3.6	2.5

Source: Consumption expenditure data of respective rounds.

As the consumption of food grains and high value foods has been declining (both in proportionate and absolute terms), the increase in consumption of fats could have only come from processed junk food and beverages, expenditure on which has increased across all expenditure classes. Since the consumption of fats remains above the recommended daily allowances, this has been adding incrementally to the

public health problem of obesity, at least among the more affluent sections.

How does India compare with the rest?

Table 4 gives a comparison of consumer expenditure on different types of food in India and different groups of countries by income for the year 2005.

Table 4: Comparison of consumer expenditure between India and countries by income groups

Country group	Cereals	Meat, fish, egg, dairy products, vegetables and fruits	Beverages, tobacco, processed and other food	Oils & fat
Low income (< 15% of US)	23.3	45.6	26.2	4.9
Middle income (15- 50% of US)	12.4	45.1	39.5	3
High income (> 50% of US)	8.6	32.3	57.7	1.4
India	31.4	35.9	25.5	7.5

Source: For data on different country groups: United States Department of Agriculture, 2011³¹

For data on India: NSSO 62nd Round, 2008: 'Household Consumer Expenditure in India, 2005-06, Report No.523, Ministry of Statistics and Programme Implementation, Government of India.³²

Note: The data for different country groups is for the year 2005.

Even if only to state the obvious, it may still be emphasized that the group of low income countries includes some of the poorest countries, with abysmal levels of human consumption. However, the period of reforms seems to have placed India in an unenviable position where its share of expenditure on cereals is 34.8% more than the average for low income countries, that on high value foods is a good 21.3% less, while the expenditure on beverages, processed and other foods is also about 3% less. This would indicate that economically an average Indian was worse off compared to an average citizen of a low income country. It is anybody's guess if such a condition would afford millions of impoverished

Indians any scope of 'voluntarily reducing food grain consumption', let alone afford the luxury of choosing from more expensive foods.

Change in consumption within cereals

We have quoted above Poleman's theorization that in case of developing countries change in consumption from cereals to more expensive calories would be preceded by change from coarse cereals to more refined cereals like rice and wheat. It would be worth examining whether this has happened in case of India.

Table 5: Consumption of different cereals (in kg per capita, per month) over different NSSO rounds

Round/ Year	Lower tertile				Middle tertile				Upper tertile			
	Rice	Wheat	Others	Total	Rice	Wheat	Others	Total	Rice	Wheat	Others	Total
50 th Round (1993- 94)	6	3.4	2.3	11.7	7.5	4.1	1.9	13.5	7.3	5.7	1.9	14.9
62 nd Round (2005- 06)	6.3	3.3	1.03	10.6	6.5	4.2	1.1	11.8	6.6	5	1	12.7
64 th Round (2007- 08)	6.4	3.7	1.12	11.2	6.4	4.3	1.25	11.9	6.3	4.7	1.07	12.1

Source: Compiled from the NSSO reports for respective rounds.

Note: The category 'Others' includes jowar, bajra, maize, barley, small millets, ragi, other cereals and gram. Since the data from the 66th round is not given by MPCE classes or by fractiles, hence, it has not been included here.

It is important to point here that much of the substitution of coarse cereals with more refined cereals – rice and wheat, took place as a result of the green revolution; not necessarily as a changeover in the wake of increased prosperity, because substitution of the cultivation of coarse cereals with cultivation of high yielding varieties of rice and wheat was pro-actively encouraged by the government even in the rain fed areas. Additionally, the procurement of food grain for PDS (public distribution system) is largely limited to that of rice and wheat. This led to change in dietary patterns of the people. This strategy that was adopted earlier is now being questioned increasingly as the green revolution is running out of steam rapidly; and efforts are afoot to revive the coarse cereals in the traditional areas of its cultivation.

Having said this we turn our attention to the findings of Table 5. It can be seen that the share of coarse cereals in the total cereal consumption in the lower, middle and upper tertiles of MPCE consumption classes dropped from 19.7%, 14.1% and 12.8% respectively in 50th round to 10%, 10.5% and 8.8% in the 64th round. The ratio of rice plus wheat to coarse

cereals increased from 4.1:1, 6.1:1 and 6.8:1 in the lower, middle and upper tertiles respectively to 9:1, 8.6:1 and 10.2:1 respectively.

On face of it then, Poleman's hypothesis seems to be borne out in case of India and one might be led into believing that lack of gains in consumption of high value calories across different expenditure classes may not be such a worrisome thing after all. This would be true except that the apparent shift in favor of superior cereals is accompanied by net decline in their consumption. Poleman's hypothesis implies that an increase in income should enable increased consumption of superior cereals supplemented by the willingness of the people to divert their money from consuming lower cereals to consuming superior ones. To the contrary, here we notice that there has been a decline of 7.8% and 15.4% in the consumption of rice and wheat in the intermediate and upper expenditure classes respectively. It is only in the lower classes that there has been an increase in the consumption of rice and wheat by 7.5%; but this too is in face of an overall decline in consumption of cereals. Decline in consumption of rice and wheat along with a steep decline in consumption of coarse

cereals only means that the nutritional security of the people was compromised even further.

CHANGES IN PATTERN OF NON-FOOD EXPENDITURE

While talking of the need to distinguish between nutrition poverty and income poverty, we had stressed that other than income poverty, poor nutrition could be the result of factors like non-food spending preferences. We have already noted that in food expenditure in rural India, even as there has been a decline in the consumption of vital nutrients, an increased trend of spending on beverages and processed food was noticed. In this section we shall

discuss the changes in spending on non-food components and their implication for spending on food.

Figures 5a, 5b, 5c and 5d show the changes in non-food expenditure among the upper, intermediate, lower and average across all MPCE classes. In these figures miscellaneous goods and services include the following items: Education, Medical expenses (institutional and non-institutional), Entertainment, Miscellaneous consumer goods (goods for personal care, toilet articles and sundry articles), Consumer services (excluding conveyance), Conveyance, Rent, Taxes and cesses.

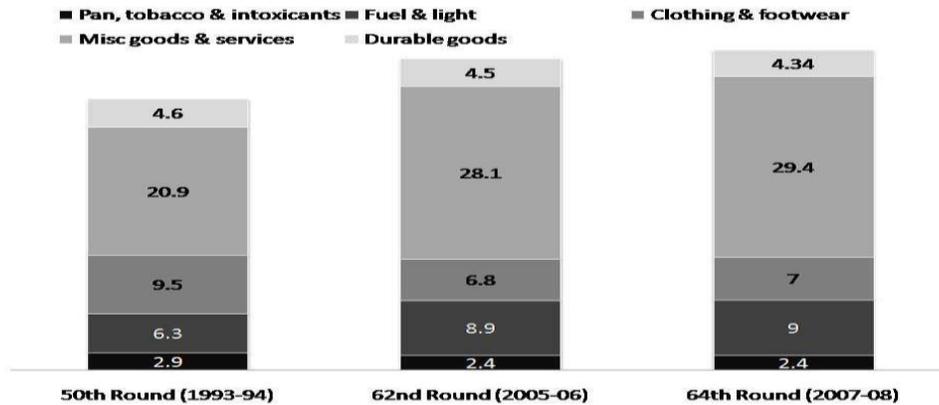


Figure 5 a: Variation in pattern of non-food expenditure (& total MPCE) across upper MPCE (rural)

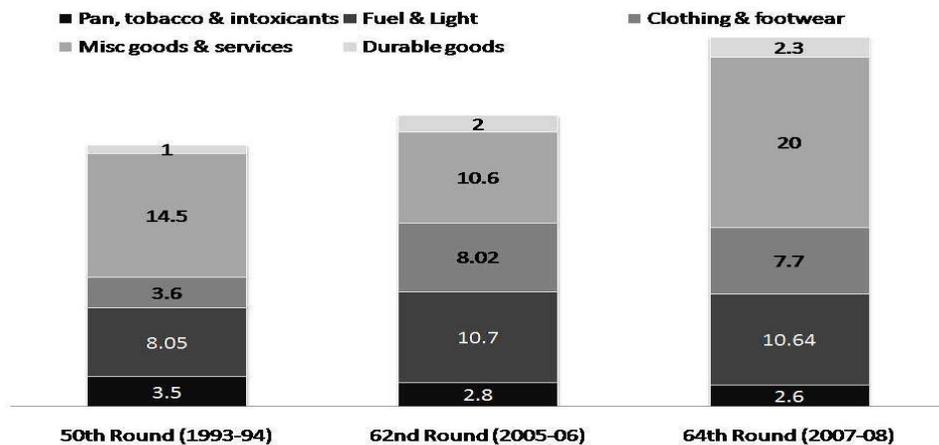


Figure 5 b: Variation in expenditure on different non-food items (% of total MPCE)

across classes (rural India)

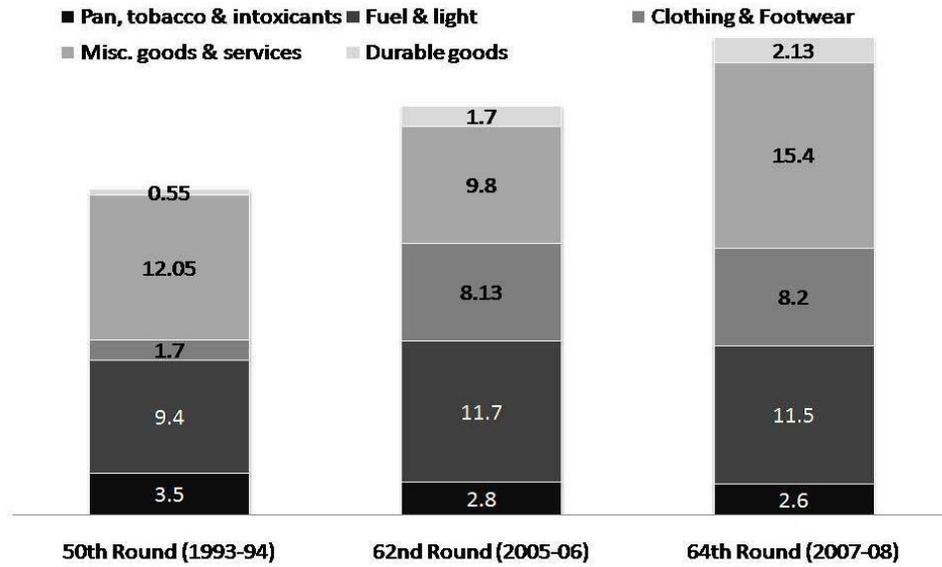


Figure 5 c: Variation in pattern of non-food expenditure (% of total MPCE) across lower MPCE classes (rural India)

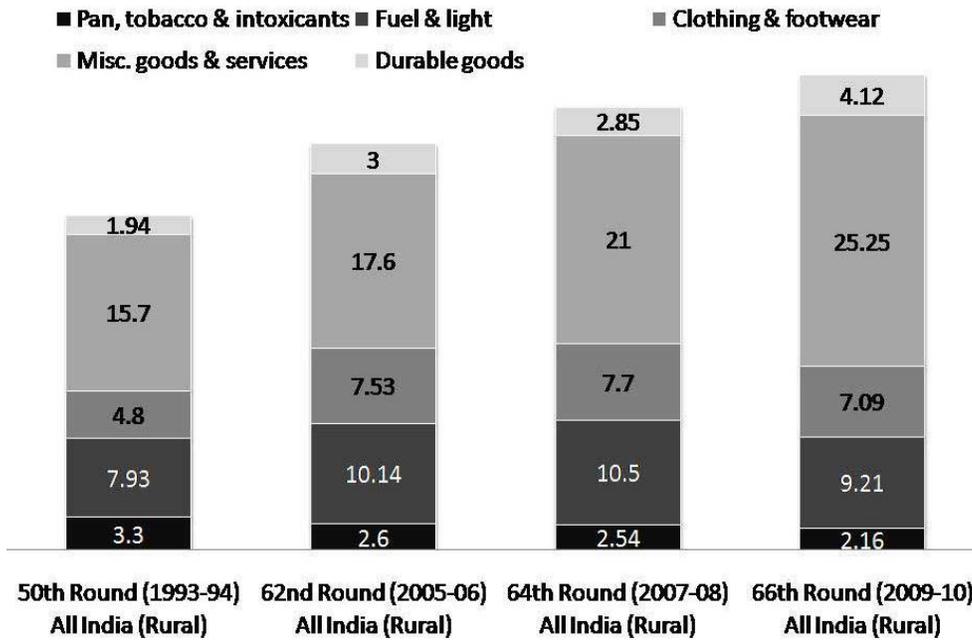


Figure 5 d: Variation in pattern of non-food expenditure (% of total MPCE) – all India average, rural

The upper MPCE classes

For the top MPCE classes the bulk of non-food expenditure is on miscellaneous goods and services, which underwent an increase of 40.7% during the reform years, while the expenditure on fuel and light increased by 43% in the same period. The expenditure on clothing and footwear actually underwent a contraction. Table 6 gives a break-up of the expenditure on miscellaneous goods and services for 64th NSSO round.

From the break-up given in Table 6, the expenditure on education, medical expenditure, conveyance and consumer services excluding conveyance may be considered essential and reducible only at the cost of compromising the quality of life. 22.84% out of the total 29.4% expenditure on miscellaneous goods and services was incurred on these heads by the top expenditure fractiles. This expenditure would hardly qualify as any kind of luxury; in fact the reduction in

expenditure on clothes and footwear (26%) and a marginal decline in the expenditure on durable goods (5.7%) indicates cutting of corners by the highest expenditure classes to meet the essential expenditure on education, medical expenses and other consumer services required for day to day life.

It is quite possible that the cut back in consumption of nutrients that we have noted earlier for this section, is directly feeding into maintaining these essential services as a valiant attempt by these sections to retain their middle or lower middle class status. The decline in expenditure on durable goods and a pitiable expenditure on entertainment hardly betray a consumerist orientation of these classes; or shall we say – an inability of even the highest expenditure classes in the NSSO data to partake in the new found affluence through the economic reforms.

Table 6: Break-up of expenditure on miscellaneous goods and services (Round 64, 2007-08)

Item	Percentage share in total consumption expenditure		
	Lower 4 fractiles	Middle 3 fractiles	Top 3 fractiles
Education	1.8	2.6	4.6
Medical expenses (Inst. & non-inst.)	3.3	4.7	7.84
Entertainment	.32	.54	.9
Goods for personal care	.2	.23	.25
Toilet articles	2.7	2.7	2.5
Sundry articles	2.2	2.3	2.14
Consumer services excluding conveyance	3	3.9	5.4
Conveyance	1.7	2.7	5
Rent	.08	.16	.56
Taxes & cesses	.12	.2	.3

The intermediate and the lower MPCE classes

Between the 50th (1993-94) and the 64th (2007-08) NSSO rounds, for the intermediate and the lower MPCE classes the maximum increase has been in expenditures on durable goods and clothes and footwear, followed by an increase in expenditure on miscellaneous goods and services and then fuel and

light. The respective increases for expenditure under these heads is 130%, 113%, 38% and 32.2% for the intermediate classes and 287%, 382%, 27.8% and 22.34% for the lower MPCE classes. However, it is important to note that between the 62nd and the 64th round, the bulk of the increase in non-food

expenditure has been under the head of miscellaneous services and goods, as in case of the upper classes.

The steep rise in expenditure on durable goods and clothes and footwear does not seem to be fuelled as much by consumerist aspirations, as much by the fact that the initial expenditure under these heads was a pittance; 1% and .55% on durable goods and 3.6% and 1.7% on clothes and footwear for the intermediate and the lower classes respectively; there was thus much scope for an increase under these heads.

For all the expenditure classes, increasing expenditure to improve quality of nutrition does not seem to have been much of a priority beyond satisfying the minimal requirements. After fulfilling minimal nutritional requirements, the priority shifted to fulfill minimal need for durable goods and clothing and then to spend on other essential services like education, health and conveyance etc.

Trends from all India average non-food expenditure also mimic the trends observed in non-food expenditure by the intermediate and the lower classes. Given the size of MPCE for different classes in rupee terms, the absolute expenditure on various non-food consumer items and services would remain modest. The handsome rise in proportionate expenditure on durable goods, clothing and footwear among the intermediate and the lower classes may be sighted by some as an evidence of rising consumerism. Given the size of the population of the country, this increase may add up to constitute a huge market for many of the lower cost consumer products. It remains a matter of further study as to how much this has helped to improve the overall quality of life of these sections. As regards food and nutrition security, the increasing diversion of resources towards beverages and processed food does not augur well for the poor.

Who then is firing India's consumerist boom?

We have mentioned earlier about the anachronism between increasing nutritional poverty accompanied by income poverty and rising consumerism in the country. The data presented thus far and the

accompanying discussion helps us establish a few things:

- That nutritional poverty in the country has indeed been rising with large sections of the population living with chronic dietary energy and protein deficiency.
- Even as consumption of high value calories remains static or has decreased, there is a worrisome decline in the consumption of even the staple cereals. The myth of 'diversification of diets in favor of high value calories' at the cost of reduction in staple calories fails to stand the test of hard evidence.
- Even as food has been difficult to come by, there is evidence of diversification of precious resources towards consumption of nutritionally poor processed foods and beverages.
- It may be argued, though not very strongly, that there is some evidence of incipient consumerism among different MPCE classes vis-à-vis non-food consumer items.

This however still does not explain the conspicuous consumerism that is as real a product of the economic reforms as are the rest of the findings. At least the bigger cities and towns are booming with expenditure on automobiles, a host of electronic consumer items and gadgetry, new shopping malls opening everywhere, the multistory residential complexes and even consumer services going by the number of costly public schools, the nature of costly and privatized professional education and the number of corporate tertiary care hospitals. There seems to be no dearth of people wanting to have their share of all this; and this is the class which has an imposing presence in the society because they are the ones who get talked of in the media; television serials and even the news plays, replays and overplays the vacuous trials and travails of this class; they dominate the politics, business, educational and other public institutions and are the reigning moguls in the world of art, literature and sports. Yet, this class may constitute only 4% to 5% of the country's population. The population that the NSSO data represents does not belong to this category. Given the size of the MPCE in Rs for different expenditure classes, there is little possibility of them having a share in this high end consumerism, except for the

theoretical possibility in case of the top most expenditure class, for which we have no evidence from the present NSSO data.

This is better illustrated in the Table 7. In 2004-05 a middle class person with daily per capita

Table 7: Monthly and daily per capita expenditure by poverty status

Serial No.	Poverty status	Criteria	MPCE (Rs)	DPCE (Rs)
1	Extremely poor	If MPCE <= 0.75 (PL)	269 (268)	9 (9)
2	Poor	If 0.75 PL < MPCE <= 1PL	348 (358)	12 (12)
3	Marginal	If 1 PL < MPCE <= 1.25 PL	438 (449)	15 (15)
4	Vulnerable	If 1.25 < MPCE <= 2.0 PL	609 (631)	20 (21)
5	Middle income	If 2.0 PL < MPCE < 4.0 PL	1,098 (1137)	37 (38)
6	High income	If MPCE > 4 PL	2,776 (2879)	93 (96)
7	Extremely poor and poor (1 + 2)	-	325 (331)	11 (11)
8	Marginal and Vulnerable (3 + 4)	-	550 (570)	18 (19)
9	Poor and Vulnerable (7 + 8)	-	486 (500)	16 (17)
10	Middle and High income (5 + 6)	-	1,387 (1448)	46 (48)
11	All	-	696 (734)	23 (25)

* Figures in brackets are based on detailed consumer expenditure.

Source: Sengupta A et.al, 2008,³³ computed from NSS 61st round survey on employment-unemployment, 2004-05.

PL = Poverty Line. Defined by the Planning Commission as which that has gained notoriety as destitution line
 MPCE = Monthly per capita expenditure
 DPCE = Daily per capita expenditure

Expenditure of more than 37 Rs and a high income person with daily per capita expenditure of Rs 100, both could not have afforded the kind of life styles that are typical of the middle classes and the rich in the country as we know them. For example they could not go shopping in malls; or go to Cineplex's; or afford to own a four wheeler; or go out eating to McDonalds, Pizza Hut and other such eateries; or send their children to public schools. They most certainly could not have afforded the costly coaching for medical and engineering entrance or entrance to Indian Institutes of Management for their children.

Even though the NSSO household consumption data potentially covers all the consumer classes in the country, in reality it fails to reflect the consumerism of the 'other India'; those who are the 'progeny of the neo-liberal reforms' and the 'motive force' powering the consumerist boom. The reason why this is so can be best answered by NSSO itself, but the reading of the data presented above tends to support our view point.

EXAMINING OTHER FACTORS IMPACTING CALORIE INTAKE

The important factors impacting on dietary energy intake could be changes in the environmental conditions over a period of time.

Improvements in the epidemiological conditions

Deaton and Dreze have emphasized the changes in the epidemiological environment impacting on the morbidity and mortality due to infectious diseases and thereby a decline in calorie needs. The more important changes that have been sighted in this regard are the much increased access to piped drinking water, an increase in vaccination rates of children and improvement in child health due to better education of women.

Tables 8, 9 and 10 trace the morbidity and mortality due to infectious diseases over the period since 1993, while table 11 gives the performance of the expanded program for immunization from 1991-92 till 2004-05.

Table 12 shows the ordering of states by female literacy, infant mortality and mortality among

children below 5 years of age.

Table 8: Total number of deaths by major cause group in India (Rural) – 1993-98

Major cause group	Proportion of total deaths					
	1993	1994	1995	1996	1997	1998
Diseases of respiratory system	14.4	15.1	16.60	17.8	16.	17.2
Infectious and parasitic diseases	12.5	12.0	11.90	10.9	10.0	12.
Viral infection	4.20	4.40	4.70	3.90	3.10	4.30
Diseases of digestive system	1.40	1.60	1.60	2.00	2.10	2.10
Pregnancy, childbirth and puerperium	1.10	0.90	0.80	1.00	0.70	1.10
Diseases of genitor-urinary system	0.50	0.60	0.70	0.80	1.00	0.70

Source: Causes of death statistics, In Health Information of India, 2000-2001, Central Bureau of Health Intelligence, Director General Health Services, Ministry of Health and Family Welfare

An improvement in the epidemiological environment would be expected to bring down the share of infectious diseases in the total number of deaths and an increase in the share of non-infectious or life style diseases. It is evident from table 14, between 1993 and 1998 the proportion of deaths due to diseases of respiratory system, which are mostly of the infectious nature, actually increased by 19.5%, while the deaths due to infectious and other parasitic diseases remained stagnant. Deaths due to viral infections

also showed a marginal increase, as did deaths due to genito-urinary system; while proportion of deaths due to conditions of pregnancy, childbirths and puerperium remained unchanged over the six year period. The rise in proportion of deaths due to diseases of digestive system was alarming at 50%.

Perusal of data from same source shows stagnation or only a slight increase in deaths due to non-infectious causes of death.

Table 9: Incidence of infectious diseases – cases per 100,000 population

Disease	2001	2002	2003	2004	2005	2006	2007	2008	2009
Acute respiratory infection	1998	2118	2283	2547	2349	2351	2319	2398	2400
Acute diarrheal disease	903	903	989	972	1002	918	974	995	1018
Pulmonary TB	46	60	85	110	118	126	131	133	100
Enteric fever	48	47	56	64	63	71	73	82	93
Pneumonia	53	55	62	65	71	61	66	64	68
Gonococcal	12	12	14	15	13	12	14	12	13
All viral hepatitis	15	13	14	22	17	14	10	8	11
Malaria	200	176	176	177	166	161	134	133	133

Sources: National Health Profile of India, 2010, Central Bureau of Health Intelligence, Director General Health Services, Ministry of Health and Family Welfare.

Likewise, perusal of Table 9 shows that incidence of acute respiratory infections per 100,000 population increased by 20.1% between 2001 and 2009; while incidence of acute diarrheal disease (wider access to

piped water would be expected to bring about a decrease in their incidence and prevalence) increased by 12.7% in the same period. The increase in incidence of pulmonary TB which is a chronic

infectious condition placing a much higher demand for dietary energy consumption as compared to acute infections, was 117.4%. The increase recorded in the

incidence of enteric fever, pneumonia and gonococcus infections per 100,000 populations was 93.8%, 28.3% and 8.4% respectively.

Table 10: Mortality due to major diseases, deaths per 100,000 population

Disease	2001	2002	2003	2004	2005	2006	2007	2008	2009
Acute respiratory infection	.336	.395	.403	.498	.375	.336	.616	.465	.259
Acute diarrheal disease	.271	.332	.323	.272	.196	.286	.319	.250	.154
Pulmonary TB	2.049	2.603	2.961	3.488	.154	5.803	5.744	5.783	5.638
Enteric fever	.059	.052	.079	.075	.038	.059	.04	.032	.037
Pneumonia	.372	.389	.392	.334	.321	.3	.306	.338	.252
All viral hepatitis	.112	.087	.095	.110	.066	.062	.048	.047	.051
Malaria	.099	.093	.095	.088	.088	.153	.116	.092	.097
Japanese encephalitis	.047	.045	.067	.034	.154	.060	.088	.06	.066

Sources: National Health Profile of India, 2010, Central Bureau of Health Intelligence, Director General Health Services, Ministry of Health and Family Welfare

Table 10 shows that between 2001 and 2009 there was a decline of 23%, 43.2%, 37% and 32.25% in the mortality due to acute respiratory infection, acute diarrheal disease, enteric fever and pneumonia respectively. However, given the small proportion of mortality of less than 1 per 100,000 for all these

diseases, this decline was more than undone by a massive increase of 175.16% in mortality due to pulmonary tuberculosis. Apart from these there were marginal declines in mortality due to viral hepatitis and malaria, while mortality due to Japanese encephalitis registered an increase.

Table 11: Year wise targets and achievements of maternity child health activities – all India during 1991-1992 to 2004-05 (Figures in million numbers)

Year	TT pregnant women		DPT		Polio		Measles	
	Target	% achieved	Target	% achieved	Target	% achieved	Target	% achieved
1991-92	26.13	77.6	23.33	90.9	15.97	91.3	23.33	85.0
1992-93	27.01	79.4	24.29	90.6	16.31	91.0	24.29	85.9
1993-94	27.56	82.6	24.79	93.2	16.65	93.6	24.79	88.5
1994-95	27.53	83.8	24.77	94.5	20.31	95.2	24.77	87.2
1995-96	27.53	80.4	24.86	90.7	20.72	91.6	24.86	82.6
1996-97	28.11	81.8	25.4	91.5	21.08	92.7	25.40	83.2
1997-98	28.29	82.6	25.55	92.9	21.44	93.9	25.55	85.8
1998-99	27.75	83.9	25.12	93.7	23.82	95.3	25.12	88.1
1999-00	29.24	81.3	24.72	95.3	24.23	95.9	24.72	89.8
2000-01	28.81	85.8	24.35	100.9*	24.62	102.1*	-	-
2001-02	28.85	86.9	24.43	101.5*	25.03	101.3*	-	-
2002-03	29.76	81.4	25.2	97.4	20.96	97.5	-	-
2003-04	30.29	78.1	25.69	91.5	25.84	93.3	-	-
2004-05	30.25	78.6	25.69	93.7	17.33	94.2	-	-

Sources: Figures for TT pregnant women, DPT and Polio are from Table No. 12.02, E.P.I. Performance, Health Information of India, 2005, Central Bureau of Health Intelligence, Director General Health Services, Ministry of Health and Family Welfare and for Measles the figures are from Table 12.02, E.P.I. Performance, Health Information of India, 2000-01. * These figures though improbable, but have been reproduced as given in original

A reading of figures from Table 11 does not reveal any spectacular increase in either the overall targets for immunization or the proportionate achievement of these targets over the years between 1991-92 and 2004-05 that could have meaningfully contributed to the observed decline in per capita calorie consumption observed during the same period. Anyways, the vaccine preventable diseases constitute at the most about 15% of infant and under-five mortality even as the bulk of mortality is due to neonatal causes, diarrheal diseases and pneumonia (Morris, 2003).

We can thus see that the hypothesis of improvements in the epidemiological environment resulting in a decline in calorie requirements and thus a decline in dietary energy consumption over the years is clearly not borne out by the epidemiological data.

Improvement in female literacy

Table 12: Ordering of some states by female literacy, IMR and Under five mortality

Serial No.	Female literacy (%)	IMR	Under five mortality
1.	Kerala (87.8)	Kerala (16.3)	Kerala (18.8)
2.	Mizoram (86.13)	Himachal Pradesh (34.4)	Himachal Pradesh (42.4)
3.	Goa (75.51)	Goa (36.7)	Goa (46.8)
4.	Delhi (75)	Mizoram (37)	Mizoram (54.7)
5.	Himachal Pradesh (68.08)	Nagaland (42.1)	Delhi (55.4)
6.	Maharashtra (67.5)	Maharashtra (43.7)	Maharashtra (58.1)
7.	Tamil Nadu (64.5)	Sikkim (43.9)	Tamil Nadu (63.3)
8.	Punjab (63.5)	Delhi (46.8)	Nagaland (63.8)
9.	Nagaland (61.9)	Tamil Nadu (48.2)	Sikkim (71)
10.	Sikkim (61.4)	Punjab (57.1)	Punjab (72.1)

Sources: Female literacy figures are based on the 2001 census figures, while the infant and under five mortality figures are for the years 1998-99 obtained from NFHS – 2. The figures for infant and under-five mortality are per thousand live births and per thousand children of less than five years age respectively.

Table 12 gives the ranking of 10 Indian states by female literacy rates, IMR (infant mortality rates) and the under-five mortality rates; the latter being indicators of improvements in the environmental conditions. Except for three states of Kerala, Goa and Maharashtra for whom the ranks in these three parameters coincide, for rest of the states there is no tight relation of IMR and under-five mortality with female literacy. Even though female literacy has an important bearing on the health and nutrition of children and an intergenerational impact on nutrition, there is no reason to believe that it has had an overarching impact in effecting the observed

decline in daily per capita calorie consumption in India.

An important question here is that improvements in female literacy and epidemiological environment have also occurred in the period earlier to the last twenty years that is under consideration here; yet why was no decline in dietary energy consumption observed for that period?

Decrease in physically demanding activities

The conclusions reached above leave only one more hypothesis for us to consider i.e. reduction in

physically strenuous routine of daily lives due to expansion of road network, motorized transport, expansion of mechanized agriculture as also piped drinking water that has obviated the need to fetch water over long distances and other such developments. Intuitively speaking this argument appears appealing; however, Deaton and Dreze have themselves admitted that there is little empirical data to corroborate this and have suggested the need for conducting detailed time use studies in this respect. This deficit could have been overcome to an extent by reflecting on the experience of other countries in this respect.

We have already noted in Table 12 above that the per capita, per day calorie consumption has been rising in all the regions of the World. It needs to be reminded that as compared to India the levels of mechanization of either agriculture or gadgets of daily use in life that are imputed to have led to decreased need for dietary energy consumption have by far been much higher in countries like China, Taiwan, South Korea and Brazil if we were to discuss here the case of only the developing countries; yet the average dietary energy consumption in these countries has only risen and currently stands much higher as compared to that in India.

Deaton and Dreze cite the example of Britain, where in the period from 1775 to 1850 "in spite of rising real wages, there was no apparent increase in the real consumption of food" and that of China for which it is claimed that despite improvements in nutrition indicators, calorie consumption is said to have declined in the 1980s and 1990s.⁶

The point is that can these two instances outweigh the weight of evidence from the rest of the World; and secondly, there is no elaboration of important details like whether the increase in real wages in Britain was across all socioeconomic strata or merely an aggregate increase due to far greater increase in the profits of the incipient capitalist class and the feudal gentry in the wake of the enclosure movement that led to development of commercial agricultural production? One cannot help but recall the description given by Fredrick Engels of widespread squalor afflicting working masses of industrial cities

of Britain in his famous work on 'Conditions of Working Class in England, 1844'.³⁵

Deaton and Dreze themselves admit in their paper 'Food and Nutrition in India: Fact and Interpretations'⁶ the possibility that improvements in nutritional outcomes of the present generation could be a result of improvements in diets and other factors that happened years earlier. For example, the nutritional well-being of today's children could be the result of good nutrition of their mothers when they were children and adolescents. Likewise, before the stated improvements in nutritional outcomes had started showing in China in the 1980s and the 1990s, there had been a long period of socialist construction that vastly improved the availability of food and health care for the people. As a matter of fact, there is enough literature to show that as a result of pro-market reforms initiated from late 1970s onwards many of the earlier benefits guaranteed to the people were gradually withdrawn. It is possible that the breaking up of the communes resulted in stagnation of dietary energy consumption for some Chinese. However, the claim that the dietary energy consumption in China declined in the 80s and the 90s needs to be examined more closely, because the figures in Table 13 obtained from the food balance sheets available from FAOSTAT clearly show a rise in per capita calorie consumption for both the decades.

There has been a massive diversification of diets of the Chinese with a 78.2 percent increase in the total calories consumed and a whopping 349 percent increase in consumption of animal proteins. According to FAO food balance sheets, for the same period India recorded a net increase of 19.6 percent in total calories and a decline of 6.25 percent in consumption of animal proteins. Even as consumption of animal proteins decreased, consumption of the main source of proteins in Indian diets i.e. pulses also decreased by 43.6 percent. For the same period the increase in consumption of vegetable oils for China was a whopping 68 percent, while that for India was a mere 75 percent.



Table 13: Total dietary calories and calories from major commodities (kcal per capita per day) in developing countries, China and India

Country	Year	Total calories	% change in four decades	Meat	% change in four decades	Sugar	% change in four decades	Pulses	% change in four decades	Roots & tubers	% change in four decades	Vegetable oils	% change in four decades	Wheat	% change in four decades	Rice	% change in four decades
Developing countries	1963	-		147	119	75	127	167	-41	178	-13	80	199	245	87	580	13
	1983	-		210		128		113		157		145		453		694	
	2003	-		369		170		99		154		239		457		655	
China	1963	1637	78.2	90	349	18	305	143	-88	255	-31	35	680	194	131	637	24
	1973	1952		94		30		50		320		47		322		749	
	1983	2462		192		54		50		222		95		534		962	
	1993	2668		284		52		15		177		145		715		803	
	2003	2917		644		73		17		176		273		448		790	

Notes: The figures for the developing countries and for China for the years 1963, 1983 and 2003, except total dietary calories, have been taken by the authors from Kearney J, 2010, whose source is from FAOSTAT. Figures for China for the years 1973 and 1993, as also the figures for total dietary energy consumption for all years have been taken from food balance sheets available from FAOSTAT.

Deaton and Dreze assume that technological improvement necessarily leads to decreased dietary energy demand. For example they state "As the wage rises, and with less work being required to earn a given amount of income, there will be a downward shift in the calorie Engel curve. This may be accentuated by technological change in the process calorie intake may decline as incomes rise, in contrast to calorie intake increasing with income in the cross-section at a given point of time".⁷

This however need not necessarily be true and the results could be just the opposite. Take the example of a fully automated assembly line of a modern car plant where the dictum is to produce a car a minute; a worker at his/her work station has only a few seconds to do his/her small bit in every car, for eight hours a day with limited breaks and a coercive supervisory mechanism.³⁶ In spite of the fact that newer technology facilitates production of same number of cars in much lesser time, the workers still have to put in 8 hours of work. Just how much reduction in dietary energy needs does such automation bring about?

This however is not to deny the evidence from across the world that with technological change there has been an accompanying shift towards physically less active lifestyles; but this has invariably been accompanied with rise in obesity which could not have come about with falling calorie consumption.³⁷ ³⁸ In case of India as well the NFHS (National Family Health Surveys) have provided evidence of rising obesity, but among the rich. The declining trend in calorie consumption in NSSO data however hardly betrays a possibility of rise in obesity. To reconcile these findings we shall have to accept that the NSSO data somehow does not capture the consumption patterns of the really rich.

We need also bear in mind the possibility that with time saved from the sundry activities of life due to increasing mechanization, people may take to more rigorous, but enjoyable pass times like sports or other outdoor activities; something that has been termed as behavioral change state of 'nutrition transition.'³⁸ The need therefore remains to undertake detailed time use studies to have a better understanding of

how activity pattern changes with increased mechanization.

THE NEED TO INTROSPECT DEEPER

Going by the discussion till now it would appear logical to explain the declining dietary energy consumption of the overwhelming majority of our population in terms of its declining purchasing power, especially because of the policies pursued during the neo-liberal economic reforms. However, the need is to have a more comprehensive theorization which would present a more composite picture of the entire population. This mandates a deeper reasoning and understanding of the problem to place the whole issue in the perspective of the stage of nutrition transition in India.

Nutrition transition is a cycle of changes in the structure of diets of the population that accompany changes associated with a number of factors like growth in income, urbanization, changes in activity patterns, demographic structure, religious and cultural factors etc, and has implications for the health of the people. A nutrition transition is effected either simultaneously with, or is preceded by demographic and epidemiological transition.³⁹ This situation is only complicated by the fact that India has neither fully undergone the demographic nor the epidemiological transition.

While on one hand, as we have already seen, there continues to be a high burden of infectious diseases and on the other there is a considerable section of population that has come to be a repository of the lifestyle or non-communicable diseases. Likewise, different sections of our population are at different stages nutritional transition.

The overwhelmingly dominant section, one who's consumption is mainly represented by the NSSO data and which constitutes more than 95% of the population; is largely caught in what is described as the 'Receding Famine' stage of nutrition transition, characterized by staple starchy diets of high fiber content with little variety and lifestyles characterized by hard physical labor. Most of the rural population and a considerable section of the urban poor would fit this description; though with eminent signs of

change and onward movement – remember the increase in consumption of beverages and processed foods and dietary fat among the lower expenditure classes; and of course modern amenities like motorized transport, television etc.

The other section, comprising 4 to 5 percent of the population; the ones who represent the 'new rich' and the traditional upper class, who's consumption is not reflected in the NSSO data, have graduated to what is described as the 'Degenerative Disease' stage of nutrition transition, or even the 'Behavioral Change' stage as is reflected in the 'fitness consciousness' of a section of the population. Former is characterized by "increased consumption of dietary fat, sugar and processed foods and a shift in technology of work and leisure", while the later signals a return to healthier diets and lifestyles – "reduced fat, increased fruit, vegetables, carbohydrates and fiber along with replacing sedentarianism with purposeful changes in recreation."³⁸ This complexity is described by Popkin and Larsen in following words – "the patterns (of different stages) can be thought of as historical developments; however, 'earlier' patterns are not restricted to the periods in which they first arose, but continue to characterize certain geographic and socioeconomic subpopulations."³⁸

The period of continuous decline in the consumption of dietary calories encompasses the period of neo-liberal reforms, and to this extent it becomes important to study in detail the role of important drivers of dietary change viz trade liberalization, transnational food corporations, changes in retailing and food industry marketing (Kearney, 2010) in order to have a fuller understanding of 'the puzzle' of declining dietary energy consumption of a majority of Indians.

Even as we emphasize the need to study the role of all these factors, it need be stated emphatically that the abysmal state of poverty of India's working masses is crucial to understanding the declining trend in dietary calories.

DIETARY CALORIES, POVERTY LINES AND IMPLICATIONS FOR POLICY

Neither hunger nor the immense human suffering that comes in the wake of it is new to India and yet the falling dietary energy consumption has been at the center of a highly contested debate. The debate itself has engaged those who are charged with taking care of the poor i.e. the government and the official policy establishment and those who are genuinely concerned about what happens to the poor. The later segment includes political activists, the members of the civil society and academics. But it is the anxieties of the official establishment which has fuelled the debate in the main. The reasons for this are twofold:

- One, as has already been mentioned the period of the decline in dietary energy consumption concerns the period of neoliberal economic reforms in the country. There has been a broad consensus on the desirability of these reforms between all the parties of the establishment. Thus any evidence that reflects poorly on these reforms becomes a matter of concern for the establishment.
- Secondly, poverty lines in India have always been pegged to per capita per day calorie consumption. Hence, declining calorie intake means that a greater proportion of population goes below poverty line and more the resources required being committed towards welfare subsidies for the poor. For an establishment obsessed with fiscal deficits and fiscal prudence this spells a nightmare; hence the efforts to normalize the falling calorie consumption.

Needless, to say such goals cannot be achieved through a fiat accompli as these are bound to be challenged; so an effort is made to construct a wider consensus through debate. We cannot but welcome this debate, for issues of poverty and hunger at least gain visibility in public domain rather than being taken as sundry realities. Our intent here is not to go into the debate itself but only to demonstrate its impact on welfare policy. Those interested in the detailed debate may refer to Patnaik 2007; 2010a; 2010b, Deaton and Dreze 2009, 2010 and GOI, 2009 among others.^{7, 9-12}

In poorer countries like India where high proportion of population lives in abject poverty and the poor spend a large proportion (often up to two third) of their income on food, concerns regarding poverty have been conjoint with concerns regarding nutrition, food being the most basic requirement for subsistence. Little wonder then that food and nutritional requirements have traditionally been used as an anchor for deriving poverty lines in the context of poor countries by pegging these lines to normative bench marks in terms of daily calorie intake. We have already mentioned that in India's case these bench marks were 2400 and 2100 kcal per capita per day for the rural and urban areas. Weakening the relationship between calorie intake and nutritional outcomes and thereby unpegging the poverty lines from the normative calorie norms has been central to this debate.

Deaton and Dreze stress that "average calorie intake per se is a poor indicator of the nutritional status of

the population." ⁷ Further – "Calorie requirements seem to be highly context-specific, depending on activity levels, the epidemiological environment, the composition of the population, and other factor. Indeed, average calorie intake in India is lower today than it was 20 years ago, yet the nutritional status of the population has improved.⁷ To support their submissions they present two maps of India in Figure 12 (reproduced here as figure 6) of their paper 'Nutrition in India: Facts and Interpretations.' The map on the left is of districts with varying proportions of underweight children and the one on right is of NSSO region wise per capita calorie consumption in 2004-05. Comparing the two maps they find that the "correlation between average calorie intake and, say, the nutrition status of children is negative..... child nutrition is worse in regions with higher levels of per capita calorie intake."⁷ We shall return to the maps in a little while.

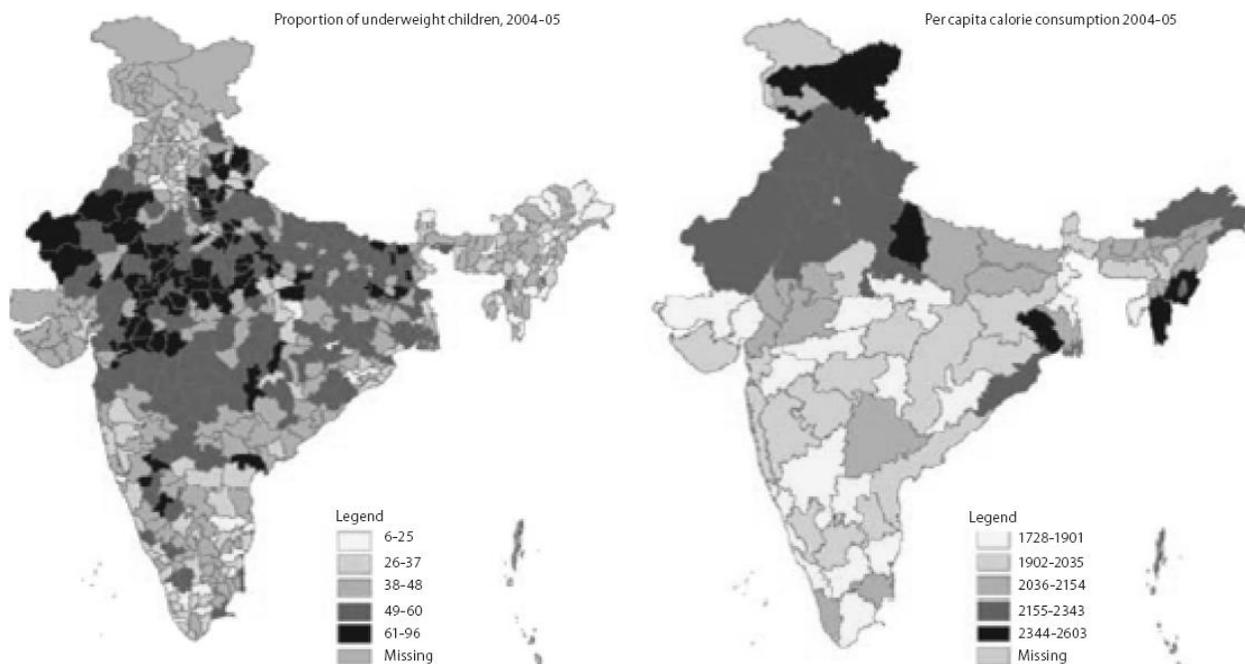


Figure 6: Comparison of districts by proportion of underweight children and per capita calorie consumption

Note: Figure 6 has been reproduced here with permission from the authors. Figure above juxtaposes region-level NSS data on calorie intake in 2004-05 with district-level child nutrition data in 2002-04 from the second round of the Reproductive and Child Health (RCH) survey, also known as District Level Household Survey (DLHS).

They have subsequently argued that - "there are, in fact, very good reasons not to treat calorie intake as an 'anchor' for setting or adjusting poverty lines. Indeed, calorie requirements are known to vary between regions, between persons, over time, and so on."⁴³ It can be no one's case that nutritional outcomes in a population can be judged by the average daily per capita calorie consumption. Indeed, there are well-defined nutritional parameters for the same.

Further, even though factors like epidemiological environment, activity levels etc. play an important role in utilization and assimilation of dietary energy intake, it is not as though this renders dietary energy intake secondary for nutritional wellbeing of the people. A more nuanced position would be that - 'adequate dietary intake is a *necessary* condition is for good nutritional outcomes; however, this by itself is not a sufficient condition to ensure good nutritional outcomes; ensuring which would also require other sufficient conditions such as good sanitary conditions, safe drinking water, availability of effective healthcare facilities, proper housing, education etc.'

Further, even optimal availability of sufficient conditions can be expected to make up for the deficiency of dietary calories only to a limited extent. Moreover, describing the 'Current Diet and Nutrition Scenario', authors of the latest NIN / ICMR (National Institute of Nutrition / Indian Council of Medical

Research) guidelines state - "The proportion of households with energy inadequacy was about 70%, while that with protein inadequacy was about 27. deficiency of dietary calories only to a limited extent. Moreover, describing the 'Current Diet and Nutrition Scenario', authors of the latest NIN / ICMR (National Institute of Nutrition / Indian Council of Medical Research) guidelines state - "The proportion of households with energy inadequacy was about 70%, while that with protein inadequacy was about 27.

Thus, in the cereal / millet based Indian diets are the primary bottleneck is energy inadequacy and not protein, as was earlier believed."⁴³ It is further stated that - "The most rational, sustainable and long term solution to the problem of malnutrition is ensuring availability, access and consumption of adequate amounts of foods."⁴³ Almost persistently high levels of food inflation since 2008 would only lend further credence to this perception.

It follows then that in the context of countries like India with high levels of poverty and hunger, consumption of normative dietary energy continues to serve as an important anchor for poverty lines, while there can be an additional case for setting similar normative standards for the 'enabling conditions' wherever possible.

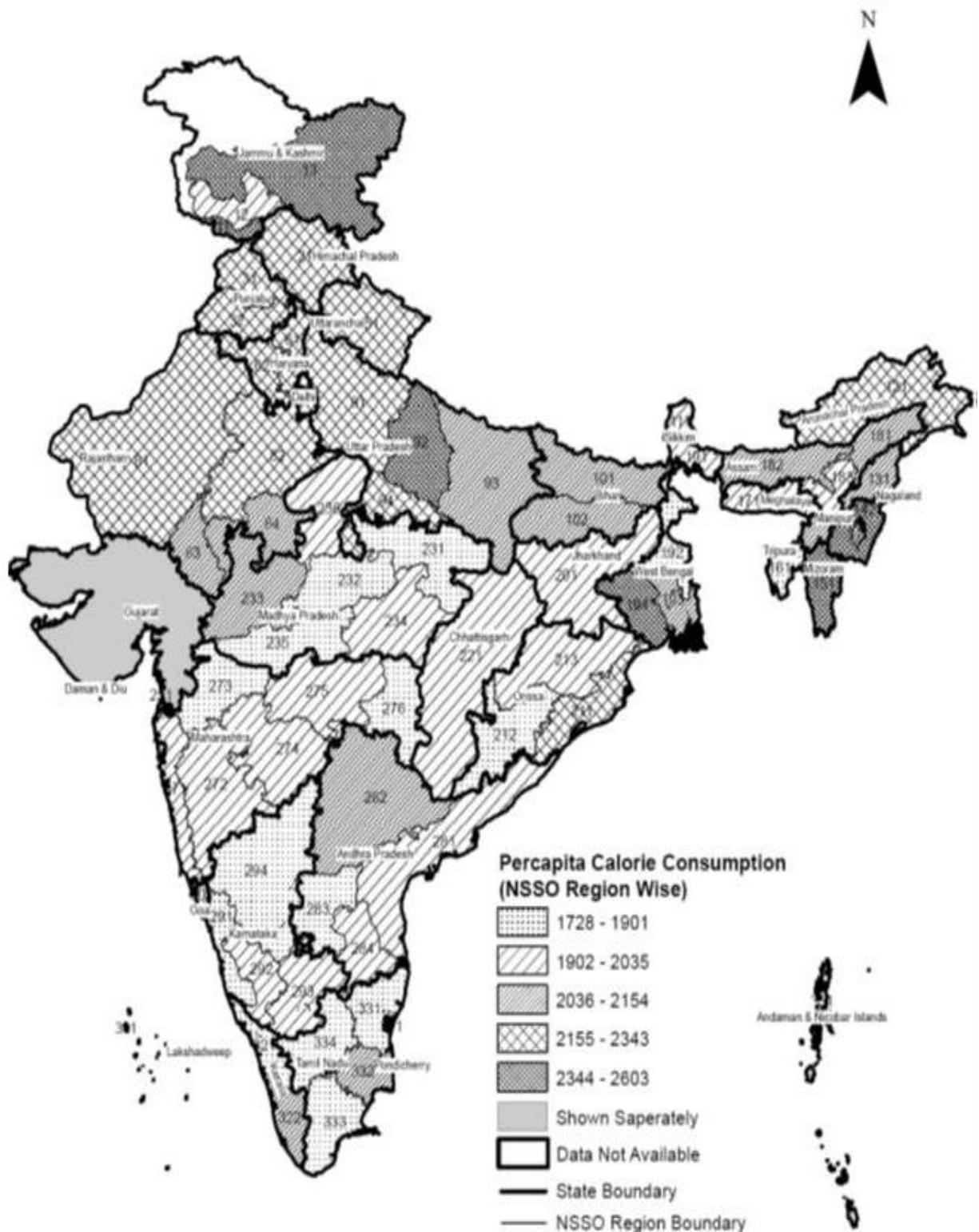
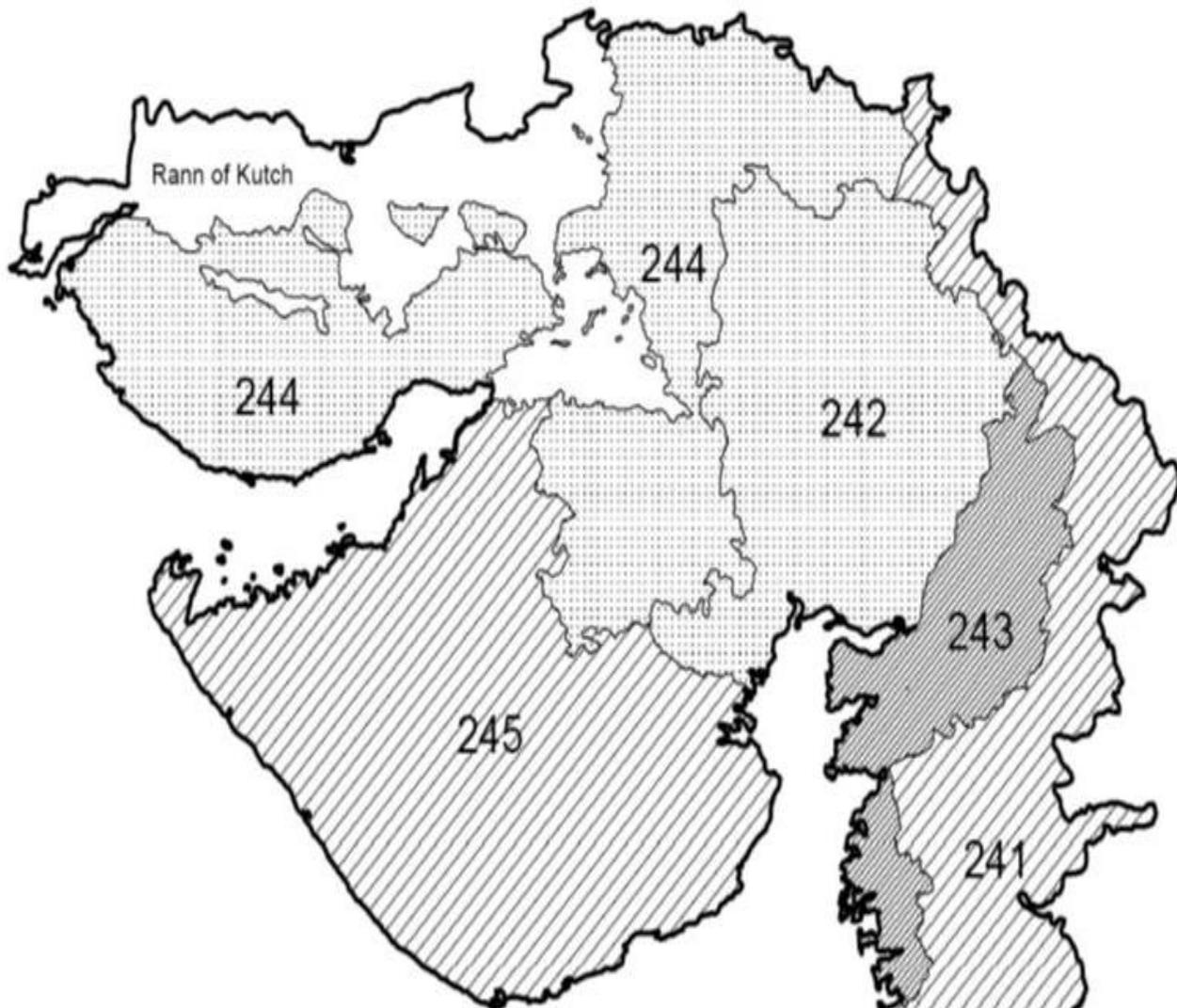


Figure 7 a: NSSO region wise distribution of per capita per day calorie consumption, all India



**Percapita Calorie Consumption
(NSSO Region Wise)**

-  1728 - 1901
-  1902 - 2035
-  2036 - 2154
-  2155 - 2343
-  2344 - 2603

 State Boundary

 NSSO Region Boundary

Figure 8a: NSSO region wise distribution of per capita per day calorie consumption, Gujarat

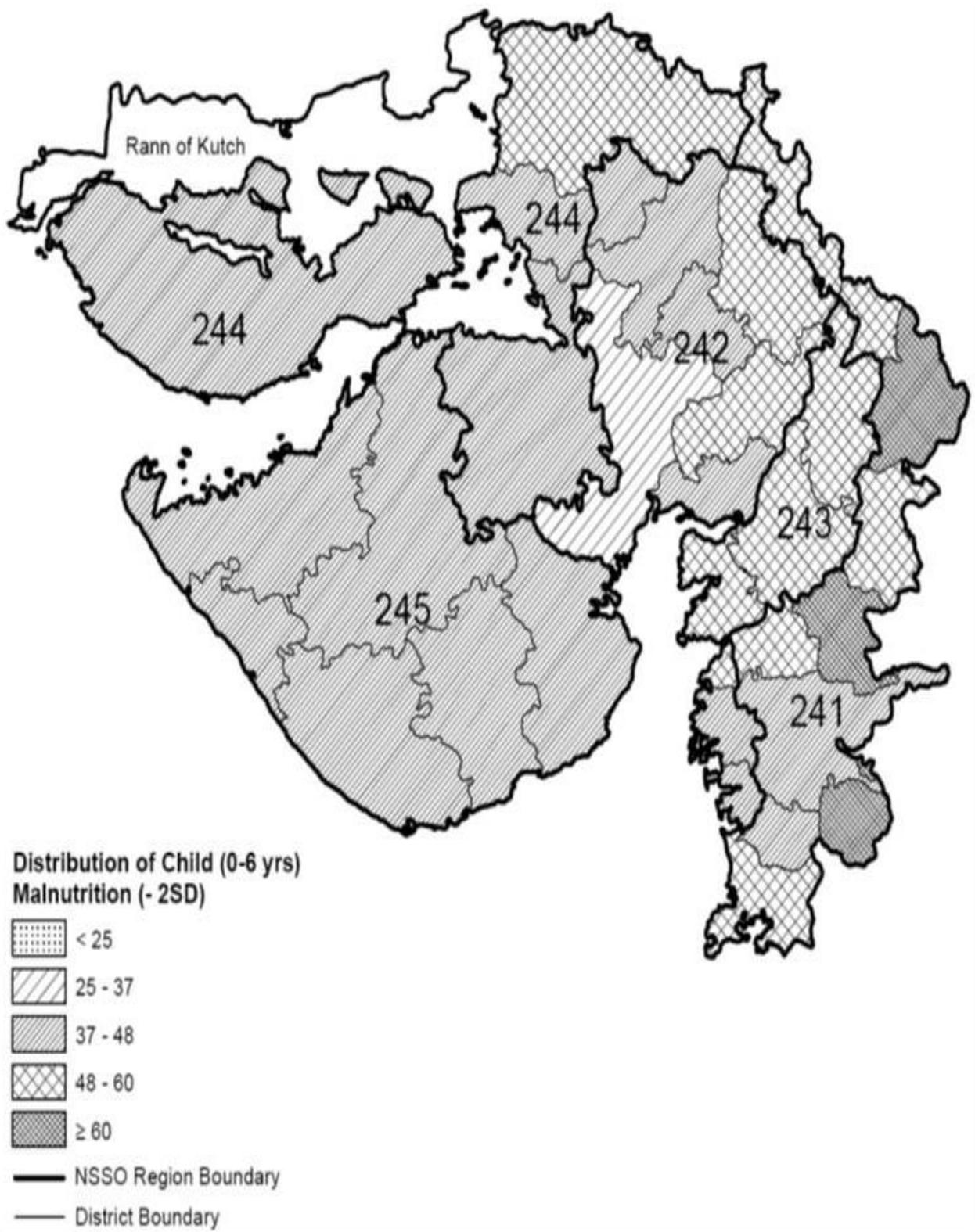


Figure 8 b: District wise distribution of child malnutrition, Gujarat

Notes for Figures 7a to 8b: Figure 7a presents per capita per day calorie consumption across NSSO regions in exactly the same way as in the right hand side map in Figure 6. Each NSSO region (except those in Gujarat) conforms to a group of districts, hence in Figure 7b we have mapped the weighted average of child malnutrition of all the districts comprising a NSSO region such that there is easy comparability between NSSO region wise distribution of calorie consumption and child malnutrition. It need be noted that for some 20 districts, most of them in the North Eastern states, the district wise child malnutrition data was not available. Data for such districts has been substituted with the state average in order to calculate the weighted average child malnutrition for respective NSSO region.

The maps of Gujarat have been shown separately because in Gujarat boundaries of some of the NSSO regions conform to sub-district boundaries; however, the data of child malnutrition is available only for the districts. Hence, prevalence of child malnutrition for Gujarat has been mapped district wise.

In all the maps the break points for different classes of calorie consumption and child malnutrition are the same as respective break points used in Figure 12 of Deaton and Dreze, 2009.

We come back to the maps presented above in Figure 6. For the purpose of a clearer comparison we have presented the same data with slight variation in

Figures 7a, 7b, 8a and 8b. While Figure 7a presents the classification of NSSO regions by calorie consumption, Figure 7b presents the classification of NSSO regions by prevalence of child malnutrition. Both the maps (Figures 7a and 7b) have been divided into five classes of calorie consumption and child malnutrition respectively beginning from the lowest to the highest. Maps in Figures 8a and 8b separately present respective data for Gujarat for reasons explained in the notes to the figures.

Table 14 gives the expected comparison between per capita calorie consumption classes and the malnutrition prevalence classes for respective maps in Figures 7 and 8.

Table 14: Expected correspondence between per capita calorie consumption and prevalence of child malnutrition classes in Figures 7 and 8

Per capita calorie consumption class (kcal)	Expected corresponding child malnutrition class (%)
1728-1901	≥ 60
1902-2035	48-60
2036-2154	37-48
2155-2343	25-37
2344-2603	< 25

A total of 73 NSSO regions there is prefect match between per capita calorie consumption classes and prevalence of child malnutrition classes for 12 NSSO regions while in 31 there is a mismatch of just one

class and in 30 NSSO regions there is a gross mismatch. Such a correspondence between per capita calorie consumption and prevalence of child malnutrition would hardly call for the conclusion that

child malnutrition is negatively correlated with calorie consumption. The correspondence between the two could have been closer to the expected if instead of per capita calorie consumption we had the figures for per capita calorie consumption for the age group of 0 to 6 years. A similar mixed picture is visible in case of Gujarat as well. This however is not to ignore the fact that there are important regions of gross mismatch between the two parameters. Our limited contention here is that on the overall balance, per capita dietary energy consumption does serve as an important indicator of wellbeing of the poor and thereby its continued relevance as an anchor for poverty lines.

Tendulkar Committee recommendations – a regressive turnaround for welfare policy

Given the fact that its official poverty estimates had come under severe criticism, the Planning Commission set up an expert group under the chairmanship of Professor Suresh Tendulkar to review the methodology for estimation of poverty and suggest a new poverty line and estimates.¹² Even though the Tendulkar Committee formally recognized the multi-dimensional nature of poverty, but for all practical purposes it did away with the concern for the falling calorie consumption and thereby the increase in the headcount of poor in India.

The Committee stated that:

“a conscious decision was taken by the Expert Group to move away from anchoring the PL (poverty line) in calorie norm as in the past because – (a) there is overwhelming evidence of downward shift in calorie Engel curves over time and (b) calorie consumption intake calculated by converting the consumed quantities in the last 30 days as collected by NSS has not been found to be well correlated either over time or across States with the nutritional outcomes observed in other specialized nutrition outcome surveys such as the National Family Health Surveys (NFHS).

They further stated – “although those near the poverty line in urban areas continue to afford the original calorie norm of 2100 per capita per day, their

actual observed calorie intake from 61st Round of NSS of is 1776 calories per capita. This actual intake is very close to the revised calorie intake norm of 1770 per capita per day currently recommended for India by the Food and Agriculture Organization (FAO) (emphasis ours).¹ Actual observed calorie intake of those near the new poverty line in rural areas (1999 calories per capita) is higher than the FAO norm.”¹²

The Committee’s contention also was:

“The new poverty lines have been arrived at after assessing the adequacy of private household expenditure on education and health, the earlier calorie-anchored poverty lines did not explicitly account for these. The proposed poverty lines are in that sense broader in scope” GOI, 2009.

So in one stroke two objectives were achieved – (a) the calorie consumption at poverty line was rationalized at a level much below the earlier normative norms and (b) the claim that the new poverty lines provided for adequacy of household expenditure on education and health. The reality however is better reflected in Table 15

Table 15: Comparison of poverty lines (Rural and Urban) at normative calorie consumption and those prescribed by the Tendulkar Committee's methodology

Year	Rural				Urban			
	Normative calories	MPCE at normative calories (Rs/mt)	OPL-T	Calories affordable at OPL-T	Normative calories	MPCE at normative calories (Rs/mt)	OPL-T	Calories affordable at OPL-T
2004-05	2400	814.73 (27)	446.68 (14.9)	1962	2100	997 (33.23)	578.8 (19.29)	1833
2009-10	2400	1580 (52.7)	672.8 (22.4)	1870	2100	2120 (70.7)	859.6 (28.65)	1720

Notes: MPCE = Monthly per capita expenditure, OPL-T = Official Poverty Line (Tendulkar). The figures in parenthesis are per day MPCE/PL. The figures for 2004-05 were taken / derived from Tables – Sector wise MPCE classes, Table 3R and Table 3U in NSSO, 2007. Figures for 2009-10 were obtained from Patnaik, 2013.⁴¹

¹ The FAO norm is meant to define "total energy expenditure corresponding to the minimum acceptable limit of the range of body-weight for attained-height and the light physical activity norm".⁴⁴ Further - "the FAO indicator (norm) is designed to capture a clearly – and narrowly – defined concept of undernourishment, namely a state of energy deprivation lasting over a year"⁴⁵

One would expect that poverty lines providing for expenditure on education and health along with adequate dietary energy consumption would be far more liberal than the ones which only followed normative calorie norms without 'explicitly accounting' for expenditure on education and health. In this respect one has to admit that the Tendulkar Committee's poverty lines prove to be far too parsimonious and therein lays their significance for the policy establishment. Little wonder then that there was a huge public outcry when the Planning Commission filed an affidavit in the Supreme Court of India testifying to the new poverty lines.⁴³

CONCLUSION

Adequacy of dietary consumption lies at the very core of human subsistence, especially in countries like India with huge burden of poverty and hunger. In the given context the declining dietary energy consumption across different expenditure classes over the last two decades is a socially, economically and politically sensitive issue that has attracted much attention among policy circles and the academia. The

analysis of these trends presented above only exposes the spurious claims presented by the policy established to rationalize the observed trends but strongly points to the deepening crisis regarding food security of the people especially the working masses.

The dietary energy insufficiency is also the biggest challenge facing the country on the malnutrition front. Under the circumstances suggestions to unpeg the poverty lines from the normative calorie anchor spells further disaster for welfare policy especially as alternative normative standards remain vague and little understood. The new official poverty lines derived as per Tendulkar Committee guidelines are but one example of this disaster. The challenge however is to strengthen the ways and means of making the ruling elite to take cognizance of the rising suffering of the people. We hope that our attempt to unravel the myths directed at camouflaging this suffering shall prove to be an effort in the right direction.

REFERENCES

1. Patnaik, Utsa (2009): "Origins of the Food Crisis in India and Developing Countries", Monthly Review, Vol 61(3), Viewed 13 May 2010 from <http://monthlyreview.org/090727patnaik.php>.
2. Pangariya A (2013, May 4): 'Does India Really Suffer from Worse Child Malnutrition Than Sub-Saharan Africa?' Economic and Political Weekly, Vol. 48 (18): 98-111.
3. Patnaik, Utsa (2003): "Food Stocks and Hunger: The Causes of Agrarian Distress", Social Scientist, Vol. 31(7/8): 15-41.
4. ibid. p 6-7
5. Suryanarayana, M H (1995): "Growth, Poverty and Levels of Living: Hypotheses, Methods and Policies", Journal of Indian School of Political Economy, Vol. (7) 2: 203-255.
6. WHO (2010): "Global and regional food consumption patterns and trends, WHO", Viewed 23 June 2010 from http://www.who.int/nutrition/topics/3_foodconsumption/en/print.html.
7. Deaton, A and Jean Dre`ze (2009): "Nutrition in India: Facts and Interpretation", Economic & Political Weekly, Vol. 44 (7):42 – 65.
8. Suryanarayana M H (2009): "Nutritional Norms for Poverty: Issues and Implications", Concept paper prepared for the Expert Group to Review the Methodology for Estimation of Poverty. Indira Gandhi Institute of Development Research, Mumbai, Viewed 28 May 2010 from <http://planningcommission.nic.in/reports/genrep/surya.pdf>
9. Patnaik, Utsa (2007): "Neoliberalism and rural poverty in India", EPW, Vol. 42 (30): 3132-3150.
10. Patnaik, U (2010a): "Trends in Urban Poverty under economic reforms: 1993-94 to 2004-05", EPW, Vol. 45 (4): 42-53.
11. Patnaik U (2010b): 'A Critical Look at Some Propositions on Consumption and Poverty.' EPW; Vol. 45 (6): 74-80.
12. Government of India (2009): 'Report of the Expert Group to Review the Methodology for Estimation of Poverty'. Planning Commission, November
13. Ministry of Rural Development (MRD) (2009): "Report of the Expert Group to advise the Ministry of Rural Development on methodology for conducting the Below Poverty Line (BPL) Census for the 11th Five Year Plan."
14. NCEUS (National Commission for Enterprises on Unorganized Sector) (2007): "Report on Conditions of Work and Promotion of Livelihoods in the Unorganized Sector", New Delhi, Viewed 6 June 2010 from http://nceus.gov.in/Condition_of_workers_sep_2007.pdf.
15. FAO (2012): 'State of Food Insecurity' (SOFI) in the World, FAO, IFAD, WFP, Rome.
16. Zimmerman Carle C, 1932: 'Ernst Engel's Law of Expenditures for Food', The Quarterly Journal of Economics, Vol. 47 (1): pp. 78-101.
17. Bennett M.K., 1954: The World's food: A study of the inter-relations of World populations, national diets and food potentials, Harper and Brothers, New York.
18. Deaton A and Dreze J (2010): 'Nutrition, Poverty and Calorie Fundamentalism: Response to Utsa Patnaik.' EPW, Vol 45 (14): 78-80.
19. Meenakshi JV, 2000: 'Food Consumption Trends in India; A Regional Analysis, In 'Public Support for Food Security; The Public Distribution System in India', N. Krishnaji & T. N. Krishnan (eds.), Sage Publications, New Delhi, 2000.
20. NSSO 50th Round, 1996: 'Key Results on Household Consumer Expenditure, 1993-94, Report No. 401, Ministry of Statistics and Programme Implementation, Government of India.
21. NSSO 53rd Round, 1998: 'Household Consumer Expenditure and Employment Situation in India, 1997', Report No. 442, Ministry of Statistics and Programme Implementation, Government of India.
22. NSSO 56th Round, 2002: 'Household Consumer Expenditure and Employment - Unemployment Situation in India, 2000 – 2001', Report No. 476, Ministry of Statistics and Programme Implementation, Government of India.
23. NSSO 59th Round, 2005: Household Consumer Expenditure and Employment-Unemployment

- Situation in India, 2003', Report No. 490, Ministry of Statistics and Programme Implementation, Government of India.
24. NSSO 61st Round, 2006: 'Level and Pattern of Consumer Expenditure, 2004-05', Report No. 508, Ministry of Statistics and Programme Implementation, Government of India.
 25. National Sample NSSO 62nd Round, 2008: 'Household Consumer Expenditure in India, 2005-06, Report No.523, Ministry of Statistics and Programme Implementation, Government of India.
 26. NSSO 64th Round, 2010: 'Household Consumer Expenditure in India, 2007-08', Report No. 530, Ministry of Statistics and Programme Implementation, Government of India.
 27. NSSO 66th Round: 'Key Indicators of Household Consumer Expenditure in India, 2009-10', NSS KI (66/1.0).
 28. (NSSO (2007): 'NSS Report No.513: Nutritional intake in India, 2004-2005', NSS 61st Round, July 2004- June 2005, Ministry of Statistics & Programme Implementation, Government of India.
 29. Regmi Anita, M. S. Deepak, James L. Seale, Jason Bernstein (2001): 'Cross-country analysis of food consumption patterns', In Changing structure of global food consumption and trade, United States Department of Agriculture Economic Research Service.
 30. George S (1982): 'Food for Beginners', Orient Longman Private Ltd., New Delhi, 2007, p 166.
 31. United States Department of Agriculture, 2011: 'Budget shares for broad aggregates and conditional budget shares for food categories,' In "International Food Consumption Patterns', Available from <http://www.ers.usda.gov/Data/InternationalFoodDemand/> on 12th Sept. 2011.
 32. National Institute of Nutrition, 2011: Dietary Guidelines for Indians; A Manual, Hyderabad.
 33. Sengupta A (2008): 'India's Common People: Who Are They, How Many Are They and How Do They Live?' Economic and Political Weekly, Vol. 43 (11): 49-63.
 34. Morris S S, Robert E Black, Lana Tomaskovic (2003): 'Predicting the distribution of under-five deaths by cause in countries without adequate vital registration systems.' International Journal of Epidemiology, 32:1041-1051.
 35. Engles Fredrick (1845): 'Conditions of the working class in England 1844', Published in 1945, Leipzig. Available from http://www.marxists.org/archive/marx/works/download/Engles_Condition_of_the_Working_Class_in_England.pdf on 25th Dec 2012.
 36. Sethi A (2011): 'Gone in 50 seconds'. The Hindu, 6th November, New Delhi.
 37. Popkin B M (2001): 'The Nutrition and Obesity in the Developing World'. Journal of Nutrition, 131: 871S-873S.
 38. Popkin B M and P G Larsen (2004): 'The Nutrition Transition: worldwide obesity dynamics and their determinants.' International Journal of Obesity.
 39. National Institute of Nutrition, 2011: Dietary Guidelines for Indians; A Manual, Hyderabad.
 40. Sengupta A (2008): 'India's Common People: Who Are They, How Many Are They and How Do They Live?' Economic and Political Weekly, Vol. 43 (11): 49-63.
 41. Morris S S, Robert E Black, Lana Tomaskovic (2003): 'Predicting the distribution of under-five deaths by cause in countries without adequate vital registration systems.' International Journal of Epidemiology, 32:1041-1051.
 42. Engles Fredrick (1845): 'Conditions of the working class in England 1844', Published in 1945, Leipzig. Available from http://www.marxists.org/archive/marx/works/download/Engles_Condition_of_the_Working_Class_in_England.pdf on 25th Dec 2012.
 43. Sethi A (2011): 'Gone in 50 seconds'. The Hindu, 6th November, New Delhi.
 44. Popkin B M (2001): 'The Nutrition and Obesity in the Developing World'. Journal of Nutrition, 131: 871S-873S.
 45. Popkin B M and P G Larsen (2004): 'The Nutrition Transition: worldwide obesity dynamics and their determinants.' International Journal of Obesity.