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Changing Food Consumption Pattern in Rural India: Implication on Food and Nutrition Security

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I

FOOD AND NUTRITION SECURITY: ISSUES IN PERSPECTIVE

India faced two major problems at the time of Independence. The first one was the threat of famine and the consequent acute starvation due to low agricultural production and the lack of an appropriate food distribution system. The other was chronic energy deficiency due to (a) low dietary intake because of poverty and low purchasing power; (b) high prevalence of infection because of poor access to safe-drinking water, sanitation and health care; and (c) poor utilisation of available facilities due to low literacy and lack of awareness. The country adopted multi-sectoral, multipronged strategy to combat these problems and to improve the nutritional status of the population (Government of India, 2002).

The achievement of self-sufficiency in macro level was accorded high priority in the initial years of plan process. India's rapid population growth at that time was posed to threat of national food security, which had reached a dangerous proportion in the mid-1960s, paving the way for introduction of 'Green Revolution' in the late sixties. The food availability and price stability had been considered as good measures of food security till 1970. Concerted effort with seed-fertiliser technology had led to growth of foodgrain production that exceeded population growth in the subsequent decades. The country has moved from chronic shortages to an era of surplus and export in most food items in recent years. Although physical access to food has been achieved, economic access at the micro level lagged behind indicating a distorting trend in the food and nutritional security front.

As per the availability of current statistics, there appears a confusing picture of India's progress on food and nutrition security. Both per capita foodgrain consumption and total calorie intake have declined in recent years among all levels of the population. At the same time, grain surpluses have reached peak levels and real per capita expenditure on food is rising among all income groups. The factors

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contributing to this trend are numerous and complex, however, it can be primarily attributed to: (a) reduction in calorie requirement due to a more sedentary lifestyle among the rural masses, and (b) diversification of the Indian diet to include a larger intake of fruits, vegetables, dairy products, sugar, oil and pulses, eggs, fish and meat products, thereby reducing the required intake of calories from cereals (Ray, 2005).

Food security necessitates not only the provision of sufficient food to meet the market demand, but also should create a condition for acquiring sufficient nutritious food for healthy life. In this context, mention may be made to the distinction between food and nutrition security in totality (Box 1).

BOX 1. FOOD SECURITY VIS-A-VIS NUTRITION SECURITY

It is important to distinguish between food security and nutrition security, two quite different terms often used interchangeably in the literature. Food security, an important input for improved nutrition outcomes, is concerned with physical and economic access to food of sufficient quality and quantity in a socially and culturally acceptable manner. Nutrition security is an outcome of good health, a healthy environment, and good caring practices in addition to household-level food security. For example, a mother may have reliable access to the components of a healthy diet, but because of poor health or improper care, ignorance, gender, or personal preferences, she may not be able to or may choose not to use the food in a nutritionally sound manner, thereby becoming nutritionally insecure. Nutrition security is achieved for a household when secure access to food is coupled with a sanitary environment, adequate health services, and knowledgeable care to ensure a healthy life for all household members. A family (or country) may be food secure, yet have many individuals who are nutritionally insecure. Food security is therefore often a necessary but not a sufficient condition for nutrition security (Source: World Bank, 2006).

According to Food and Agriculture Organization (FAO), around 225 million of the Indian population remain chronically undernourished. Similarly, the National Nutrition Monitoring Bureau estimated that, about half of the rural children aged five years suffered from malnutrition and 40 per cent of the adults suffered from chronic deficiency in 2000-01. This is due to the fact that a substantial proportion of the population are too poor to buy enough food and also exposed to disease caused by poor sanitation, resulted in poor conversion of food into energy. The most vulnerable are children, women and the elderly, especially among the lower income groups in rural areas. While the number of children suffering from severe malnutrition declined significantly in the 1990s, the prevalence of mild and moderate under-nutrition especially among those in the lower 30 per cent income group is still high. The nutritional status of tribals is still worse. The National Family Health Survey (1998-99) had these findings “47 per cent of children are malnourished and 74 per cent are anaemic. 36 per cent of ever-married women aged 15-49 have chronic energy deficiency. 54 per cent of women aged 15-49 in rural areas have no education, about half the pregnant women suffer from iron deficiency. 71 per cent of rural households do not have any toilet facility; 19 per cent villages do not have any health facility and 51 per cent villages do not have any drainage system either underground or open”. According to Sundaram and Tendulkar (2003a,b) the headcount ratio of the percentage of population below the poverty line among STs was 48.81 per cent in 1993-94 and 48.02 per cent in 2000-01 for the rural sector giving rise to a poverty

gap of almost 20 per cent with the non-SC/ST population. Farrington and Saxena (2003) find the central tribal belt in India to be among the poorest in rural India.

II

POVERTY AND FOOD SECURITY – THE RELATIONSHIP

The thought on poverty reduction via calorie intake was originally provoked in India by Professor V.M. Dandekar and N. Rath in 1971. The effort continued in the ensuing years for poverty reduction accompanied by various targeted/non-targetted programmes by successive Central and the State Governments. There has been a shift in policy focus towards household level food security, whereas per capita/consumer unit food energy intake is taken as a measure of food security. It has become common practice to estimate the number of food insecure households by comparing their calorie intake with the required norms. The government has been implementing a wide range of nutrition intervention programmes for achieving food security at the household and individual levels. The public distribution system (PDS) supplies food items, such as, foodgrains and sugar at administered prices through fair price shops. There has been a range of food-for-work and other wage employment programmes, where people are paid in part or full in foodgrains for working in public works. Another approach adopted by the Government is to target women and children directly; this includes the mid-day meal programme for school-going children and supplementary nutrition programme for children and women.

One of the main reasons for the prevalence of food insecurity in India is the demand deflation that has been brought about by falling agrarian incomes over the past decade. Our economy traditionally has had a significant amount of private ownership of assets by a small section of the economic elite. The high disparity in wealth between this small elite class and considerable–sized poorer section of the society has always given our economy a dualist nature, where growth-led policies adopted by the government have co-existed with support-led measures. However, in recent years a reduction in the state intervention (PDS, food-for-work, direct aid programmes) coupled with a rapid opening up of the agricultural sector to foreign competition from vastly subsidised foodgrains from developed countries (which leads to a change in the composition of output and a lowering of agricultural prices) had led to a rise in rural poverty and a lowering of food security (Patnaik 2001, 2003, 2004). It is also true that today in India the distribution of income within the population is more skewed than it was a decade ago. According to Sen and Himanshu (2004), the bottom 80 per cent of the rural population who now number almost 600 million, have seen declining per capita consumption since 1989-90. This is in stark contrast to the top 20 per cent of the population whose per capita consumption (and thus income) has gone up by about 40 per cent in the 1990s. Thus the averages of the parameters of wealth ownership may look impressive, but they obscure a serious problem of the rising numbers that go hungry everyday.

In order to mitigate the regional inequalities of foodgrain production, to provide subsistence for the poorest and to stabilise agricultural prices, the Food Corporation of India (FCI) started procurement and distribution operations in 1964. However, the universal coverage of the PDS which gave way to the targeted PDS (TPDS) in 1997 has been a complete failure both in terms of the high errors of exclusion (due to flaws in the identification of above poverty line and below poverty line households) it has propagated and a significant level of inefficiency and corruption that has characterised its operations (see Box 2). A third factor that affects the level of food security in India is the supply-side cuts that may be brought about by famines or earthquakes.

BOX 2: PDS: ACRONYM FOR PATHETIC DISTRIBUTION SYSTEM

The targeted Public Distribution System (TPDS), formerly known as PDS, categorises the economically weaker sections based on their income. In Maharashtra, the system has colour-coded rationing card system with Yellow, Saffron and White cards. The yellow card distributed to (a) Antyodaya families: poorest from among Below Poverty Line (BPL) families, and (b) BPL families having their income equal to or less than Rs. 15,000 per annum. These families have monthly entitlement of 35 kg of foodgrains (wheat @Rs. 2 and rice @ Rs. 3 per kg) and 500 gram sugar per person. While saffron ration cards distributed to families having annual income between Rs. 15,000 and 1 lakh (their entitlement consists of only foodgrains of 35 kg) white card bearers are having an annual family income of more than Rs. 1 lakh and excluded from the supply of PDS foodgrains and other commodities. But the unscrupulous ration shop owners simply siphon off the cheap foodgrain to sell in the black market. While in tribal belts, failure of the *Aanganwadi* (meant to feed poor children) and Employment Guarantee Scheme (EGS) are the major factors, in Maharashtra, as a whole, glaring lacunae in the PDS had led to malnutrition. Basically, it is not a health problem, but a socio-economic problem.

The existing literature on the relation between food energy intake and nutritional status is problematic. This is because food energy intake is an inadequate measure of nutritional status. Various factors like non-nutrient food attributes, privately and publicly provided inputs and health status of the individual also affect the nutritional status (Martorell and Ho, 1984). Various pioneering studies on malnutrition explained that the conversion efficacy of food into energy of an individual depends on his/her access to safe drinking water, health care and environmental hygiene. The advances in the control of communicable diseases and improvement in health care significantly improved the efficiency of food energy conservation by reducing food wastages caused by diarrhoea and dysentery (Seckler, 1982). At present, a general consensus has emerged that the assessment of malnutrition should be based on nutritional outcome. Measures such as anthropometric measures, clinical signs of malnutrition, biochemical indicators, and physical activity are the suggested indicators of malnutrition. Among these, anthropometric measures are the preferred ones since the body measurements are highly sensitive to even minor levels of malnutrition whereas biochemical and clinical indicators are useful only when the level of malnutrition is extreme.

After the liberalisation began in 1991, though much attention has been paid to the reduction in head count ratio, less priority accorded to the magnitude and pattern of food consumption. Ray and Lancaster (2005) have recently shown the link that had

weakened to the extent that the official poverty line in India today is quite out of step with that based on the household's minimum calorie requirements. This necessitates an analysis on the magnitude and trend in food consumption, especially cereals, over the reforms period in India in view of their strong implications for food and nutrition security. This study provides evidence, at both state and all-India levels, on the magnitude and trends in food consumption and nutritional status based on anthropometric measures. The other related issues that have been examined are; (a) what are the trends in food energy intake and malnutrition?, (b) How far does income growth lead to reduction of malnutrition? (c) Is there any need for direct nutrition intervention programmes? This is a topic of some policy importance in the Indian context in view of the recent debate on the effectiveness of the PDS as an anti-hunger strategy, and the efforts to target the PDS exclusively at households 'below the poverty line' to provide sufficient nutrition.

III

FOOD CONSUMPTION PATTERN

It has long been known that malnutrition undermines economic growth and perpetuates poverty. Yet the international community and most governments in the developing countries have failed to tackle malnutrition over the past decades, even though well-tested approaches for doing so exist. The consequences of this failure to act are now evident in the world's inadequate progress toward the Millennium Development Goals (MDGs) and toward poverty reduction more generally. Three reasons for intervening to reduce malnutrition are: (1) high economic returns; (2) high impact on economic growth, and (3) poverty reduction. The Copenhagen Consensus concluded that nutrition interventions generate returns among the highest of 17 potential development investments (Table 1).

TABLE 1. THE COPENHAGEN CONSENSUS RANKS THE PROVISION OF MICRONUTRIENTS AS A TOP INVESTMENT

Rating (1)		Challenge (2)	Opportunity (3)
Very good	1.	Diseases	Controlling HIV/AIDS
	2.	Malnutrition and hunger	Providing micronutrients
	3.	Subsidies and trade	Liberalising trade
	4.	Diseases	Controlling malaria
Good	5.	Malnutrition and hunger	Developing new agricultural technologies
	6.	Sanitation and water	Developing small-scale water technologies
	7.	Sanitation and water	Implementing community-managed systems
	8.	Sanitation and water	Conducting research on water in agriculture
	9.	Government	Lowering costs of new business
Fair	10.	Migration	Lowering barriers to migration
	11.	Malnutrition and hunger	Improving infant and child malnutrition
	12.	Diseases	Scaling up basic health services
	13.	Malnutrition and hunger	Reducing the prevalence of low birthweight
Poor	14-17.	Climate/migration	Various

Indian consumers meet their demand for cereals from purchases in the open market and from supply through the public distribution system. About 91 per cent of the demand is met from the open market and the remaining 9 per cent from PDS supply. The data used in this analysis are collated from the 43rd (July, 1987 – June 1988), 55th (July, 1999 – June, 2000) and 57th (July, 2001 – June, 2002) Rounds of the National Sample Survey (NSS). The 55th Round data provide information, at the household level, on calorie intake. These rounds revealed that cereals consumption is generally much higher in the rural areas than in the urban areas, mainly due to the higher consumption of rice by the rural households. The reverse is the case for meat/ fish/eggs and fruits/vegetables. There has been a marked decline in the consumption of all the cereal items over the period 1987-88 through 2001-02 in nearly all the states and in both rural and urban areas, with the reduction being particularly sharp in the case of smaller cereal items, e.g., barley, maize and cereal substitutes such as tapioca. There has been a switch in preferences towards non-cereal items such as meat/fish and fruits/vegetables and, once again, this picture holds generally (Table 2 and Table 3 adapted from Ray, 2005).

It is interesting to note that the rural food share in the total expenditure in 2002 fell below that prevailing in the urban areas in 1988. The phenomenon interpreted by C.H. Hanumantha Rao (2005) as evidence of urbanisation and increased household affluence. Some analysts have also argued that such changes have been involuntary reflecting the loss in access to common property resources by the rural poor. Whatever the underlying factors causing these changes, these have led to significant decline in calorie consumption due to the switch from calorie intensive cereal items to non-cereals which are more expensive sources of calories.

The policy measures adopted since the beginning of economic reforms in 1991 have created a situation that is unsustainable for fiscal resources and is at the same time having an adverse impact on the demand for cereals which are the basic staple for India's vast population. Large quantities of foodgrains have accumulated in public stocks, amounting to more than one-fourth of the annual production of rice and wheat in the country, even as every fifth Indian is reported to be underfed according to the minimum calorific requirement for a healthy and active life (*World Development Indicators*, World Bank). The accumulation of these stocks coincides with an increase in the incidence of under-nutrition, as both calorie intake and calorie deprivation increased in the country during the same period (Meenakshi and Vishwanathan, 2003).

A partial explanation for the switch in food spending from cereals to non-cereal items, especially, meat, fish and eggs can be stretched to the price differentials – cereals and pulses registering large increases and oils, meat, fish and eggs recording smaller unit value inflation. The above average increases in the unit values of the cereal items, partly, reflect the shift in household purchases from inferior to superior quality cereals. However, they also reflect the artificially high levels at which the

TABLE 2. PER CAPITA FOOD CONSUMPTION IN RURAL AREAS

(kg/30 days)

State	Food Items											
	Rice		Wheat		Other Cereals		Pulses		Dairy		Edible Oils	
	1988	2002	1988	2002	1988	2002	1988	2002	1988	2002	1988	2002
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Andhra Pradesh	11.8	11.2	0.1	0.2	2.3	0.9	0.8	0.7	2.5	3.7	0.4	0.5
Assam	13.7	12.7	0.9	0.7	0.0	0.0	0.8	0.7	1.5	1.7	0.3	0.5
Bihar	9.1	7.9	5.6	6.1	1.1	0.5	1.1	0.7	1.7	2.4	0.3	0.4
Gujarat	2.0	2.1	4.8	4.1	5.6	3.5	1.0	0.9	4.7	6.1	0.7	1.0
Haryana	0.8	0.7	13.5	8.8	0.5	0.3	0.9	0.6	12.6	12.8	0.3	0.4
Himachal Pradesh	4.3	4.8	7.3	5.9	4.5	1.9	1.6	1.4	8.5	8.9	0.6	0.7
Karnataka	5.3	5.7	0.8	1.1	7.9	4.5	1.0	0.9	2.9	3.3	0.3	0.5
Kerala	9.9	8.6	0.6	0.9	2.0	1.0	0.5	0.5	2.4	3.2	0.3	0.5
Madhya Pradesh	6.9	2.9	5.9	6.8	2.9	1.7	1.3	0.9	2.4	3.6	0.3	0.5
Maharashtra	3.0	3.6	2.4	3.0	7.7	4.5	1.2	1.1	2.5	2.8	0.5	0.7
Orissa	14.7	13.3	0.6	0.4	0.9	0.5	0.5	0.5	0.8	0.6	0.2	0.3
Punjab	0.8	0.9	11.2	9.2	0.4	0.3	1.1	0.8	13.6	11.8	0.5	0.7
Rajasthan	0.2	0.2	12.5	8.2	4.4	4.4	0.7	0.6	7.2	10.7	0.4	0.5
Tamil Nadu	10.1	10.0	0.2	0.3	2.5	0.4	0.8	0.8	1.6	2.1	0.3	0.5
Uttar Pradesh	3.9	3.8	10.7	8.4	1.0	0.4	1.3	0.9	4.5	4.4	0.4	0.5
West Bengal	13.6	12.0	1.5	1.1	0.0	0.0	0.5	0.5	1.4	1.8	0.3	0.5

State	Food Items											
	Meat/Fish/Eggs		Vegetables/Fruits		Sugar/Spices		Processed Food		Beverages		Total	
	1988	2002	1988	2002	1988	2002	1988	2002	1988	2002	1988	2002
(1)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)
Andhra Pradesh	1.7	2.3	6.2	9.0	1.4	1.3	1.1	2.1	2.3	8.0	14.3	12.3
Assam	1.9	2.8	10.2	13.0	1.2	1.1	0.7	1.1	2.8	3.2	14.5	13.3
Bihar	0.5	0.7	6.7	9.7	1.0	0.9	0.3	0.8	0.9	3.2	15.8	14.5
Gujarat	0.3	0.4	6.2	9.4	1.9	1.8	0.3	1.3	1.4	2.5	12.4	9.7
Haryana	0.3	0.1	7.0	10.7	2.5	1.9	0.3	3.0	2.9	4.2	14.8	9.8
Himachal Pradesh	0.6	0.8	6.1	8.8	1.9	1.8	0.2	1.7	2.5	4.6	16.1	12.5
Karnataka	0.9	1.8	7.3	10.1	1.8	1.5	0.8	1.2	4.1	7.7	14.0	11.2
Kerala	3.4	4.8	11.5	15.5	1.6	1.6	0.3	2.7	9.7	7.9	12.5	10.5
Madhya Pradesh	0.3	0.3	5.6	7.1	1.5	1.3	0.3	1.1	1.2	2.5	15.7	11.3
Maharashtra	1.0	1.5	6.2	9.9	1.7	1.7	0.3	4.6	2.4	3.2	13.2	11.1
Orissa	0.5	0.8	6.8	7.8	1.1	0.9	0.3	2.7	0.5	1.6	16.1	14.3
Punjab	0.8	0.6	8.4	9.3	3.0	2.3	0.2	0.8	3.9	2.7	12.4	10.3
Rajasthan	0.2	0.5	4.0	6.8	2.2	1.8	0.2	1.0	2.1	2.1	17.0	12.8
Tamil Nadu	1.1	2.3	6.7	9.7	1.5	1.3	0.9	1.8	4.4	11.7	12.9	10.7
Uttar Pradesh	0.4	0.6	7.7	8.6	1.7	1.3	0.2	1.6	0.9	2.3	15.6	12.7
West Bengal	1.9	3.9	8.5	11.3	1.1	1.1	0.3	2.6	1.7	4.7	15.1	13.1

TABLE 3. PER CAPITA FOOD CONSUMPTION IN URBAN AREAS

(kg/30 days)

	Food Items											
	Rice		Wheat		Other Cereals		Pulses		Dairy		Edible Oils	
State	1988	2002	1988	2002	1988	2002	1988	2002	1988	2002	1988	2002
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Andhra Pradesh	10.3	9.2	0.7	0.8	0.5	0.3	0.9	0.8	3.9	4.1	0.5	0.6
Assam	10.5	9.4	1.3	1.4	0.0	0.0	1.1	0.8	2.1	1.8	0.5	0.7
Bihar	7.7	5.8	5.8	6.0	0.2	0.0	1.2	0.9	2.5	3.9	0.4	0.6
Gujarat	2.3	1.8	5.7	4.9	1.6	1.2	1.2	0.9	6.2	7.5	1.0	1.1
Haryana	6.8	1.0	10.1	7.9	0.1	0.0	1.1	0.7	8.7	9.3	0.6	0.7
Himachal Pradesh	3.8	3.5	6.2	5.7	0.4	0.2	1.6	1.2	7.7	8.8	0.6	0.7
Karnataka	5.6	5.1	1.4	1.8	3.1	2.2	1.0	1.0	3.9	5.1	0.4	0.6
Kerala	7.9	7.2	0.9	1.0	0.6	0.4	0.6	0.6	3.5	4.2	0.4	0.5
Madhya Pradesh	3.9	2.3	7.3	7.5	0.5	0.2	1.4	0.9	4.5	4.8	0.6	0.7
Maharashtra	2.9	3.2	4.3	4.0	2.4	1.2	1.2	1.0	4.8	5.3	0.7	0.9
Orissa	10.6	10.2	2.3	2.1	0.1	0.0	0.8	0.8	2.3	2.7	0.4	0.5
Punjab	1.2	1.3	8.7	7.8	0.1	0.0	1.2	0.9	10.1	10.6	0.7	0.7
Rajasthan	0.6	0.6	11.4	9.2	0.8	0.9	0.9	0.7	7.3	7.7	0.6	0.7
Tamil Nadu	8.9	8.1	0.7	0.6	0.2	0.1	0.9	0.9	3.3	4.0	0.4	0.5
Uttar Pradesh	2.5	2.5	8.9	7.3	0.1	0.1	1.2	0.9	5.3	5.9	0.5	0.6
West Bengal	8.3	7.3	2.9	2.4	0.0	0.0	0.7	0.6	2.8	2.9	0.5	0.7

	Food Items											
	Meat/Fish/Eggs		Vegetables/Fruits		Sugar/Spices		Processed Food		Beverages		Total	
State	1988	2002	1988	2002	1988	2002	1988	2002	1988	2002	1988	2002
(1)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)
Andhra Pradesh	2.5	2.9	10.0	12.8	1.5	1.3	2.0	3.3	5.9	12.6	11.5	10.2
Assam	3.0	3.7	12.3	13.8	1.3	1.1	0.4	6.8	6.4	16.0	11.9	10.8
Bihar	1.1	1.6	10.0	14.3	1.2	1.1	0.2	3.4	2.7	10.4	13.7	11.8
Gujarat	0.7	0.8	8.9	11.3	1.8	1.6	0.2	3.0	3.5	7.9	5.2	7.9
Haryana	1.4	2.9	12.6	15.3	1.9	1.9	0.3	1.8	8.5	6.2	17.0	8.9
Himachal Pradesh	2.3	1.9	13.6	11.7	1.8	1.5	0.3	9.2	6.3	13.8	10.3	9.4
Karnataka	1.7	2.2	9.7	14.1	1.6	1.5	2.3	4.4	6.2	11.5	10.1	9.0
Kerala	4.9	5.3	14.1	16.5	1.6	1.6	0.2	9.5	9.7	13.4	9.4	8.6
Madhya Pradesh	1.3	1.0	10.6	10.5	1.8	1.6	0.3	1.8	5.9	6.9	11.7	10.0
Maharashtra	2.4	2.4	13.4	14.2	1.7	1.5	0.7	5.1	6.6	12.9	9.6	8.4
Orissa	1.8	2.2	11.5	15.3	1.5	1.2	0.4	4.1	3.4	8.0	13.0	12.4
Punjab	1.3	2.2	12.5	13.0	2.3	2.0	0.3	4.9	8.6	13.0	10.0	9.1
Rajasthan	0.7	1.0	9.9	11.3	2.1	1.6	0.2	2.0	6.4	6.5	12.7	10.7
Tamil Nadu	2.9	3.7	11.2	12.5	1.6	1.4	1.7	5.5	6.6	12.5	9.8	8.8
Uttar Pradesh	1.0	1.5	13.0	13.4	1.7	1.4	0.4	2.2	4.4	7.0	11.5	9.9
West Bengal	3.3	5.0	11.9	16.6	1.2	1.1	0.7	8.0	5.5	15.3	11.3	9.7

minimum support prices of rice and wheat were set, with the consequent inflationary effect on cereal prices vis-à-vis that of the non-cereal items. The latter, being outside the public distribution system (PDS), were not subject to similar upward pressure on their unit values. Incidentally, besides the substitution effect due to increase in the relative prices of cereal items, the switch from cereals to non-cereals could, also, be explained by the much larger values of the expenditure elasticities of the latter items (Table 4).

TABLE 4. ALL-INDIA MEAN CONSUMPTION AND EXPENDITURE SHARES

	Urban			Rural		
Food Items	1988 (43rd Round)	2002 (57th Round)	Change (per cent)	1988 (43rd Round)	2002 (57th Round)	Change (per cent)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Consumption/capita (kg/30 days)						
Rice	5.65	4.85	-14.2	7.35	6.79	-7.7
Wheat	4.57	4.03	-11.7	4.80	4.05	-15.7
Cereals ^{NES}	0.83	0.56	-32.5	2.59	1.38	-46.8
Total cereals	11.05	9.44	-14.5	14.75	12.21	-17.2
Pulses	1.06	0.86	-18.8	0.97	0.77	-20.9
Dairy	4.52	5.25	16.2	3.34	3.94	17.9
Edible Oils	0.56	0.69	23.6	0.35	0.51	45.4
Meat/Fish/Eggs	2.01	2.49	23.8	0.91	1.50	65.6
Vegetables/Fruits	11.46	13.44	17.3	6.99	9.48	35.6
Sugar/Spices	1.63	1.46	-10.4	1.53	1.34	-12.7
Share of total food expenditure (per cent)						
Rice	16.33	14.06	-13.9	24.97	21.32	-14.6
Wheat	9.07	8.70	-4.1	10.99	9.58	-12.8
Cereals^{NES}	1.80	1.18	-34.4	5.87	2.83	-51.7
Total cereals	27.20	23.94	-12.0	41.82	33.74	-19.3
Pulses	6.16	5.66	-8.1	6.48	6.31	-2.6
Dairy	13.23	15.71	18.7	9.87	12.02	21.8
Edible Oils	8.65	6.55	-24.4	7.41	6.53	-11.9
Meat/Fish/Eggs	5.37	5.58	4.0	4.27	5.34	25.1
Vegetables/Fruits	12.29	15.03	22.3	10.32	14.56	41.1
Sugar/Spices	8.12	7.44	-8.4	8.73	8.36	-4.2
Processed Food	13.59	13.49	-0.7	8.28	9.31	12.5
Beverages	5.38	6.61	22.8	2.83	3.83	35.5
Share of total food expenditure (per cent)						
All Food	66.1	50.0	-24.4	72	60.9	-16.1

NES – not elsewhere specified.

In order to present a clear idea of the price increase during the 1980s and 1990s, their trend growth rates are presented in Table 5. The procurement prices of wheat increased by 10.53 per cent annually during the 1990s, which is more than double the growth rate recorded during the 1980s. Similarly, the procurement price of paddy shows an annual growth rate of 9.65 per cent during the 1990s compared with 5.42 per cent during the preceding decade. The wholesale prices of wheat and rice, which were strongly influenced by government intervention, also showed much higher growth in the 1990s than in the 1980s. As a matter of fact, during the 1980s the increase in procurement prices was quite small compared with the increase in the

prices of food and other commodities, whereas during the 1990s the growth rate of procurement prices outpaced the general rate of inflation.

TABLE 5. GROWTH RATES IN DIFFERENT TYPES OF PRICES OF RICE AND WHEAT

(per cent per annum)

Commodity	Price	1980-81 to 1989-90	1990-91 to 1999-2000
(1)	(2)	(3)	(4)
Wheat	Procurement price	4.36	10.53
	Wholesale price	5.67	9.48
	Retail price	6.62	8.88
	PDS price	3.74	11.85
Rice	Procurement price	5.42	9.65
	Wholesale price	5.24	9.24
	Retail price	7.36	8.69
	PDS price	5.80	12.96
Consumer Price Index	Food	8.38	9.39
	General	8.58	9.31

Improving nutrition is essential to reduce extreme poverty. Recognition of this requirement is evident in the definition of the first millennium development goal, which aims to reduce extreme poverty and hunger by 50 per cent between 1990 and 2015: (a) The proportion of people whose income is less than $1 a day, (b) The proportion of people who suffer from hunger (as measured by the percentage of children under five who are underweight). The first target refers to income poverty; the second addresses non-income poverty. Markets are failing to address the malnutrition problem wherever families do not have the money to buy adequate food or health care. But malnutrition occurs also in many families that are not poor - because people do not always know what food or feeding practices are best for their children or themselves, and because people cannot easily tell when their children are becoming malnourished, since faltering growth rates and micronutrient deficiencies are not usually visible to the untrained eye. The need to correct these "informational asymmetries" is another argument for government intervention. And governments should intervene because improved nutrition is a public good, benefiting everybody; for example, better nutrition can reduce the spread of contagious diseases and increase national economic productivity.

IV

ROLE OF THE PDS IN PROVIDING CALORIES

In the introductory remark, mention has been made on the pathetic condition of the role played by PDS in providing food to the rural poor in Maharashtra. Table 6 provides some evidence on this issue by reporting the share of the household's intake of calories that is contributed by the PDS. This provides estimation separately for the female headed households and the backward classes. The importance of the PDS in

supplying inexpensive calories to the household varies considerably among the States. The larger share of the total calorie intake is supplied through the PDS in the southern States of Kerala and Tamil Nadu compared to northern States like Punjab, Rajasthan, Haryana and Bihar. This is partly due to the caste-based discrimination and exclusion prevailing in the northern states that allow the backward classes very limited access to the PDS. Thorat and Lee (2005) have observed recently that, such discrimination is much less acute in the southern States due to greater weaker section participation in the operation of the PDS, especially in Andhra Pradesh. The female headed households and the backward classes obtain a greater share of their total calories from their PDS food rations than the rest of the population. Female-headed households, who are mostly widows in the Indian context, experience higher per capita calorie intake levels than the male-headed households reflecting both the higher calorie intensity of the Indian widow's diet and the smaller sized household that she typically belongs to. Since these minority groups are more poverty prone than the others this feature needs to be kept in mind in the ongoing debate on the future of the PDS.

TABLE 6. CALORIE SHARE OF PDS ITEMS IN RURAL HOUSEHOLDS

	All Households		Female Headed Households		SC/ST Households	
State	NSS Round 50 (1993-94)	NSS Round 55 (1999-2000)	NSS Round 50 (1993-94)	NSS Round 55 (1999-2000)	NSS Round 50 (1993-94)	NSS Round 55 (1999-2000)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Andhra Pradesh	0.177	0.153	0.251	0.191	0.207	0.184
Assam	0.051	0.058	0.076	0.089	0.037	0.058
Bihar	0.022	0.022	0.021	0.027	0.022	0.026
Gujarat	0.093	0.076	0.108	0.094	0.126	0.105
Haryana	0.025	0.019	0.022	0.018	0.022	0.027
Himachal Pradesh	0.143	0.140	0.126	0.118	0.143	0.165
Karnataka	0.084	0.111	0.123	0.158	0.104	0.141
Kerala	0.303	0.280	0.325	0.313	0.345	0.392
Madhya Pradesh	0.038	0.042	0.043	0.052	0.041	0.050
Maharashtra	0.070	0.085	0.092	0.125	0.075	0.094
Orissa	0.021	0.112	0.021	0.150	0.020	0.123
Punjab	0.018	0.014	0.018	0.012	0.023	0.017
Rajasthan	0.067	0.024	0.062	0.049	0.074	0.027
Tamil Nadu	0.157	0.242	0.199	0.292	0.170	0.280
Uttar Pradesh	0.027	0.026	0.047	0.052	0.030	0.030
West Bengal	0.028	0.035	0.031	0.037	0.028	0.038
All India	0.071	0.078	0.114	0.126	0.067	0.083

V

FOOD AND NUTRITION SECURITY: IMPLICATION ON FOOD SUBSIDY

The food security system in the country has the dual objective of providing minimum nutritional support to the poor at an affordable price and ensuring price stability in different parts of the country (by supplying foodgrains to the deficient areas), involves subsidy from the exchequer. Food subsidies grew steeply at annual

rates between 28 per cent and 45 per cent during the period 2000-01 and 2002-03 (Table 7). But, attainment of self-sufficiency in foodgrains production (with implication for reduced need for price stabilisation operation), and reduction in the proportion of people belonging to the BPL category should actually lead to decline in the levels of food subsidy. There is also unanimity that the targeting of food subsidy leaves a lot of scope for improvement.

The Government in its agenda pledges that all subsidies will be targeted sharply to the poor and the truly needy. To contain operational costs, reimbursement of expenses of the Food Corporation of India (FCI) should be based on the normative unit costs and actual quantities involved. With respect to the public distribution system, it is suggested that the system of dual prices, which encourages leakages, may be replaced by a uniform price policy along with a system of food coupons for the BPL families. Some success has been achieved in this respect, because the market prices of rice and wheat, which remained below the MSP in different parts of the country during 2001-02 and 2002-03 recovered to prevail at a level higher than the MSP during 2003-04 and 2004-05. All these helped in tackling the problem of excess stock of foodgrains with the FCI and as already discussed earlier, the declining trend in stock levels, which started in 2003-04, continued through 2004-05. Carrying costs of foodgrains accounted for almost 25 per cent of the food subsidy during 2001-02 and 2002-03. The decline in food stocks, particularly from 2003-04 with implications for reduction in the carrying cost and the gradual decline in the disposal of subsidised foodgrains have resulted in a considerable deceleration in the growth of food subsidy (Table 7).

TABLE 7. GROWTH OF FOOD SUBSIDIES

Year	Food subsidy* (Rs. crores)	Annual growth (per cent)	As per cent to GDP
(1)	(2)	(2)	(4)
1990-91	2450	-	0.43
1991-92	2850	16.33	0.44
1992-93	2800	-1.75	0.37
1993-94	5537	97.75	0.64
1994-95	5100	-7.89	0.50
1995-96	5377	5.43	0.45
1996-97	6066	12.81	0.44
1997-98	7900	30.23	0.52
1998-99	9100	15.19	0.52
1999-2000	9434	3.67	0.48$
2000-01	12060	27.84	0.57$
2001-02	17499	45.10	0.77$
2002-03	24176	38.16	0.98$
2003-04	25160	4.07	0.91$
2004-05 (RE)	25800	2.54	0.83$
2005-06 (BE)	26200	1.55	-

Source: *Economic Survey, 2005-06*.

$ As per cent of GDP (New Series based on 1999-2000).

* Other than that on sugar.

The cross country evidence suggests that there is reduction in the undernourishment in various poor countries. The range in the gain, that is reduction in per cent, ranges from 17 per cent in India to 52 per cent in Ghana. In terms of growth rates in per capita real gross domestic product and agricultural production for these countries most were positive (Table 8).

TABLE 8. COUNTRIES WHERE UNDERNOURISHMENT DECLINED

Countries	Undernourished (per cent)		Percentage change points	Real GDP per capita Growth rate (per cent)
	1980	1997		
(1)	(2)	(3)	(4)	(5)
Indonesia	26	6	-20	1.9
Nepal	47	28	-19	0.8
Ghana	62	10	-52	2.1
India	38	21	-17	1.0
China	30	11	-29	1.5
Cambodia	61	32	-28	4.5
Mali	60	32	-28	1.0
Nigeria	44	8	-36	2.4

Source: The State of Food Insecurity in the World, 2000, FAO, Rome.

VI

CONCLUDING OBSERVATIONS

As per the data, it has been observed that there is a marked decline in the consumption of all the cereal items over the period 1987-88 through 2001-02 in almost all the States and in both rural as well as urban areas with the reduction being particularly sharp in the case of the smaller cereal items, e.g., barley, maize and cereal substitutes such as tapioca. There has been a switch in preferences towards non-cereal items, such as, meat/fish/eggs and fruits/vegetables. Whatever the underlying factors causing these changes, these have led to significant decline in calorie consumption due to the switch-over from calorie intensive cereal items to non-cereals which are more expensive sources of calories.

However, malnutrition occurs also in many families that are not poor - because people do not always know what food or feeding practices are best for their children or themselves, and because people cannot easily tell when their children are becoming malnourished, since faltering growth rates and micronutrient deficiencies are not usually visible to the untrained eye. The need to correct these informational asymmetries suggests intervention on the part of the Government. Such intervention through specific channel can help improving nutrition and reduce the spread of contagious diseases. With respect to the public distribution system, it is suggested that the system of dual prices, which encourages leakages, may be replaced by a uniform price policy along with a system of food coupons for the BPL families.

The problem of chronic macro and micro nutrient under-nutrition cannot be addressed simply by increases in food production or the accumulation of larger food buffer stocks. Nor has the public distribution system been able to effectively target the most needy in an effective manner. Targeted food-for-work programmes and targeted nutrition programmes can alleviate the problem temporarily. But in the long run, the solution is to ensure employment opportunities for all citizens so that they acquire the purchasing power to meet their nutritional requirements. Thus, employment or livelihood security becomes an essential and inseparable component of a comprehensive strategy for national food security and must be considered as one of the nation's highest priorities (Box 3). The overall performance of food and nutrition security at macro as well as micro level needs interventions to be demand driven. In this regard only scaling up the coverage of the programmes without specific initiatives would not be the best way to reduce malnutrition and poverty.

BOX 3: GUARANTEEING WORK IN RURAL INDIA: THE NATIONAL RURAL EMPLOYMENT GUARANTEE SCHEME

India intends to legally guarantee 100 days of employment on public works to each rural household, which is embodied in the National Rural Employment Guarantee (NREG) Act. Targeting is by self-selection, i.e. wages will be low enough that only those who can't find work elsewhere would choose to work under this scheme. If well implemented, NREG can redistribute incomes and reduce poverty substantially, provided a partial insurance function. Estimates suggest that a nationwide roll-out (it is currently being piloted in 200 backward districts in the poorest states) could reduce *lean* season poverty from 37 percent to 23 percent (from 34 percent to 30 percent on an equivalent *annual* basis), with around 54 percent of gainers in the poorest 40 percent of the population, and less than 10 per cent in the richest fifth. The scheme has been hailed by supporters as an example of a rights-based approach to social protection, with the potential for directly reducing poverty, diluting the monopsony power of employers in rural areas, and empowering communities to implement their own infrastructural priorities. The scheme's strong emphasis on community execution and monitoring of works is also expected to be a major blow to the capture of publicly-financed civil works by contractors.

But the critics point to a number of areas of concern. The program will have substantial opportunity costs, even though the evidence on the local growth impact of the civil works is still limited. The administrative capacity to implement a complex scheme is likely to be low, raising the prospect of local capture and corruption. Job rationing may occur, and self-targeting may be an issue, since wages in most pilot areas are set at a level above market wages for casual labour. In previous schemes, employment on civil works was least available in the lean season when it was needed the most, and was most available in the peak season when the opportunity cost of participation was the highest.

Finally, what civil works are eligible under the scheme is very tightly defined, leaving little room to states or communities to match the works to local needs easily. Despite the operation of major public employment programs in India since at least in the 1970s, there is surprisingly little rigorous evidence on the potential impacts claimed by both critics and supporters. For example, there is no robust analysis of the impact on the local economy of civil works created under previous schemes. Nor is evidence available on the impact of such schemes on casual wages outside the program, a crucial determinant of whether self-selection will work. With the exception of a long-standing program in Maharashtra, the opportunity costs of poor households working on public works is also not well understood. Only time will tell whether NREG will fulfil its redistributive promise in India. Meanwhile, it has clearly established the urgent need to start monitoring and impact evaluation studies to understand such schemes better before countries make major commitments to them (World Bank, 2006).

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