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ECONOMIC LIBERALISATION, TARGETED PROGRAMMES AND HOUSEHOLD FOOD SECURITY: A CASE STUDY OF INDIA

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EXECUTIVE SUMMARY

Although there is little consensus on the impact of trade liberalization on poverty and food security, it is nevertheless widely acknowledged that there is a need for governments to establish safety-nets to guard against any potentially harmful effects on the poor and vulnerable sections of society.

Against this background, programs aimed at achieving food security and reducing poverty gain increased importance in the reform era. This study aims to evaluate several such programs that are currently in place in the country from the point of view of their impact, efficiency and financial sustainability. The purpose is to determine how these programs may be improved and propose appropriate policy options for reform, while also keeping in mind the new challenges that might lie ahead.

Specifically, the study evaluates the Public Distribution System (PDS), Public Works Programs, and certain food-based direct intervention programs such as the Integrated Child Development Scheme (ICDS) and Tamil Nadu Integrated Nutrition Program (TINP), with a view to suggest how they can be made more cost effectiveness and better targeted. A summary of the main findings of the study is presented here.

The Background: Food Security in the Era of Reforms

The first chapter of this report provides the background in which the issues of food security and poverty are being studied in the Indian context. During the last five decades there have been highly interventionist trade policies in India that have discriminated against agriculture, particularly in the category of basic foods such as cereals. On the domestic front, there has been substantial control over the pricing, procurement, stocking, marketing and transport of foodgrains. These domestic and international trade policies resulted in a considerable wedge between the domestic and international price of wheat and rice, as observed by Gulati and Kelly (1999).

Due to the historically lower domestic price relative to the international price, it was expected that with liberalization, (i) the volume of exports of rice and wheat would increase and (ii) domestic prices of rice and wheat would rise. In the immediate years following liberalization, both of these were true for wheat, and for rice, export volumes increased while domestic prices did not rise as expected. Against this background, several studies have analyzed the impact of trade liberalization on food security but the results appear to be mixed. Nevertheless, to guard against any possible adverse impacts on the poor and vulnerable sections of the population, there is agreement over the fact that adequate safety nets must be in place in the country.

Changes in Patterns of Food Consumption

In the second chapter, the study analyzes the trends in food consumption in India as a backdrop to understanding the status of food security and poverty in the country. The consumption patterns of an average Indian are undergoing significant changes. In general there is an expansion of the shares of non-cereal food and non-food in the consumption basket, while the share of cereals is shrinking. This is true even for the bottom 30% of the population, *although in absolute terms cereal consumption per capita has not fallen*.

The substitution of non-cereals with cereals is resulting in a decline of calorie intake and is not contributing substantially to protein intake. While the decline in the cereals consumption can be explained by the slow down in the growth in the incomes of the poor and adverse prices of cereals versus non-cereal food, its decline in the seventies and eighties seem to be related to shifts in tastes and preferences.

The complete set of expenditure and own and cross price elasticities are estimated by the demand system. The following results emerge from the exercise: There are marked differences in consumption behavior among the income groups and between rural and urban areas. Estimated price effects indicate the importance of cereal price, especially in rural areas.

The simulation exercise indicates that the adverse relative price of cereals dampens the demand of not only cereals but also that of other food items. The adverse movements in the relative price of cereals together with lower growth in rural incomes may have resulted in the stagnant food consumption in rural areas.

It is noted that during the economic reform period, cereal prices increased faster than in the 1980s. The increase in prices in the 1990s was primarily on account of the increase in procurement price. Procurement prices rose due to devaluation and because the government wanted to compensate the farmer for the prevailing restrictions on trade.

Finally, another significant finding is that consumption of non-cereal food, particularly fruits and vegetables, has increased faster during the reform period than in the 1980s.

An Evaluation of the Public Distribution System

The third part of the analysis studies the effectiveness of public distribution of food within the country. In particular, the objective is to examine the performance of the Public Distribution System (PDS) with a view to provide suggestions for cost-effective and better-targeted alternatives. This is probably the first study to look at the impact of the PDS on consumption and poverty after the introduction of targeting in 1997.

Two basic questions are addressed with respect to the performance of the PDS:

(a) Does the target group receive significant subsidy?

(b) Are the subsidies provided in a cost-effective manner?

The evaluation of performance is in terms of extent of food subsidy provided, coverage, impact on consumption and calories, impact on the poor in particular, leakages from the system and targeting errors, and cost effectiveness. The political economy of the PDS is also discussed. The following are the findings from this exercise:

(i) The impact on consumption by the poor increased in rural areas between 1986-87 and 1999-00 and poverty also declined during this period. The impact on urban areas has been more or less same.

(ii) A higher impact of the PDS on consumption by the poor is found in certain states like Andhra Pradesh, Orissa and Tamil Nadu. However, overall the impact of the PDS on the poor is still marginal at the all-India level.

(iii) The finding in terms of the political economy of the PDS is that the dealers of the PDS, the bureaucrats, politicians, and the Civil Supplies departments have a vested interest in keeping the present system in operation.

Based on the findings, three options for reform are suggested: (i) revamping the existing PDS through decentralization, (ii) introducing food stamps, and (iii) replacing it with the food-for-work program. In the short run the authors also recommend that decentralization of the PDS and better targeting through village-level government units, known as Panchayats, can be attempted. The study is also in favor of linking the PDS with employment programs and the ICDS in order to improve targeting. This aspect is discussed in greater detail in a later section of the study. In the medium term, a move toward food stamps and the replacement of the PDS with a food-for-work or cash-for-work program are suggested.

The Impact of Public Works Programmes on Food Security

The fourth chapter of the study looks at the impact of the Public Works Programmes on food security in the country. Public works programs play an important role in raising economic access of the poor. The case for RWPs (Rural Works Programs) lies primarily in the self-targeting nature of the schemes. However, public works are often criticized, with some justification, for creating unproductive (low productive) assets, providing only short-term supplementary income, and for not raising the skill-levels of workers. The analysis shows that wage employment programs like the Employment Guarantee Scheme, Jawahar Rojgar Yojana and Employment Assurance

Scheme seem to be more pro-poor than programs like the Integrated Rural Development Program (self-employment programs) and the Public Distribution System. They also achieve the additional objective of creating productive assets. However, the authors recommend the effective involvement of Panchayats (village-level government units) in order to ensure better planning of projects at the local level using local priorities and greater involvement of voluntary organizations as ways to ensure that the assets created may be more productive and better maintained.

Finally, the authors also make the point that in the changing context of trade liberalization, public works also can be used promoting diversification of agriculture. Although they are not a substitute for a sustained and broad based growth process, the authors believe that in a country like India, which has surplus labor and poor infrastructure, these programs can be a useful component for providing food security at the household level.

A Study of Two Specific Direct Food-based Intervention Programmes

The next section of the report analyzes two direct food-based intervention programs for pre-school children in India, namely the Integrated Child Development Service (ICDS) and the Tamilnadu Integrated Nutrition Project (TINP). These schemes are evaluated using three parameters: targeting - whether they cover the entire group for whom they have been designed, effectiveness – do the programs bring about the anticipated results, and efficiency - for a unit of money spent per person, how much eventually reaches the individual and the benefit-cost ratio of the programs. The important findings of the study are presented below:

About 50 percent of children below three years are undernourished in rural India and about 38 percent in urban India. Even in states like Maharashtra and Tamil Nadu where per capita (real) state domestic product has grown significantly in the last decade, commensurate improvements in nutritional status cannot be seen.

The recent evaluation studies of the ICDS have shown improving trends in child nutritional status in the project areas. The studies found a reduction in severe under-nutrition but minimal impact in reducing moderate under-nutrition. The projects also contributed to a reduction in the infant mortality rate and the incidence of low birth weights.

A national evaluation of the ICDS, however, revealed an unsatisfactory performance overall. The nutritional status of children in ICDS areas was found to be only slightly better than in non-ICDS areas. The percentage of severely malnourished children below the age of three in the ICDS areas is lower by 1.8 percentage points than the non-ICDS areas, and for children 3-6 years old, by 1.5 percentage points. The percentage of moderately malnourished children in ICDS areas is 2.5 and 3.4 percentage points lower than in the non-ICDS areas for the two subgroups. The two major limitations of this study are that there has not been an evaluation of the cost-effectiveness of the ICDS program and regional disaggregates have not been provided.

The Tamil Nadu Integrated Program on the other hand has been hailed a success. The scheme has reduced severe malnutrition without any apparent need to fear a reversal of the problem. The important lessons to be drawn from this scheme's success are effective management with very few leakages, educating the mother and adolescent girls about good nutrition and health practices, and increasing participation by the community and the involvement of the government in running the program efficiently. However, the questions of sustainability in terms of the cost of the program and its contribution in reducing moderate and mild under-nutrition are yet to be addressed.

This study finds that there is a paucity of relevant, reliable and timely data to study the trends in nutritional status even in the areas where the ICDS program is being implemented. There is a provision for a Management Information System (MIS) for all the ICDS blocks that is supposed to keep track of bottlenecks in the program and maintain regular records of the nutritional status, immunization rates, and participation rates. While this is a good idea, it must be ensured that the data is more accessible for research purposes.

The study also finds that most evaluations have assessed impact on anthropometric indicators, rather than aspects like improvements in cognitive development, school achievement of the child or poverty status of the household. Information on these aspects will go a long way in convincing (a) the policy makers about the need for such programs and their efficient management, and (b) the participants about the impacts in order to encourage greater community participation, which would result in more effective outcomes.

Concluding Remarks

By providing a detailed analysis of some of the major government-operated programs in place today, the hope is that there will be a better understanding of the specific areas where the government needs to focus its attention and resources in order to achieve better targeting and greater cost-efficiency. In this way the reforms can be undertaken with greater confidence and without sacrificing the goals of social welfare.

ECONOMIC LIBERALISATION, TARGETED PROGRAMMES AND HOUSEHOLD FOOD SECURITY: A CASE STUDY OF INDIA

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1. FOOD SECURITY IN THE INDIAN CONTEXT

1. 1 BACKGROUND AND OBJECTIVES

Food security can be assessed both at the national and household level. At the national level, in the context of an open economy, as long as the country has sufficient foreign exchange reserves, it is considered to be safe with regard to food security even if it is not self sufficient in food grain production. With this logic, food security is not a problem in India at the national level as the foreign exchange reserves in India have now crossed the mark of $100 billion (as of the end of 2003) as against the level of $1.5 billion in July 1991 at the time when the economic crisis occurred. Additionally, India's stock of food grains with the public sector agencies stood at a record level of 63 million MT as of July 2002, thereby placing the country in an extremely comfortable position with regard to food security. However, at the household level, approximately 26 percent of the population remains below the poverty line, and therefore household food security is still a critical issue in the Indian context. The main problem at the household level is the lack of economic access among the poor. Therefore, (i) generating employment

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opportunities to increase purchasing power (through overall economic growth and specific poverty alleviation programs), and (ii) supplying food grains at subsidized prices to the poor, can help ensure food security. This study examines the problem of household food security in India against the background of economic reforms initiated since the early nineties.

1.2 FOOD SECURITY IN THE ERA OF REFORMS

During the last five decades there have been highly interventionist trade policies in India that have discriminated against agriculture, particularly in the category of basic foods such as cereals. International trade in cereals by the private sector was practically banned during the period 1950-1995, with the exception of Basmati rice exports and maize imports for the poultry sector. On the domestic front, there have been substantial controls over pricing, procurement, stocking, marketing and transport of food grains.

These domestic and international trade policies resulted in a considerable wedge between the domestic and international prices of wheat and rice, as observed by Gulati and Kelly (1999). The authors calculate the price wedge as approximately 61% for rice and 6% for wheat under the Exportable Scenario and as much as 100% for rice and 78% for wheat in the Importable Scenario, for the base years of the triennium ending 1993-94.[6] Moreover, as can be seen from the NPC values in Figures 1 and 2, domestic prices have consistently remained below the export parity levels for both rice and wheat, with the exception of a few years in between. (Gulati and Mullen, 2003). Due to the historically lower domestic prices relative to the international prices, it was expected that with liberalization (i) the volume of exports of rice and wheat would increase and (ii) the domestic prices of rice and wheat would rise.

[6] The NPC is defined as Domestic price/Reference price, where the reference price is either the export parity price or the import parity price, depending on whether the commodity is an exportable or importable respectively. In order to determine whether the commodity is an exportable or importable, one can simply look at whether it is currently exported or imported. However, if the commodity is not currently traded, one must make a judgment as to whether it can be exported or imported when trade is opened up, by comparing the domestic price with the export and import parity prices. Both wheat and rice were considered exportables for India, due to the domestic price being far below the international prices.

As expected, when India opened up exports of common rice in 1994-95, the volume of exports surged from 1 million to nearly 5 million MT, making the country the second largest exporter of rice that year (Gulati and Mullen, 2003). Encouraged by the experience with rice exports, wheat was also liberalized soon after, resulting in the level of exports rising to almost two million MT or three percent of the production in 1996 (Hoda and Sekhar, 2003). However, with regard to domestic retail prices, while the retail price of wheat increased between 1995-98 quite sharply for wheat, it was actually found to decline in the same period for rice. The retail prices for rice and wheat are shown in Figures 3 and 4 respectively.

It is important to note, however, that the increase in retail prices in the case of wheat is also argued to be a consequence of the policy followed by the government with respect to the Minimum Support Price (MSP). The Minimum Support Price is the price at which the government procures food grains from the farmers, and it is meant to protect farm incomes against price fluctuations in order to provide them an incentive to invest and produce7. In the nineties, the government has consistently and sharply increased the MSP every year in the case of wheat, and to a lesser extent in the case of rice also (Figures 3 and 4). This has translated into a higher PDS price, due to attempts by the government to reduce the aggregate food subsidy bill. It has also resulted in a higher open market retail price, through the diversion of grain from the open market to the public sector (Persaud and Rosen, 2003). The high degree of correlation of support prices, open market farm prices and retail prices is evident from figures 3 and 4, and is particularly noteworthy in the case of wheat.

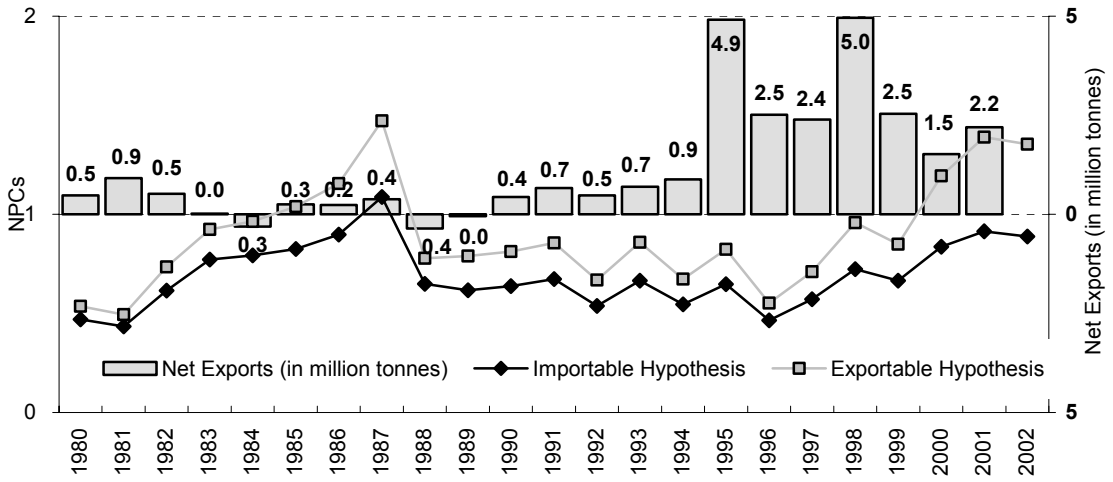
[7] The MSP determined by the Commission for Agricultural Costs and Prices (CACP) by taking into account several factors such as the costs of production, changes in input prices, trends in domestic and international prices, the estimated effect of changes in the support price on the industrial cost structure, etc. It is, however, unclear exactly how the commission assesses the relative weights of each of these factors in its calculation. The Food Corporation of India guarantees to buy all food grains from farmers at the support price, which is normally less than the open-market farm price. Therefore the farm support price acts as the floor price, while the ceiling is determined by the forces of demand and supply.

1.3 LIBERALIZATION IN THE CASE OF WHEAT: A STORY OF REVERSALS

The situation in the case of wheat became one where stocks were piling up due to the high MSPs on one hand and distribution from the PDS was declining due to the increase in issue prices on the other. Therefore in 1996, the government decided to impose a 50% tariff on imports of wheat, while exports were allowed to continue as a means to offload the built up stocks.

In fact in October 2000, the government decided to export 2 MT of wheat at 4,150 rupees/tonne, to further reduce domestic stocks, even though this price is 30% below the MSP and 50% below the government's cost of acquisition, which is in violation of WTO commitments[8]. However, export of subsidized wheat by private traders was still not allowed, as the government feared that they would re-sell the wheat in the domestic market at a premium. The volume of exports from the central pool increased to 3.9 million MT in 2001-2002 and 6.7 million MT in 2002-03.

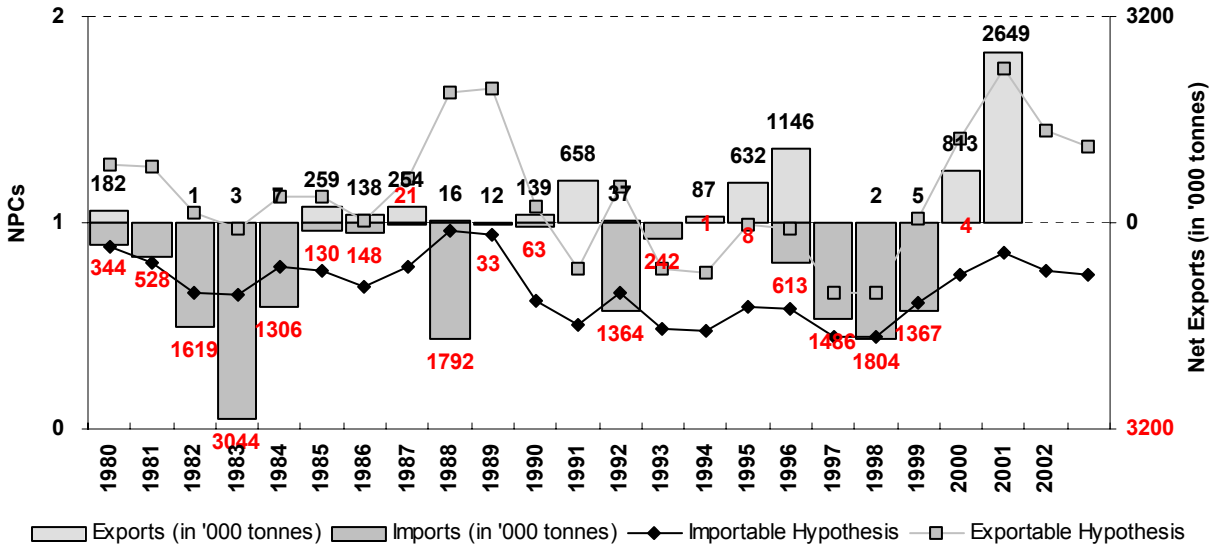
Figure 1—Rice Trade and Protection in India 1980-2002



Source: Trade data is from FAO
Source of Figure 1: Gulati and Mullen (2003)

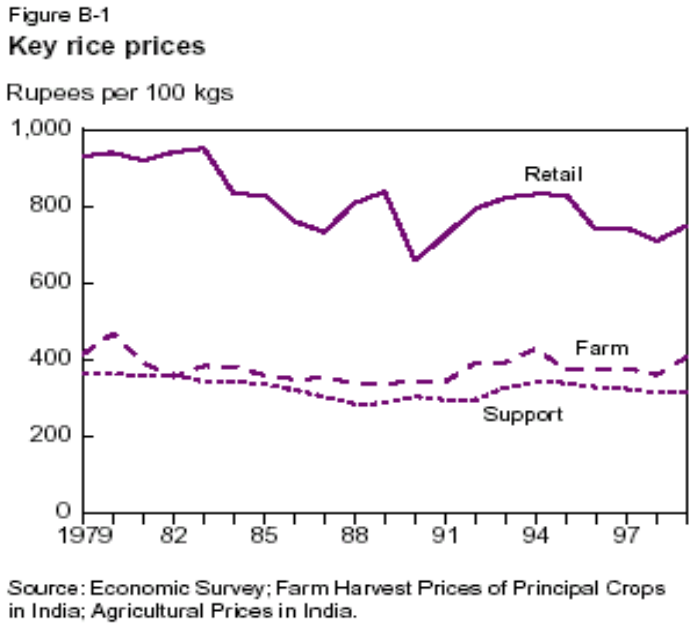
[8] http://www.agr.gc.ca/mad-dam/e/bulletine/v14e/v14n18e.htm.

Figure 2—Wheat Trade and Protection in India1980-2002



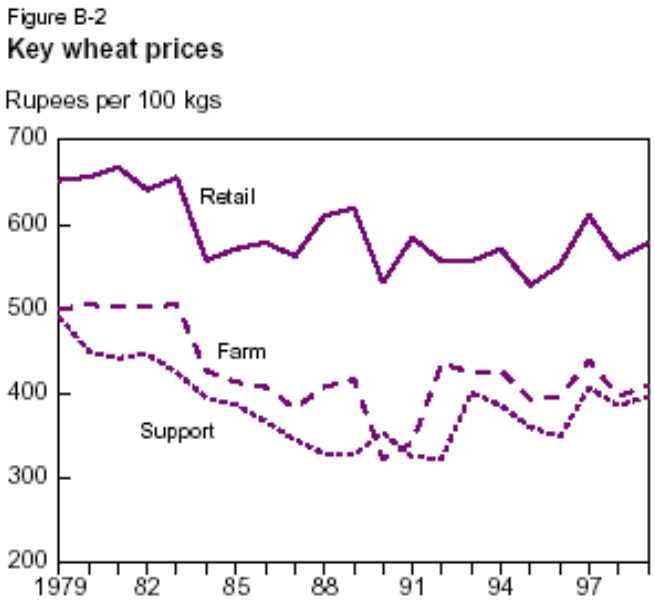
Source: Trade data is from FAO
Source of Figure 2: Gulati and Mullen (2003)\

Figure 3—Key Rice Prices



Source: Economic Survey; Farm Harvest Prices of Principal Crops in India; Agricultural Prices in India.

Figure 4—Key Wheat Prices



Source: Economic Survey; Farm Harvest Prices of Principal Crops in India; Agricultural Prices in India.

1.4 IMPACTS OF LIBERALIZATION: THE PROGNOSIS FOR THE POOR

Studies that evaluate the impact of trade liberalization on food security and poverty appear to produce different results. Parikh et al (1997) have systematically analyzed the potential effects of agricultural trade liberalization on food security, poverty and welfare, using a computable general equilibrium model (CGE). The results show that Agricultural Trade Liberalization (ATL), even without liberalization in the other sectors, leads to a decrease in poverty, by making the rural poor better off and the rural rich worse off in terms of average equivalent income. The consumer price index (CPI) is also found to move more favorably for the poorer classes compared to the richer classes. Another important finding is that, on the whole, the rural population appears to gain whereas the urban population loses. While the above study may seem to suggest that there is little to worry about, other studies point out that the current mix of liberalization and simultaneous increases in the domestic Minimum Support Price (MSP), is producing disastrous consequences.

Parikh et al (2003) examine the consequences of increasing the MSP of wheat and rice by ten percent, within an applied general equilibrium model of India, using 65 sectors, and five rural and urban expenditure classes. From a macro perspective, the results indicate that the policy to hike procurement prices of rice and wheat has had an adverse impact on overall growth, raised the level of inflation in the economy, and reduced real incomes and demand. The decline in total private consumption of rice and wheat is estimated to be between 3 and 3.5 percent.

Yet another important finding is that the increasing MSPs have had a worsening effect on the welfare of 80% of the rural population and also the entire urban population. Further, the welfare loss in general is larger for the urban population than for the rural population, across classes and over time, and it is also regressive overall. The findings from our study, however, seem to suggest that the impact on the consumption of the poor (in particular, the bottom 30% of the population) has been neutral rather than bad, since the per capita cereal consumption of this expenditure class has not fallen over time. It does appear, however, that the cereal consumption per capita, in the case of the middle and upper income brackets has gone down, although this decline can presumably be interpreted as the income effect.

Nevertheless, given the mixed evidence on the potential impacts of the reforms on the poor, the government must be prepared for the worst-case scenario. It is imperative, therefore, that adequate safety nets are in place in the country to guard against any potential negative impacts on the vulnerable groups in society.

1.5. OBJECTIVES OF THE STUDY

Against this background, the broad objectives of this study are:

1. To determine whether the safety nets in place in India at present are effective in terms of how well they target the poor and vulnerable sections of society.

2. To analyze how cost effective the existing safety nets are and to investigate possible alternatives or options for reform.

Given the focus on food security, Chapter 2 begins with a background on consumption trends in India over the past 30 years, across income groups and in the rural and urban areas. The subsequent chapter investigates the efficacy of the Public Distribution System in India, the generic name for the network of Fair Price Shops through which food and other essential commodities are sold to the poor sections of society at subsidized prices. Chapter 4 evaluates the contribution of the Public Works Programs - the various employment schemes operated by the government that are intended to create assets and simultaneously generate income – toward achieving food security and reducing poverty. Finally, the fifth chapter explores the effectiveness of two direct food-based intervention programs in achieving the same goals.

As can be seen, the importance of assessing the efficiency and sustainability of social safety–nets in India today, in the context of the possible adverse impacts of trade liberalization, cannot be over-emphasized. Although the likelihood of undesirable outcomes is uncertain and disputed, when dealing with issues that are as serious as food security and poverty, even potentially small risks cannot be ignored. Therefore, the findings of this study are crucial, as they will bring to light the existing capabilities in the country by way of social safety nets and provide recommendations on how they can be expanded and strengthened. By addressing these challenges, India can undertake the process of liberalization with greater confidence and reap the benefits with no sacrifice to the basic welfare objectives.

2. FOOD CONSUMPTION IN INDIA: PATTERNS AND TRENDS

2.1 INTRODUCTION

This section focuses on the analysis of food consumption patterns for India. We address the following issues:

(i) What are the trends in the consumption of important items of food?

(ii) Are there any significant differences in these patterns across different income groups and between rural and urban areas?

(iii) What are the factors responsible for these changes?

Having examined the above issues, we estimate a complete demand system duly incorporating the taste factor, which seems to be a significant factor in explaining the consumer behavior in India. Based on the parameter estimates a simulation exercise is carried out to assess the impact of prices on food consumption.

2.2 CONSUMPTION AND PRICE DATA

Consumption Data: The National Sample Survey Organization (NSSO) periodically conducts sample surveys on consumer expenditure among several other topics. Each survey is called a round. In general each of these surveys is conducted in the period July to June, which is the agricultural year in India. However, a few rounds are spread over calendar year (January-December). Also because of various reasons, a few rounds cover only six-month period. The schedule designed for the consumer expenditure surveys elicits information regarding the expenditure on several items of consumption from the respondents by recall. The reference period for consumption is 'last 30 days' for

items of frequent purchases and 'last one year' for others[9]. These surveys were conducted on regular basis over large samples till 1973-74. From 1986-87 the regular 'large' sample surveys were replaced by annual 'thin sample series' with a large sample survey once in about five years. The published data contains expenditures on about 20 broad groups of consumption items by 12-10 monthly per capita expenditure (MPCE) classes, separately for rural and urban. The consumption data for the present analysis have been compiled from the published reports. We cover 16 periods of the survey data spread over the last three decades[10]. For some rounds, the published results also give the nutritional intakes estimated from the consumption data. We use this data for examining the nutritional consequences of changing food consumption patterns.

Prices Data: In India Consumer price indices are not compiled separately for rural and urban areas[11]. What we have are price indices compiled for different section of people like agricultural labor, industrial workers and urban non-manual employees. Even these indices are not available at the disaggregated commodity level. On the other hand, the Economic Advisor's wholesale price indices are compiled for the country as a whole and also their weighing diagram is production based. Therefore the existing price data cannot serve for consumption analysis. In order to overcome this, a separate price index series was constructed following the procedure of Radhakrishna et al (1979). Broadly this procedure is as follows

The Economic Advisor's Wholesale Price Indices Series give monthly item-wise average price relatives. For every NSSO round the monthly item-wise price relatives were averaged over the corresponding survey period. The item-wise NSS-period-average price relatives form the basic data for constructing the consumer price indices separately

[9] During the recent surveys the NSSO experimented with the reference periods. In the last large sample survey (1999-2000), 30 day and 7day references were used simultaneously. This resulted in a controversy over the comparability of results of this survey to those of earlier surveys. See Deaton and Dreze(2003), Sundaram and Tendulkar (2003). In the present analysis we use results of 1999-2000 survey based on 30-day period and assume that they are comparable to those of earlier survey.

[10] Surveys with six months duration have not been considered.

[11] Attempts to compile separate consumer price indices were made by Minhas, et al (1988,1991). Recently, Deaton(2000) constructed price indices for rural India using prices estimates from NSS consumer expenditure survey data.

for rural and urban areas. Using the mean level item-wise expenditure data of the 32nd round (1977-78) we formed the weighting diagram separately for rural and urban areas. The round-wise average relatives are then aggregated according to commodity scheme followed. These indices were constructed for 16 years for which we have the expenditure data. For examining the trends in the relative prices, separate price indices were constructed using annual average (April-March) price relatives and NSSO weighting diagram for rural and urban.

2.3 CONSUMPTION PATTERNS

The trends in consumption patterns have been examined for three broad income groups, viz., bottom thirty percent, middle forty percent and top thirty percent. Consumption estimates for each group is made using linear interpolation method from MPCE class-wise data. The consumption data were aggregated to 9 broad groups, viz. 1) Cereals, 2) Milk and milk products, 3) Edible oils, 4) Meat, fish and eggs, 5) Sugar and gur, 6) Pulses, 7) Fruits and vegetables, 8) Other food, 9) All non-food. All the expenditures were expressed in terms of 1999-2000 prices. For this we used the round-specific commodity price indices by shifting their base to 1999-2000. For presenting the broad trends, the commodity groups were then further aggregated into three broad groups viz. Cereals, non-cereal food (milk, edible oils, meat, fish and eggs, sugar, pulses, fruits and vegetables and other food) and non-food. Growth rates for the periods 1970-90 and 1990-2000 are estimated following trend method. Trends for the items of non-cereal food are presented separately for the last six large sample rounds.

2.4 CEREALS

The per capita monthly real expenditures on cereals over the years 1970-2000 are presented in table 1 and figure 5. As can be seen, there are significant differences in the consumption patterns of cereals between rural and urban areas. In rural areas the cereal consumption declined consistently among all the income groups, while in urban areas it exhibited mixed trends. At mean level, the cereal consumption in rural areas declined at

1.1%pa during the seventies and eighties, while in the nineties it declined at 2.2% pa. In the urban areas it was almost stagnant in the first period while in the second period it declined at about 0.4% pa. In other words the cereal demand declined faster in the nineties compared to the seventies and eighties in India, especially in the rural areas. In both rural and urban areas, the cereal consumption of the poorest 30% started declining during the nineties.

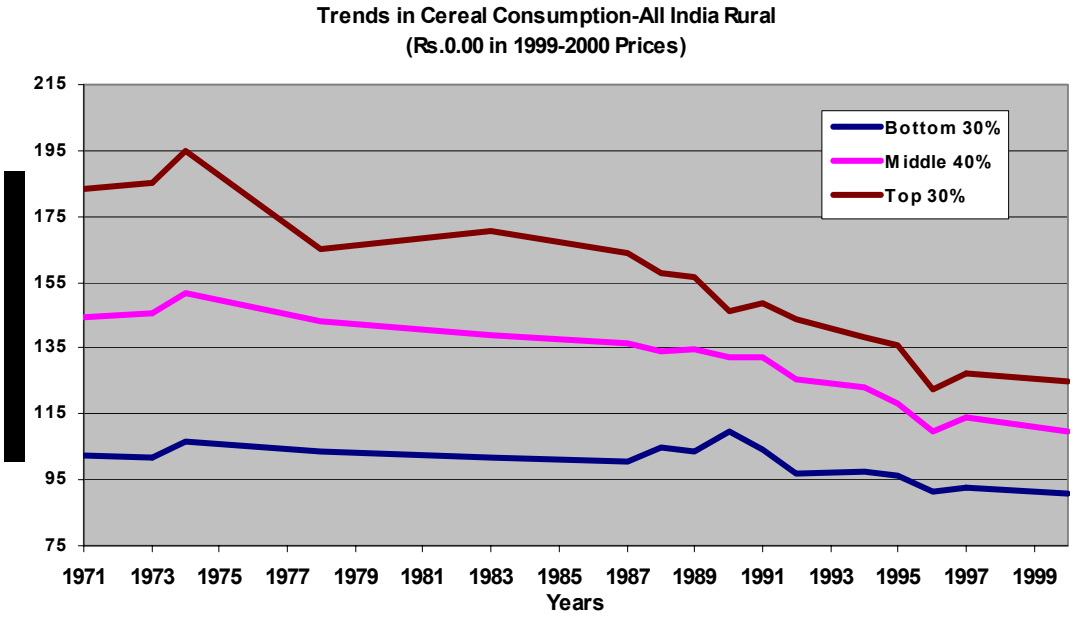
It can be seen that the rate of decline increases as one moves from the poor to richer groups in rural areas. For the poorest 30%, the rate of decline in the cereal consumption was about 1.4% pa while for the top 30% it was 2.1%. On the other hand in the urban areas the decline is slower among the richer groups- in fact the cereal consumption of the urban non-poor appears to be almost stagnant. To examine the regional patterns, we have presented the mean level per capita cereal consumption (in quantity terms) across major states of India for the last three large sample rounds of NSSO in rural areas (Table 2). Across all the states, the cereal consumption has declined between 1993-94 and 1999-2000. It can be seen that even in those states where the cereal consumption increased in the eighties have registered decline in the nineties.

Table 3 and figure 6 presents the consumption of rice, wheat and other cereals (coarse) in rural areas of India in quantity terms for the six NSSO rounds by the three broad income groups. The data show that the consumption of other cereals is rapidly shrinking for all the income groups, while that of rice and wheat is increasing. Between 1972-73 and 1999-2000, the decline in coarse cereals was as much as 3.4 kg at mean level. The consumption of rice and wheat show increasing trend, though it seems to have tapered off in the recent periods. However, the increase in the consumption of so-called superior cereals is not commensurate with the decline in the coarse cereals in quantity terms. This resulted in the decline in intake of total cereals over time.

Table 1—Trends in Per Capita Cereal Consumption (at 1999-2000 prices)

YEAR	RURAL				URBAN			
	B 30%	M 40%	T 30%	All	B 30%	M 40%	T 30%	All
1970-71	102.2	144.2	183.2	143.3	97.71	124.77	134.30	119.51
1972-73	101.9	145.5	185.0	144.3	100.80	127.84	135.82	122.12
1973-74	106.6	151.4	195.0	151.1	101.15	131.76	145.58	126.72
1977-78	103.4	143.1	165.4	137.9	100.19	125.15	138.11	121.55
1983	102.0	139.1	170.3	137.3	97.85	122.31	137.68	119.58
1986-87	100.4	136.6	164.1	134.0	98.58	121.28	135.87	118.84
1987-88	104.7	134.0	158.0	132.4	101.13	118.79	134.95	118.34
1988-89	103.7	134.5	156.4	131.9	99.78	121.69	133.83	118.76
1989-90	109.7	132.5	146.3	129.8	104.31	122.60	132.40	120.05
1990-91	104.2	132.4	148.7	128.8				
1992	96.9	125.8	143.9	122.5	96.77	115.23	129.20	113.88
1993-94	97.3	123.0	138.6	120.0	94.83	112.98	125.90	111.41
1994-95	96.6	118.1	135.8	117.0	95.44	117.27	133.69	115.64
1995-96	91.4	109.9	122.4	108.1	92.59	109.59	122.10	108.24
1997	92.6	113.7	127.2	111.4	93.21	112.61	128.06	111.43
1999-2000	91.0	109.9	124.9	108.7	90.35	106.93	123.29	106.86
Growth Rates								
1970-90	0.10	-0.55	-0.55	-1.10	0.25	-0.15	0.00	0.00
1990-2000	-1.38	-2.15	-2.15	-2.17	-0.65	-0.60	0.03	-0.39

Figure 5—Trends in Cereal Consumption-All India Rural



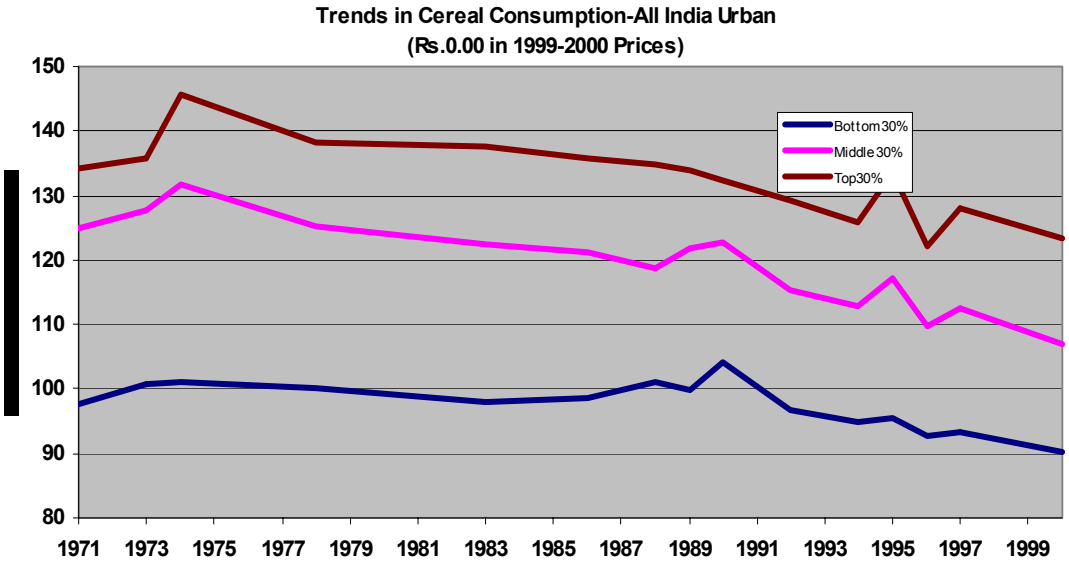


Table 2—Trends in Cereal Consumption in Major states of India (Rural)

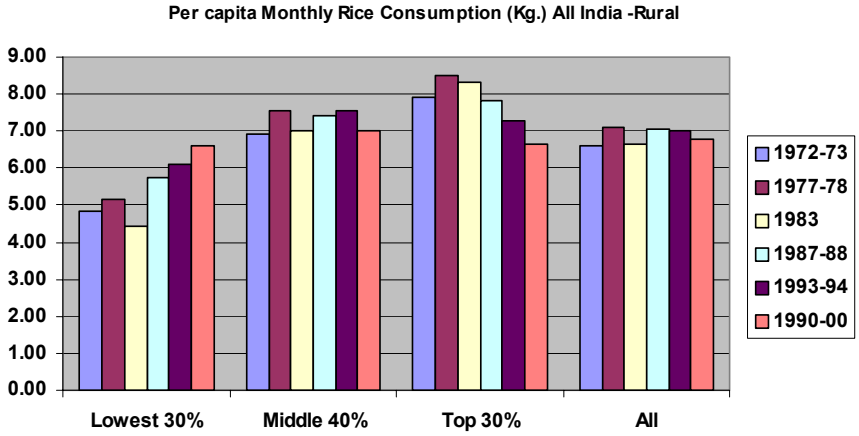
Kg/Month

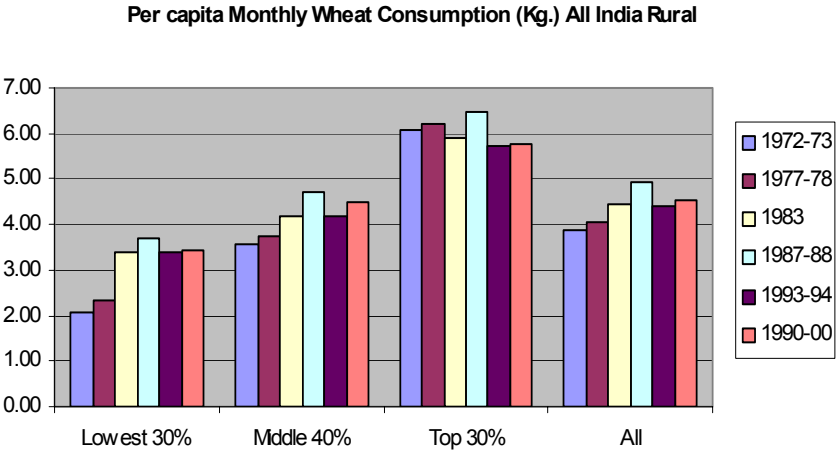
States	Per Capita Consumption (kg/Month)				Annual Growth Rate		
	1983	1987-88	1993-94	1999-00	1987-88	1993-94	1999-00
Andhra Pradesh	15.37	14.35	13.27	12.66	-1.36	-1.30	-0.79
Assam	14.23	14.23	13.17	12.63	0.00	-1.28	-0.69
Bihar	15.77	15.39	14.31	13.76	-0.49	-1.21	-0.65
Gujarat	12.56	12.00	10.66	10.19	-0.91	-1.95	-0.75
Haryana	14.54	15.02	12.92	11.38	0.65	-2.48	-2.09
Karnataka	15.03	13.75	13.15	11.53	-1.76	-0.74	-2.17
Kerala	10.01	10.36	10.11	9.89	0.69	-0.41	-0.37
Madhya Pradesh	15.83	15.39	14.20	12.93	-0.56	-1.33	-1.55
Maharashtra	13.79	13.03	11.39	11.32	-1.13	-2.22	-0.11
Orissa	15.61	15.72	15.93	15.09	0.14	0.22	-0.90
Punjab	13.52	12.41	10.78	10.58	-1.70	-2.32	-0.32
Rajasthan	17.19	16.62	14.85	14.19	-0.67	-1.86	-0.75
Tamil Nadu	13.05	12.24	11.72	10.66	-1.27	-0.72	-1.57
Uttar Pradesh	15.47	15.32	13.91	13.66	-0.19	-1.60	-0.30
West Bengal	14.28	15.12	14.96	13.59	1.15	-0.18	-1.59
All India	14.80	14.47	13.40	12.72	-0.45	-1.27	-0.86

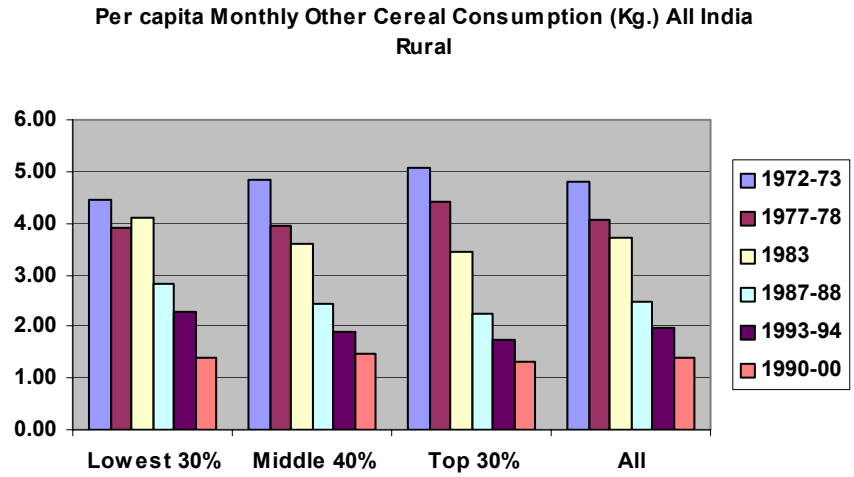
Table 3—Trends Per Capita Consumption of Rice, Wheat, Other Cereals and Total Cereals in Rural India

Rice (kg/month)						
Decile Group	**1972-73**	**1977-78**	**1983**	**1987-88**	**1993-94**	**1990-00**
Lowest 30%	4.82	5.17	4.44	5.74	6.10	6.60
Middle 40%	6.91	7.57	7.01	7.42	7.54	7.02
Top 30%	7.93	8.48	8.32	7.83	7.28	6.64
All	6.59	7.12	6.63	7.04	7.02	6.78
Wheat (kg/month)						
Decile Group	**1972-73**	**1977-78**	**1983**	**1987-88**	**1993-94**	**1990-00**
Lowest 30%	2.09	2.33	3.40	3.71	3.38	3.44
Middle 40%	3.58	3.73	4.18	4.70	4.17	4.47
Top 30%	6.08	6.20	5.90	6.49	5.73	5.76
All	3.88	4.05	4.46	4.94	4.40	4.55
Other Cereals (kg/month)						
Decile Group	**1972-73**	**1977-78**	**1983**	**1987-88**	**1993-94**	**1990-00**
Lowest 30%	4.45	3.92	4.11	2.82	2.28	1.41
Middle 40%	4.83	3.94	3.61	2.44	1.90	1.45
Top 30%	5.07	4.41	3.43	2.23	1.76	1.30
All	4.79	4.08	3.71	2.49	1.98	1.39
Total Cereals (kg/month)						
Decile Group	**1972-73**	**1977-78**	**1983**	**1987-88**	**1993-94**	**1990-00**
Lowest 30%	11.36	11.42	11.95	12.27	11.76	11.44
Middle 40%	15.32	15.24	14.80	14.56	13.61	12.95
Top 30%	19.08	19.09	17.65	16.55	14.77	13.69
All	15.26	15.25	14.80	14.47	13.40	12.72

Figure 6—Per capital Monthly Rice Consumption (Kg) All India-Rural







2.5 NON-CEREAL FOOD

The expenditure on non-cereal items of food in rural and urban areas shows expansion during the entire period of three decades. However, the rate of expansion seems to have slowed down in the nineties (Table 4 and figure 7). The pattern is almost similar across all the income groups and between rural and urban areas. During the seventies and eighties, the growth rate of non-cereal consumption for the bottom 30% was 2.8% pa in rural areas but it declined to 1.3% pa in the nineties. For the middle 40% and top 30%, the growth rates dropped to 1.0 and 0.5% respectively in the nineties from about 2.2% in the first period. Similarly, in the urban areas, the growth rate declined from 1.6 percent to .8 percent.

In rural as well as urban, the rate growth declined with income in both the periods. To probe further, the non-cereal food is disaggregated into milk and milk products, Edible oils, Meat, fish and eggs, Sugar, Pulses and Fruits and vegetables and trends in their consumption are examined (Table 5 and 6). These trends show significant differences among income groups and between rural and urban areas.

Consumption of milk and milk products increased throughout the entire period in both the rural and urban areas. However, between 1993-94 and 1999-2000 its expansion slowed down in the rural areas, especially for the poor, while for the urban poor continued to increase. Consumption of Edible oils is growing faster in rural compared to urban areas. For the rural poor its growth rate is higher than for the rest. Both in the rural and urban areas, the consumption of meat, fish and egg is declining at mean level, while it is almost stagnant among the poor in both the regions. The consumption of pulses is declining for the all income groups in rural and urban areas. Fruits and vegetables is the only group, which registered consistently high growth throughout the period. Rural areas have higher growth in the consumption of fruits and vegetables compared to the urban. Between 1993-94 and 1999-2000 the consumption of fruits and vegetables increased at

the rate of 6.3% pa in rural and 4.8% pa in urban. Both in rural and urban areas, the poor have higher growth rates of its consumption compared to the richer groups.

The rapid expansion of non-cereal food in the consumption basket in spite of declining cereal consumption resulted in increase in food consumption during earlier period. However during the nineties, the faster decline in the cereal consumption and near slow down in the growth of non-cereal food consumption together have resulted in almost stagnant levels of food consumption.

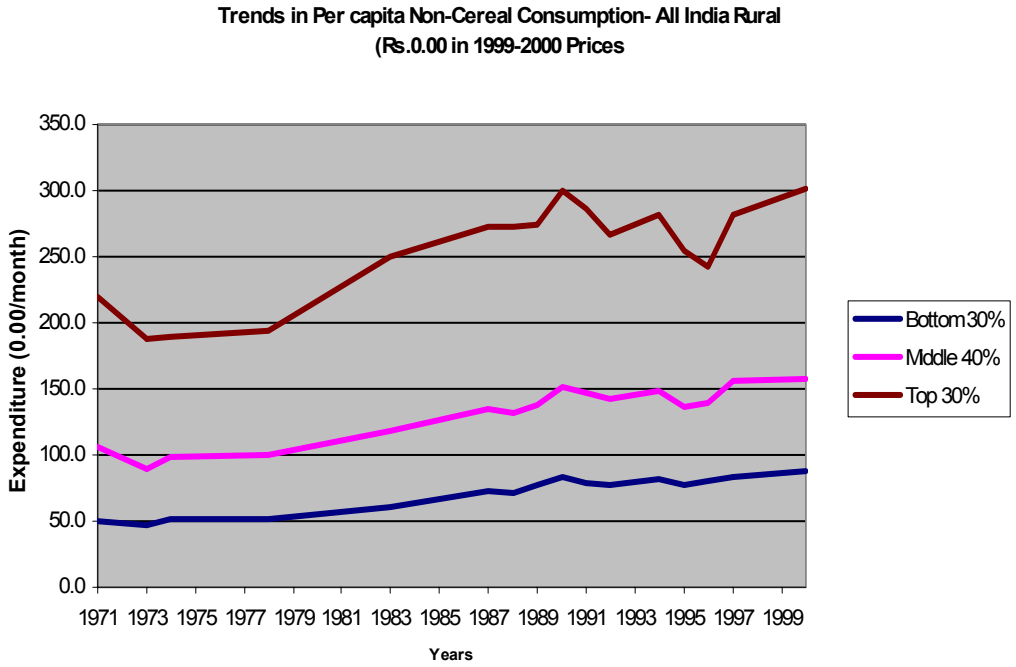
On the other hand, the consumption of non-food is expanding faster for all the income groups in rural and urban areas throughout the last three decades (Table 7 and Figure 8). At mean level, the rural non-food consumption increased at the rate of 4.4% per annum in during both the periods. In the urban areas its growth rate increased from 4 to almost 6% between the same periods. In the seventies and eighties, all the income groups had more or less the similar growth in the non-food consumption.

In the nineties, the rate of expansion declined with income. For the bottom 30% of rural poor the growth of non-food was 5.8% pa and for the top 30% it was 3.7% pa. Corresponding growth rates for the urban are 6.2% and 5.8% pa.

Table 4—Trends in Per Capita Non- Cereal Consumption (at 1999-2000 Prices)

Year	Rural				Urban			
	B 30%	M 40%	T 30%	All	B 30%	M 40%	T 30%	All
1970-71	50.2	105.3	219.9	123.1	89.97	178.64	429.56	227.31
1972-73	47.0	89.4	188.6	106.5	89.45	175.04	411.22	220.22
1973-74	51.0	99.0	189.3	111.7	86.78	161.60	376.24	203.55
1977-78	50.9	100.4	193.8	113.6	89.00	175.75	382.15	211.64
1983	60.7	118.4	249.9	140.6	103.32	202.85	418.49	237.68
1986-87	72.4	134.7	272.4	157.3	123.99	233.93	462.54	269.53
1987-88	71.8	132.2	273.3	156.4	119.29	223.97	469.09	266.10
1988-89	77.7	137.7	274.6	160.8	126.68	237.06	453.49	268.87
1989-90	83.6	151.3	299.4	175.4	128.81	236.86	469.55	274.25
1990-91	78.4	146.7	286.4	168.1				
1992	76.9	142.0	267.3	160.0	127.93	244.35	471.22	277.48
1993-94	81.7	148.0	281.5	168.2	133.02	246.57	485.44	284.16
1994-95	76.9	135.6	253.9	153.5	121.81	229.87	476.38	271.41
1995-96	80.0	139.3	242.5	152.5	134.82	242.38	441.88	269.96
1997	83.3	155.5	281.3	171.6	134.38	248.72	457.36	277.01
1999-2000	87.4	158.1	301.8	180.0	144.64	264.15	516.28	303.94
Growth Rates								
1970-90	2.79	2.23	2.20	2.29	2.38	2.09	1.05	1.57
1990-2000	1.26	0.98	0.52	0.79	1.14	0.97	0.48	0.75

Figure 7—Trends in Per capita Non-Cereal Consumption-All India Rural and Urban



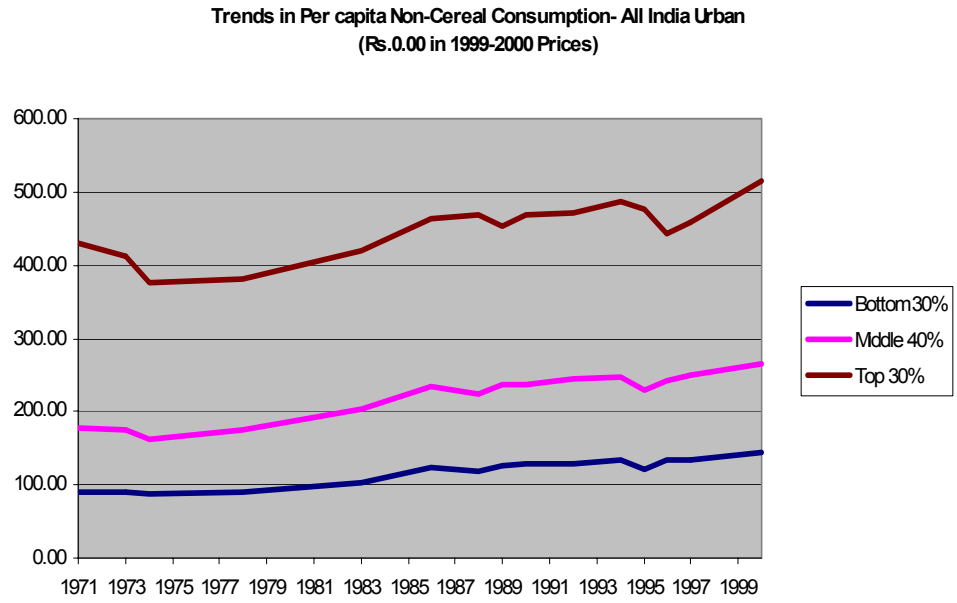


Table 5—Per capita Consumption of Items of Non-Cereal Food in Rural Areas of India (at 1999-2000 Prices)

Rs. 0.00/month

Year	Milk and milk products				Edible oils				Meat, fish and eggs			
	30.00%	40.00%	30.00%	All	30.00%	40.00%	30.00%	All	30.00%	40.00%	30.00%	All
1973-74	5.22	17.95	49.22	23.51	4.84	8.76	14.28	9.24	7.68	14.69	26.98	16.27
1977-78	5.60	19.65	58.12	26.98	5.30	9.64	15.27	10.03	7.57	15.05	25.48	15.93
1983	7.25	22.93	64.70	30.76	6.39	11.02	20.12	12.36	6.83	14.52	31.97	17.45
1987-88	8.74	25.95	74.46	35.34	7.33	12.01	20.96	13.29	7.77	15.66	31.75	18.12
1993-94	10.89	31.85	82.49	40.75	9.54	14.79	22.71	15.59	7.52	15.36	28.41	16.92
1999-2000	10.87	32.56	87.55	42.55	11.41	17.39	25.94	18.16	7.56	14.76	26.56	16.14
Growth Rate												
1977-78	1.76	2.29	4.24	3.50	2.31	2.43	1.68	2.07	-0.36	0.60	-1.42	-0.53
1983	4.81	2.84	1.97	2.41	3.47	2.46	5.14	3.88	-1.85	-0.65	4.21	1.66
1987-88	4.24	2.78	3.17	3.13	3.10	1.93	0.91	1.62	2.91	1.69	-0.16	0.84
1993-94	3.73	3.48	1.72	2.41	4.48	3.53	1.35	2.69	-0.54	-0.33	-1.83	-1.13
1999-2000	-0.04	0.37	1.00	0.72	3.04	2.74	2.24	2.58	0.10	-0.66	-1.12	-0.79
Year	**Sugar**				**Pulses**				**Fruits and Vegetables**			
	30.00%	40.00%	30.00%	All	30.00%	40.00%	30.00%	All	30.00%	40.00%	30.00%	All
1973-74	3.41	7.48	14.65	8.41	10.42	19.30	31.30	20.24	7.23	11.92	20.13	12.98
1977-78	4.00	7.94	16.31	9.27	9.28	16.70	26.08	17.29	7.33	12.34	20.24	13.21
1983	5.19	10.25	22.07	12.28	10.87	17.96	29.88	19.41	9.53	15.10	28.92	17.58
1987-88	6.19	11.68	23.58	13.60	14.03	21.51	30.62	22.00	9.81	16.60	28.24	18.05
1993-94	5.31	9.51	17.43	10.62	12.61	18.12	26.64	19.02	15.45	24.35	40.62	26.56
1999-2000	5.91	10.63	18.48	11.57	11.89	17.99	25.73	18.48	22.58	35.06	58.38	38.31
Growth Rates												
1977-78	4.05	1.53	2.71	2.46	-2.87	-3.55	-4.46	-3.86	0.36	0.87	0.13	0.44
1983	4.85	4.75	5.65	5.24	2.93	1.33	2.51	2.13	4.89	3.74	6.71	5.33
1987-88	4.00	2.93	1.48	2.30	5.82	4.09	0.55	2.82	0.63	2.13	-0.53	0.60
1993-94	-2.51	-3.37	-4.91	-4.03	-1.75	-2.82	-2.30	-2.39	7.87	6.59	6.24	6.64
1999-2000	1.81	1.89	0.98	1.43	-0.98	-0.12	-0.57	-0.48	6.53	6.27	6.23	6.30

Table 6—Per capita Consumption of Items of Non-Cereal Food in Urban Areas of India (at 1999-2000 prices)

Rs 0.00/month

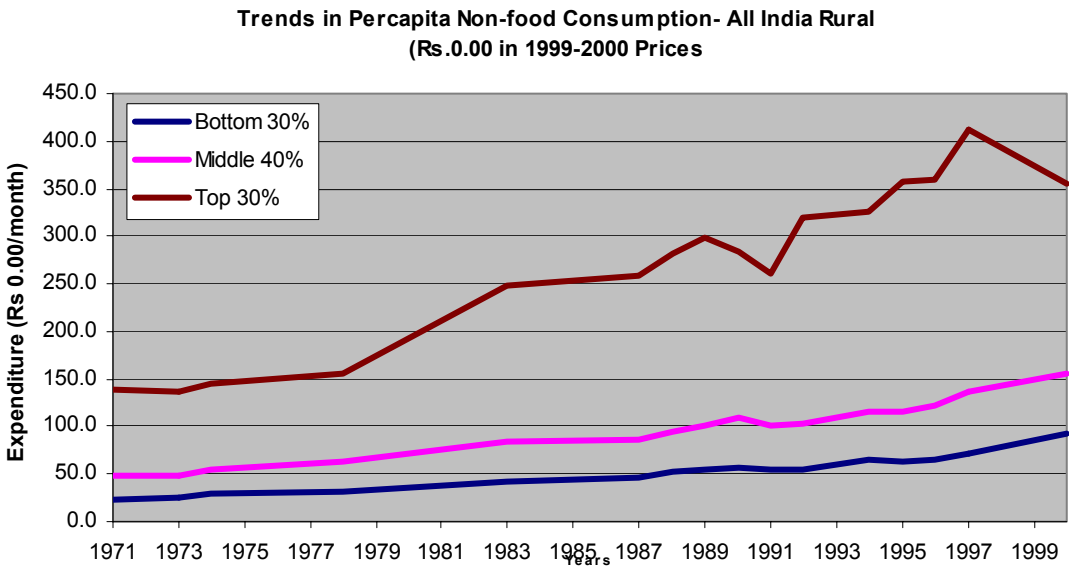
Year	Milk and milk products				Edible Oils				Meat, fish and eggs			
	30%	40%	30%	All	30%	40%	30%	All	30%	40%	30%	All
1973-74	12.43	32.36	82.34	41.38	8.97	16.38	29.04	17.96	11.77	21.63	48.00	26.59
1977-78	14.26	40.50	102.79	51.32	9.78	18.55	32.11	19.98	12.07	24.04	49.94	28.22
1983	17.24	45.89	104.89	55.00	11.04	20.49	34.00	21.71	12.43	25.15	51.00	29.09
1987-88	20.62	51.23	118.21	62.14	11.57	20.35	34.90	22.08	14.01	25.16	51.15	29.61
1993-94	23.26	58.64	125.22	68.00	14.60	24.00	36.79	25.01	13.52	24.71	44.06	27.16
1999-2000	26.92	63.87	135.13	74.16	16.17	26.00	38.51	26.80	13.77	25.20	41.89	26.78
1977-78	3.50	5.77	5.70	5.53	2.19	3.15	2.54	2.71	0.62	2.68	0.99	1.50
1983	3.51	2.30	0.37	1.27	2.24	1.83	1.05	1.52	0.55	0.83	0.38	0.56
1987-88	4.06	2.47	2.69	2.75	1.04	-0.15	0.58	0.38	2.69	0.00	0.06	0.39
1993-94	2.03	2.28	0.97	1.51	3.95	2.79	0.88	2.10	-0.60	-0.30	-2.46	-1.43
1999-2000	2.47	1.43	1.28	1.46	1.72	1.34	0.77	1.16	0.30	0.33	-0.84	-0.23
	Sugar				**Pulses**				**Fruits & Vegetables**			
	30%	40%	30%	All	30%	40%	30%	All	30%	40%	30%	All
1973-74	6.02	10.60	17.76	11.37	14.28	23.85	35.86	24.58	11.11	20.20	45.52	25.07
1977-78	6.61	11.67	19.84	12.61	13.70	23.02	34.33	23.62	12.36	22.95	49.63	27.78
1983	8.03	13.44	20.65	13.98	15.63	25.06	36.93	25.79	15.21	28.36	57.31	33.10
1987-88	8.55	14.25	21.64	14.75	15.93	24.74	36.27	25.55	17.81	32.76	67.57	38.72
1993-94	8.89	14.07	19.15	14.04	16.22	24.29	33.16	24.53	23.92	41.85	82.81	48.76
1999-2000	9.36	13.92	18.74	14.00	16.09	23.77	33.04	24.25	32.13	56.16	108.20	64.57
1977-78	2.36	2.45	2.81	2.60	-1.04	-0.88	-1.08	-1.00	2.72	3.24	2.18	2.60
1983	3.58	2.60	0.73	1.90	2.43	1.55	1.34	1.61	3.84	3.92	2.65	3.24
1987-88	1.40	1.31	1.04	1.21	0.42	-0.29	-0.40	-0.21	3.56	3.26	3.73	3.54
1993-94	0.66	-0.21	-2.01	-0.82	0.30	-0.30	-1.48	-0.68	5.04	4.16	3.45	3.92
1999-2000	0.86	-0.18	-0.36	-0.05	-0.13	-0.36	-0.06	-0.19	5.05	5.03	4.56	4.79

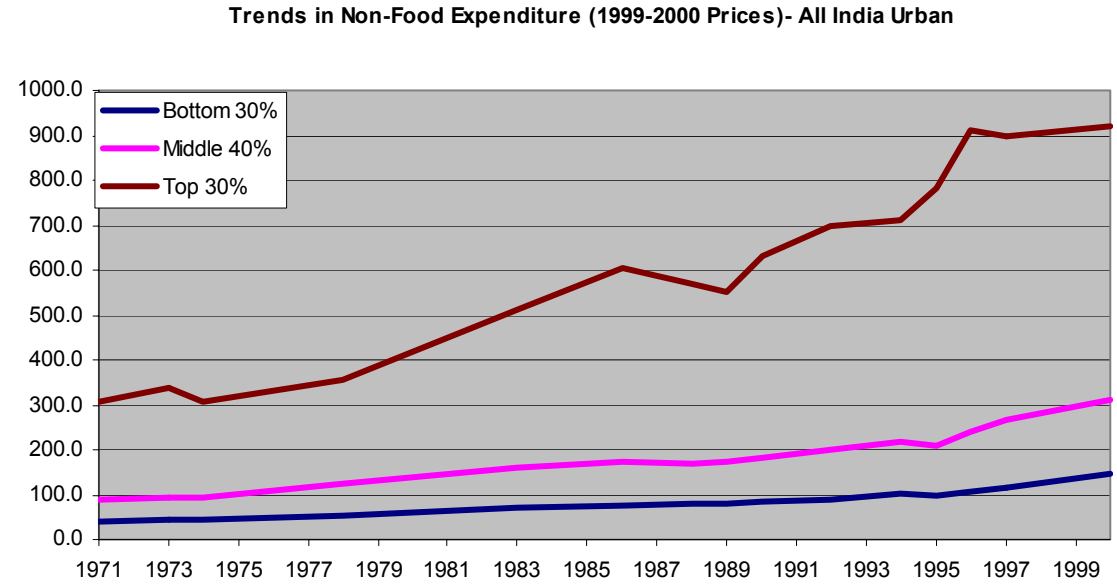
Table 7—Trends in Per Capita Non- Food Consumption at 1999-2000 Prices

Rs. 0.00/month

Year	Rural				Urban			
	30.00%	40.00%	30.00%	All	30.00%	40.00%	30.00%	All
1970-71	23.5	48.6	138.4	68.0	41.20	90.41	307.99	140.92
1972-73	25.4	49.1	137.6	68.5	43.90	95.09	336.69	152.22
1973-74	28.4	53.9	145.4	73.7	45.57	92.14	307.48	142.77
1977-78	32.1	63.2	155.4	81.5	55.26	122.57	354.17	171.85
1983	43.1	83.9	249.0	121.2	72.82	160.74	511.77	239.67
1986-87	46.0	87.2	259.6	126.5	77.07	175.40	604.25	274.56
1987-88	52.4	95.2	282.5	138.5	79.82	168.33	568.10	261.71
1988-89	54.6	101.1	297.8	146.1	79.51	175.05	551.60	259.35
1989-90	56.2	109.5	283.2	145.6	83.46	180.83	632.78	287.21
1990-91	54.7	100.3	260.2	134.6				
1992	54.1	103.0	318.7	153.1	89.32	199.72	698.17	316.14
1993-94	64.2	115.5	325.8	163.2	102.31	217.50	710.24	330.77
1994-95	62.3	115.3	357.5	172.1	97.94	209.93	783.51	348.41
1995-96	64.6	122.6	360.2	176.5	107.88	240.02	911.25	401.75
1997	71.9	137.1	411.1	199.7	117.02	267.12	899.69	411.86
1999-2000	92.6	156.5	356.3	197.3	146.06	309.31	921.07	443.87
Growth Rates								
1970-90	4.53	4.23	4.47	4.41	3.91	4.00	4.08	4.04
1990-2000	5.73	5.09	3.69	4.38	6.19	6.49	5.47	5.81

Figure 8—Trends in Percapita Non-food Consumption-All India Rural





2.6 NUTRITIONAL INTAKES

What are the implications of these trends on the levels of nutrition intake? Table 8 (Figure 9) presents the calorie intake levels of the three income groups over 1972-73 and 1999-2000 in rural areas. As can be seen the average calorie intake levels decline steadily over time. For poorest 30% the calorie intake levels increased till the early nineties but stagnated thereafter. For the middle and top groups it shows declining trend from late seventies. Table 9 presents the trends in mean level intake of calorie, protein and fat across major states of India (rural areas). It can be seen that except Punjab, Rajasthan and Uttar Pradesh, the calorie intake levels of all other states remained stagnant during the last decade. The protein intakes levels do not show considerable improvement in spite observed diversification to non-cereal food. This could be due to the fact that cereals form cheap source of proteins also (apart from calories) and the increases in non-cereals food intake is not commensurate with the loss due to reduced cereal intake. However, the content of other micronutrients in the food basket of all, especially of the poor might have improved considerably due to increased non-cereal food consumption. In contrast, the trends in fat intake levels show substantial improvement over time. In rural areas the fat intake increased from 24 gm per capita per day to 36 grams in the last three decades. During the same period in urban areas it increased from 36 grams to almost 50 grams. The reason for the increasing content of fats in the Indian food basket while energy and protein content is almost stagnant needs to be probed further. A possible reason is the high expenditure elasticity of edible oil, which is the basis for most Indian cooking.

What are the factors responsible for these changes? Given tastes, the consumption levels respond to the changes in relative prices and income. It is also possible that the preferences of consumer change over time. Together, these factors influence the consumption patterns of an individual. At aggregate level, income distribution is another factor that affects the aggregate consumption level.

However, this factor may not play significant role when we consider the consumption patterns at broad income group level. In what follows we examine these factors.

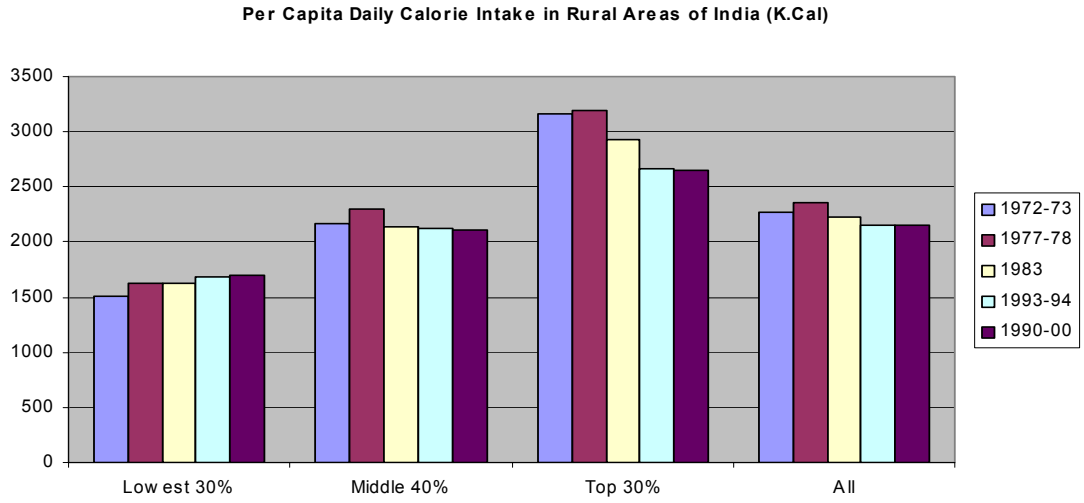
Table 8—Trends in Per Capita Daily Intake of Calories in Rural India

Decile Group	1972-73	1977-78	1983	1993-94	1990-00
Lowest 30%	1504	1630	1620	1678	1696
Middle 40%	2170	2296	2144	2119	2116
Top 30%	3161	3190	2929	2672	2646
All	2268	2364	2222	2152	2149

Table 9—Trends in Per capita Daily Intake of Calorie, Protein and Fat in Urban areas of India

States	Calories (K.cal/day)				Proteins (gm/day)				Fat (gm/day)			
	1972-73	1983	1993-94	1999-00	1972-73	1983	1993-94	1999-00	1972-73	1983	1993-94	1999-00
Andhra Pradesh	2143	2009	1992	2052	51.0	50.0	49.6	50.8	31.0	32.0	34.9	41.5
Assam	2135	2043	2108	2174	56.0	52.0	53.5	56.5	25.0	25.0	30.8	38.7
Bihar	2167	2131	2188	2171	61.0	61.0	61.4	61.0	25.0	26.0	32.7	34.2
Gujarat	2172	2000	2027	2058	57.0	55.0	54.9	54.7	58.0	53.0	57.9	67.0
Haryana	2404	2242	2140	2172	67.0	67.0	63.6	62.5	42.0	49.0	49.4	56.3
Karnataka	1925	2124	2026	2046	46.0	55.0	53.1	53.5	32.0	36.0	37.6	45.1
Kerala	1723	2049	1966	1995	44.0	51.0	52.4	55.2	27.0	38.0	37.0	42.9
Madhya Pradesh	2229	2137	2082	2132	61.0	62.0	59.8	60.6	34.0	36.0	40.3	43.5
Maharashtra	1971	2028	1989	2039	55.0	56.0	55.5	55.9	41.0	45.0	47.9	52.6
Orissa	2276	2219	2261	2298	55.0	56.0	57.2	57.8	23.0	24.0	28.1	27.4
Punjab	2783	2100	2089	2197	70.0	63.0	61.8	64.8	52.0	49.0	53.7	57.9
Rajasthan	2357	2255	2184	2335	70.0	69.0	66.5	70.4	47.0	47.0	51.6	61.5
Tamil Nadu	1841	2140	1922	2030	44.0	45.0	48.7	51.7	23.0	29.0	33.9	43.2
Uttar Pradesh	2161	2043	2114	2131	62.0	62.0	63.2	62.0	35.0	34.0	41.2	45.5
West Bengal	2080	2048	2131	2134	58.0	55.0	56.6	55.5	31.0	31.0	34.2	40.2
All India	2107	2089	2071	2156	56.0	57.0	57.2	58.5	36.0	37.0	42.0	49.6

Figure 9—Per Capita Daily Calorie intake in Rural Areas of India (k. Cal)



2.7 INCOME AND PRICES

Table10 and figure 10 presents the trends in the real total expenditures of the three broad income groups in rural and urban areas. The data show significant differences in the growth patterns between rural and urban areas. The growth rates in rural areas have always been higher than those in rural areas. During the seventies and eighties, the rural growth was about 1.8%pa but it dropped to 1.4% in the nineties. The decline is visible across all the income groups. For the bottom 30%, the growth rate dropped from 1.7% to 1.5% between the two periods. For the top 30%, the drop in growth rate was from 2% to 1.4% in the same period. Though the rural growth in the nineties is lower, it was uniform across the three income groups. On the other hand, in the urban areas the growth rate increased from 2.1% pa in the seventies and eighties to 3% in the nineties. Though, the growth rate in urban areas is higher during the nineties, it is inequitable within urban income groups. The growth rate for the top 30% of the urban is one percentage point more than that for the bottom 30%. With positive growth in real expenditures and with high expenditure elasticities the consumption of food items should have increased in the eighties and nineties unless the relative prices were adverse. We examine the trends in the relative prices.

Relative prices for the 9 broad groups of items have been worked out for the last three decades using the wholesale price relatives and NSSO weighting diagram separately for rural and urban areas. The relative prices are worked out as ratios of commodity price indices to the general index. Table 11 and figure 11 presents the relative prices in rural areas. During the seventies and eighties, the relative price of cereals showed declining trend. But in the nineties, it increased rapidly at almost 1% pa. The aggregated price non-cereal food items declined in the nineties relative to the general price. Meat, fish and eggs and Pulses are the only two commodity groups, whose price relatives increased in the nineties.

Though the price movements of non-cereals are favorable, because of the increasing relative price of cereals, the overall food relative price showed an increasing trend in the nineties. It can be seen that in the eighties, the relative price of non-cereal food was responsible for the adverse trends in the food price.

2.8 SHIFTS IN TASTES AND PREFERENCES

The expenditure elasticity of cereals is known to be higher in rural areas compared to the urban areas. Also, in urban areas poor have higher expenditure elasticity compared to the richer groups. The adverse cereal price and the slow down of growth in rural and for urban poor in the nineties might have dampened the demand for cereals. However, with the positive growth in the income across all the income groups and favorable cereal price movements in the seventies and eighties, one expects an improvement in the cereal consumption of the poor. But no such improvement had taken place. For explanation, one may have to consider exogenous factors, which affect food consumption. One possible explanation could be the changing tastes and preferences. The tastes and preferences of Indian consumers seem to be changing in favor of non-food items from food, within food in favor of non-cereal food from cereals. Within cereals the preference patterns seems to be moving in favor of rice and wheat from coarse cereals (Radhakrishna and Ravi 1992). More recently, Rao (2000) observed that the decline has been sharper in the rural areas where improvements in rural infrastructure made other food and non-food items available to the rural households and hard manual work is

greatly reduced in agriculture due to farm mechanization. Rao further observed that a reduction in the intake of food grain on this account should not be taken as deterioration in human welfare.

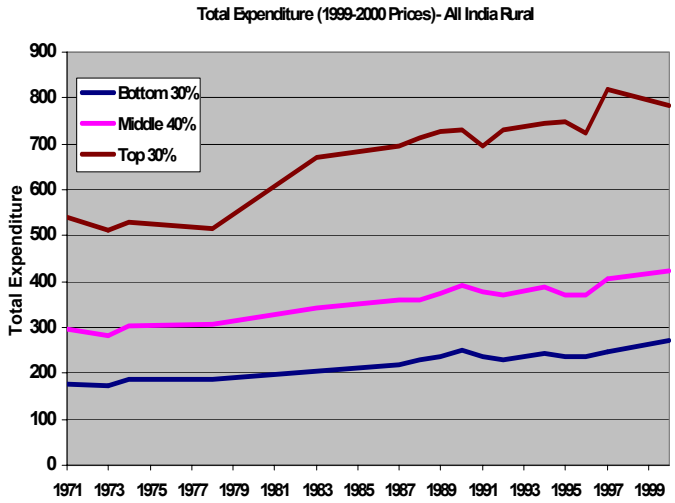
In the next section we estimate a complete demand system keeping the shift in tastes and preferences as one of the factors and derive the complete set of elasticities.

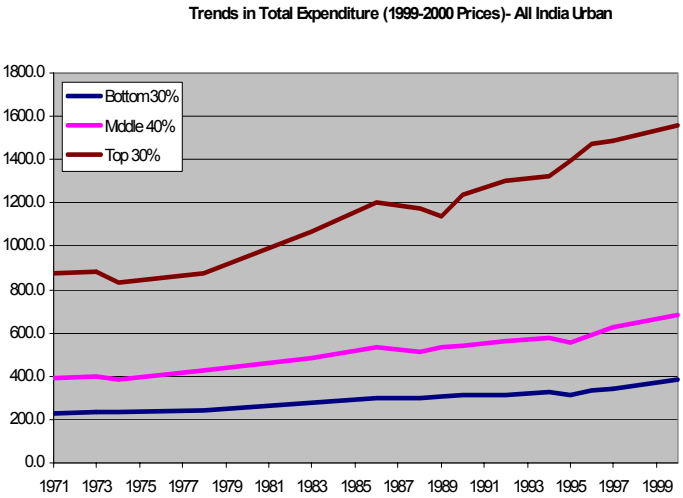
Table 10—Trends in Per Capita Total Expenditure (at 1999-2000 Prices)

Rs. 0.00/month

Year	Rural				Urban			
	30.00%	40.00%	30.00%	All	30.00%	40.00%	30.00%	All
1970-71	175.8	298.2	541.4	334.4	228.87	393.83	871.86	487.75
1972-73	174.3	284.0	511.2	319.2	234.15	397.98	883.73	494.55
1973-74	186.0	304.3	529.8	336.4	233.51	385.49	829.30	473.04
1977-78	186.3	306.7	514.6	332.9	244.45	423.46	874.43	505.05
1983	205.8	341.4	669.2	399.0	273.99	485.90	1067.94	596.94
1986-87	218.8	358.5	696.1	417.9	299.64	530.61	1202.66	662.93
1987-88	228.9	361.4	713.8	427.4	300.24	511.08	1172.13	646.15
1988-89	236.0	373.3	728.8	438.8	305.98	533.80	1138.92	646.99
1989-90	249.5	393.3	728.9	450.9	316.59	540.29	1234.73	681.51
1990-91	237.2	379.4	695.3	431.5				
1992	227.9	370.7	729.9	435.6	314.02	559.29	1298.59	707.50
1993-94	243.2	386.5	746.0	451.4	330.16	577.05	1321.58	726.34
1994-95	235.8	369.1	747.2	442.5	315.19	557.07	1393.58	735.46
1995-96	236.0	371.7	725.0	437.0	335.29	592.00	1475.23	779.95
1997	247.8	406.3	819.6	482.8	344.61	628.45	1485.11	800.30
1999-2000	271.1	424.5	783.1	486.0	381.05	680.39	1560.64	854.66
Growth Rates								
1970-90	1.73	1.48	2.02	1.78	1.92	2.02	2.22	2.11
1990-2000	1.49	1.32	1.41	1.40	2.30	2.88	3.26	3.01

Figure 10—Total Expenditure (1999-2000 prices) All India Rural





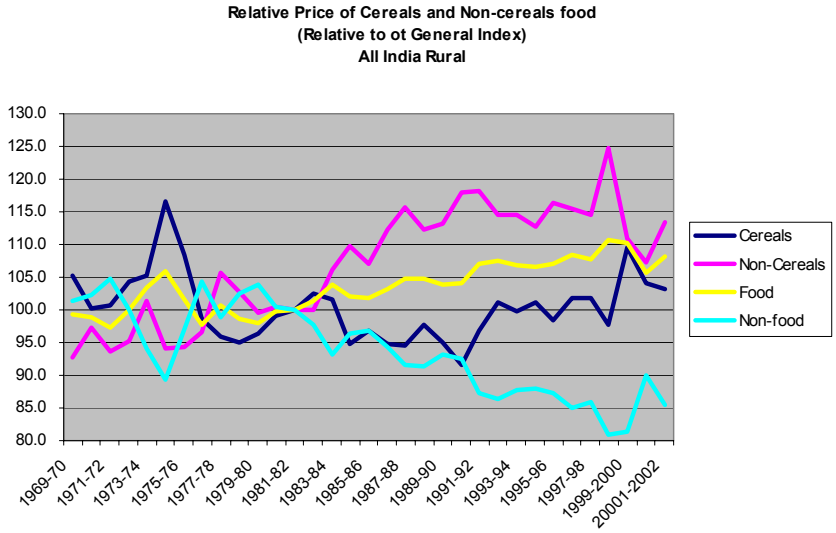
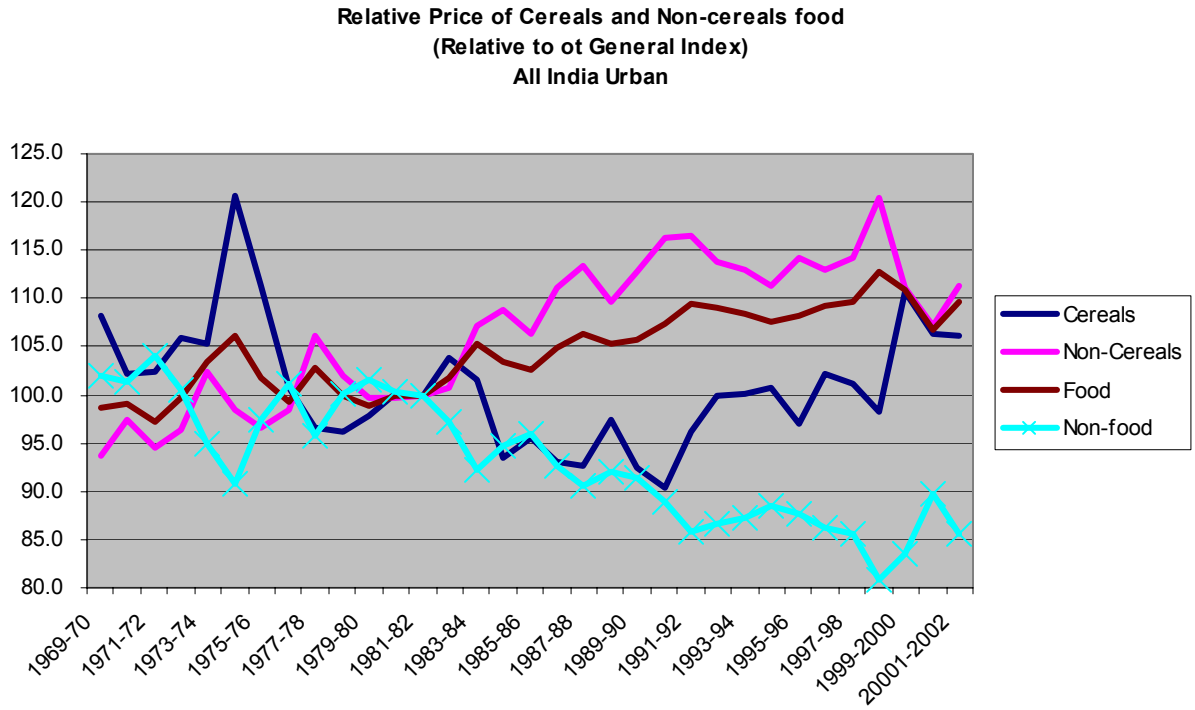


Table 11—Relative Prices of 9 Broad Commodity Groups in Rural Areas

Year	Cereals	Milk and milk products	Edible oils	Meat, Fish and Eggs	Sugar	Pulses	Fruits and Vegetables	Other Food	Non-cereal Food	All food	Non-food
1969-70	98.8	101.9	75.9	64.9	75.0	68.7	94.3	91.5	92.7	99.2	101.4
1970-71	97.7	104.0	83.5	67.3	72.4	73.6	118.7	96.8	97.2	98.8	102.2
1971-72	98.7	105.0	73.2	69.6	95.1	83.6	96.6	102.3	93.6	97.3	104.8
1972-73	101.7	101.9	76.1	71.5	112.8	92.7	101.6	90.7	95.1	100.0	100.1
1973-74	105.6	106.9	95.5	74.7	111.3	88.2	117.4	80.7	101.3	103.3	94.0
1974-75	109.0	96.9	89.6	71.0	82.3	86.0	92.8	91.4	94.2	105.9	89.3
1975-76	108.5	105.4	65.7	74.3	88.0	74.1	87.6	100.4	94.3	101.7	97.0
1976-77	97.4	101.9	75.8	77.8	92.0	71.6	94.2	123.3	96.5	97.7	104.2
1977-78	93.6	96.8	92.1	81.3	75.1	98.7	112.6	131.6	105.7	100.6	98.9
1978-79	93.9	103.0	82.9	91.0	63.7	113.8	96.9	114.0	102.8	98.7	102.4
1979-80	99.5	99.0	90.9	94.0	84.6	101.6	102.3	115.0	99.7	97.9	103.8
1980-81	100.4	94.8	99.0	94.1	118.5	103.5	108.6	102.6	100.4	99.7	100.5
1981-82	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1982-83	106.8	101.7	91.8	106.0	76.3	94.8	100.7	109.1	99.9	101.3	97.7
1983-84	109.6	100.7	97.1	98.8	76.6	102.8	118.4	145.3	106.1	103.8	93.1
1984-85	100.7	107.8	94.9	103.2	82.2	105.5	98.5	160.5	109.8	102.0	96.3
1985-86	100.7	105.9	82.1	114.1	92.8	101.1	104.2	132.4	107.1	101.8	96.8
1986-87	99.2	104.8	102.6	115.8	88.8	99.8	149.1	126.4	112.4	103.2	94.3
1987-88	99.0	108.3	121.6	115.5	81.6	117.1	130.7	117.7	115.8	104.7	91.6
1988-89	102.0	109.9	96.7	111.9	82.1	125.6	105.4	113.5	112.3	104.8	91.4
1989-90	100.6	116.8	92.6	111.6	91.3	121.9	98.9	158.6	113.3	103.8	93.2
1990-91	96.3	110.8	117.5	112.7	83.1	127.7	124.0	156.8	117.9	104.2	92.5
1991-92	99.7	107.7	117.7	107.2	74.1	126.1	119.7	122.5	118.3	107.0	87.3
1992-93	104.5	109.0	97.5	116.1	76.3	115.0	105.3	125.7	114.6	107.6	86.4
1993-94	106.1	107.9	89.2	125.7	96.5	119.7	122.3	136.3	114.5	106.8	87.8
1994-95	105.6	110.7	90.8	139.7	94.4	129.4	103.2	118.6	112.7	106.6	88.0
1995-96	103.1	103.6	91.6	137.6	80.8	151.4	116.7	122.0	116.4	107.1	87.2
1996-97	104.9	97.3	83.8	127.4	76.4	152.4	129.6	114.0	115.4	108.4	84.9
1997-98	105.9	100.2	78.1	136.4	89.5	128.8	101.5	153.0	114.5	107.8	85.9
1998-99	101.9	96.4	91.4	127.3	81.1	130.4	170.1	127.0	124.7	110.6	80.9
1999-2000	113.4	99.0	75.0	123.3	77.3	129.4	88.6	120.2	111.0	110.3	81.4
2000-2001	108.8	103.4	62.8	128.9	76.8	128.4	80.7	101.3	107.2	105.6	89.9
20001-2002	109.7	105.4	68.9	135.0	77.1	131.3	125.1	94.7	113.4	108.1	85.4
Growth Rates											
70s	-0.5	-0.5	1.0	3.5	-2.4	2.8	-0.9	3.4	0.8	-0.1	0.2
80s	-0.3	1.8	0.4	2.0	-1.7	2.4	1.0	2.8	1.7	0.5	-1.0
90s	0.9	-0.9	-4.8	1.4	-0.5	0.6	-1.0	-2.5	-0.4	0.2	-0.5

Figure 11—Relative Price of cereals and Non-cereals food



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2.8.1 Demand Model

A complete demand system has been estimated to compute the complete set of price and expenditure elasticities of major consumption items. We used a hierarchic version of modified Linear Expenditure system (LES), where in the first stage a LES is specified for the broad groups of consumption items. In the second stage a model of Nasse's extended LES is specified to disaggregate one or more broad commodity groups of first stage. The combined model is then used to estimate the elasticities. For the first stage model the commodity grouping followed was 1) Cereals and cereal substitutes, 2) Milk and milk products 3) Edible oils, 4) Meat, fish and eggs, 5) Sugar and gur, 6) other food, and the last is 7) non-food. A separate sub models is specified for the commodity group 'other food'[12]. The sub model disaggregates other food group into pulses, Fruits

[12] A sub model cereal with break up of rice, wheat and other cereals also was tried. However, inclusion of cereal sub model led to violation of second order condition, which, results in unreliable elasticities. Therefore the cereal sub model was dropped and that of 'other food' alone was use to form the combined model.

and vegetables and other food. It is important to note that the elasticities computed using this method vary significantly from those calculated by other authors. For example, P.Kumar et al. in their paper *Changing Consumption Pattern In South Asia* (2003) compute demand elasticity using the Food Characteristic Demand System (FCDS), following Bouis (1992) and their estimates are found to be significantly lower in the case of several commodities such as cereals, milk, meat, fruits and vegetables etc.

Since its formulation by Stone (1954), LES has been extensively used for consumption analysis in various countries (Deaton, 1975, Lluch et al. 1977, Radhakrishna et al 1979, 1980, Radhakrishna and Ravi 1990). However, two limitations of LES, which restrict its application, arise out of linear income effects and inherent additivity of its utility function. The first limitation can be overcome by specifying the piece-wise LES. (Ludlow, 1988). The second limitation of additivity does not allow inferior goods. However for broad commodity groups the additive demand model may not be restrictive. For specifying the piece-wise LES, the population within rural and urban is divided into four income groups, very poor (those below 75% of the poverty line), moderately poor (below poverty line but above 75% of it), non-poor lower (between poverty line and 150% of it) and non-poor high (above 150% of the poverty line). The first and second stage models were estimated for each of these groups in rural and urban areas separately using cross section time-series data on consumption expenditure and prices. Commodity prices are assumed to be the same for all the expenditure groups. In order to capture the shifts in the consumption patterns the model specified with a dummy in marginal budget share parameter[13]. We specify the LES as follows.

$$p_{it}q_{it} = c_i p_{it} + (b_i + b^*_i D)(y_t - \Sigma c_k p_{kt}) + u_{it}$$

$$i=1,2,\ldots n$$

$$\Sigma_i b_i = 1 \ , \ \Sigma_i b_i^* = 0$$

$$D = 0 \text{ for } t= 1983 \text{ to } 1986\text{-}87$$

[13] Several alternative specifications are possible to isolate taste effects; a dummy in b parameter or in c parameter or in both with different periodisation or a time trend. However our results with these specifications indicate that the a dummy in 'b' gives better results in terms of likelihood and also in terms of significant coefficients.

=1 for t= 1987-88 to 1999-2000

where, q_i , p_i and y are quantity and price of i th commodity consumed, y is total expenditure and b, b^* and c are parameters. The b parameter gives the marginal budget share. In above specification the c coefficient is assumed to be constant over the entire period but the marginal budget share of i th commodity takes the value b_i in the first period i.e. 1983-1986-87 and $b_i + b_i^*$ for the second period covering 1988-00. The expenditure and the price elasticities are given by

$$\eta_{yi} = b_i/w_i$$

$$\eta_{ij} = -\delta_{ij} + (\delta_{ij} - b_i)\, p_j c_j/p_i q_i$$

where w is budget share of ith commodity and δ_{ij} =1 if i=j and zero otherwise.

The Nasse's extended version of LES is used as the second stage model. It allows inferior goods. The model is specified as,

$$p_i q_i = p_i c_i(p) + b_i (y - \Sigma\, p_k\, c_k(p))$$

where $c_i(p) = \Sigma_j c_{ij}(p_i/p_j)^{1/2}$, $0<b_i<1$, $\Sigma b_k = 1$ and $c_{ij} = c_{ji}$ for all i and j. The expenditure and price elasticities given by

$$\eta_{yi} = b_i/w_i \text{ , where } w_i = p_i q_i/y$$

$$\eta_{ij} = -\delta_{ij} + (\delta_{ij} - b_i)p_j c_j(p)/p_i q_i + [c_{ij}(p_i p_j)^{1/2} - \delta_{ij}\, c_i(p)\, p_i]/2p_i q_i$$

where w is budget share of ith commodity and δ_{ij} =1 if i=j and zero otherwise. The model is specified without dummies using the data of the nineties (1987-88 to 199-2000) only.

Table 12 and 13 give the parameter estimates of the LES and the Other food sub model for rural and urban areas. As can be seen the LES fits well the data. The dummy coefficients indicate shifts in consumption patterns independent of price and income. The marginal budget shares for the period 1983-88 and for 1988-2000 are presented in table 14. Among all the income groups of rural areas, the dummy coefficients indicate significant decline in the marginal budget shares (MBS) of cereals and meat, fish and eggs and improvement in marginal budget share of non-food. Other commodity groups of food have generally declining MBS but are not significant. In urban areas the MBSs of food item show significant decline while that of non-food an increase. The results clearly

show that due to shifts in the preference structure, the consumers are moving away from the food to non-food. The MBS parameters vary significantly across income groups. In rural areas, the MBS of milk and milk products and edible oils increased with income, while that of cereals and other food items declined. In urban areas the MBS of all the food items decline with income, while that of non-food increased (Figure 12 and 13). The pattern of marginal budget shares clearly implies that changes in income distribution alter the demand for food.

Given the expenditure on other food, the b parameters of the sub model give the marginal budget shares of the three items of other food (Table 13). For the two poor groups in rural and urban areas and the non-poor lower of rural areas, Fruits and vegetables has the highest MBS. For the two non-poor groups in urban and the non-poor high in rural areas, 'other food' has the highest marginal budget share.

Uncompensated price and expenditures are computed using combined model. It may be noted that the combined model yields a Nasse's extended version of LES with c_{ij} parameters as zero for i,j ε G, where G is the other food group. For this we used the marginal budget shares of the second period, i.e. $(b_i + b^*_I)$. The estimates are made at 1999-2000 prices.

Table 12—Parameters of Linear Expenditure System – All India Rural

Commodity Group	Very Poor				Moderately Poor				Non-Poor, Lower				Non-Poor High			
	C	b	b'	R^2	C	b	b'	R^2	C	b	b'	R^2	C	b	b'	R^2
Cereals	6.7061	0.3833	-0.0678	0.9803	13.2388	0.2455	-0.0878	0.9767	15.4797	0.1578	-0.0780	0.9736	18.2690	0.0526	-0.0302	0.9685
	(1.0568)	(0.0199)	(0.0176)		(0.8854)	(0.0269)	(0.0221)		(0.6412)	(0.0191)	(0.0148)		(0.6151)	(0.0050)	(0.0051)	
Milk and milk products	-0.0914	0.0659	-0.0008	0.7657	-0.3738	0.1577	0.0000	0.8686	-1.1713	0.1816	0.0041	0.9460	2.5810	0.0995	0.0043	0.9445
	(0.2280)	(0.0097)	(0.0065)		(0.5948)	(0.0154)	(0.0088)		(0.9204)	(0.0108)	(0.0063)		(1.6300)	(0.0060)	(0.0049)	
Edible oils	0.8187	0.0452	0.0051	0.9559	1.5464	0.0469	0.0062	0.9524	1.8857	0.0400	0.0007	0.9588	2.7025	0.0264	-0.0050	0.9643
	(0.1426)	(0.0044)	(0.0036)		(0.2210)	(0.0066)	(0.0044)		(0.2638)	(0.0043)	(0.0026)		(0.4093)	(0.0013)	(0.0010)	
Meat, egg and fish	0.0779	0.0410	-0.0063	0.8908	0.3439	0.0570	-0.0147	0.9569	0.3802	0.0511	-0.0060	0.9663	1.1198	0.0278	-0.0054	0.9569
	(0.0892)	(0.0036)	(0.0032)		(0.1292)	(0.0041)	(0.0046)		(0.1690)	(0.0032)	(0.0028)		(0.2592)	(0.0017)	(0.0017)	
Sugar	0.2506	0.0277	-0.0004	0.9441	0.4616	0.0387	0.0010	0.9463	0.5066	0.0378	-0.0015	0.9616	1.2686	0.0240	-0.0066	0.9400
	(0.0757)	(0.0022)	(0.0016)		(0.1429)	(0.0034)	(0.0021)		(0.1732)	(0.0024)	(0.0015)		(0.2826)	(0.0014)	(0.0013)	
Other food	2.3509	0.2005	-0.0037	0.9907	5.4705	0.1880	-0.0035	0.9918	6.3215	0.1666	0.0032	0.9909	7.8416	0.1246	0.0038	0.9531
	(0.5720)	(0.0069)	(0.0048)		(0.7175)	(0.0096)	(0.0057)		(0.9595)	(0.0077)	(0.0046)		(2.1066)	(0.0077)	(0.0064)	
Non-food	4.0634	0.2364	0.0738	0.9691	8.6532	0.2662	0.0988	0.9624	7.2262	0.3652	0.0775	0.9774	-18.8437	0.6451	0.0391	0.9902
	(1.0790)	(0.0230)	(0.0194)		(1.8500)	(0.0356)	(0.0262)		(3.1971)	(0.0262)	(0.0183)		(13.4856)	(0.0134)	(0.0115)	

Note: Figures in the parentheses are standard errors.

Table 12—Cont. Parameters of Linear Expenditure System – All India Urban

Commodity Group	Very Poor				Moderately Poor				Non-Poor, Lower				Non-Poor, High			
	C	b	b'	R^2	C	b	b'	R^2	C	b	b'	R R^2	C	b	b'	R^2
Cereals	6.9652	0.1810	-0.0224	0.9561	14.0312	0.0592	-0.0209	0.9797	17.1761	0.0243	-0.0140	0.9842	18.6864	0.0119	-0.0030	0.9709
	(0.7505)	(0.0121)	(0.0081)		(0.6487)	(0.0090)	(0.0054)		(0.5583)	(0.0054)	(0.0032)		(0.3994)	(0.0017)	(0.0014)	
Milk and milk products	-1.1895	0.1124	-0.0077	0.9564	-0.1533	0.1095	-0.0081	0.9600	0.8285	0.1039	-0.0033	0.9534	9.0129	0.0592	-0.0038	0.9586
	(0.4151)	(0.0044)	(0.0027)		(0.9542)	(0.0061)	(0.0030)		(1.3143)	(0.0065)	(0.0031)		(1.4353)	(0.0029)	(0.0023)	
Edible oils	0.7921	0.0489	-0.0039	0.9028	2.1449	0.0342	-0.0062	0.9164	3.0155	0.0281	-0.0057	0.9234	5.4300	0.0146	-0.0050	0.9340
	(0.1852)	(0.0039)	(0.0026)		(0.2838)	(0.0037)	(0.0019)		(0.3131)	(0.0028)	(0.0014)		(0.2845)	(0.0010)	(0.0008)	
Meat, egg and fish	-0.2511	0.0503	-0.0034	0.9581	0.2844	0.0408	-0.0036	0.9838	0.7270	0.0345	-0.0047	0.9731	2.3675	0.0214	-0.0067	0.9361
	(0.1476)	(0.0019)	(0.0017)		(0.2701)	(0.0019)	(0.0020)		(0.3204)	(0.0019)	(0.0018)		(0.3224)	(0.0013)	(0.0013)	
Sugar	0.4869	0.0248	-0.0016	0.9454	1.1250	0.0179	-0.0034	0.9552	1.6606	0.0125	-0.0027	0.9433	2.7467	0.0061	-0.0026	0.9369
	(0.0958)	(0.0015)	(0.0010)		(0.1381)	(0.0016)	(0.0009)		(0.1525)	(0.0013)	(0.0007)		(0.1184)	(0.0005)	(0.0004)	
Other food	1.1484	0.2178	-0.0052	0.9919	2.6339	0.2002	-0.0063	0.9933	2.6520	0.1924	-0.0090	0.9924	10.0502	0.1441	-0.0044	0.9714
	(0.7653)	(0.0050)	(0.0032)		(1.5569)	(0.0076)	(0.0038)		(2.0685)	(0.0068)	(0.0035)		(3.5769)	(0.0054)	(0.0045)	
Non-food	-1.5777	0.3648	0.0443	0.9663	-13.9527	0.5383	0.0485	0.9898	-26.3352	0.6043	0.0393	0.9910	-51.6616	0.7427	0.0256	0.9963
	(2.0881)	(0.0163)	(0.0110)		(7.0541)	(0.0175)	(0.0104)		(10.5591)	(0.0145)	(0.0082)		(25.0694)	(0.0084)	(0.0070)	

Note: Figures in the parentheses are standard errors

Table 13—Parameters of Other Food Sub model – All India Rural

Commodity	Very Poor					Moderately Poor				
	Cij			b	R^2	Cij			b	R^2
Pulses	-3.6019	1.2967	2.9909	0.2731	0.9768	-4.9825	4.3121	2.3147	0.2513	0.9802
SE	(1.0225)	0.2157)	(1.0157)	(0.0197)		(1.7325)	(1.4398)	(1.6907)	(0.0203)	
F& Veg		-1.0903	0.6336	0.4478	0.9959		0.5140	-2.8484	0.4073	0.9973
SE		(0.1892)	(0.1903)	(0.0149)			(1.2335)	(0.9972)	(0.0150)	
O food			-2.8000	0.2791	0.9882			2.3817	0.3413	0.9876
SE			(0.2144)	(0.0183)				(1.4425)	(0.0222)	
	Non-Poor, Lower					Non-poor, High				
Pulses	-3.2503	2.1958	3.9680	0.2110	0.9881	-6.5279	3.7604	8.5061	0.1328	0.9662
SE	(1.6118)	(1.0106)	(1.8786)	(0.0112)		(3.0343)	(1.8407)	(3.6683)	(0.0076)	
F& Veg		4.1895	-4.6318	0.4166	0.9928		6.8456	-7.7323	0.3766	0.9953
SE		(0.9198)	(1.3276)	(0.0160)			(1.6580)	(2.0070)	(0.0072)	
O food			2.3168	0.3724	0.9768			-1.5461	0.4906	0.9892
SE			(1.0884)	(0.0225)				(2.1251)	(0.0124)	

Table 13—Cont. Parameters of Other Food Sub model – All India Urban

Commodity	Cij			b	R^2	Cij			b	R^2
	Very Poor					Moderately Poor				
Pulses	-0.3541	0.8575	-0.0069	0.1906	0.9840	-0.3861	1.0757	0.6480	0.1399	0.9933
SE	(0.8011)	(0.2428)	(0.8874)	(0.0091)		(0.7466)	(0.3142)	(0.7914)	(0.0082)	
F& Vega		-1.1164	0.2110	0.4320	0.9960		-1.2999	0.5219	0.4500	0.9969
SE		(0.3206)	(0.3561)	(0.0083)			(0.5518)	(0.3532)	(0.0114)	
O food			0.4973	0.3773	0.9922			-0.1723	0.4101	0.9983
SE			(0.2614)	(0.0111)				(0.3311)	(0.0090)	
	Non-Poor Lower					Non-Poor, High				
Pulses	-0.9679	1.4319	1.7025	0.1012	0.9929	-2.1994	3.8667	2.7611	0.0420	0.9759
SE	(1.0574)	(0.4129)	(1.1128)	(0.0069)		(1.8411	(0.8253)	(2.1528)	(0.0032)	
F& Veg		-0.1321	-0.3020	0.4075	0.9925		8.5987	-7.3209	0.3293	0.9872
SE		(1.6443)	(1.6947)	(0.0162)			(3.2846)	(3.8396)	(0.0099)	
O food			-1.9048	0.4913	0.9904			5.0369	0.6287	0.9926
			(0.4722)	(0.0179)				(1.0676)	(0.0116)	

Note: SE- Standard Errors

Figure 12—Marginal Budget Shares of cereals in Rural Areas for Period 1 and 2

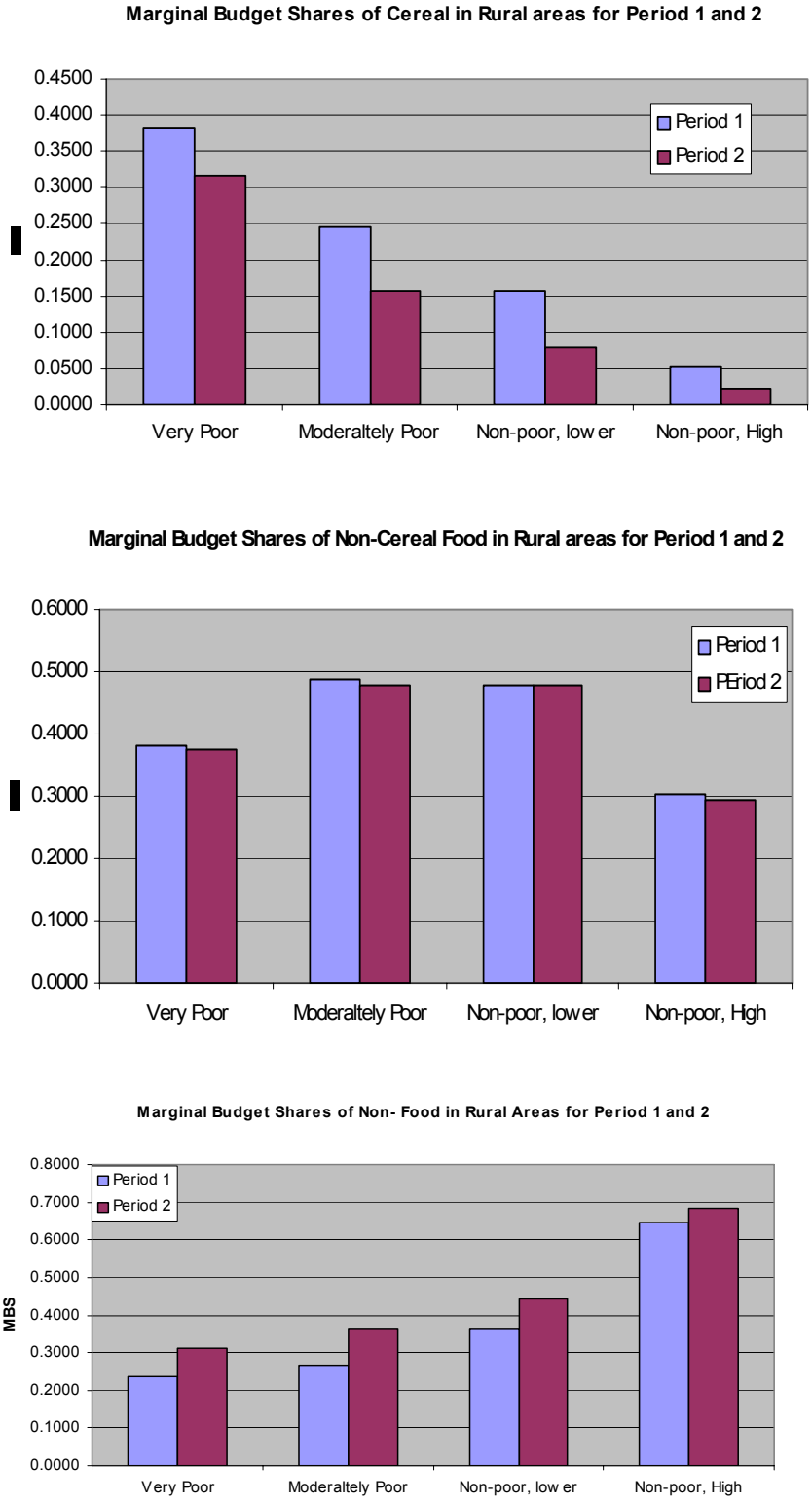


Figure 13—Marginal Budget Shares of Cereal in Urban areas of period 1 and 2

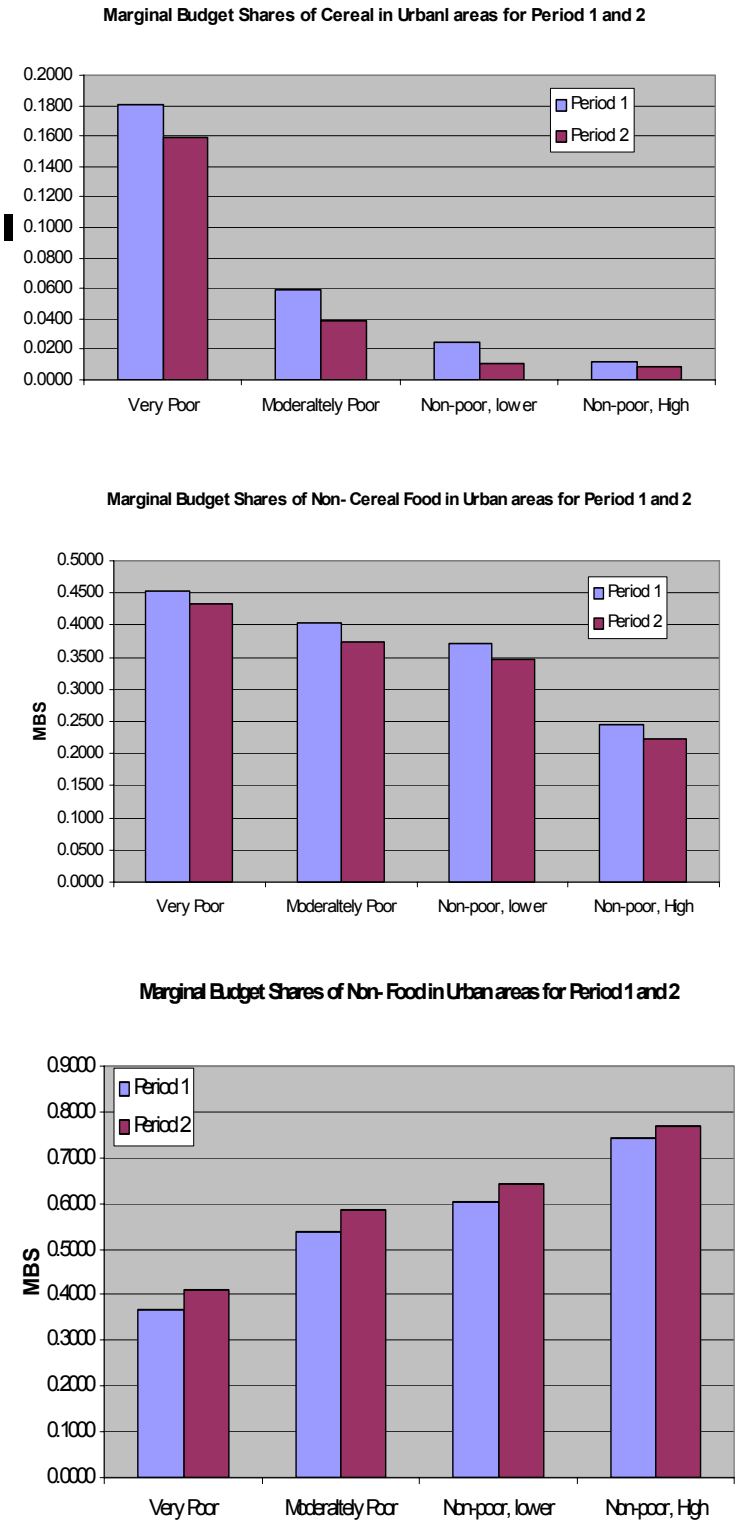


Table 14—Marginal Budget Shares of LES

Commodity Group	Very Poor		Moderately Poor		Non-Poor Lower		Non-Poor, High	
	Period I	Period II	Period I	Period II	Period I	Period II	Period I	Period II
RURAL								
Cereals	0.3833	0.3155	0.2455	0.1577	0.1578	0.0798	0.0526	0.0224
Milk and milk products	0.0659	0.0651	0.1577	0.1577	0.1816	0.1856	0.0995	0.1038
Edible oils	0.0452	0.0503	0.0469	0.0531	0.0400	0.0407	0.0264	0.0213
Meat, egg and fish	0.0410	0.0347	0.0570	0.0423	0.0511	0.0450	0.0278	0.0224
Sugar	0.0277	0.0274	0.0387	0.0397	0.0378	0.0363	0.0240	0.0174
Other food	0.2005	0.1968	0.1880	0.1845	0.1666	0.1699	0.1246	0.1284
Non-food	0.2364	0.3102	0.2662	0.3650	0.3652	0.4427	0.6451	0.6843
URBAN								
Cereals	0.1810	0.1586	0.0592	0.0382	0.0243	0.0103	0.0119	0.0089
Milk and milk products	0.1124	0.1047	0.1095	0.1014	0.1039	0.1006	0.0592	0.0554
Edible oils	0.0489	0.0450	0.0342	0.0280	0.0281	0.0224	0.0146	0.0096
Meat, egg and fish	0.0503	0.0469	0.0408	0.0372	0.0345	0.0298	0.0214	0.0146
Sugar	0.0248	0.0232	0.0179	0.0145	0.0125	0.0099	0.0061	0.0035
Other food	0.2178	0.2125	0.2002	0.1939	0.1924	0.1835	0.1441	0.1397
Non-food	0.3648	0.4091	0.5383	0.5868	0.6043	0.6435	0.7427	0.7683

Table 15 and figure 14 presents the expenditure elasticities across the income groups in rural and urban areas. In rural areas the expenditure elasticities of most of the food items increase between very poor and moderately poor and then decline for other income groups. For cereals and cereal substitutes, it declined from 0.80 for the rural very poor group to 0.14 for the non-poor high. At mean level it is 0.30. For milk the elasticity is as high as 1.64 for the very poor, increases further to 2.3 for the moderately poor and then declines to 0.97 for the non-poor, high. Milk and milk products, meat, fish and eggs, sugar and fruits and vegetables are elastic with respect to expenditure at aggregate level in rural India. In urban areas, the expenditure elasticities are lower compared to those of rural areas and they decline across expenditure groups. The elasticity of cereals declines from 0.53 for the very poor to 0.09 for the non-poor high. Most of food items show

similar declines, except other food, which fluctuated around 0.95. At mean level, other food, Fruits and vegetables and Milk have higher elasticities (n that order) among the food items.

The own price elasticities also exhibit similar trends (Table 16) In case of cereals, the own price elasticity in rural areas declines in absolute terms as one moves from the very poor to the non-poor high strata. Other food items increase between the first two income groups and then decline. Among the food items, pulse has the highest own price elasticity in both rural and urban areas. These elasticities clearly indicate that any price increase will have differential effects on the welfare levels of different sections.

Using the elasticities, we have estimated separately the effect of a 10 percent increase of prices of cereals, non-cereals food, and non-food on the consumption of 9 broad commodity groups. For assessing the price effect of non-cereal food we aggregated elasticities of the items of that constitute this group. The price effects are estimated for rural and urban areas at mean level. Table 19 presents the results of the simulation exercise. Given the total expenditure, a 10 percent increase of cereal price would result in a 2.5 and 1.0 percent of cereal consumption in rural and urban areas respectively. However, the impact of increased cereal price on the consumption of non-cereal food seems to be considerable, especially in rural areas. When the cereal price increases by 10 percent in rural areas, the consumption of all non-cereal food items decline by 2 percent or more, except for edible oils, pulses and other food. The decline in milk consumption is in fact more than that of cereals itself. In urban areas the price effects of cereal are considerably lower than in rural areas. When prices of all non-cereal food items increase by 10%, the impact on consumption of cereals is marginal. It declines by about 0.3 percent in rural areas and almost remains unchanged in urban areas. The impact of this price rise on the consumption of milk in rural areas is highest at 11%, followed by fruits and vegetables (8.2%) and sugar (8%). Other food items decline between 6-8 percent. As in case of cereals, the prices of non-cereal food items have considerably lower effect on their consumption in urban areas. In rural areas the impact of non-food price on food consumption is marginal. However, urban areas, its effect on food items is positive.

When its price increases by 10 percent, the consumption of other-food increases by 2%, fruits and vegetables by 1.7% and milk by 1.4%. Other food items increase by about 1 percent. The simulation exercise clearly shows that the price of cereals is an important determinant of demand for food in rural areas. From the elasticities presented in tables 17 and 18 it can be seen that it is more so for the poorer groups in both rural and urban areas.

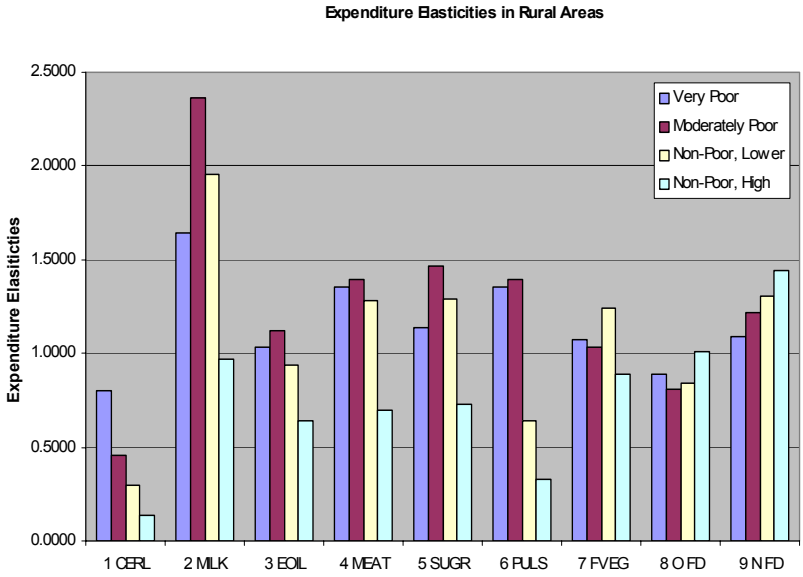
Table 15—Expenditure Elasticities in Rural and Urban Areas

Commodity Group	Rural					Urban				
	Very Poor	Moderately Poor	Non-Poor, Lower	Non-Poor, High	All	Very Poor	Moderately Poor	Non-Poor, Lower	Non-Poor, High	All
1 CERL	0.8005	0.4568	0.2937	0.1377	0.3094	0.5286	0.1365	0.0439	0.0827	0.0913
2 MILK	1.6465	2.3612	1.9578	0.9734	1.4474	1.6710	1.2151	0.9663	0.5673	0.6582
3 EOIL	1.0303	1.1252	0.9368	0.6443	0.8500	0.8649	0.5422	0.4470	0.3145	0.3662
4 MEAT	1.3512	1.3911	1.2843	0.6941	1.0161	1.4932	0.9656	0.7239	0.4615	0.5422
5 SUGR	1.1385	1.4651	1.2880	0.7326	1.0552	0.7971	0.5092	0.3665	0.2293	0.2885
6 PULS	1.3529	1.3971	0.6443	0.3301	0.5695	0.9332	0.6107	0.4321	0.2244	0.3026
7 FVEG	1.0698	1.0376	1.2413	0.8882	1.0406	1.1357	1.0658	0.9047	0.7031	0.7599
8 O FD	0.8864	0.8071	0.8427	1.0131	0.9145	0.9688	0.9480	1.1143	0.9519	0.9738
9 N FD	1.0933	1.2184	1.3055	1.4461	1.3718	1.2875	1.9059	1.9133	1.4406	1.4956

Table 16—Own Price Elasticities in Rural and Urban Areas

Commodity Group	Rural					Urban				
	Very Poor	Moderately Poor	Non-Poor, Lower	Non-Poor, High	All	Very Poor	Moderately Poor	Non-Poor, Lower	Non-Poor, High	All
1 CERL	-0.6683	-0.3377	-0.2404	-0.1366	-0.2558	-0.5355	-0.1495	-0.0509	-0.0883	-0.0977
2 MILK	-1.0562	-1.0883	-1.1332	-0.8442	-0.9694	-1.3724	-1.0268	-0.9136	-0.5744	-0.6478
3 EOIL	-0.6803	-0.5516	-0.5748	-0.5565	-0.5698	-0.7449	-0.4746	-0.4312	-0.3112	-0.3547
4 MEAT	-0.8745	-0.6656	-0.7739	-0.5983	-0.6809	-1.2528	-0.8251	-0.6868	-0.4550	-0.5221
5 SUGR	-0.7403	-0.6980	-0.7740	-0.6283	-0.6972	-0.6829	-0.4398	-0.3493	-0.2248	-0.2752
6 PULS	-2.3882	-2.5669	-1.1886	-1.2080	-1.3482	-1.0137	-0.8588	-0.8800	-0.8643	-0.8708
7 FVEG	-0.9994	-0.7322	-0.5272	-0.5544	-0.6009	-1.1077	-1.0650	-0.9425	-0.5942	-0.6826
8 O FD	-1.4211	-0.4306	-0.5691	-1.0317	-0.7885	-0.8594	-0.9339	-1.1588	-0.8352	-0.8817
9 N FD	-0.7958	-0.7270	-0.8751	-1.0718	-0.9725	-1.0537	-1.2542	-1.2816	-1.0916	-1.1134

Figure 14—Expenditure Elasticities in Rural Areas



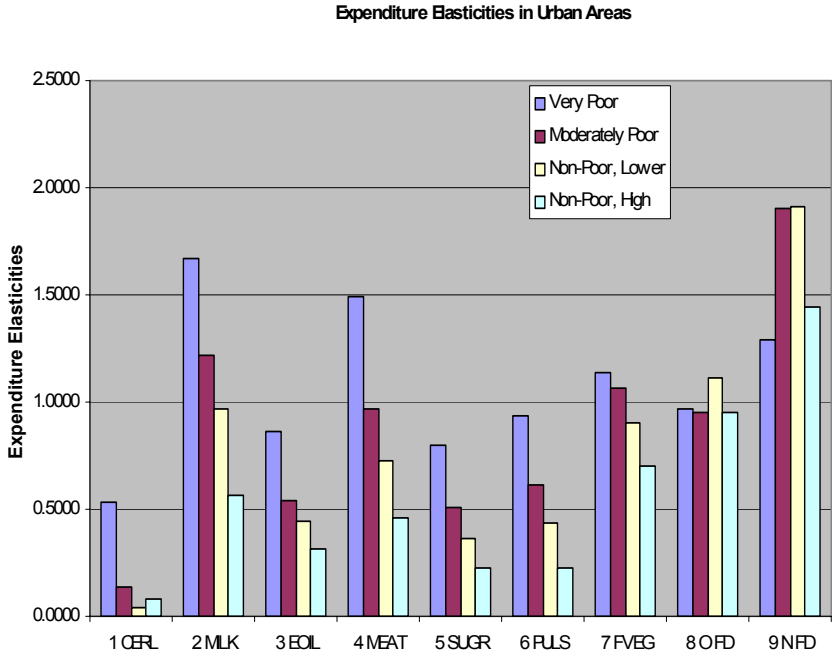


Table 17—Uncompensated Own, Cross Price and Expenditure Elasticities

All India Rural – Very Poor

Commodity Group	Price Elasticities									Expenditure
	1 CERL	2 MILK	3 EOIL	4 MEAT	5 SUGR	6 PULS	7 FVEG	8 O FD	9 N FD	
1 CERL	-0.6683	0.0019	-0.0132	-0.0027	-0.0051	-0.0041	-0.0205	-0.0213	-0.0673	0.8005
2 MILK	-0.3145	-1.0562	-0.0271	-0.0055	-0.0106	-0.0084	-0.0422	-0.0438	-0.1383	1.6465
3 EOIL	-0.1968	0.0025	-0.6803	-0.0034	-0.0066	-0.0053	-0.0264	-0.0274	-0.0866	1.0303
4 MEAT	-0.2581	0.0032	-0.0222	-0.8745	-0.0087	-0.0069	-0.0346	-0.0359	-0.1135	1.3512
5 SUGR	-0.2174	0.0027	-0.0187	-0.0038	-0.7403	-0.0058	-0.0292	-0.0303	-0.0956	1.1385
6 PULS	-0.2584	0.0032	-0.0222	-0.0045	-0.0087	-2.3882	0.3698	1.0697	-0.1137	1.3529
7 FVEG	-0.2043	0.0025	-0.0176	-0.0036	-0.0069	0.1898	-0.9994	0.0595	-0.0899	1.0698
8 O FD	-0.1693	0.0021	-0.0146	-0.0030	-0.0057	0.7054	0.0942	-1.4211	-0.0745	0.8864
9 N FD	-0.2088	0.0026	-0.0180	-0.0037	-0.0070	-0.0056	-0.0280	-0.0291	-0.7958	1.0933

All India Rural – Moderately Poor

Commodity Group	Price Elasticities									Expenditure
	1 CERL	2 MILK	3 EOIL	4 MEAT	5 SUGR	6 PULS	7 FVEG	8 O FD	9 N FD	
1 CERL	-0.3377	0.0032	-0.0102	-0.0049	-0.0039	-0.0053	-0.0170	-0.0222	-0.0588	0.4568
2 MILK	-0.6410	-1.0883	-0.0528	-0.0251	-0.0201	-0.0272	-0.0881	-0.1147	-0.3041	2.3612
3 EOIL	-0.3054	0.0079	-0.5516	-0.0120	-0.0096	-0.0129	-0.0420	-0.0547	-0.1449	1.1252
4 MEAT	-0.3776	0.0097	-0.0311	-0.6656	-0.0119	-0.0160	-0.0519	-0.0676	-0.1792	1.3911
5 SUGR	-0.3977	0.0103	-0.0327	-0.0156	-0.6980	-0.0169	-0.0546	-0.0712	-0.1887	1.4651
6 PULS	-0.3793	0.0098	-0.0312	-0.0148	-0.0119	-2.5669	1.1074	0.6698	-0.1799	1.3971
7 FVEG	-0.2817	0.0073	-0.0232	-0.0110	-0.0088	0.5194	-0.7322	-0.3737	-0.1336	1.0376
8 O FD	-0.2191	0.0057	-0.0180	-0.0086	-0.0069	0.3046	-0.3302	-0.4306	-0.1040	0.8071
9 N FD	-0.3307	0.0085	-0.0272	-0.0129	-0.0104	-0.0140	-0.0454	-0.0592	-0.7270	1.2184

All India Rural – Non-Poor Lower

Commodity Group	Price Elasticities									Expenditure
	1 CERL	2 MILK	3 EOIL	4 MEAT	5 SUGR	6 PULS	7 FVEG	8 O FD	9 N FD	
1 CERL	-0.2404	0.0046	-0.0057	-0.0024	-0.0019	-0.0101	-0.0044	-0.0110	-0.0223	0.2937
2 MILK	-0.4392	-1.1332	-0.0377	-0.0162	-0.0129	-0.0671	-0.0293	-0.0733	-0.1488	1.9578
3 EOIL	-0.2101	0.0145	-0.5748	-0.0078	-0.0062	-0.0321	-0.0140	-0.0351	-0.0712	0.9368
4 MEAT	-0.2881	0.0199	-0.0247	-0.7739	-0.0085	-0.0440	-0.0192	-0.0481	-0.0976	1.2843
5 SUGR	-0.2889	0.0200	-0.0248	-0.0107	-0.7740	-0.0442	-0.0193	-0.0482	-0.0979	1.2880
6 PULS	-0.1445	0.0100	-0.0124	-0.0053	-0.0043	-1.1886	0.2398	0.5101	-0.0490	0.6443
7 FVEG	-0.2785	0.0192	-0.0239	-0.0103	-0.0082	0.2004	-0.5272	-0.5185	-0.0944	1.2413
8 O FD	-0.1890	0.0131	-0.0162	-0.0070	-0.0056	0.3669	-0.3716	-0.5691	-0.0641	0.8427
9 N FD	-0.2929	0.0202	-0.0251	-0.0108	-0.0086	-0.0448	-0.0195	-0.0489	-0.8751	1.3055

Table 17 —(contd.) Uncompensated Own, Cross Price and Expenditure Elasticities
All India Rural – Non-Poor high

Commodity Group	Price Elasticities									Expenditure
	1 CERL	2 MILK	3 EOIL	4 MEAT	5 SUGR	6 PULS	7 FVEG	8 O FD	9 N FD	
1 CERL	-0.1366	-0.0026	-0.0021	-0.0018	-0.0012	-0.0051	-0.0019	-0.0012	0.0148	0.1377
2 MILK	-0.1399	-0.8442	-0.0146	-0.0129	-0.0088	-0.0363	-0.0131	-0.0085	0.1047	0.9734
3 EOIL	-0.0926	-0.0119	-0.5565	-0.0085	-0.0058	-0.0240	-0.0086	-0.0056	0.0693	0.6443
4 MEAT	-0.0997	-0.0129	-0.0104	-0.5983	-0.0062	-0.0259	-0.0093	-0.0061	0.0747	0.6941
5 SUGR	-0.1053	-0.0136	-0.0110	-0.0097	-0.6283	-0.0273	-0.0098	-0.0064	0.0788	0.7326
6 PULS	-0.0474	-0.0061	-0.0050	-0.0044	-0.0030	-1.2080	0.2443	0.6639	0.0355	0.3301
7 FVEG	-0.1276	-0.0165	-0.0133	-0.0118	-0.0080	0.2033	-0.5544	-0.4554	0.0956	0.8882
8 O FD	-0.1456	-0.0188	-0.0152	-0.0134	-0.0091	0.5176	-0.4059	-1.0317	0.1090	1.0131
9 N FD	-0.2078	-0.0268	-0.0217	-0.0192	-0.0130	-0.0539	-0.0194	-0.0126	-1.0718	1.4461

All India Rural – Aggregate

Commodity Group	Price Elasticities									Expenditure
	1 CERL	2 MILK	3 EOIL	4 MEAT	5 SUGR	6 PULS	7 FVEG	8 O FD	9 N FD	
1 CERL	-0.2558	0.0017	-0.0058	-0.0027	-0.0023	-0.0071	-0.0071	-0.0105	-0.0198	0.3094
2 MILK	-0.2903	-0.9694	-0.0261	-0.0150	-0.0112	-0.0456	-0.0258	-0.0408	-0.0232	1.4474
3 EOIL	-0.1753	0.0020	-0.5698	-0.0085	-0.0066	-0.0244	-0.0167	-0.0255	-0.0253	0.8500
4 MEAT	-0.2070	0.0024	-0.0185	-0.6809	-0.0078	-0.0308	-0.0188	-0.0297	-0.0250	1.0161
5 SUGR	-0.2176	0.0029	-0.0194	-0.0106	-0.6972	-0.0314	-0.0201	-0.0317	-0.0303	1.0552
6 PULS	-0.1184	0.0016	-0.0105	-0.0056	-0.0044	-1.3482	0.3172	0.6179	-0.0191	0.5695
7 FVEG	-0.2064	0.0003	-0.0186	-0.0106	-0.0081	0.2496	-0.6009	-0.4312	-0.0146	1.0406
8 O FD	-0.1733	-0.0025	-0.0160	-0.0099	-0.0073	0.4384	-0.3618	-0.7885	0.0062	0.9145
9 N FD	-0.2444	-0.0087	-0.0231	-0.0156	-0.0113	-0.0459	-0.0221	-0.0282	-0.9725	1.3718

Table 18—Uncompensated Own, Cross Price and Expenditure Elasticities

All India -Very Poor

Commodity Group	Price Elasticities									Expenditure
	1 CERL	2 MILK	3 EOIL	4 MEAT	5 SUGR	6 PULS	7 FVEG	8 O FD	9 N FD	
1 CERL	-0.5355	0.0138	-0.0074	0.0044	-0.0050	-0.0048	-0.0016	-0.0078	0.0153	0.5286
2 MILK	-0.2768	-1.3724	-0.0232	0.0139	-0.0158	-0.0152	-0.0051	-0.0248	0.0483	1.6710
3 EOIL	-0.1433	0.0225	-0.7449	0.0072	-0.0082	-0.0079	-0.0026	-0.0128	0.0250	0.8649
4 MEAT	-0.2473	0.0389	-0.0208	-1.2528	-0.0141	-0.0136	-0.0046	-0.0221	0.0431	1.4932
5 SUGR	-0.1320	0.0208	-0.0111	0.0066	-0.6829	-0.0072	-0.0024	-0.0118	0.0230	0.7971
6 PULS	-0.1546	0.0243	-0.0130	0.0078	-0.0088	-1.0137	0.2136	-0.0158	0.0270	0.9332
7 FVEG	-0.1881	0.0296	-0.0158	0.0095	-0.0107	0.1059	-1.1077	0.0089	0.0328	1.1357
8 O FD	-0.1605	0.0253	-0.0135	0.0081	-0.0092	-0.0098	0.0222	-0.8594	0.0280	0.9688
9 N FD	-0.2133	0.0336	-0.0179	0.0107	-0.0122	-0.0117	-0.0039	-0.0191	-1.0537	1.2875

All India – Moderately Poor

Commodity Group	Price Elasticities									Expenditure
	1 CERL	2 MILK	3 EOIL	4 MEAT	5 SUGR	6 PULS	7 FVEG	8 O FD	9 N FD	
1 CERL	-0.1495	0.0003	-0.0038	-0.0010	-0.0022	-0.0029	-0.0011	-0.0023	0.0259	0.1365
2 MILK	-0.3007	-1.0268	-0.0339	-0.0085	-0.0197	-0.0260	-0.0096	-0.0200	0.2302	1.2151
3 EOIL	-0.1342	0.0014	-0.4746	-0.0038	-0.0088	-0.0116	-0.0043	-0.0089	0.1027	0.5422
4 MEAT	-0.2390	0.0024	-0.0270	-0.8251	-0.0156	-0.0207	-0.0077	-0.0159	0.1829	0.9656
5 SUGR	-0.1260	0.0013	-0.0142	-0.0036	-0.4398	-0.0109	-0.0040	-0.0084	0.0965	0.5092
6 PULS	-0.1511	0.0015	-0.0171	-0.0043	-0.0099	-0.8588	0.1921	0.1211	0.1157	0.6107
7 FVEG	-0.2638	0.0027	-0.0298	-0.0075	-0.0173	0.0839	-1.0650	0.0290	0.2019	1.0658
8 O FD	-0.2346	0.0024	-0.0265	-0.0066	-0.0154	0.0491	0.0380	-0.9339	0.1796	0.9480
9 N FD	-0.4717	0.0048	-0.0532	-0.0133	-0.0309	-0.0408	-0.0151	-0.0314	-1.2542	1.9059

All India Non-Poor, Lower

Commodity Group	Price Elasticities									Expenditure
	1 CERL	2 MILK	3 EOIL	4 MEAT	5 SUGR	6 PULS	7 FVEG	8 O FD	9 N FD	
1 CERL	-0.0509	-0.0004	-0.0013	-0.0006	-0.0008	-0.0011	-0.0006	0.0002	0.0117	0.0439
2 MILK	-0.2175	-0.9136	-0.0282	-0.0128	-0.0172	-0.0248	-0.0123	0.0033	0.2567	0.9663
3 EOIL	-0.1006	-0.0045	-0.4312	-0.0059	-0.0079	-0.0115	-0.0057	0.0015	0.1187	0.4470
4 MEAT	-0.1629	-0.0072	-0.0211	-0.6868	-0.0129	-0.0186	-0.0092	0.0025	0.1923	0.7239
5 SUGR	-0.0825	-0.0037	-0.0107	-0.0049	-0.3493	-0.0094	-0.0047	0.0013	0.0973	0.3665
6 PULS	-0.0973	-0.0043	-0.0126	-0.0057	-0.0077	-0.8800	0.1953	0.2655	0.1148	0.4321
7 FVEG	-0.2036	-0.0091	-0.0264	-0.0120	-0.0161	0.0813	-0.9425	-0.0167	0.2403	0.9047
8 O FD	-0.2508	-0.0111	-0.0325	-0.0148	-0.0198	0.1120	-0.0344	-1.1588	0.2960	1.1143
9 N FD	-0.4306	-0.0191	-0.0558	-0.0254	-0.0340	-0.0491	-0.0243	0.0066	-1.2816	1.9133

Table 18—Cont. Uncompensated Own, Cross Price and Expenditure Elasticities

All India –Non-Poor, High

Commodity Group	Price Elasticities									Expenditure
	1 CERL	2 MILK	3 EOIL	4 MEAT	5 SUGR	6 PULS	7 FVEG	8 O FD	9 N FD	
1 CERL	-0.0883	-0.0036	-0.0018	-0.0015	-0.0010	-0.0017	-0.0017	-0.0006	0.0174	0.0827
2 MILK	-0.0562	-0.5744	-0.0121	-0.0099	-0.0067	-0.0117	-0.0119	-0.0041	0.1196	0.5673
3 EOIL	-0.0311	-0.0138	-0.3112	-0.0055	-0.0037	-0.0065	-0.0066	-0.0023	0.0663	0.3145
4 MEAT	-0.0457	-0.0203	-0.0098	-0.4550	-0.0055	-0.0095	-0.0096	-0.0033	0.0972	0.4615
5 SUGR	-0.0227	-0.0101	-0.0049	-0.0040	-0.2248	-0.0047	-0.0048	-0.0017	0.0483	0.2293
6 PULS	-0.0222	-0.0099	-0.0048	-0.0039	-0.0027	-0.8643	0.3543	0.2818	0.0473	0.2244
7 FVEG	-0.0696	-0.0309	-0.0149	-0.0123	-0.0084	0.1298	-0.5942	-0.2508	0.1482	0.7031
8 O FD	-0.0943	-0.0419	-0.0202	-0.0167	-0.0113	0.0612	-0.1941	-0.8352	0.2006	0.9519
9 N FD	-0.1427	-0.0634	-0.0306	-0.0252	-0.0171	-0.0297	-0.0301	-0.0104	-1.0916	1.4406

All India - Aggregate

Commodity Group	Price Elasticities									Expenditure
	1 CERL	2 MILK	3 EOIL	4 MEAT	5 SUGR	6 PULS	7 FVEG	8 O FD	9 N FD	
1 CERL	-0.0977	-0.0020	-0.0020	-0.0010	-0.0011	-0.0017	-0.0014	-0.0008	0.0164	0.0913
2 MILK	-0.0902	-0.6478	-0.0153	-0.0101	-0.0088	-0.0142	-0.0118	-0.0035	0.1435	0.6582
3 EOIL	-0.0534	-0.0103	-0.3547	-0.0052	-0.0050	-0.0078	-0.0062	-0.0020	0.0783	0.3662
4 MEAT	-0.0769	-0.0163	-0.0126	-0.5221	-0.0073	-0.0116	-0.0094	-0.0030	0.1169	0.5422
5 SUGR	-0.0441	-0.0073	-0.0068	-0.0039	-0.2752	-0.0062	-0.0047	-0.0016	0.0612	0.2885
6 PULS	-0.0472	-0.0074	-0.0072	-0.0041	-0.0042	-0.8708	0.3093	0.2644	0.0645	0.3026
7 FVEG	-0.1027	-0.0247	-0.0175	-0.0117	-0.0101	0.1190	-0.6826	-0.1941	0.1645	0.7599
8 O FD	-0.1200	-0.0356	-0.0219	-0.0158	-0.0125	0.0667	-0.1633	-0.8817	0.2104	0.9738
9 N FD	-0.1787	-0.0567	-0.0334	-0.0247	-0.0190	-0.0317	-0.0290	-0.0091	-1.1134	1.4956

Table 19—Effect of 10% Increase in the Prices of Cereal, Non-cereal Food and Non-food on the Consumption of 9 Broad Commodity Groups

Commodity Group	10% increase in the Price of					
	Cereals		Non-Cereals		Non-Food	
	Rural	Urban	Rural	Urban	Rural	Urban
1 CERL	-2.56	-0.98	-0.34	-0.01	-0.20	0.16
2 MILK	-2.90	-0.90	-11.34	-0.71	-0.23	1.43
3 EOIL	-1.75	-0.53	-6.49	-0.39	-0.25	0.78
4 MEAT	-2.07	-0.77	-7.84	-0.58	-0.25	1.17
5 SUGR	-2.18	-0.44	-8.07	-0.31	-0.30	0.61
6 PULS	-1.18	-0.47	-4.32	-0.32	-0.19	0.64
7 FVEG	-2.06	-1.03	-8.20	-0.82	-0.15	1.65
8 O FD	-1.73	-1.20	-7.47	-1.06	0.06	2.10
9 N FD	-2.44	-1.79	-1.55	-0.20	-9.73	-11.13

2.9 CONCLUSIONS

The consumption patterns of an average Indian are undergoing significant changes. In general there is an expansion of non-cereal food and non-food in the basket, while cereals is shrinking. However, the total food consumption is stagnating in the recent periods. The substitution of non-cereal food in place of cereal food is resulting in decline of calorie intakes and is not contributing substantially to protein intake. While the decline in the cereals consumption can be explained with the slow down in the growth and adverse prices, its decline in the seventies and eighties seem to be related to shifts in tastes and preferences. A demand model estimated isolating the taste effects

The complete set of expenditure and own and cross price elasticities are estimated from the demand system. The parameters and the elasticities show that there are marked differences in consumption behavior among the income groups and between rural and urban areas. The estimated price effects indicate the importance of cereal price, especially in rural areas. The simulation exercise indicates that the adverse relative price of cereals dampens the demand of not only cereals but also that of other food items. The adverse movements in the relative price of cereals together with lower growth in rural areas may have resulted in the stagnant food consumption in rural areas. It is important

to note, however, that for the bottom 30% of the population cereal consumption per capita has not come down.

3. PUBLIC DISTRIBUTION SYSTEM (PDS): PERFORMANCE AND OPTIONS FOR REFORMS[14]

3.1 INTRODUCTION

The objective of this chapter is to examine the performance of PDS and provide suggestions for more cost effective and better-targeted alternatives. The performance of the PDS is analyzed by asking two basic questions:

(a) Does the target group receive significant subsidy?

(b) Are the subsidies provided efficiently (i.e. are they cost effective)?

Other aspects of performance covered include coverage under the PDS, impact on consumption and nutrition, impact on poverty, extent of leakage and targeting errors within the system. The political economy of the PDS is also discussed. Targeting was introduced in the PDS for the first time at the all India level in late 1990s[15]. Radhakrishna et al (1997) have examined the impact of PDS on consumption, nutrition and poverty using 1986-87 NSS data. In this chapter, we compare their results with the latest data. This is probably the first study to look at the impact of PDS on consumption and poverty after the introduction of targeting.

We have used three types of data bases: (a) The National Sample Survey that provides household level data (100,000 households) for 1986-87 and 1993-94 and 1999-00 (b) Data collected from a micro study – undertaken as part of the CESS-IFPRI collaborative project - in six villages in order to examine the performance of the PDS and the food coupon system. (c) Other existing studies on the PDS.

[14] We thank Jos Mooij for comments on this chapter.
[15] There was already targeting in some states (e.g. Andhra Pradesh).

Before going into the performance of the PDS, we briefly look at the evolution of the PDS over time.

The Public Distribution System (PDS) is one of the instruments for improving food security at the household level in India. The PDS ensures availability of essential commodities like rice, wheat, edible oils and kerosene to the consumers through a network of outlets or fair price shops. These are supplied at below market prices to consumers. The origins of the Indian PDS can be traced back to the Second World War and the Bengal Famine in 1943, when the colonial government felt the need to develop a food policy for the country. Over the years the system expanded enormously, in terms of area covered, quantity of foodgrains handled and in costs involved[16]. With a network of more than 462,000 fair price shops (FPS) distributing commodities worth more than Rs. 300 billion annually to about 160 million families, the PDS in India is perhaps the largest distribution network of its kind in the world.

According to GOI (2002), historically, the objectives of the PDS have been the following:

(a) Maintaining price stability

(b) Raising the welfare of the poor

(c) Rationing during situations of scarcity

(d) Keeping a check on private trade

The first two continue to be important while the last two objectives are redundant in the context of the shift away from a situation of food scarcity to one of food surpluses within the country.

Access to the PDS until 1997 was universal. During the first few decades of its existence, the PDS did not operate as an anti-poverty programme but merely as an instrument of price stabilization and the main emphasis was to provide an alternative channel to private trade. Also, until the 1970s, operations were mainly restricted to urban

[16] See Chopra, 1988; Bapna, 1990, Tyagi, 1990, Bhatia, 1991 and Mooij 1998).

areas and food deficit regions. Since the Sixth Five Year Plan, however, the welfare importance of the PDS has been recognized, and rural areas have been covered in many states from the 1980s onward. In the 1990s, the government decided to restructure the PDS in the form of the Revamped PDS (RPDS) and Targeted PDS (TPDS). Under the RPDS, introduced in 1992, the subsidy on foodgrains was increased for people in tribal, drought-prone and desert areas. The Targeted PDS (TPDS) was introduced in 1997 and under this scheme special cards were issued to families below poverty line (BPL) and foodgrains were distributed at a lower price for these families compared to those above the poverty line (known as APL families). Each poor BPL family under this scheme was originally entitled to 10kgs of foodgrains per month at a specially subsidized price but the government increased the allocation to 20kgs. at 50% of economic cost from April, 2000 on. The allocation for APL was retained at the same level at the time of introduction of TPDS but the Central issue prices (CIP) for APL was fixed at 100% of economic cost from 2000 onward such that the entire consumer subsidy is directed for the benefit of BPL population. In order to reduce excess stocks lying with the FCI, the Government has initiated the following measures under TPDS from July 2001:

(i) The BPL allocation of foodgrains has been increased from 20kgs. to 25 kgs. per family per month with effect from July, 2001, and the CIP for BPL families has been fixed at Rs.4.15 per kg. for wheat and Rs.5.65 per kg. for rice, which is 48% of the economic cost.

(ii) The government has decided to allocate foodgrains to APL families at the discounted rate of 70% of the economic cost. The CIP of APL wheat was Rs.830 per quintal, which has been reduced to Rs.610 per quintal, and the CIP of APL rice, which was at Rs.1130 per quintal, has been reduced to Rs.830 per quintal.

3.2 PERFORMANCE OF PDS

3.2.1 Accumulation of Foodgrains and Increase in Food Subsidy

In the last few years, public stocks of foodgrains have risen to a disturbingly high level of 62.55 million tons as of May 1, 2002. The reasons for the over accumulation are discussed here:

(i) *Increase in procurement prices*: The continuous increase in the procurement prices/MSP has led to the accretion of stocks far above the levels required. The concept of MSPwas enlarged to take into account the full cost of production including some management cost [17]. Due to pressures from the vocal farmers' lobby, all types of farm expenditure, incurred or imputed, were added to the cost of production for the purpose of fixing the MSP. This escalated the MSP, and it had to be increased each year. Another important reason for the increases in the MSP has been the trade policy reform that took place in the cereals sector in the mid-nineties. When India opened up rice exports in 1994-95, the volume of exported rice increased from less than 1 million to about 5 million tons, making India the second largest exporter of rice in the world that year. Encouraged by the impressive growth in rice exports the government also opened up the exports of wheat soon after. The reason for the surge in exports was that domestic prices had been historically kept artificially lower than the international price.[18]. However, in order to give farmers an incentive to part with their marketable surplus and ensure that procurement continues, the government had to announce hikes in the procurement prices of rice and wheat. However, due to the upward pressure on domestic price of wheat

[17] The definitions of various costs given by the Commission for Agricultural Costs and Prices are as follows: Cost A1= All actual expenses in cash and kind incurred in production by owner; Cost A2 = Cost A1+rent paid for leased-in land; Cost B1= Cost A1+interest value of owned capital assets (excluding land); Cost C1 = Cost B1 + imputed value of family labor; cost C2 = Cost C1 + 10% of C1 to account for managerial remuneration for the farmer.

[18] This in turn was due to several factors such as an overall anti-export bias to the economy involving both export restrictions and an overvalued currency. On the domestic front, policies that controlled the pricing, movement, storage and distribution of foodgrains also kept the price at an artificially low level.

caused by opening up exports, the government decided to reverse the policy for wheat in 1996. Nevertheless, the procurement price had to be increased periodically in response to the strong farmers' lobby and therefore continued to show an upward trend even after the closing of exports[19]. A comparison of the increase in procurement and issue prices in the 1990s with those in the 1980s is presented in Table 20.

(ii) P*rivate trade is discouraged:* The higher levels of procurement and market prices seem to have discouraged private trade in recent years. Till the mid-1990s, private trade used to hold stocks of around thirty to forty percent of the marketable surplus (World Bank, 1999). It is possible that most of the stocks are with FCI as high procurement prices make private trade unprofitable (Rao, 2002a).

Table 20—Growth of Minimum Support Prices and Issue Prices

	1980-81 to 1991-92	1992-93 to 1999-2000
Annual Average Increase in MSP (%)		
Rice	7.5	10.0
Wheat	6.2	10.8
Average Annual Increase in Issue Price (%)		
Rice	8.4	9.3
Wheat	7.4	12.0

Source: Economic Survey, 2000-2001, GOI.

(iii) *Exports are uncompetitive*: Exports of food grains have become uncompetitive because of high procurement prices. The government has been exporting rice and wheat at subsidized prices in order to reduce the high stocks.

(iv) C*onsumption was reduced due to low purchasing power*: In the 1990s, the relative prices of food grains were higher than those of the 1980s. This reduced the purchasing power of the population particularly of the poor. Some simulations on the

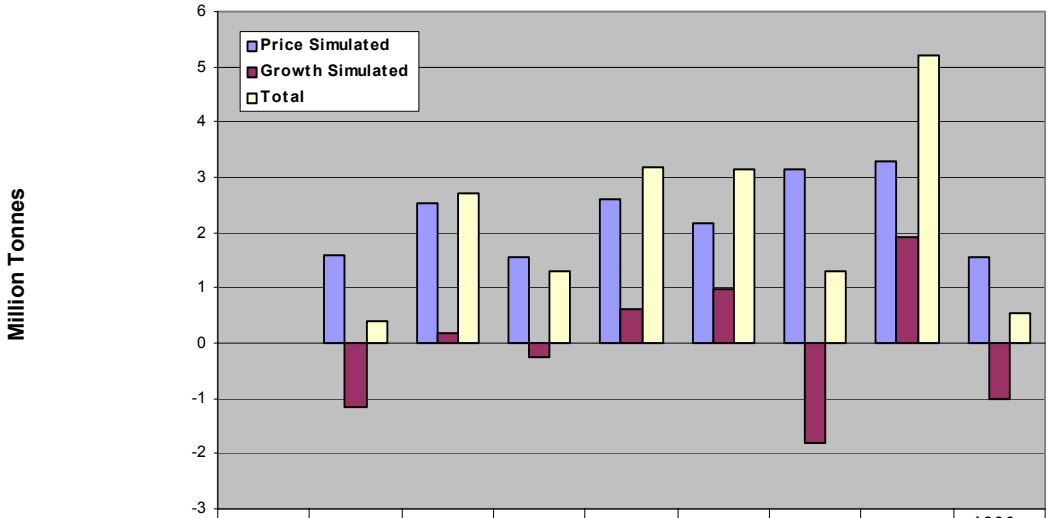
[19] With regard to rice, the late nineties witnessed a crash in international prices. Together with the upward trend in procurement prices of rice in the country, India no longer had a competitive edge in the world market. In fact, in 1999-2000 and 2000-01, the country had to resort to a minor amount or rice imports. In the case of wheat, the ban on international trade combined with the continuous hikes in procurement price has led to a considerable build up of stocks, which the government has started to export since 1999 at a price equal to 50% of the subsidy.

demand for food grains were conducted for this study (see Appendix 3.1 for methodology). For growth-simulated demand we first projected, starting from 1990-91 the total expenditure in each year (in 1990-91 prices) using the growth rate of eighties (1.7% pa in rural and 1.76% pa in urban)[20]. For each year in the nineties, the percentage difference between the projected and actual expenditures were multiplied by the expenditure elasticity of cereals to arrive at the additional demand that would result if the 'eighties growth' persisted in the nineties. The expenditure elasticity of cereals for rural and urban areas was assumed to be 0.31 and 0.10 respectively.

As shown in figure 15, if relative prices in the 1990s were the same as those of the 1980s, the demand would have been higher by 2.71 million tons in 1992. In subsequent years, the estimated annual additional demand would have been higher by 1.5 to 3.3 million tons. Similarly, figure 15 also shows the estimated demand if the growth of consumption in the 1990s is similar to that of the 1980s. In some years in the 1990s, the growth effect was negative while in others it was positive. In 1998, the additional demand for foodgrains would have been around 5.22 million tons if the relative prices and growth pattern in the 1990s were the same as those for the 1980s.

[20] The expenditure growth rates for the nineties were 1.5 and 3.1 percent pa in rural and urban respectively.

Figure 15—Estimated Additional Demand in 1990s Assuming 1980s Prices and Growth of Consumption



	1990-91	1991	1992	1993-94	1994-95	1995-96	1997	1998	1999-2000
Price Simulated	0.00	1.58	2.54	1.57	2.60	2.17	3.13	3.30	1.54
Growth Simulated	0.00	-1.17	0.17	-0.26	0.60	0.97	-1.81	1.92	-1.02
Total	0.00	0.41	2.71	1.31	3.20	3.14	1.31	5.22	0.53

(v) Off-take declined under PDS: The increase in procurement prices led to an increase in issue prices for PDS. This led to reductions in off-take of foodgrains under PDS, particularly for wheat. In 1991-92, the off-take of wheat was 86 percent of the quantity allocated for PDS while rice off-take was about 90 percent of the allocated quantity. However, in 2000-01, wheat off-take fell to 32 percent while for rice it fell to 48 percent (GOI, 2002)[21].

(vi) A Long Term Factor: Changing Consumption Patterns Apart from the above factors relating to procurement and issue prices, long term factors like changes in consumption patterns could also be responsible for the huge increase in stocks. It is now widely recognized that the food basket is more diversified and dramatic changes in food consumption patterns have taken place in India in the post-Green Revolution period. For

[21] Off-take has partly also declined after 1998-99 on account of the introduction of Targeted PDS (TPDS), which made a distinction between the Above Poverty Line (APL) and Below Poverty Line (BPL) households.

example, at the national level, in rural areas, cereal consumption declined from 15.3 kg. per capita per month in 1972-73 to 13.4 kg. per capita per month in 1993-94[22]. Recent National Statistical Survey data for 1999-2000 shows a further decline in the per capita consumption of cereals. This is true for all classes, rich and poor. The cereal shares have seen a dramatic decline of more than 10 percentage points between 1972-73 to 1993-94 in most regions, in both rural and urban India. Similarly, the share of meat and milk products, and vegetables and fruits has increased over time.

(vii) The Food Subsidy Increase: In the Late 1990s: Procurement increased significantly in the late 1990s from about 20 million tonnes in 1996-97 to 37 million tonnes in 2001-02 – almost 20 per cent of foodgrains production (Table 21). Buffer stock increased 16 million tonnes to 60 million tonnes during the same period. As a result of the accumulation of food grains, the food subsidy increased significantly in the late 1990s. Table 21 shows that the food subsidy at current prices increased from Rs. 24.1 billion in 1990-91 to Rs.242 billion in 2002-03. As percent of GDP, the food subsidy increased from 0.43 in 1990-01 to 0.51 in 1999-00. It increased significantly to 0.84 percent in 2001-02 and to 0.98 percent in 2002-03 (Figure 16). Similarly food subsidy as percent of total public expenditure also increased significantly from 2.3 percent in 1990-91 to 6.0 percent in 2002-03 (Table 21).

The related issue under food subsidy is that the producer subsidy has increased while the consumer subsidy has declined. Higher procurement with the reduced off-take resulted in the generation of larger stocks, which in turn led to higher carrying costs (comprised of freight, storage, interest charges etc.). In 1997-98, the buffer component of the food subsidy bill was only 13 percent. It increased to 42 percent in 2000-01 (figure 17).

The above discussion shows that buffer stock is becoming expensive and the share of consumer subsidy has declined over time.

[22] For more details on changing consumption patterns, see Rao, CHH (2000).

Table 21—Food Economy: Production, Procurement and Food Subsidy

Year	Production (mi.tonnes)	Procurement (mi.tonnes)	Stocks (mil.tonnes)			Food Subsidy (in 10mill)	Food subsidy As% of GDP	Food Subidy As% of Govt.exp.	Buffer subsidy as % of food subsidy
			Total	Norm	Excess				
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1990-1	176.39	22.81	15.81	14.50	1.31	2450	0.48	2.30	--
1991-2	168.38	16.99	11.07	14.50	-3.43	2850	0.48	2.52	--
1992-3	179.48	18.17	12.67	14.50	-1.83	2785	0.41	2.24	16.2
1993-4	184.26	26.48	20.54	14.50	6.04	5537	0.70	3.35	22.5
1994-5	191.50	25.27	26.80	14.50	12.30	4509	0.49	3.34	41.1
1995-6	180.42	22.28	22.14	14.50	7.64	4960	0.46	2.94	28.6
1996-7	199.44	20.38	16.41	14.50	1.91	5166	0.52	3.00	14.8
1997-8	192.26	23.63	18.12	14.50	3.62	7500	0.54	3.36	12.5
1998-9	203.60	24.49	21.82	15.80	6.02	8700	0.53	3.23	18.3
1999-0	209.80	31.41	28.91	15.80	13.11	9200	0.51	3.11	20.6
2000-1	195.90	35.45	44.70	15.80	28.90	12060	0.63	3.20	35.1
2001-2	211.30	37.41	50.95	15.80	35.15	17612	0.84	4.83	41.5
2002-3	--	--	-	-	-	24200	0.98	6.00	--

Source: Rakshit for cols. 2 to 6; Economic Survey, 2002-03 and Budget 2003-04 for cols 7 and 10; Authors' estimates for 8 and 9.

Figure 16—Food Subsidy as Percent of GDP

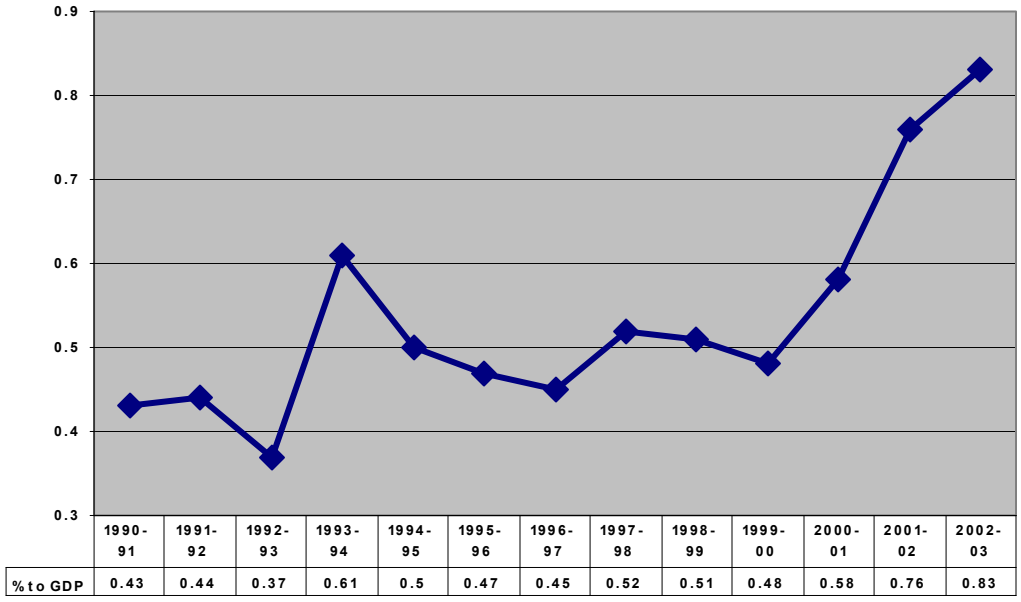
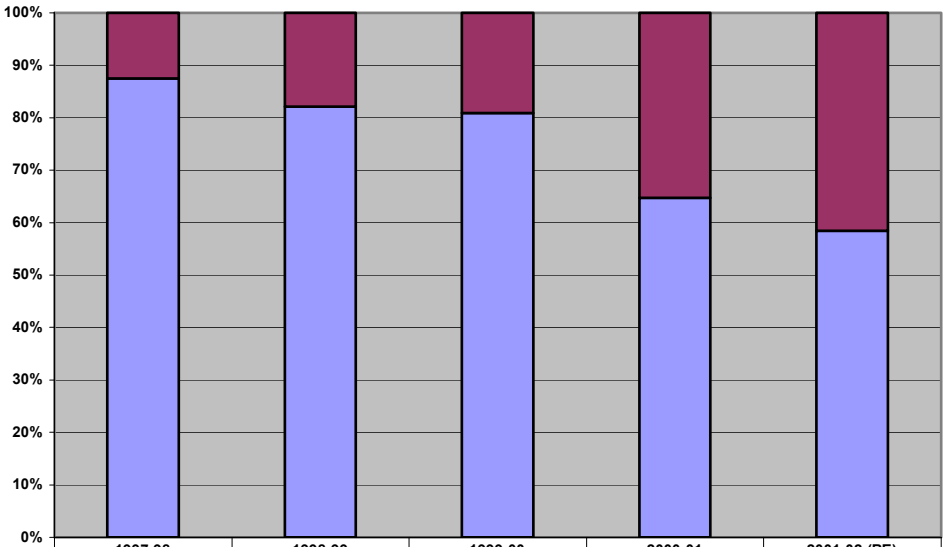


Figure 17—Components of Food Subsidy



	1997-98	1998-99	1999-00	2000-01	2001-02 (BE)
Buffer Stocking	9.37	15.52	17.54	42.33	56.8
Others	65.63	71.48	74.46	77.77	79.9

3.2.2 Coverage under PDS

There are about 460 thousand fair price shops covering most part of the country. In 1999, BPL ration cards were 73 million while APL cards were 118.6 million. Even in poorer states like Bihar, Uttar Pradesh and Orissa, the ration shops are widespread except in some remote areas. Till the introduction of TPDS, the criteria of allocations were not explicitly stated. A number of considerations determined the state-wise allocations of grains by the Central Government from the Central pool, including the historical allocation patterns, foodgrain availability and prices in various states. There was no correlation between incidence of poverty and allocation and off-take of grains. The transition to TPDS in 1997 contributed to some improvement in targeting foodgrain allocations towards states with higher poverty rates. Three states that significantly benefited from a sharp increase in food grain allocation are Assam, Bihar and UP –states with some of the highest poverty rates in the country. Gujarat, Karnataka and West Bengal had their allocations cut considerably. Gujarat, Karnataka and West Bengal had their allocations cut considerably (World Bank, 2001). With the shift to the targeted PDS,

the offtake in foodgrains also increased significantly in states like Assam, Bihar, Kerala, Madhya Pradesh, Orissa and Uttar Pradesh in 1998-99. However, offtake as percent of allotment declined considerably in 1999-00 and 2000-01 due to increase in issue prices and lack of subsidy for APL population.

Access to PDS

The National Sample Survey Organisation (NSSO) in its 55th round in 1999-2000 collected information on purchases of rice, wheat, sugar and kerosene made in fair price shops. These data have been analyzed to examine the utilization of PDS (Table 22). According to the 1999-2000 data, the PDS is accessible (Percentage of households purchases in Fair Price Shops) to about 30 percent of Indian rural households for rice and only 17 percent for wheat. The corresponding figures for states show large variations – from 75 percent for Tamil Nadu to 17 percent in West Bengal (barring other Wheat eating States) in case of rice and 34 percent in Gujarat to 0.21 percent in Punjab (barring Rice eating states) in case of wheat. For both rice and wheat some people may not depend on market (including PDS) as they consume food produced in their own farms. Therefore, the low percentages of access to PDS in rice and wheat could be partly due to this reason.

Purchase of Rice and Wheat under PDS

At the all India level, per capita monthly consumption of rice and wheat in rural areas was 0.86 kg in 1986-87 (Table 23). The consumption increased to 1.03 kg in 1999-00. The increase was mainly due to increase in rice consumption. On the other hand, the cereal consumption declined for urban areas in 1999-00 as compared to 80s. At the state level, states like Bihar, J&k, Karnataka, Maharashtra, Orissa and Tamil Nadu gained in terms of rice consumption. In the case of urban areas, only in Orissa and Tamil Nadu the cereal consumption increased.

Table 22—Percentage of Household Accessing PDS: 1999-00

States	Rural		Urban	
	Rice	Wheat	Rice	wheat
1	2	3	5	6
Andhra Pradesh	62.93	1.84	29.34	15.86
Assam	37.22	1.74	22.28	1.25
Bihar	5.40	8.98	2.30	4.66
Gujarat	43.98	34.32	17.54	12.78
Haryana	0.72	2.16	0.35	1.34
Himachal Pr.	34.90	20.08	17.23	10.98
J&K	36.55	21.44	42.89	26.13
Karnataka	68.24	61.96	40.19	37.49
Kerala	68.52	37.08	59.99	39.88
Madhya Pradesh	16.10	10.90	6.81	3.45
Maharashtra	44.26	43.43	15.17	14.75
Orissa	51.38	4.98	29.76	17.72
Punjab	0.24	0.21	0.14	0.10
Rajasthan	0.61	5.46	0.28	2.41
Tamil Nadu	75.21	15.09	52.59	30.32
Uttar Pradesh	8.07	7.34	3.29	2.93
West Bengal	17.49	16.06	6.87	18.36
All India	32.38	16.59	20.28	15.12

Source: Estimated from NSSO 1999-2000 consumer expenditure data access
indicates the percentage of households reporting purchases from PDS.

Table 23—Per capita Monthly Purchases of Rice and Wheat from PDS

(Kg/Person/Month)

State/Year	Rural			Urban		
	Rice	Wheat	Cereals	Rice	Wheat	Cereals
Andhra Pradesh						
1986-87	2.51	0.00	2.51	2.13	0.30	2.43
1999-2000	2.32	0.01	2.33	1.22	0.40	1.62
Assam						
1986-87	0.67	0.03	0.70	1.26	0.00	1.26
1999-2000	0.70	0.04	0.74	0.60	0.01	0.61
Bihar						
1986-87	0.01	0.04	0.05	0.01	0.25	0.26
1999-2000	0.11	0.15	0.26	0.04	0.07	0.11
Gujarath						
1986-87	0.49	0.63	1.12	0.32	0.58	0.90
1999-2000	0.38	0.56	0.94	0.19	0.27	0.46
Haryana						
1986-87	0.01	0.00	0.01	0.08	0.00	0.08
1999-2000	0.02	0.04	0.06	0.00	0.03	0.03
Himachal Pradesh						
1986-87	-	-	-	-	-	-
1999-2000	1.67	1.26	2.93	0.80	0.80	1.60
Jammu & Kashmir						
1986-87	1.64	0.25	1.89	6.24	0.55	6.79
1999-2000	2.40	0.71	3.11	4.38	1.01	5.39
Karnataka						
1986-87	0.75	0.22	0.97	1.29	0.39	1.68
1999-2000	1.20	0.30	1.50	0.83	0.30	1.13
Kerala						
1986-87	4.07	0.39	4.46	3.68	0.56	4.24
1999-2000	4.18	0.45	4.63	3.58	0.58	4.16
Madhya Pradesh						
1986-87	0.12	0.24	0.36	0.25	0.27	0.52
1999-2000	0.22	0.15	0.37	0.08	0.10	0.18
Maharashtra						
1986-87	0.39	0.67	1.06	0.67	0.81	1.48
1999-2000	0.47	0.66	1.13	0.26	0.30	0.56
Orissa						
1986-87	0.03	0.02	0.05	0.03	0.31	0.34
1999-2000	1.53	0.05	1.58	0.92	0.34	1.26
Punjab						
1986-87	0.00	0.01	0.01	0.04	0.00	0.04
1999-2000	0.00	0.01	0.01	0.00	0.00	0.00
Rajasthan						
1986-87	0.01	0.82	0.83	0.03	0.22	0.25
1999-2000	0.01	0.19	0.20	0.00	0.15	0.15

Table 23—Cont. Per capita Monthly Purchases of Rice and Wheat from PDS

State/Year	Rural			Urban		
	Rice	Wheat	Cerals	Rice	Wheat	Cerals
Tamil Nadu						
1986-87	1.18	0.11	1.29	0.93	0.25	1.18
1999-2000	3.18	0.16	3.34	2.14	0.36	2.50
Uttar Pradesh						
1986-87	0.12	0.10	0.22	0.14	0.17	0.31
1999-2000	0.11	0.14	0.25	0.09	0.09	0.18
West Bengal						
1986-87	0.50	0.44	0.94	1.53	1.78	3.31
1999-2000	0.19	0.14	0.33	0.13	0.37	0.50
All India						
1986-87	0.62	0.24	0.86	0.84	0.48	1.32
1999-2000	0.82	0.21	1.03	0.64	0.27	0.91

Source: NSS data
Share of Consumption obtained from PDS

The percentage of consumption obtained from PDS to total consumption provides some idea about the role of PDS in catering to the needs of the population. At all India level the share of rice consumption due to PDS in rural areas was 9 per cent in 1993-94 (Table 24). The corresponding numbers for rural wheat, urban rice and urban wheat were 5.6%, 14.2% and 9.2% respectively. The shares were higher for Kerala, Gujarat, A.P. and Tamil Nadu. The share of PDS for rice in rural areas increased from 9.4 per cent in 1993-94 to 12.1 percent in 1999-00. The shares increased significantly for Orissa, Tamil Nadu and J&K. In the case of rural wheat, rice and wheat in urban areas, the shares have not increased at all India level.

Table 24—Share of Consumption from PDS in Total Consumption: 1993-94 and 1999-00 (%)

	Rural				Urban			
	Rice		Wheat		Rice		Wheat	
	1993-4	1999-0	1993-4	1999-0	1993-4	1999-0	1993-4	1999-0
1	2	3	4	5	6	7	8	9
Andhra Pradesh	22.4	19.7	25.0	8.3	15.0	12.3	41.8	44.3
Assam	3.3	6.1	12.9	6.6	10.3	5.4	3.8	5.0
Bihar	0.3	0.9	1.8	2.9	0.2	1.1	2.4	2.7
Gujarat	25.9	19.6	14.4	15.3	19.5	10.2	7.8	5.7
Haryana	4.1	1.0	0.8	0.8	3.9	0.0	0.8	0.8
Himachal Pr.	34.2	36.5	22.7	19.8	35.1	17.8	18.2	11.7
J&K	4.3	27.1	5.1	15.3	27.0	47.0	50.1	30.7
Karnataka	13.3	22.9	46.9	41.1	19.8	14.1	29.1	26.5
Kerala	45.6	46.6	55.4	62.9	46.5	43.8	60.3	61.4
Madhya Pradesh	3.4	4.0	2.6	2.6	5.7	2.7	3.8	2.1
Maharashtra	13.4	15.3	16.3	19.8	15.9	7.2	8.3	7.1
Orissa	0.8	11.2	8.8	9.3	0.5	11.5	24.7	17.6
Punjab	1.4	1.3	0.6	0.5	1.1	0.9	0.8	1.4
Rajasthan	8.7	4.3	11.5	2.0	5.2	0.0	8.6	1.7
Tamil Nadu	18.1	32.2	70.8	70.0	17.1	24.7	62.3	60.7
Uttar Pradesh	3.3	2.6	2.0	2.0	3.1	2.8	2.2	2.5
West Bengal	0.7	2.0	12.4	14.4	8.6	2.9	33.7	15.5
All India	9.4	12.1	5.6	4.9	14.2	12.9	9.2	7.0

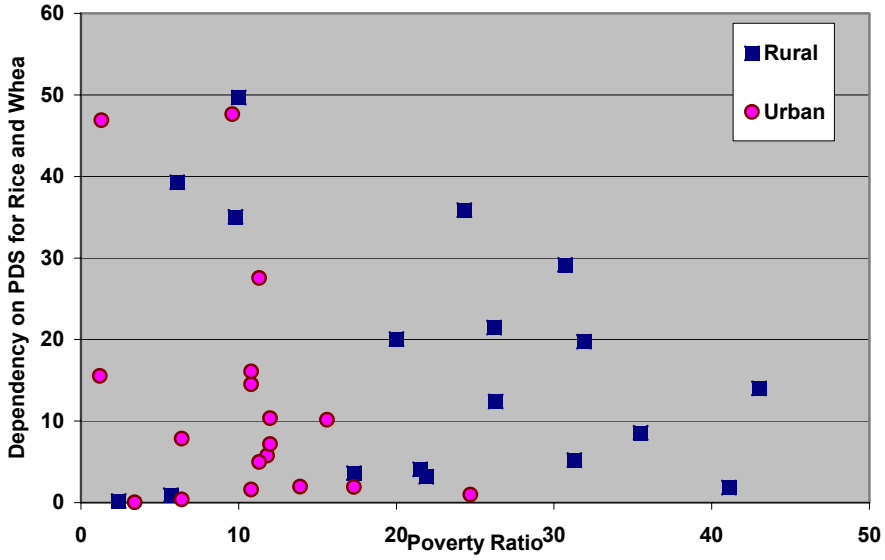
Source: Estimated from NSSO 1993-94 and 1999-2000 consumer expenditure data
Access indicates the percentage of households reporting purchases from PDS.

We now examine whether the interstate variations in the share of PDS are related to the levels of poverty. The correlation coefficient of the share of PDS in total consumption (rice and wheat) with the poverty ratio23 in 1999-00 is -0.24 and –0.37 in rural and urban areas[24].

It seems the consumer support of PDS as reflected in the share of PDS in total consumption is weak in the poorer states compared to the relatively richer states. The distortion gets sharper if we exclude foodgrain rich states like Punjab and Haryana from analysis.

[23] Poverty ratios are taken from the alternative estimates developed by Deaton and Dreze (2002).
[24] Share of PDS here refers to both rice wheat together.

Figure 18—Do poor states gain more from PDS?



3.2.3 Impact on Consumption and Poverty

1986-87 NSS data

Using NSS 1986-87 household level data, Radhakrishna et al (1997) estimate the extent of income transfer through PDS to the poor, and the consequent reduction in poverty in terms of percentage and severity. They also assess the nutritional impact of PDS on the poor as well as the cost per rupee of income transferred to the poor. The main findings of their study are the following.

(a) Welfare gains due to PDS are negligible. The per capita income gain to the poor from all consumer subsidies was no more than Rs.2.01 per month, or 2.7 per cent of their per capita expenditure, in rural areas and Rs.3.4 per month (or 3.2 per cent of per capita expenditure) in urban areas. The overall transfer gains were very meager although there were differences in income transfers between the commodities and across states. The income transfers due to PDS (food and non-food) in Andhra Pradesh and Kerala

were much higher than Orissa and U.P. The study also shows that the transfers are regressive i.e. non-poor are getting higher benefits[25].

(b) Another finding is that there has been minimal impact of PDS on poverty. With the exception of Kerala and Andhra Pradesh, the impacts on poverty are negligible. If we consider the country as a whole, there would have been a decline of barely 2 percentage points in the poverty ratio due to combined incidence (income gains) of food and non-food consumer subsidies. In the cases of Andhra Pradesh and Kerala, however, there would have been a decline of 4.64 and 5.49 percentage points respectively in the rural poverty ratio.

Impact on Food consumption using 1994 NCAER data

National Council of Applied Economic Research (NCAER) collected data on various aspects of consumption from 34000 rural households. The survey asked respondents whether the household had bought any cereal from the PDS in the month before the survey. It then asked what quantities of a few basic foods were bought from the PDS. Using this data, Bhalotra (2001) examined the impact of PDS subsidy on consumption. The study uses a wealth of socio-economic data available for both participating and non-participating households in a multivariate analysis that permits estimation of conditional effects of policy interest. From the NCAER data one can estimate the rise in food expenditures (encompassing quantity and quality increases) in response to the food subsidy. The results show that the mean predicted food-share of PDS users is 50.9%. It turns out that this is not significantly different from the actual mean food share of this group, which is 50.5%. For the poor (bottom 40% of the population), the actual and predicted food share is 67%. This can be interpreted as, if the average subsidy for the average household from the PDS is 23%, the PDS using household buys 23% more food than the all - India average. But this result varies across states. In the case of Andhra Pradesh, for example, a unit subsidy of 26 per cent stimulates a 16 per cent

[25] Also, see Parikh (1994) 1986-87for income gains due to PDS.

increases in food purchases. The study shows that, in every state, PDS use is associated with a positive increase in food purchased.

Bhalotra's study also examines whether additional spending on food can be distributed equally amongst boys and girls. The results show that any additional spending on food is distributed equally amongst boys and girls. This result is unchanged when the sample is restricted to the poorest 40% of households. Both boys and girls get a slightly larger share of food amongst households that use the PDS but the difference is not significant.

Comparison of 1986-87 and 1999-00

In order to get the impact of PDS in recent years and to compare with 1986-87 data, we examined the income gain for the poor at all India and state levels by using NSSO 55th Round (1999-00) data on PDS. All computations are made using the household level data. Table 25 and 26 provide income gains for all commodities under PDS for 1986-87 and 1999-00 at all India level and states respectively.

Income gain for the consumer is the difference between the value of the quantity of goods purchased in PDS when evaluated at market prices and the actual value of PDS purchases. The NSSO data gives the purchases made in PDS and open market in both quantity and value terms. Prices implicit in these data are used to derive the income gain.26 The income gains vary with quantities purchased in PDS, open market prices and PDS price. Though the central issue price is the same for all states, the income gains can be higher for some states on account of lower PDS prices due to additional state subsidies.

Following are the findings on income gains and poverty.

[26] It is important to note that the assumption here is that there is no quality difference between PDS and open market grains. If in fact the grains bought in the open market were of a superior quality and this were factored into our analysis then the income gain from the PDS would be even lower.

(a) The income gains through PDS formed about 1 percent of the total monthly per capita expenditure of the same income category in rural areas and 0.65 percent in urban areas at the all India level in 1999-00 (Table 25). As compared to 1986-87, the income gain to the rural poor in 1999-00 was higher by about one percentage point. On the other hand, there was marginal reduction in income gain for urban poor.

(b) Income as % of total monthly per capita expenditure of the same income category increased for most of the states in rural areas. Income gain in 99-00 as compared to 86-87 was higher in Orissa and Tamil Nadu. If we look at 1999-00 data only, the highest income gain for the poor is in rural Tamil Nadu (7.70) followed by rural Andhra Pradesh (5.49%) and rural Kerala (5.42%) and rural Orissa (4.30%) (Table 26).

Impact on Poverty

It is interesting to see the impact of PDS on poverty. At the level of all India, rural poverty decline due to income transfer was 0.61 percentage points in 1986-87and it was found to have increased to 1.27 percentage points in 1999-00 (Table 27). The impact on poverty increased significantly between 1986-87 and 1999-00 for Tamil Nadu, Andhra Pradesh and Orissa. In Karnataka it increased more than one percentage point. In states like Assam, Bihar, Madhya Pradesh, Maharashtra and Uttar Pradesh the increase was less than one percentage point. Similar conclusions can be seen for more sophisticated measures like poverty gap and the FGT Index.

Table 25—Income gain from PDS Foodgrain Distribution as % of consumer expenditure: All India: 1986-87 and 1999-00

	Rural			Urban		
	Poor	**Non-poor**	**All**	**Poor**	**Non-poor**	**All**
1986-87	0.97	0.51	0.60	1.31	0.49	0.65
1999-00	1.98	0.53	0.73	1.29	0.45	0.49

Source: Radhakrishna et al (1997) for 1986-87 and NSS 55 th Round for 1999-00.

Table 26—Income gain from PDS Foodgrain Distribution as % of consumer expenditure, Major States: 1986-87 and 1999-00

State	Rural			Urban		
	Poor	Non-poor	All	Poor	Non-poor	All
Andhra Pradesh						
1986-87	4.30		1.99	3.52	1.02	1.56
1999-2000	5.49	2.62	3.10	4.09	1.09	1.24
Assam						
1986-87	1.16	0.45	0.64	1.31	0.47	0.56
1999-2000	1.82	0.64	0.96	1.94	0.24	0.35
Bihar						
1986-87	0.04	0.03	0.03	0.05	0.06	0.06
1999-2000	0.31	0.22	0.25	0.36	0.05	0.09
Gujarath						
1986-87	1.07	0.42	0.52	1.10	0.28	0.49
1999-2000	1.74	0.74	0.87	0.94	0.23	0.25
Haryana						
1986-87	0.03	0.01	0.01	0.07	0.03	0.03
1999-2000	0.08	0.04	0.04	0.00	0.01	0.01
Himachal Pradesh						
1986-87	-	-	-	-	-	-
1999-2000	3.07	0.50	0.64	0.66	0.31	0.32
Jammu & Kashmir						
1986-87	1.92	0.62	0.81	5.27	3.07	3.29
1999-2000	1.20	0.80	0.79	0.11	1.92	1.90
Karnataka						
1986-87	1.76	0.89	1.06	1.72	0.99	1.16
1999-2000	2.79	1.70	1.96	1.29	0.56	0.60
Kerala						
1986-87	6.42	2.49	3.08	5.30	1.47	2.38
1999-2000	5.42	2.08	2.26	5.03	1.68	1.81
Madhya Pradesh						
1986-87	0.13	0.06	0.08	0.19	0.08	0.11
1999-2000	0.56	0.21	0.28	0.17	0.05	0.06
Maharashtra						
1986-87	0.67	0.34	0.43	1.25	0.48	0.63
1999-2000	1.79	0.73	0.93	0.59	0.26	0.28

Table 26—Cont. Income gain from PDS Foodgrain Distribution as % of consumer expenditure, Major States: 1986-87 and 1999-00

Orissa						
1986-87	0.00	0.02	0.02	0.07	0.06	0.06
1999-2000	4.30	1.64	2.38	2.97	0.91	1.06
Punjab						
1986-87	0.00	0.00	0.00	0.06	0.02	0.02
1999-2000	0.00	0.01	0.01	0.00	0.00	0.00
Rajasthan						
1986-87	0.71	0.16	0.24	0.05	0.04	0.04
1999-2000	0.26	0.09	0.10	0.26	0.05	0.06

State	Rural			Urban		
	Poor	Non-poor	All	Poor	Non-poor	All
Tamil Nadu						
1986-87	2.29	0.99	1.29	1.72	0.60	0.86
1999-2000	7.70	4.31	4.82	6.84	2.05	2.30
Uttar Pradesh						
1986-87	0.00	0.01	0.00	0.09	0.06	0.07
1999-2000	0.38	0.08	0.11	0.18	0.06	0.07
West Bengal						
1986-87	0.73	0.35	0.45	2.12	0.72	0.90
1999-2000	0.88	0.30	0.38	0.93	0.15	0.19

Source: Same as Table 5.

Table 27—Decline in Poverty Due to Income Transfers Through PDS Supply of Rice and Wheat

State/year	Rural		
	Poverty	Poverty Gap	FGT
Andhra Pradesh			
1986-87	2.21	0.73	0.30
1999-2000	4.35	1.09	0.33
Assam			
1986-87	0.77	0.36	0.15
1999-2000	1.33	0.51	0.20
Bihar			
1986-87	0.04	0.02	0.01
1999-2000	0.37	0.12	0.05
Gujarath			
1986-87	1.18	0.43	0.19
1999-2000	1.11	0.27	0.08
Haryana			
1986-87	0.01	0.00	0.00
1999-2000	0.03	0.00	0.00
Himachal Pradesh			
1986-87	-	-	-
1999-2000	-0.24	0.20	0.07
Jammu & Kashmir			
1986-87	1.28	0.39	0.13
1999-2000	0.59	0.08	0.01
Karnataka			
1986-87	0.95	0.45	0.22
1999-2000	2.32	0.67	0.22
Kerala			
1986-87	4.08	1.55	0.67
1999-2000	2.23	0.47	0.10
Madhya Pradesh			
1986-87	0.08	0.04	0.02
1999-2000	0.43	0.12	0.03
Maharashtra			
1986-87	0.46	0.22	0.11
1999-2000	1.06	0.44	0.19
Orissa			
1986-87	0.01	0.00	0.00
1999-2000	2.29	1.42	0.68
Punjab			
1986-87	0.00	0.00	0.00
1999-2000	0.00	0.00	0.00

Table 27—Cont. Decline in Poverty Due to Income Transfers Through PDS Supply of Rice and Wheat

State/year	Rural		
	Poverty	Poverty Gap	FGT
Rajasthan			
1986-87	0.30	0.15	0.07
1999-2000	0.16	0.04	0.00
Tamil Nadu			
1986-87	1.25	0.68	0.37
1999-2000	5.20	1.38	0.44
Uttar Pradesh			
1986-87	0.00	0.00	0.00
1999-2000	0.21	0.06	0.02
West Bengal			
1986-87	0.50	0.24	0.12
1999-2000	0.55	0.16	0.06
Other States			
1986-87			
1999-2000	1.13	0.22	0.03
All India			
1986-87	0.61	0.25	0.12
1999-2000	1.27	0.41	0.14

3.2.4 Targeting Errors

In the literature, targeting errors viz., Type 1 and Type 2 are discussed with reference to the PDS. Type I errors refer to the access of PDS by non-poor (inclusion error) while Type 2 errors refer to exclusion of the poor (exclusion error) under the PDS. They are estimated as follows:

Inclusion error: N^{PB}/N^{B} where N^{PB} is number of poor beneficiaries and N^{B} is total beneficiaries.

Exclusion error: N^{PB}/ N^{P} where N^{P} is total poor.

A study by Dutta and Ramaswami (2001) estimate targeting errors in Andhra Pradesh (A.P.) and Maharashtra using NSS data for the year 1993-94. The estimates

given in Table 28 show Type 1 errors in rural and urban areas in both the states – the errors being higher in rural areas of A.P. Type 2 errors are, however, lower for rural A.P. compared to urban A.P., and the rural and urban areas of Maharashtra. The Type 2 errors for the combined areas (rural + urban) are more than 50 per cent lower for A.P. as compared to Maharashtra. In both states, Type 2 errors are much higher than Type 1 errors.

Table 28—Targeting Errors in Andhra Pradesh and Maharashtra

	Andhra Pradesh			**Maharashtra**		
	Rural	Urban	Total	Rural	Urban	Total
T_1	22.35	4.29	14.35	11.30	4.12	6.92
T_2	20.42	36.40	22.29	49.90	51.34	49.61

Source: Dutta and Ramaswami (2001)

3.3 MICRO STUDY IN ANDHRA PRADESH

As part of a micro level study conducted within the CESS-IFPRI collaborative project, we estimated targeting errors in six villages of Andhra Pradesh – two each from three regions - Telangana, Rayalaseema and Coastal Andhra. Table 29 and Figure 19 provide the targeting errors in these villages. The results of the exercise reveal that both types of errors are present in all the selected villages and that they are sizeable in magnitude. The Type 2 error in the selected villages other than Veerapuram, varied in the range of 25 to 30 percent. In other words, about 25 to 30 percent of the white cardholders do not deserve to be covered under rice subsidy scheme. In Veerapuram, the extent of type 2 error is relatively large (46 %). The magnitude of type 1 error is relatively larger than that of type 2 error. Barring KLpuram it varied in the range of 53 to 60 percent. This implies that more than half of the poor households are excluded from the subsidized rice scheme. Inter-village comparison reveals that type 2 and 1 errors were relatively large in Veerapuram while they were relatively small in KLpuram. In Pathrlagadda, type 1 error was large but many of the poor households were given pink cards meant for non-poor.

Therefore, they had some stake in the PDS. In Veerapuram, 60 % of poor households were denied white cards and only 7 % of them were compensated with pink cards.

Table 29—Errors in Targeting Public Distribution System in Selected Villages

Slno	Village	Type 1 Error	Type 2 Error
1	Gandhinagar	53.3	26.2
2	Mamidigudem	53.4	27.8
3	Veerapuram	60.9	46.1
4	Kadapagunta	31.8	38.4
5	Klpuram	43.9	25.3
6	Patharlagadda	60.5	29.9
7	All	50.2	32.1

Note: Type 1 Error is proportion of card less among poor households; Type 2 Error is proportion of non-poor included under poor.

The fieldwork in Andhra Pradesh was done in the year 2002 when the TPDS was in operation. However, the field level results show that targeting errors continue to be quite high. This indicates the need for improving targeting in Andhra Pradesh.

3.3.1 Leakages

One of the problems of PDS has been the diversion of PDS commodities to the open market. A study done by the Tata Economic Consultancy Services shows that there is 36% diversion of wheat, 31 % diversion of rice and 23% diversion of sugar (Table30)[27]. The diversion is more in the Northern and Eastern regions. It is relatively less in the southern and western regions. It is significant to note that less diversion is estimated in the case of sugar as compared to rice and wheat. In this connection, it has to be noted that sugar is a commodity where even the well-to-do section buy from the PDS outlets.

[27] These are most likely estimates of diversion based on the sample survey conducted. Statistically at 90% confidence level, the actual diversion of wheat would fall in the range of 32-40% for wheat and 27-35% for rice and 20-26% for sugar (Planning Commission, 2001). There is a criticism that the sample size used in the study was small and therefore was not truly representative.

Figure 19—Coverage of Non-Poor Households under Rice Scheme

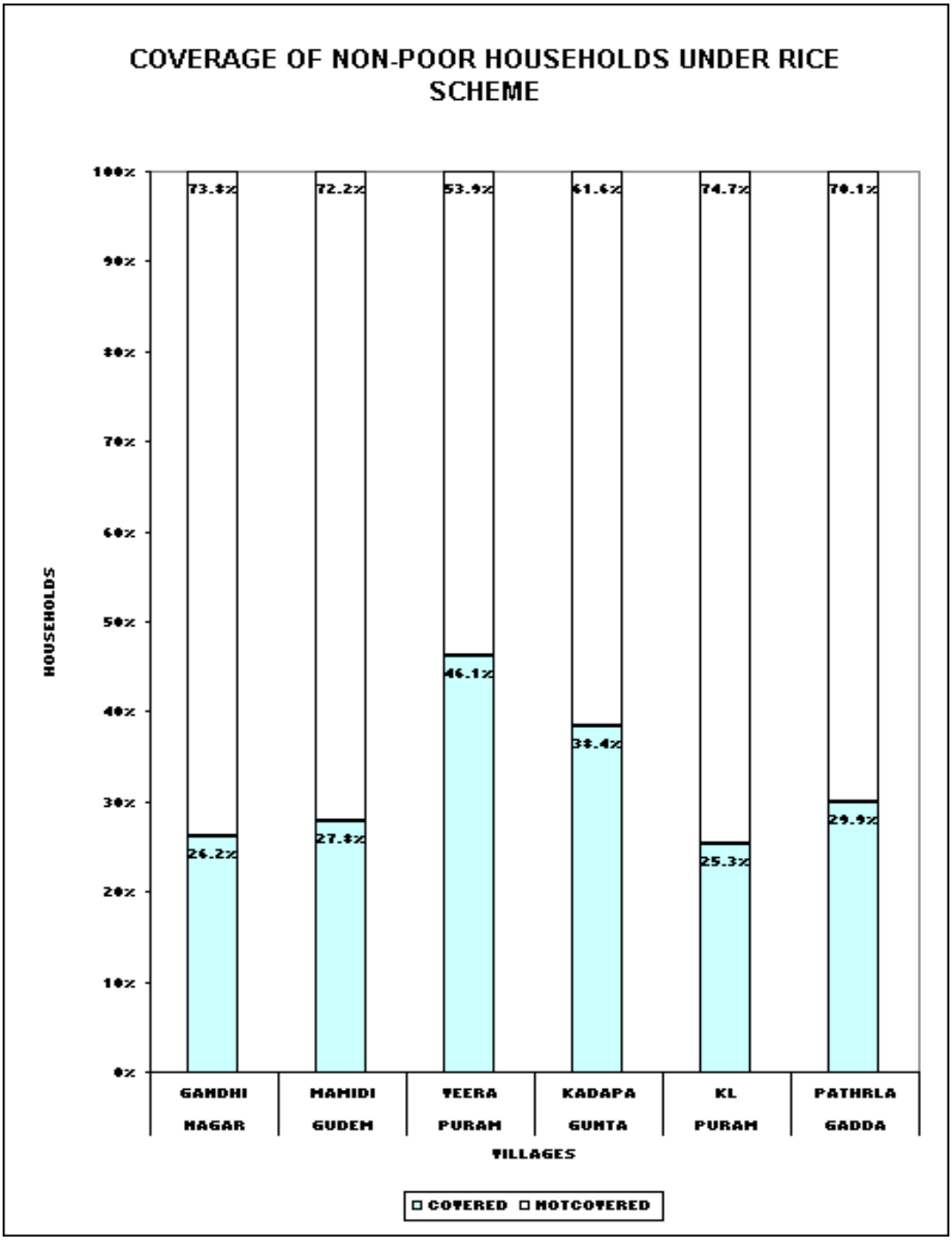


Table 30—State and National Level Diversion from PDS: 2000-01

State	Estimated Diversion (%)		
	Wheat	Rice	Sugar
Andhra Pradesh	15	19	16
Assam	61	64	52
Bihar	44	64	47
Gujarath	23	21	18
Haryana	53	44	28
Karnataka	30	18	19
Kerala	28	23	25
Madhya Pradesh	20	24	32
Maharashtra	26	30	22
Orissa	39	54	28
Punjab	69	40	6
Rajasthan	31	36	17
Tamil Nadu	24	33	28
Uttar Pradesh	46	49	36
West Bengal	40	34	24
All India	36	31	23

Greater diversion in the case of rice and wheat (not generally purchased by the well-to-do section from PDS outlets) is perhaps an indication that large amount of the quota meant to be distributed among the well-to-do is actually diverted to the open market. This again strengthens the argument for excluding the population above the poverty line from the PDS (GOI, 2001). Using 1993-94 data, Datta and Ramaswamy (2001) estimated both the extent of leakage as well as the economic inefficiency of the public food procurement system relative to the open market. The study shows that leakages range from 15% to 28% of the subsidy while 16 to 26.5% of the subsidy is eaten up by the inefficiency of the government procurement and distribution system (FCI plus state level) relative to the market.

3.3.2 Cost Effectiveness: Cost per One Rupee Transfer to the poor

The food subsidy bill has been very high in recent years, and therefore it is necessary to look at cost effectiveness and opportunity costs of the money that is being so

spent. In order to examine this, we compared the cost effectiveness in terms of one rupee reaching the poor for different targeted programmes. A comparison of some anti-poverty programmes in India[28] shows that Employment programmes fare better than food transfer programmes in terms of cost effectiveness, though ICDS appears to transfer income to the poor at a lower cost (Table 31). The public distribution system and Andhra's rice subsidy emerge as very expensive.

Table 31—Cost Effectiveness: Cost per Re. 1 of Income transferred by various programmes

Schemes	1999-00 (Rs.)
PDS	6.68
Andhra rice scheme	6.46
JRY (public works)	2.28
Maharashtra EGS (public works)	1.85
ICDS (integrated child development services)	1.44

Source: Estimated by the authors; See Appendix 3.2 for methodology on caculations of cost of one rupee transferring to the poor.

There are some estimates using the 1993-94 NSS data. According to Dutta and Ramaswami (2001), cost of providing one rupee food subsidy was Rs. 3.14 and Rs.5.81 respectively for the bottom 40 per cent and bottom 20 per cent in Andhra Pradesh (Table 32. In Maharashtra, the cost of providing one rupee food subsidy was Rs. 4.02 and Rs.9.05 respectively for the bottom 40 per cent and bottom 20 per cent.

Table 32—Cost of Providing one Rupee of Food Subsidy: 1993-94

State/target group	Entire Population	Bottom 40 per cent	Bottom 30 per cent	Bottom 20 per cent
Andhra Pradesh	1.71	3.14	4.05	5.81
Maharashtra	1.81	4.02	5.72	9.05

Source: Dutta and Ramaswami (2001).

[28] See Radhakrishna et al (1997).

There are three principal reasons put forth regarding why the PDS does not deliver food subsidies efficiently (Ramaswami, 2002). These are: (a) targeting errors i.e. income transfer to non-target groups; (b) excessive costs of procurement, storage and distribution (relative to the private sector) and; (c) leakages or fraud, i.e. illegal diversions of subsidized grain to the open market. Table 33 shows how much of the expenditures on food subsidies go to the target group (col.6). It shows only 32 per cent and 25 per cent of the expenditures respectively in Andhra Pradesh and Maharashtra go to the bottom 40 per cent of the population.

Table 33—Decomposition of the Cost of Food Subsidies (in Rs. Millions): 1993-94

State	Total Expenditures	Transfer to non-target group	Excessive costs	Leakages/ fraud	Transfer to target group
1	**2**	**3**	**4**	**5**	**6**
Andhra Pradesh	7778	2059 (26.5)	2058 (26.5)	1161 (15)	2477 (32)
Maharashtra	1883	568 (31)	295 (16)	529 (28)	468 (25)

Note: Figures in brackets are in percentages
Source: Ramaswami (2002). The target group is defined as the bottom 40 per cent of the population ranked by expenditure

3.4 CONSTRAINTS: POLITICAL ECONOMY OF PDS

There are several actors who are interested in continuing with present policies on food subsidy. These are: farmers, FCI officials, bureaucrats, politicians, PDS dealers, local smugglers etc.

3.4.1 Farmers and Politicians[29]*:*

The food subsidy exists because the expenses incurred by the government on foodgrain procurement, storage etc. are larger than the revenues through the sale of these

[29] The discussion in this sub-section is taken from Dev and Mooij (2002).

foodgrains. The system is the following. The government of India procures foodgrains (i.e. rice/paddy and wheat) at fixed prices, set by the Government. The Commission on Agricultural Costs and Prices recommends a certain price (called minimum support price or MSP) on the basis of costs of production along with several other factors. The Cabinet then decides at what price level it will procure. This price is most often higher than the recommended MSP.[30] The foodgrains are then stored and distributed in the various States through Fair Price Shops to consumers who possess ration cards.

The rise in food subsidy is sometimes interpreted as a logical consequence of the desire to satisfy different constituencies simultaneously: producers (who demand a high procurement price) and consumers (who are interested in low consumer prices). But this is not what happened in the 1990s. In fact, the large subsidy in the 1990s (especially after 1997) was the consequence of raising the consumer prices more or less on par with procurement prices. The result of this policy was a lower offtake from the Fair Price Shops because the prices were relatively high as compared to the poor quality of the foodgrains. Since the Food Corporation of India, the main procuring agent, has to buy whatever is offered, the foodstock continues to rise, and so does the subsidy.

Procurement prices have experienced steep increases in the 1990s, and they are consistently higher than the prices recommended by the Commission for Agricultural Costs and Prices (CACP), even though there is no need to continue procurement as far as the stock level is concerned. Attempts to reduce the subsidy have been half-hearted (and counter-productive) as also attempts to restructure the distribution side of the PDS. The obvious question is why nothing has been done about this procurement (price) policy and in order to understand this one has to look at the process and politics involved in setting procurement prices.

Minimum support prices are advised by the CACP. Nowadays, the CACP is composed of seven members: a chairman, a member-secretary, three non-official members and two official members. The two official members are usually retired civil

[30] See also Rao (2001).

servants, academics or other experts, while the non-official members are supposed to be representatives of the farmer community. However, this has not always been the case. When the Agricultural Price Committee (APC), the predecessor of the CACP, was established in 1965, there were no farmer-members. Representatives of the farm community often aggressively favor higher prices but there are also those who are more accustomed to dealing with the bureaucracy, and have moderate demands.

The real upward push on the prices seems to happen, however, after the CACP makes its recommendation.[31] The Ministry of Agriculture prepares a Cabinet note, and the Cabinet decides about the price level. According to several people we interviewed, there is direct pressure on the Prime Minister from the Chief Ministers of the main procuring States to set the procurement price at a higher level. These States are Punjab, Haryana and Andhra Pradesh.[32] There are several reasons why high prices are important for these States and their Chief Ministers. First, for these Chief Ministers it is a very cheap way of pleasing a large part of their constituency. Especially in Punjab, whose economy depends to a large extent on agriculture and where foodgrain production is mainly for the FCI, the level of the procurement price is of immediate interest to the farmers. In all these States the political leaders have their major support base among the wealthy foodgrain-producing farmers. Second, these States levy a statutory tax on FCI purchases, which means that, on top of the procurement price for the farmers, the FCI has to pay about 10 per cent statutory levy to the State Treasury.

There are also several reasons why the Prime Minister and the Union Cabinet cannot afford not to give in to this pressure. First, the central government cannot afford to antagonize the chief ministers of Haryana and Andhra Pradesh as they represent political parties that contribute to the National Democratic Alliance, and the latter is crucial for the

[31]Actually, between 1999 and 2001, the CACP has not recommended a MSP for wheat, following a disagreement between the CACP and the GoI regarding the MSP and the extra bonus on top of the MSP.

[32] These States contribute most foodgrains to the Central pool. In 1994/95, 50 per cent of the FCI wheat purchase and almost 40 per cent of the paddy/rice purchase was done in Punjab; 25 per cent of the FCI wheat and 12 per cent of the paddy/rice came from Haryana and 30 per cent of the paddy/rice came from Andhra Pradesh. (World Bank, 1999: Annex Table 1.11).

survival of the central government. While this is the current situation, the same type of reasons also held true during the first half of the 1990s, when the ruling Congress (I) government wanted the Congress in Punjab to win the Assembly elections in 1992. Second, there are important farmers lobbies with members in almost all political parties and no political party would want to antagonize them. Third, although there is no strong separatist movement in Punjab at the moment, there is still a fear of potential political instability.

The other reason for the rise in MSP is related to the important trade reforms that have taken place in the cereal sector in the mid-nineties. With the opening up of exports of rice and wheat in 1994-95, the volume of exports of both commodities surged due to the large wedge between international and Indian prices of rice and wheat prevailing at the time. In order to ensure that domestic procurement is not harmed, however, the government began to announce hikes in the procurement prices also. Due to the rise in the domestic prices of these food grains the government decided to revert the liberalization policy in the case of wheat in 1996 by closing exports once again. Nevertheless procurement prices continued to increase in the case of wheat, as with rice, in the following years. In fact, when the world price of rice crashed in the late nineties, India lost her competitive edge in the world markets due to the high domestic price. As a result the country had to resort to a small amount of imports in 1999 and 2000.

3.4.2 FCI officials and Civil Supplies Departments

It is reported that some of the FCI officials have become millionaires because of procurement and distribution. They have dealings with politicians, traders and ration shop dealers in diverting the foodgrains meant for the poor. Removal of PDS system and introduction of food stamps or any other alternative will be opposed by the FCI officials. Food and Civil Supplies Departments in different states also have vested interested in keeping the present status of PDS because of leakages in the system.

3.4.3 PDS dealers

There is a demand to obtain licenses for PDS dealership because of many associated benefits. The commission on the sale of PDS commodities is not more than Rs.400-600 per month, which is equal to the earnings of a landless labourer (Mooij, 1998). However, according to the study by Mooij, people are willing to pay large amounts of money for PDS dealership because they can make money in two ways. One is to issue bogus cards that do not belong to any family. The commodities purchased against these bogus cards are sold in the open market at a profit. A second way is to divert part of the commodities meant for real cardholders to the open market. The above reasons, however, may not be true in the case of certain other states. For example, in Andhra Pradesh PDS dealership is seen as an opportunity to have better contact with the villagers and improve their public image (Indrakant, 1996).

3.4.4 Politicians

As compared to South India, there is little interest for politicians in some of the Northern and Eastern states in proper working of PDS. They are interested only in getting the licenses for their party workers and share in money collected through diversions. On the basis of her study on Bihar Mooij (2001) formulated four hypotheses that could explain why politicians in Bihar do not regard the PDS in that way.

(a) Politicians in Bihar do not require food to increase their popularity. They pursue other strategies to attract votes.

(b) Politicians in Bihar are not capable of making the PDS delivery system function such that they can get political mileage out of it. They do not have sufficient control over the (food) bureaucracy in order to force it to deliver the goods to the people, and neither do they have adequate control over the local level vested interests (PDS dealers, local politicians etc).

(c) The present system in which about 85 per cent of the commodities are diverted to the black market offers the Bihari politicians a system that would benefit the consumers/cardholders.

(d) Politicians in Bihar are faced with a different situation than in South India. The poor in Bihar are too poor for the PDS. Households that are permanently indebted cannot be helped through special schemes or proper implementation alone.

Mooij found that the first and third hypotheses contain some truth. The fourth also may be true although people do value PDS ration cards. According to the above study, there are three reasons why this is so: (a) First, the system offers politicians a possibility to offer lucrative posts to fellow caste people or political followers (e.g. licenses to run PDS shops); (b) Second, there is a possibility to extort money from the PDS dealers; (c) Third, the payments for transfers of people working within the food bureaucracy is a source of money for the concerned minister. These payments require diversion of foodgrains to generate money. Apart from politicians, the local mafia is also involved in diverting foodgrains to the open market and collecting funds during rallies and election times.

3.5 OPTIONS FOR REFORMS

Our evaluation of PDS above shows that all is not well with the food policy of the Government. A review of past experience raises a number of questions about the working of the PDS and the associated policies. At the macro level, these questions refer to the fixing of the support and issue prices, the quantities to be procured and distributed, the manner in which stocks should be managed etc. At the micro level, there are the obvious problems of extending the coverage of the PDS, ways of targeting, managing the fair price shops to prevent 'leakages' etc.

Higher procurement prices invariably edge out private trade thus causing the FCI to procure more than what is required for food security. Low volumes of foodgrains available with private trade generally lead to higher market price during lean season due

to inadequate supply in the market while FCI is having huge unutilized stocks in godowns. The food security system has become expensive and unsustainable. There is a need to have better options in terms of cost effectiveness, reaching to targeted population and financial sustainability.

Three Options for Reforms

We can think of three options for reforms in PDS[33]. They are: (1) Strengthening the present system of PDS with better targeting and improving the delivery systems; (2) Shifting to food stamps system and; (3) Replacing it with better cost effective programmes like Employment Guarantee Scheme at All India level

We discuss three options in detail below.

3.5.1 Strengthening the present system of PDS

This can be done through better targeting and improving the delivery systems. The present targeted PDS is based on income criterion. It is well known that it is difficult to identify the poor based on income criterion. Indicator targeting may be better to identify the poor.

(a) *Geographical targeting*

As mentioned above, there is a need to have innovative programmes to minimize the errors of targeting. In this context, some studies have shown geographical targeting is

[33] High Level Committee on Long Term Grain Policy (GOI, 2002) has given short term and long term recommendations. On PDS, The committee recommends that a system of universal PDS be introduced with uniform Central Issue Prices (CIP), one each for rice and wheat respectively, for all consumers in all parts of the country. In this: (a) There should be a single prices for rice, and no distinction between varieties; (b) The uniform CIPs should be the FCIs all India average acuisition cost at MSP of the relevant gain and (c) At these uniform prices, the Centre should allocate grain to states based on population and a monthly per capita quota to be specified from time to time. Actual lifting will be less than allocation, and past lifting should be the basis for decisions regarding grain movement. In the long run, as markets get better integrated, the PDS function need not remain restricted to designated fair price shops, and a food coupon system valid even outside PDS outlets may become possible. If decentralization has to proceed to its logical conclusion in the long term, the entire subsidy in the PDS has to be devolved to the states. The Committee also recommends on issues relating to minimum support prices and procurement, open market sales, exports and imports, encouraging private trade and , FCI related issues (see GOI, 2002).

better than income based targeting[34]. Jha and Srinivasan (2001) have shown that if district is taken as a unit for geographical targeting, inclusion and exclusion errors are low. They suggest that universal provision of subsidies is desirable for poorer states such as Bihar, Orissa, Rajasthan and Madhya Pradesh since most of the districts in these states belong to the 'poor' and very 'poor' categories. In other states, universal subsidies can be provided to poorer districts. In fact, the limited evidence on RPDS (revamped PDS) in Andhra Pradesh and Madhya Pradesh suggest that the performance of PDS in RPDS villages was much better than that in non-RPDS villages with similar socio-economic characteristics. Geographical targeting is supposed to reach the poor more effectively and is more cost effective. However, politically it may be difficult to implement because all the states want PDS in all the districts and they do not want to limit to poorer districts in their respective states.

(b) *Self-targeted commodities*

In the self targeted programmes, the relatively rich voluntarily opt out of the programme. Self targeting in food subsidies may work if subsidies are given to commodities consumed primarily by poor. Rice and wheat are the main commodities given under PDS. One way is to give coarse variety of rice under the scheme. Another way is to distribute coarse cereals like sorghum, pearl millet and maize. However, these commodities are consumed only certain regions such as Maharashtra, Gujarat, Rajasthan and Karnataka. In these regions, one can explore the possibility of distributing coarse cereals.

(c) *Decentralized procurement*

The Union Budget 2001-02 indicated enlarged role for the state governments in both procurement and distribution of foodgrains for PDS in an attempt to economize on procurement costs. It proposed that instead of giving subsidized foodgrains, funds would be provided to the state governments to enable them to procure and distribute foodgrains. Decentralized procurement already started in Uttar Pradesh, Madhya Pradesh and West

[34] Bigman and Srinivasan (2001) Jha and Srinivasan (2001).

Bengal. Decentralised procurement of foodgrains is intended to benefit both the farmers and consumers while simultaneously improving the financial position of the Government. The High Level Committee on Long term food grain policy also recommended for decentralized procurement and distribution. However, state governments such as Punjab, Haryana, Andhra Pradesh and Kerala opposed the decentralized procurement because of the lack of infrastructure and resources with the states. These problems have to be solved before implementing the decentralized procurement.

(d) Involvement of PRIs for better targeting and delivery systems

Panchayati Raj Institutions (PRIs) are in a better position to identify the poor households. Therefore, it is better to give responsibility of identifying the target households and issuing ration cards to PRIs. This would likely to improve targeting and also minimize leakages to open market. According to Central Government directive, the state governments are supposed to involve PRIs in the functioning of PDS. But, in pactice they are not being involved.

3.5.2 Shifting to Food Stamps

The second and better option is to move towards food stamps or food credit card system. Main feature of India's food subsidy programme has been the involvement of the government and its agencies in physically handling the grain. The government procures, stores and transport it to different states/union territories in the country and state governments distribute the commodities to ration dealers. It may be more efficient to move towards a new system of providing food subsidy through the normal food supply shops that exist throughout the length and breadth of the country, supplemented by Fair price shops in remote and inaccessible regions where such shops may be absent. This could be achieved through the introduction of food stamps or food credit card system.

A food stamp is a cash voucher, which can be exchanged by the beneficiary for only food. GOI (2001) suggests a subsidy entitlement card (SEC) for food stamps. The SEC should show the number of members in a poor family, their age etc. and indicate

their entitlement level for food stamps. The members of a family would produce their SEC and collect their monthly quota of food stamps from prescribed distribution centers such as the local post-office, for example, since there already exists a wide network of post offices throughout most of India. By using these food stamps in any food supply shop the poor should be able to purchase foodgrains at a price below the market price. The retailer who sells food to the stamp holder could accumulate these food stamps issued by the state governments and claim money from the state government.

Is the food stamp system more cost effective compared to the PDS?

We mentioned above that main problems with PDS are: targeting errors, leakages, excess costs. Regarding targeting errors, food stamps also face the same problem of identifying the target group. There is no problem of excess costs, which constitute a significant part of government subsidies, as these cannot arise in a food stamp programme since the grain is transacted through private markets. This is sited as a major gain from a switch to food stamps from PDS (Ramasamy, 2002). However, there can be other types of fraud such as counterfeiting of stamps and currency and intermediaries diverting the stamps meant for the poor to non-target groups. The cost-effectiveness of food stamps depends on its administrative costs and the efficiency of the private sector. Where food markets are more developed (e.g. urban areas), food stamps may be more effective.

(a) *Involvement of private sector*: FCI inefficiency also led to an increase in economic costs of buffer stocks, which in turn led to an increase in issue prices. There is a need to involve the private sector in storage and distribution of foodgrains since the inefficiency of FCI is has been well established[35]. The latter has also been responsible for increasing the burden of the food subsidy bill on the government. Private sector participation might be particularly useful in the storage and distribution of distribution of

[35] see Gulati et al (1996).

food grains[36] since studies have shown that private costs are lower than those of FCI in handling the grains.

Box 1—Food Coupons: The Andhra Pradesh Experiment

A food coupon system for the distribution of rice and kerosene through the public distribution system (PDS) was introduced in Andhra Pradesh during 1998-99 in order to improve the delivery system for these two commodities. Under the scheme, mere possession of the card is not enough to draw PDS rice, wheat or kerosene. The cardholder, whose photo is affixed on the card has to be physically present when obtaining the coupons. Coupons are issued once a year and coupon holders are entitled to draw rice and kerosene on a monthly basis. To help the coupon holder draw rice and kerosene in easy installments in a month, coupons are denominated in smaller quantities like 4 kg, 8 kg etc. The coupon holder/beneficiary is aware of his entitlement. The state government feels that this system has largely eliminated the scope of cheating by dealers by giving beneficiaries less than their entitlement. The coupon guarantees the stakeholder his right to draw a specific quantity every month. Rice or kerosene is not released unless the coupon is produced. This facilitates proper accounting of the actual quantity distributed in the month as it is calculated on the basis of the quantity covered by coupons produced by the beneficiaries. Quantity distributed vis-à-vis the coupons produced could be verified every month by the officials of the Civil Supplies/Revenue Department. Introduction of the coupon system has also reduced in saving about 20,000 tonnes of rice and 7,100 kilo litres of kerosene every month. In financial terms, the exchequer has saved Rs. 90 million per month on rice and Rs.56.7 million per month on kerosene as subsidy. The coupon system can be made more effective if the list of beneficiaries is computerized on the basis of FPS (fair price shops) so that duplicate names, if any, could be identified and eliminated. This step would also reduce the cost of PDS substantially. However, steps should be taken to prevent counterfeiting of coupons by ensuring that legal consequences for such offences are duly enforced. Regular and staggered distribution of coupons could also be used to reduce the incidence of malpractices.

Source: GOI (2003).

(b) *Buffer stock levels:* The FCI's role should be restricted to the maintenance of emergency stocks to be used in situations such as crop failure, and PDS operations may be left to states. Also the FCI should procure only the required amounts in the open market. Various committees have also provided recommendations regarding the size of buffer stock, which varies from 15 to 25 million tonnes (inclusive of PDS supplies) depending on the season in a year. The Expenditure Reforms commission recommended 17 million tonnes as the total average stocks to be maintained for distribution and buffer stock.

[36] See World Bank, 1999 for some suggestions.

(c) *Food coupon system or food credit card system could also be tried.* A food coupon system for distribution of rice and kerosene through PDS was introduced in Andhra Pradesh in 1998-99. The scheme was aimed at improving the delivery system of these two commodities. Under the scheme mere possession of card was not adequate to draw PDS rice. Physical presence of the cardholder whose photo was affixed on the card was insisted upon for obtaining the coupons. This has reduced the scope of diversion of rice and kerosene to a great extent, if not totally eliminated it. However, private sector has to be ensured that they get reimbursements from the government without delay

3.5.3 Hard Option: Replace it with Food for work Programme

Effective implementation of Food for work programmes (FFW) can improve food security. It is known that public works programmes have many direct and indirect benefits to the poor (see Dev, 1995, 2000). and these programmes have been in operation in India since the 1960s. Among the important ones are the Employment guarantee scheme of Maharashtra, JRY (Jawahar Rojgar Yojana) , and EAS (Employment Assurance Scheme), although the EGS is a cash for work programme. Even in the case of JRY and EAS the food component in payment is very less. There are two aspects to be considered in the functioning of public works programmes. One is how to utilize the available excess stocks effectively for FFW. The second is how to improve the effectiveness of the cash for work programmes like JRY in order to increase the purchasing power of the unskilled workers. With the increase in purchasing power workers can buy foodgrains in PDS or in the market. Therefore, food security can be increased directly by distributing foodgrains and indirectly by increasing purchasing power. Another question is how to link these programmes with the PDS. One possible way is to ensure that subsidized foodgrains under the PDS reach the workers working in FFW such that the workers reap double benefits (under FFW and PDS). The recently announced Prime Minister's *Sampoorna Rojgar Yojana* (Rs.10, 000 crores) program is supposed to provide full assistance for the states to implement FFW.

3.5.4 Which Option is better?

In the medium term to long term, the last two options viz., food stamps, replacement with food-for-work/cash-for-work programmes can be tried. In the short run, PDS can be strengthened through targeting (the first option). A study done for IFPRI by Jha and Srinivasan (2003) shows that decentralization would improve the performance of PDS. With the involvement of Panchayats (local councils), targeting can be improved considerably. Also present PDS can be linked with employment programmes, ICDS etc. for better targeting.

3.6 CONCLUSION

The objective of this chapter was to examine the performance of PDS and provide suggestions for more cost effective and better-targeted alternatives. An earlier attempt to look at the impact of PDS on consumption of the poor and poverty was done by Radhakrishna et al (1997) using the NSS data. Targeting was introduced in PDS for the first time in late 1990s and in this chapter, we compare the results of Radhakrishna with the latest data.

Evaluation of performance is in terms of increases in food subsidy, coverage under PDS, impact on consumption, calories, impact on the poor, leakages including targeting errors, and cost effectiveness. The results show that the impact on consumption by the poor and the decline in poverty have increased in rural areas between 1986-87 and 1999-00. The impact on urban areas has been more or less same. The impact is much higher on states like Andhra Pradesh, Orissa and Tamil Nadu. However, inspite of the increase in 1999-00, the impact of the PDS on the poor is still marginal at the all India level. We have also looked at the political economy of the PDS and find that the dealers of PDS, bureaucrats, politicians, and the civil supplies departments have a vested interest in keeping the present system of public distribution in operation.

Three options are mentioned in the chapter for reform of the PDS. They are: revamping the existing PDS through decentralization and targeting, the introduction of food stamps and replacing the PDS with food-for-work programmes. In the short run we have advocated decentralization of the PDS and better targeting with the help of panchayats. We have also recommended that the PDS be linked with employment programmes and ICDS, in order to improve targeting. In the medium term, one should move towards one of the other two options of Food (cash) for Work programs and Food Stamps (coupons) to be distributed to those below the poverty line.

APPENDIX 3.1: METHODOLOGY FOR ESTIMATING ADDITIONAL DEMAND

The methodology for estimating the additional demand that would have been generated in the nineties had the prices (price simulated demand) and growth patterns (growth simulated demand) of eighties prevailed in the nineties is as follows: Let y_t be the total expenditure (in 1990-91 prices) for any year t in the nineties. If the growth rate of the total expenditure in the eighties is g, then $y_t' = (1+g)^t y_{1990}$ gives the total expenditure in year t if the growth rate of eighties persists. The additional growth simulated demand for the year t is given by

$$\Delta q_y = \eta_y (y_t'/y_t - 1)*q_{1990\text{-}91}.$$

where $q_{1990\text{-}91}$ is the per capita demand for cereals in 1990-91. Similarly the price simulated additional demand is given by

$$\Delta q_p = q_{1990\text{-}91} [\Sigma \eta_i (p_{it}'/pi_t - 1)]$$

where, η_i is the elasticity of cereal consumption with respect to the i th price, p_{it} is the relative price of the ith commodity in year t with base 1990-91 and $p_t' = pi_t g_{ip}$, and g_{ip} is the growth rate of relative price of the ith commodity in eighties. It may be noted that the cross price effects are ignored in the estimation of price-simulated demand.

The expenditure and price elasticities were derived from a seven commodity Piece-wise Linear Expenditure System estimated using NSSO consumption data. For convenience all items of non-cereal food are combined in to one commodity group. Similarly all the non-food commodities are treated as one. The complete set of elasticities is available for four income groups separately for rural and urban areas. However, the following computations are based on the average elasticities for rural and urban areas.

As mentioned in the text, for growth-simulated demand we first projected, starting from 1990-91 the total expenditure in each year (in 1990-91 prices) using the growth rate of eighties (1.7% pa in rural and 1.76% pa in urban). Taking 1990-91 is as base, the relative price of each commodity is moved using the growth rates of eighties to relative prices that would have prevailed had the eighties relative price movements continued. The percentage difference between the actual relative price and the simulated relative

price is multiplied by the price elasticity to estimate the price simulated additional demand.

Table below presents the elasticities and the growth rates of the relative prices used

Commodity	Rural		Urban	
	Price Elasticity of Cereals	Growth Rate of Relative Price	Price Elasticity of Cereals	Growth Rate of Relative Price
Cereals	-0.256	-0.32	-0.098	-0.75
Non-Cereal Food	-0.034	1.69	-0.010	1.59
Non-Food	-0.020	-0.96	0.016	-1.16

The estimated additional demand in the nineties are given in the table below

Actual and Simulated Aggregate Consumption of Cereals in Rural and Urban Areas								
Round	Year	Actual	Simulated			Difference		
			P	Y	P+Y	D(P)	D(Y)	D(P+Y)
46	1990-91	133.36	133.36	133.36	133.36	0.00	0.00	0.00
47	1991	131.82	133.40	130.65	132.23	1.58	-1.17	0.41
48	1992	132.28	134.81	132.45	134.99	2.54	0.17	2.71
50	1993-94	135.13	136.70	134.87	136.44	1.57	-0.26	1.31
51	1994-95	136.74	139.33	137.33	139.93	2.60	0.60	3.20
52	1995-96	136.87	139.04	137.84	140.01	2.17	0.97	3.14
53	1997	139.26	142.39	137.44	140.57	3.13	-1.81	1.31
54	1998	138.27	141.57	140.19	143.49	3.30	1.92	5.22
55	1999-2000	121.13	122.68	120.12	121.66	1.54	-1.02	0.53

APPENDIX 3.2: COST OF ONE RUPEE TRANSFER TO POOR: METHODOLOGY PDS

Appendix Table 1—Cost of one Rupee transfer to Poor through Rice Subsidy Scheme of Andhra Pradesh – 1999-2000

	Item	Units	Costs
1	Total Annual Spending on the Subsidized Rice Scheme [1]		
	a) State	Rs. Million	10631.00
	b) Centre	Rs. Million	7390.00
	c) Total	Rs. Million	18021.00
2	Per capita Annual Income Gain due to Rice Scheme to all[2]		
	a) Rural	Rs. 0.00	167.88
	b) Urban	Rs. 0.00	106.56
3	Average Annual Income Gain to All Consumers [3]		
	a) Per capita	Rs. 0.00	151.2846
	b) Aggregate	Rs. Million	11308.53
4	Public Spending Required to Transfer 1 Rupee to any consumer (1c/3b)	Rs. 0.00	1.59
5	Per capita Annual Income Gain to Poor due to Rice Scheme [2, 4]		
	a) Rural	Rs. 0.00	173.16
	b) Urban	Rs. 0.00	144.24
6	Average Annual Income Gain to Poor[3,4]		
	a) Per capita	Rs. 0.00	169.3234
	b) Aggregate	Rs. Million	2788.60
7	Public Spending Required to Transfer 1 Rupee to Poor consumer (1c/6b)	Rs. 0.00	6.46
8	Annual Income Gain under perfect targeting[6]		
	a) Per capita	Rs. 0.00	686.65
	b) Aggregate	Ra. Million	11308.53
9	Public Spending Required for 1 Rupee under perfect targeting (1c/8b)	Rs. 0.00	1.59

Note: 1. The State Spending is taken from the Budget volumes of Government of Andhra Pradesh. For the central spending, the average FCI subsidy rate given in HLC (2003) is multiplied by the rice off take for PDS from AP.
2. Estimated from NSSO 55th Round Survey on Consumer Expenditure.
3. See Table 2 for Population estimates used.
4. Deaton (2003) Poverty Lines were adopted for computations.
5. See Table 2 for Population estimates used.
6. The per capita annual income gain to poor under perfect targeting obtained by dividing 3b by the total number of poor. It is assumed that perfect targeting does not involve additional costs.

Appendix Table 2—Basic Parameters for estimation of cost of transfers through AP Rice Scheme

1	Population	**Units**	**Nos**
	a) Rural	Millions	54.52
	b) Urban	Millions	20.23
	c) Total	Millions	74.75
2	Percentage of Poor		
	a) Rural	%	26.2
	b) Urban	%	10.8
	c) Total	%	21.88
3	Number of Poor		
	a) Rural	Millions	14.28
	b) Urban	Millions	2.18
	c) Total	Millions	16.47

Appendix Table 3—Cost of one Rupee transfer to poor through PDS in India (1999-2000)

	Item	**Units**	**Costs**
1	Total Annual Spending on Rice and Wheat Subsidy[1]	Rs. Million	73160.81
2	Per capita Annual Income Gain due to PDS supplies of Rice and Wheat to all [2]		
	a) Rural	Rs. 0.00	50.4
	b) Urban	Rs. 0.00	42.72
3	Annual Income Gain to All Consumers [3]		
	a) Per capita	Rs. 0.00	48.21
	b) Aggregate	Rs. Million	48071.32
4	Public Spending Required to Transfer 1 Rupee (1/3b)	Rs. 0.00	1.52
5	Per capita Annual Income Gain to Poor due to PDS supplies of Rice and Wheat [2,4]		
	a) Rural	Rs. 0.00	47.04
	b) Urban	Rs. 0.00	62.4
6	Annual Income Gain to Poor[3,4]	Rs. 0.00	49.40
7	Public Spending Required to Transfer 1 Rupee to Poor (1/6b)	Rs. 0.00	6.68
8	Annual Income Gain under perfect targeting[6]		
	a) Per capita	Rs. 0.00	216.88
	b) Aggregate	Ra. Million	48071.32
9	Public Spending Required for 1 Rupee under perfect targeting (1/8b)	Rs. 0.00	1.52

Note: 1. The central spending on PDS is taken from HLC (2003). The annual spending includes only central government expenditures. The state subsidies have not been considered due to lack of data. Therefore, the estimated transfer costs give lower bound of the actual costs.
2. Estimated from NSSO 55th Round Survey on Consumer Expenditure.
3. See Table 4 for Population estimates used.
4. Deaton (2003) Poverty Lines were adopted for computations.
5. See Table 4 for Population estimates used.
6. The per capita annual income gain to poor under perfect targeting obtained by dividing (3b) by the total number of poor. It is assumed that perfect targeting does not involve additional costs.

Appendix Table 4—Basic Parameters for estimation of cost of transfers through PDS (Rice and Wheat) in India

1	Population		
	a) Rural	Millions	713.34
	b) Urban	Millions	283.69
	c) Total	Millions	997.02
2	Percentage of Poor		
	a) Rural	%	26.3
	b) Urban	%	12
	c) Total	%	22.23
3	Number of Poor		
	a) Rural	Millions	187.61
	b) Urban	Millions	34.04
	c) Total	Millions	221.65

JRY

(1) First we get the govt. expenditure on JRY. Based on concurrent evaluation we get the expenditure on wages. According to concurrent evaluation on JRY, 53 % of the expenditure goes as wages to employees. It shows that govt. is spending Rs. 1.88 to reach Rs.1 of wage to JRY employees.

However, all JRY employees are not poor. Again concurrent evaluation shows that 18% are non-poor i.e. 82% are poor. Then the cost of one rupee reaching the poor increases to Rs2.28

Maharashtra EGS

The same methodology is used in Maharashtra EGS also. Only difference is that wage share is high in MEGS (60%) and 90% of EGS are workers are poor. The calculations show that it needs Rs.185 to pay one rupee to the poor.

ICDS

Total cost= Health (salaries, traveling, medical kit) + welfare (salaries, wages, rents, traveling) + nutrition (cost of food).

Cost of one rupee reaching the poor= Total cost / nutrition (cost of food) =1.44

4. PUBLIC WORKS PROGRAMMES AND FOOD SECURITY

4.1 INTRODUCTION

Economic access is important for ensuring food security at the household level. Public works programmes play an important role in raising economic access of the poor. The case for RWPs (Rural works programmes) lies in the self-targeting nature of the schemes. There is a growing theoretical and empirical literature on the impact of public works programmes (or 'workfare') on poverty alleviation (see Dreze and Sen, 1989; Ravallion, 1991; Besley and Coate, 1992; Besley and Kanbur, 1993; Sen, 1995). 'Workfare' is supposed to enable the social planner to separate the non-poor from the poor by connecting income transfers to participation in public works. The public works also fit into the ideas of Ragnar Nurkse (1957) who regards surplus labour in low-income countries a potential saving useful for capital formation. The objectives of RWPs are to provide employment and to generate 'public goods' such as physical infrastructure. Their policy attractiveness lies in their self-selection aspect since they can better screen out the non-poor, and also provide wage incomes to the poor. Furthermore they are also useful in the creation and maintenance of rural infrastructure, which in turn due to their public goods nature provides positive externalities. Generally priority is given to directly productive and economic infrastructure rather than social infrastructure. Some tertiary objectives are:

While creating employment, more emphasis is given to women and socially disadvantaged sections

(b) Seasonal and stabilization benefits. PWP can also function as insurance

(c) Creates an upward pressure on rural and urban wages

(d) Slows down rural-urban migration

(e) Incorporates the objective of environmental protection

(f) Makes rural and urban poor a political force

In India, the provision of employment has been extensively used as a tool of entitlement protection for many centuries. From the fourth Century BC when the ancient Indian political economist, Kautilya, wrote his *Arthasastra,* there has been an emphasis

on public relief works, particularly at times of famine, and employment from public works, later became the main and most effective element of strategies for famine prevention (World Bank, 1990). After independence in 1947, many schemes were sponsored by the central government, beginning with the Rural Manpower programme in 1960. However, the most important programme at the state level is the Maharashtra Employment Guarantee Scheme (EGS), introduced in 1972 - one of the most researched and discussed programmes in the country and commended by the UNDP's Human Development Report (1993) as one of the largest public works programmes in the developing world. It is a particularly interesting example because of its unprecedented feature of guaranteed rural employment at a defined wage, which makes it a model for other states in India and throughout the developing world. Agriculture in Maharashtra does not generate sufficient employment and therefore requires government intervention. The EGS is one such attempt to enlarge the scope of employment in order to alleviate poverty in the state. In developed countries such a security is offered by the state in terms of unemployment insurance, which is financed by a payroll tax on the working population. A programme such as the EGS acts as proxy unemployment insurance, and indeed is financed by a payroll tax at the state level in Maharashtra.

At the national level, Jawahar Rojgar Yojana (JRY) and Employment Assurance Scheme (EAS) are the important programmes in rural areas[37]. An important role was envisaged for the panchayats in JRY's implementation, who receive funds directly. In terms of person days of employment created, India's rural public works programmes are the largest in the world. The JRY reached around a billion person days in recent years. JRY's share is quite high in the social sector expenditure. Around 350 billion was spent on JRY during 1989-90 to 2000-01[38].

In this chapter, we examine the impact of Maharashtra EGS and national level programmes on the food security at household level. We will discuss about the reforms needed in public works programmes for better implementation.

[37] The National Rural Employment Programme (NREP) and Rural Landless Employment Guarantee Programme (RLEGP) were working in the 1980s.
[38] JRY has been restructured in 1999 and renamed as Jawahar Gram Samridhi Yojana (JGSY).

4.2 EMPLOYMENT GUARANTEE SCHEME IN MAHARASHTRA

4.2.1 Expenditure and Benefits

The Employment Guarantee Scheme (EGS) introduced in Maharashtra in the early 1970s is an innovative anti-poverty intervention. The EGS provides a guarantee of employment to all adults above 18 years of age who are willing to do unskilled manual work on a piece rate basis. The scheme is self-targeting in nature. It is totally financed by the state government. The main objectives of the EGS are to improve household welfare in the short run (through provision of employment) and to contribute to the development of the rural economy in the long run through strengthening rural infrastructure[39]. Here we examine the costs and benefits due to EGS.

The expenditures and employment generated under EGS for the period 1972-73 to 2000-01 are given in Table 34. From a modest beginning of only 19 million in 1972-73, the scheme expanded to an expenditure of 5.78 billion in 2000-01 at current prices (see Table 34). In 2001-02, the expenditure seems to have increased significantly to around 9 billion due to drought conditions. During the 1970s and 80s, the EGS has consistently claimed from 10 to 14 per cent of the total plan expenditure of the Maharashtra state. During the Eighth Plan period, however, the EGS share in the plan expenditure declined to around 8 per cent. The table shows that the employment created under EGS reached peak in 1985-86 (189.5 million person days). Since 1987-88, it started declining due to various reasons. Introduction of JRY could be one of the reasons for decline in the number of person days under EGS. However, still EGS created more than 110 million person days in 2000-01.

One important development in the 1990s relates to linking of EGS to horticulture development. As shown in Table 35, the area under horticulture till 1990 was only 173,000 ha. . In the 1990s, the area planted under fruit crops due to EGS linked horticulture programme was around - 970,000 ha. During this period, approximately 150 million person days were created under this programme.

[39] For more details on EGS, see Mahendra Dev (1995, 1996).

Table 34—Maharashtra Employment Guarantee Scheme: Expenditure and Employment, 1972-73 to 2000-2001

Year	Total Expenditure (in Rs. million	Person days created (Rs. million)	Year	Total Expenditure (in Rs. billion)	Person days created (Rs. -million)
1972-73	18.8	04.5	1987-88	2.8831	133.3
1973-74	18.9	05.1	1988-89	2.5423	81.3
1974-75	137.2	48.1	1989-90	2.3928	78.0
1975-76	346.1	109.5	1990-91	2.3892	89.8
1976-77	511.0	136.5	1991-92	3.1992	119.4
1977-78	515.4	117.3	1992-93	4.5272	148.0
1978-79	741.7	163.5	1993-94	3.4734	98.4
1979-80	1.0923 billion	205.4	1994-95	3.8409	94.2
1980-81	1.2212 billion	171.5	1995-96	4.4375	97.0
1981-82	1.2617 billion	156.0	1996-97	3.6675	90.1
1982-83	1.3093 billion	128.0	1997-98	3.5300	90.0
1983-84	1.8498 billion	164.5	1998-99	4.5666	91.9
1984-85	2.3204 billion	178.0	1999-2000	4.9397	94.9
1985-86	2.7224 billion	189.5	2000-2001*	5.7800	111.2
1986-87	2.4343 billion	187.6			

*provisional
Note: 1 crore = 10 million
Source: Planning Department, Government of Maharashtra.

Table 35—Area Under Fruit Crops in Maharashtra (Before and after EGS linked horticulture), Area in 000ha.

Name of Fruit crop	Area before 1990 (000 ha.)	Area after horticulture linked programme with EGS (1990-91 to 2000-01) (000 ha.)
Mango	35.4	368.2
Cashew	16.0	122.4
Coconut	17.0	21.5
Sapota	3.9	49.2
Orange	33.6	98.6
Sweetlime	5.7	66.9
Guava	8.5	23.4
Pomegranate	7.7	67.4
Ber	0.0	71.2
Custard Apple	2.8	26.9
Tamarind	0.0	16.3
Fig	0.0	0.5
Jamun	0.0	0.4
Jackfruit	0.0	1.3
Awala	0.0	4.9
K.Lime	14.0	20.2
Spices	0.0	0.6
Others	28.0	11.1
Total	**172.6**	**970.6**

Source: Department of Agriculture& Horticulture.

4.3 BENEFITS DUE TO EGS

(a) EGS and Targeting

There has been a debate about the effectiveness of the EGS in covering the target group. Using landless laborers as the criterion for target group, the PEO study (1980) shows that only 40 percent belonged to the target group under the EGS. Ravallion(1991) questions this criterion and rightly says that "it is the *poor* whom we are trying to reach, not the landless per se"(p.159). According to him a better test would be to compare the income distribution among participants with that for the rural population as a whole. Using the results of micro studies, he showed that EGS was well targeted to the poor. For example, Dandekar's study (1983) shows that almost 90 per cent of the EGS workers belong to poorer sections.

Using ICRISAT Village Level Studies' data, a number of studies have examined the targeting performance of the EGS. Most of these studies have concentrated on Shirapur and Kanzara villages of Maharashtra. Walker and Ryan (1990) showed that wealth in the form of total assets was strongly and inversely related to participation in the EGS. Their results also reveal that the size of that relationship was larger for women as compared to men in both the villages. Between the two villages, the inverse relationship was much stronger in Kanzara, where the opportunity cost was higher because of abundant availability of agricultural employment opportunities.

Deolalikar and Gaiha (1993) also examine the targeting performance in these two villages. On female participation, this study indicates that the scheme is well targeted to young female agricultural laborers with low levels of schooling who are household heads and who come from low-income and low-asset households. A study by Datt and Ravallion (1992) on these two villages shows that, in general, low wealth people participate in the programme. However, according to this study, there are signs that social stigma and work disabilities dilute targeting performance somewhat. In other words, the possibility of participation for low wealth high caste people and people with physical disabilities is less.

However, recent studies by Gaiha (1996a, 1996b) reveal that the EGS was mistargeted contrary to the conclusions of the former researchers. According to these studies, a little over 48 per cent of the EGS participants in 1979 were poor. In 1989, the share of the poor among EGS participants was a little over 27 per cent. Thus the proportion of non-poor rose more than moderately. Gaiha's conclusions are based on data sets for two villages in Maharashtra (viz., Shirapur and Kanzara). First, this evidence may not be true for the entire Maharashtra. Secondly, the poverty lines used by the author appear to be much lower than official poverty lines.

Most of the other evidence shows that EGS well targeted to the poor.

(b) Mitigation of Underemployment and Unemployment at the Aggregate Level

Based on the estimates at the aggregate level it can be concluded that the contribution of the EGS to the total employment/underemployment in the state varies from less than 10 per cent to one third. However, the equivalent of 10 to 30 per cent of full time employment has an impact on a much larger part of the targeted group because the EGS employment is considered only supplementary or part-time employment.

The average labor attendance under the EGS was approximately 0.50 million in the year 1993/94. In the same year the NSS 50th Round data revealed that there were 23.2 million workers (self employed as well as wage employed) above 15 years. Thus the share of EGS workers in the total rural workers was only 2.2 per cent in the state. In the absence of EGS, at least theoretically, unemployment among rural workers would have been up by 2.2 per cent.

This is reflected in the trends in unemployment rates for Maharashtra in Table 36. The incidence of unemployment declined much faster in Maharashtra as compared to all India. The decline was particularly significant between 1983 and 1987/88. This is true for female unemployment also. However, the unemployment for both males and females has increased in Maharashtra since 1987/88. During the same period the female unemployment for all India declined. The reasons for increasing person day unemployment in Maharashtra are yet to be explored.

(c) Transfer Benefits of EGS

At the aggregate level we can estimate transfer benefits to the workers under EGS. Assume that the available funds are Rs.100. The gross transfer benefit to the unskilled workers is Rs 60 (i.e. share of wage costs). Assuming 30 percent of wages as forgone income and targeting efficiency of 90 per cent, the net transfer benefit would be Rs.35 to Rs.40 out of Rs. 100. If we assume Gaiha's finding of 27 per cent of transfer efficiency, only Rs.11 out of Rs.100 reach the poor. However, Ravallion and Datt's study (1995) on two villages from Maharashtra (Shirapur and Kanzara) shows that half of the gross budget disbursement directly reaches the participants most of whom are poor. This study found that the foregone income from employment on the public works schemes is quite low - around one quarter of gross wage earnings. Most of the time displaced was in domestic labor, leisure and unemployment. It shows that workers are not losing much by participating in the EGS at least in the villages studied.

Table 36—Person-day Unemployment Rates for Rural Areas: Maharashtra and all India

Years	Maharashtra		All India	
	Rural Male	Rural Female	Rural Male	Rural Female
1972-73	7.7	11.7	6.8	11.2
1977-78	5.9	9.3	7.1	9.2
1983	6.3	7.2	7.5	9.0
1987-88	2.9	3.5	4.6	6.7
1993-94	4.6	4.0	5.6	5.6
1999-00	6.3	6.9	7.2	7.0

Note: Unemployment rate is defined as the ratio of unemployment days to labor force person days.
Source: Economic Survey.

(d) Impact on Poverty

One criticism of the EGS is that, despite the scheme's existence, poverty in Maharashtra has not declined more rapidly than average. However, the performance of Maharashtra was better than all India in the 1990s. Also, it may be noted that the EGS alone cannot lead to poverty alleviation. As some calculations can show, even if workers work full time on EGS, they cannot earn enough to cross the poverty line. The problem of poverty is much wider than the coverage of EGS. The anti-poverty record of EGS is

better understood by looking at district or region level data. The macro-level poverty ratios do not fully capture the impact of EGS on the poor because EGS is concentrated in a few districts. Almost two-thirds of all EGS employment is concentrated in one-third of the districts.

Table 37—Rural Poverty: Maharashtra and all India

Year	Maharashtra	All India
1973-74	57.71	56.44
1993-94	37.93	37.27
1999-00	23.72	27.09

Source: Economic Survey, 2001-02.

(e) Wage Debate

The dilemma to be resolved is whether the wage should be below or equal to market wage rate or at the legally fixed minimum wage level (generally market wages are below minimum level). Initially the EGS wages were below the market agricultural wages. In 1988, with the doubling of the statutory minimum wage rate, the EGS piece rates were also doubled. Ravallion et al (1993) reveal that higher wages led to rationing in the guarantee of employment. They argue that lower wages should be maintained in order to have wider coverage, which would help the poor better as compared to the rationing due to higher wages. This issue should be resolved before replicating the EGS to other states. There is some merit in the low wage argument if one wants to concentrate on reducing the intensity of poverty. However, if the aim is to take the poor upto the so called poverty line, obviously higher wages are needed. In recent years, the workers seem to have been shifting from EGS to JRY in Maharashtra because of the higher wages (Prabhu, 1996). Therefore, one has to verify whether reduction in EGS employment has been due to increase in wage rates or shifting of workers to JRY.

(f) Indirect or Secondary Benefits

The case for EGS relies more heavily on secondary (or indirect) and stabilization benefits, rather than on direct benefits. One of the second round effects of EGS is its contribution to the creation of rural assets. The EGS projects mainly relate to soil

conservation, land development, percolation tanks and roads. They can have substantial impact on agricultural growth (see Sathe, 1991). The EGS has been criticized for neglecting the creation of durable assets and paying more attention to employment generation. There is some merit in this argument but it may not be true for all EGS assets. The related criticism is that the agricultural growth in Maharashtra was very low in the 1980s inspite of EGS[40]. Here too one has to look at the disaggregate data i.e. trends in agricultural growth at the district level.

Secondly, EGS puts an upward pressure on agricultural wages[41]. The guarantee part of the EGS increases unskilled labourers's bargaining strength in negotiations with an employer or landlord. There is evidence that the EGS wage rate has influenced the agricultural wage rate in Maharashtra (see Acharya, 1990). Thirdly, one of the important aspects of the EGS is its insurance function. In the absence of unemployment insurance in India, EGS can act as an insurance for the rural workers. The existence of a form of income/employment insurance could be quite significant although the increase in employment and income is not very large as compared with the aggregate needs. The EGS also have stabilization benefit in the sense that the employment under the scheme is high in the lean season (April to July) and low in the peak season (October to January) (see Table 38). Fourthly, it is worth noting that in rural Maharashtra, the EGS is known as a "programme of women". Various micro studies have shown that women constitute 40 to 50 per cent of the EGS workers. These large percentages could be due to the predominance of female labor in casual unskilled work in rural areas.

Fifth, by making employment to entitlement, the EGS facilitates collective political action by the poor, and promotes the realization of their common interest. The scheme also makes rural politicians to be more responsive to the demands of the poor. It provided the poor with opportunities for effective action and encouraged the mobilization of their political resources and also improved the bargaining position of rural poor. A number of organizations have come up to help the EGS workers[42].

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[40] Suresh Tendulkar, Delhi School of Economics (personal communication).

[41] There is also casual evidence of a labour shortage in Maharashtra, along with significant seasonal unemployment.

[42] Also see Echeverri-Gent (1988), Subbarao (1992), Hirway and Terhal (1994) on the benefits of EGS.

Table 38—Average Monthly attendance on EGS sites (in 000's)

	85-86	86-87	87-88	88-89	89-90	90-91	91-92	92-93	93-94	94-95	95-96	96-97
April	731	686	957	535	534	331	270	696	335	186	292	186
May	820	765	940	532	532	347	282	773	385	223	318	182
June	748	740	769	333	332	297	244	902	391	203	350	165
July	515	621	523	174	173	148	164	502	298	123	283	132
August	475	523	411	129	129	114	110	277	222	104	172	86
September	587	482	357	80	110	90	104	181	196	106	148	63
October	549	420	227	85	97	84	129	142	132	135	109	49
November	505	374	266	90	96	75	161	124	101	147	89	49
December	696	494	361	151	123	104	232	174	106	206	110	52
January	649	601	446	182	186	190	360	226	134	259	117	NA
February	639	739	472	238	246	247	511	270	150	285	131	NA
March	668	1061	493	309	307	253	535	294	175	293	162	NA

Source: Planning Department, Government of Maharashtra.

(g) Opportunity Cost to the Workers and to the society

Participation in EGS involves some costs to the workers. However, since most of the employment under EGS is created during lean season, the opportunity cost of the workers may be low. The social costs could be very low because EGS employment is a net addition to the society.

(h) Targeting Errors: EGS as compared to other Anti-poverty Programmes

The success of the EGS needs to be judged against alternative anti-poverty programmes or policies. Many evaluation studies have shown that the performance of EGS is much better as compared to programmes like IRDP. None of the other programmes have sustained large-scale operations for a lengthy period or dealt with corruption and other administrative problems as effectively as the EGS.

In recent years, there are comparisons between EGS and Public Distribution System (PDS). Actual information is not readily available for comparing the EGS and

PDS. A comparison by Guhan (1996) shows that although transfer efficiency is higher under PDS than in EGS, the benefit cost-ratio in the PDS may be only half of that in the employment programmes. This is because of better targeting in employment programmes. However, the coverage is much wider for the PDS (more on this see Mahendra Dev, 1996a).

Cornia and Stewart (1995) divide the errors of 'target' government expenditures on poor people into two: 'E' mistakes in which benefits are provided to the non-poor as well as the poor, and 'F' mistakes in which some of the poor fall outside the scope of the programme. In employment programs that are generally self-targeted, the 'E' mistakes would be lower than 'F' mistakes. In the untargeted programme like PDS, the 'E' mistakes (coverage of non-poor) are expected to be larger than in targeted programmes.

(i) 'E' and 'F' mistakes for EGS

In the case of employment programmes, 'E' mistakes are expected to be less and 'F' mistakes are expected to be higher as compared to those of PDS. For example, 90% the workers working under Employment Guarantee Scheme were poor according to some estimates (Dandekar, 1983). In this case, 'E' mistakes are very low. However, 'F' mistakes are high under employment programmes because many of the poor are not generally covered. Another point is that EGS is considered superior over PDS even if it does not create any assets (see Parikh, 1994). EGS scores much more over other poverty alleviation programmes if secondary benefits such as asset creation, increase in agricultural wages, insurance benefits etc. are considered. If these benefits are considered, the impact of EGS on the poor could be much higher than that of PDS.

To sum up, given some of the limitations in the EGS design and implementation, many studies, particularly at the micro level, have shown that the EGS has made a positive impact on the levels of living of the poor in Maharashtra. The unemployment rate has declined considerably and incomes of the poor have increased over time.

4.4 PUBLIC WORKS PROGRAMMES AT NATIONAL LEVEL

4.4.1 Developments in Public works Over Time

While public works programmes to provide employment in times of distress have a long history, the major thrust to wage-employment programmes in the country was provided only after the attainment of self-sufficiency in foodgrains in the 1970s. The National Rural Employment Programme (NREP) and Rural Landless Employment Guarantee Programme (RLEGP) were started in the Sixth and Seventh Plans. The NREP and RLEGP were merged in April 1989. The JRY was revamped from April 1999 as Jawahar Gram Samridhi Yojana (JGSY). The food-for-work programme was started in 2000-01 as a component of the EAS in eight notified drought-affected states of Chattisgarh, Gujarat, Himachal Pradesh, Madhya Pradesh, Orissa, Rajasthan, Maharashtra and Uttaranchal. The programme aims at augmenting food security through wage employment. Foodgrains are supplied to states free of cost. Given the complementarity of the JGSY, EAS and Food for Work programme, all of which aim at the creation of employment opportunities in the rural areas, they were revamped and merged under the new Sampoorna Gramin Rozgar Yozana (SGRY) scheme from September 2001. The basic aim of the scheme continues to be generation of wage employment, creation of durable economic infrastructure in rural areas and provision of food and nutrition security to the poor (GOI, 2003). The amalgamation of the earlier schemes has led to an augmentation of resources for this programme.

Evaluations are yet to be done on JGSY and SGRY. Therefore, we look at the impact of JRY and EAS on the employment and incomes of the poor.

4.4.2 Contribution of JRY and EAS to Rural Employment

Since both JRY and EAS are major programmes, which provide rural employment, it is useful to consider their contribution to rural employment creation by taking the two schemes together. The total employment generated by these two

programmes in 1998-99 is equivalent to 4.4 million person years (table 39). Compared to the size of the total labor force of over 300 million this is only 1.5 per cent and if adjustments are made for the likely over-reporting in official figures, the percentage is even lower. However, comparing the employment created under these schemes to the total labor force in rural areas is not appropriate since these schemes are aimed specifically at the rural poor. If we assume that this segment is about 30 per cent of the rural labor force, the contribution of the employment schemes increases to about 4.5 per cent of the labor force. This is still small but considering the scale of unemployment in rural areas (around 7 per cent) it can make a significant difference. One can therefore conclude that the schemes do help to contain the level of unemployment in a significant way.

Table 39—Financial & Physical Performance Under EAS/SGRY Since Inception

(Rs. in billions)

Sl.No.	Year	Total Utili. Of funds	% of Utili. to Total Avail.	Wage emp. generated (Million Man days)	Works completed (Nos.)
1	**2**	**3**	**4**	**5**	**6**
1	1993-94	1.8375	26.79	49.474	1397
2	1994-95	12.3545	58.06	273.956	114199
3	1995-96	17.2061	53.70	346.527	128420
4	1996-97	21.6041	63.84	403.002	277014
5	1997-98	29.0497	78.37	471.774	184699
6	1998-99	28.8218	85.84	427.936	196589
7	1999-2000	21.8261	75.02	278.617	156540
8	2000-01	18.6111	84.38	218.392	137722
9	2001-02*	5.3092	42.29	66.627	44872
	TOTAL	103.6179	77.13	1.463346 billion	720422

Note: * upto September, 2001.

4.4.3 Concurrent Evaluation of JRY (1993-94)

The findings of the report of the Concurrent Evaluation (1993-94), carried out by the Ministry of Rural Areas and Employment, are as follows:

In about 77.18 per cent of the works, the panchayats were the executing agency and only 2.02 per cent of works were executed by the contractors; (ii) A substantial amount of JRY funds has been spent on roads and buildings; (iii) The wage to non-wage ratio has been 53:47; (iv) 47 per cent of employment is generated for Scheduled Caste/Scheduled Tribes (SC/ST) and 36 per cent for landless laborers; (v) Quality of majority of assets were found to be good and only 0.41 per cent of assets were not useful. 86 per cent of assets were reported to be durable; (vi) 70 per cent of the assets created were maintained by the panchayats. However, 13 per cent of the assets were not maintained at all; (vii) On an average employment generated under JRY was 11 days per month[43] (GOI, 2001).

Other evaluations show that the resources were spread thinly so as to increase the coverage of areas/ beneficiaries without any concern for the duration of employment. Projects selected bore no relationship to the local needs or the agricultural development strategy. A study on U.P. reports that the timing of works coincided with peak agricultural season and that the selection of works was not done in the gram sabha as required (GOI, 2000). Wage employment programmes, by effectively intervening in the labor markets, were expected to exert upward pressure on the market wages. This could not happen because of insufficient employment provided by these programmes. The share of women in employment generated under the programme was only 17 per cent. JRY and similar public works programmes have tended to breed corruption. The fudging of muster rolls and of measurement books is very common, resulting in a huge loss of funds that could otherwise have been invested in building rural infrastructure.

[43] In the Concurrent Evaluation, the question in the survey relates to the employment generated under JRY in 30 days preceding the date of survey.

Notwithstanding some of the problems mentioned above, there are two positive aspects of the programme (GOI, 2000). First, the programme did succeed in creating durable community assets in rural areas, although it is true that some assets built have poor quality. Second, the programme led to empowerment of panchayats as the funds were placed at their disposal along with power to get the works executed through line departments.

4.4.4 Evaluation of EAS

The Programme Evaluation Organization (PEO) of the Planning Commission undertook the evaluation study on Employment Assurance Scheme (EAS) for the reference period 1995-97. The main findings are as follows:

(i) The utilization of EAS funds is extremely low. Lack of planning, untimely release of funds - both from the center to DRDAs (District Rural Development Agencies) and from DRDAs to blocks - and other factors such as inability of the states to generate matching resources are the important reasons for the low utilization of EAS funds.

(ii) The coverage of villages and the target group is extremely low. A maximum of 32 per cent of the villages and 5 per cent of the target group in a block are estimated to have been covered annually.

(iii) A large part of the EAS funds has been used in activities that are less labor intensive and more capital intensive. The normative capital labor ratio has not been generally adhered to.

(iv) The majority of EAS beneficiaries received less than 30 days' wage employment in a year. Non- poor households were also found to have been the beneficiaries of EAS.

Several gaps have been noticed in the design and implementation of EAS, and there have been some major criticisms of the programme: (i) There has been bogus

reporting to achieve targets (ii) Income is created but no assets are left behind and (iii) Corruption is prevalent both at political and administrative levels.

4.4.5 Employment and Income Benefits: Concurrent Evaluation of JRY

As mentioned above, according to the Concurrent Evaluation, JRY worker got on an average 11.06 days of employment (or 133 days per year) from panchayat JRY works during the reference period of 30 days preceding the date of survey. State-wise variations are given in table 40. In some poorer states like Madhya Pradesh and Orissa, JRY workers got less than 10 days per month.

Table 40—Average Person Days of Employment Generated During the Last 30 days Preceding the Date of Survey: Major States, 1993/94

State	By Self Under JRY	State	By Self Under JRY
Andhra Pradesh	12.53	Madhya Pradesh	9.34
Assam	17.94	Maharashtra	11.80
Bihar	10.13	Orissa	8.58
Gujarat	10.67	Punjab	30.00
Harayana	11.84	Rajasthan	11.02
Himachal Pradesh	15.00	Tamil Nadu	12.30
Jammu and Kashmir	9.65	Uttar Pradesh	12.22
Karnataka	12.89	West Bengal	8.52
Kerala	11.59	**All India**	**11.06**

Source: GOI (1997a).

According to the concurrent evaluation, the average daily wage rate was Rs.33.36 (Rs.30.54 cash + Rs.2.82 value of food grains). On an average, a JRY worker at the all India level earned Rs.369 during the 30 days preceding the date of survey. The poverty

line income per month per family is around Rs.917[44]. In other words, a JRY worker earned on an average 40 per cent of the poverty line threshold. Thus JRY seems to be contributing substantial income to the families working under the scheme.

Targeting Under JRY

The Concurrent Evaluation for the year 1993-94 shows that 82 per cent of the workers had annual family income of less than Rs.11, 000, which is the revised poverty line. Therefore, to a large extent, the workers who were provided employment belonged to the poorer sections[45]. The picture varies at state level. In Andhra Pradesh, 52 per cent of JRY workers were non-poor. This percentage is quite high for Bihar, Karnataka and Uttar Pradesh. On the other hand, it was less than 10 per cent for Assam, Gujarat, Orissa, Rajasthan, Tamil Nadu and West Bengal. Thus, there are significant variations in the coverage of poor under JRY across states.

4.4.6 Jawahar Gram Samridhi Yojana (JGSY)

JRY has been restructured in 1999 and renamed as Jawahar Gram Samridhi Yojana (JGSY). The programme aims at creating need –based rural infrastructure at the village level to boost the rural economy and improve the quality of life. Priority will be given to develop infrastructure for SC/ST habitations, education and public health. The programme, not only develops rural infrastructure, but also provides individual assets to the poorest of the poor SCs/STs families, as 22.5 per cent funds are earmarked for them. The entire funds of the JGSY are devolved to village panchayats in order to create greater financial autonomy. The panchayats are empowered to take up works up to Rs. 50,000 independently with the approval of Gram Sabha to ensure active people's participation at the grassroots level. 15 per cent of the allocated funds have been earmarked for

[44] Annual family income of Rs.11, 000 is considered as poverty line.
[45] The concurrent evaluation for the year 1992, however, shows that around 56 per cent of the JRY workers were non-poor in 1992. This result could be due to the low poverty line (Rs.6400 per annum) used in this evaluation.

maintenance of assets created under the programme for greater durability. The main emphasis of the programme is to create rural infrastructure.

Since its inception in 1999, a total of 1.57 million works have been completed upto March 2001. A total of 598,000 works have been completed under individual beneficiary schemes meant for SCs/STs. Around Rs.43 billion were spent under JGSY from 1999 to March 2001. Presently some gram panchayats are getting as low as Rs.5, 000 per annum as per the criteria of allocation under the JGSY guidelines. With this meager amount it is impossible to create any meaningful infrastructure at the village level. In order to create tangible and meaningful infrastructure it is necessary that the gram panchayats at least get an allocation of Rs.50, 000.

4.5 REFORMS NEEDED FOR RURAL PUBLIC WORKS

The main criticism against public works is that they are relief oriented and are not creating durable assets. Around 40 to 50 per cent of total funds under public works are being used for non-wage purposes. What is happening to these funds? How productively are these funds being used? The major issue is how to generate productive assets without diluting the primary objective of employment guarantee and poverty alleviation.

4.5.1. Reforms under Employment Guarantee Scheme (EGS) of Maharashtra

The EGS has been in existence for a long period-25 years so far. There is a need for some changes, which would be more effective in helping the poor without altering the basic structure of EGS. Some of them are the following.

(a) Wage Rate

The workers under EGS in Maharashtra seem to be shifting from EGS to JRY because of the higher wage rates in the latter. The data for 1995/96 shows that around 91.2 million person days were created under JRY. This number is almost equal to that created under EGS. There is a need to have some parity between these two schemes. The

wage rate must be raised in such a way that a person working 300 days a year can lift him or herself and dependents above the poverty line.

(b) Resources under EGS

The Government may resort to employment rationing if the hike in EGS wages is not accompanied by a matching increasing in the outlay. This seems to have happened in the late 1980s. In real terms, there has not been much increase in the outlay under EGS in recent years. The resources have to be increased if the government is serious about increasing wage rates under the scheme. Apparently, there is accumulated surplus of nearly Rs. 20 billion in the Employment Guarantee Fund. These funds can be utilized for paying higher wage rates and better infrastructure.

(c) Asset Creation and Organizational Aspects

Some organizational aspects have to be sorted out in EGS. Inadequate planning, improper project selection and design, lack of technical and organizational supervision, and long delays in implementation have affected the productive quality of capital constructed. The EGS has been criticized for neglecting the creation of durable assets by paying more attention to employment generation. The initial emphasis on creation of durable assets got watered down due to public pressures for starting road works. One major weakness of the EGS is the lack of adequate planning for assets. It may be noted that volatile demands from the workers also creates problems for the projects. Droughts, natural calamities or even seasonal changes cause dramatic shifts in demand. Because of sudden increase in demand, new projects have to be undertaken which may be of little productive value (Dantwala, 1978)

(d) Maintenance of Assets

Maintenance and utilization of assets are observed to be far from satisfactory. The problems in ensuring adequate maintenance are two-fold. First, there has been a considerable delay in handing over completed works to the Zilla parishads for maintenance. Second, even where the works have been handed over, the local bodies did

not allocate resources for the maintenance of the EGS assets. Consequently, the maintenance of assets has been neglected. There is a need to allocate some part of the EGS funds for maintenance of the assets.

(e) People's Participation

Some evaluations have shown that the EGS plans and implementation is dominated by bureaucracy without people's participation. People's participation in selection and management would improve the productivity and sustainability of the assets.

(f) *More Importance to Watershed Development*

Water management is crucial for increasing agricultural production and productivity in Maharashtra. It may be noted that even after utilizing the ultimate irrigation potential, over 60 per cent of the cultivated area may have to depend on uncertain rainfall. Therefore, EGS projects should concentrate more on water conservation. Similarly, emphasis has to be given to the promotion of horticulture.[46] There are already models like Pani Panchayats, Ralegaon Shindi etc.

(g) *Involvement of voluntary organizations for effective implementation of EGS*

Along with local people's participation, involvement of voluntary organizations would improve the working of EGS. Corruption and leakages in the EGS has been a point of major concern. A number of cases of corruption have been cited in the reports of the legislature committee on the EGS from time to time[47]. Involvement of NGOs and local people can reduce the corruption.

[46] There are already one scheme on horticulture under EGS.
[47] It may be noted, however, compared to other anti-poverty programmes in India, corruption may be lower in the EGS. The decisions of the officers responsible for planning and implementing the EGS are more open to outside scrutiny.

4.5.2 Reforms Under JRY

(a) Are the Resources Enough for Wage Employment Programmes?

We have noted above that the person days under public works contribute only 3 to 5 per cent to the total casual labor days in rural areas[48]. This shows that the all-India programmes are thinly spread and are unlikely to have a significant impact in any given state[49]. The implications may be interpreted in two ways. One view is that these funds should be diverted for investment purposes since they are not having much impact on poverty particularly in normal years. On the other hand, we can say that funds should be increased under wage employment programmes in order to have significant impact on poverty. For example, Parikh (1998) argues that 'a nationwide EGS with increased wage and easy access to all can provide individual food security against both chronic and transient hunger to the employable hungry. This can be done at a cost of about 147.75 billion per year to cover both rural and urban areas. Of course here Parikh is assuming that other programmes like PDS are not necessary for employable persons[50]. Obviously we need more resources for public works in order to have a significant impact on poverty.

(b) Minimum Wage Rate

Higher wages in public works may be important from the point of view of income guarantee. The use of minimum wage rates for JRY work, however, raises several issues. Where the minimum daily wage is above the market wage, as may be the case in poorer localities, there is a danger that persons with other market based work opportunities will be attracted to JRY, which detracts from targeting and inflates demand for JRY employment, possibly necessitating rationing. On the other hand, in some places the minimum wage rate appears to be well below the market wage, in which case no one

[48] On the other hand, Nayyar (1996), Papola and Sharma (1996) show that JRY and EAS are taking care of 40 to 50 per cent of the underemployment in the country.
[49] This point is due to Suresh Tendulkar, Delhi School of Economics, (personal communication).
[50] Parikh says along with EGS, a PDS to reach the old and the infirm who can not work on EGS would be required. The EGS with supplementary PDS for 5 per cent of the poor requires around 167 billion for both rural and urban areas.

would be attracted to engage in JRY work unless higher wages are paid in a disguised manner (violating JRY guidelines). The question that naturally arises is whether JRY is needed at all in areas where the market wage far exceeds the minimum wage. If there is no demand for JRY employment at the minimum wage rate, the programme could simply be dispensed with in that locality, leaving more resources available where they are truly needed – that is, in poorer localities. Attraction of some of the non-poor to JRY mentioned above could also be due to higher wages under this programme.

(c) Using Excess Buffer stock for Public Works

Sometimes governments have excess buffer stock as happened in 1995. It had reached a peak of 37 million tonnes in May 1995. Government has several options to dispose of this excess stock. These are: (a) export (b) sale in the open market, (c) sale through the PDS by reducing the issue price and increasing PDS demand, (d) distribution though public works programmes. Among these options, the last option of linking food grains with public works programmes like the JRY seems to be the most effective strategy for buffer stock reduction. A similar view has been expressed by Ghosh et al (1996). According to them, existence of food stocks 'provides a tremendous opportunity in terms of a substantial non-inflationary expansion in public works and other infrastructure development and maintenance which can be organized through food-for-work and similar schemes' (p.1235).

(d) Public Works can be used for Targeting PDS

Various options are being discussed regarding targeting of PDS to the poor. There is, however, some sort of consensus that PDS should be linked with public works programmes because they have an excellent self-targeting character. Giving food coupons as part of the wages to the workers in public works can also be experimented with.

(e) Involvement of Institutions

It is a general impression that the actual impact of the programmes on the lives of the people is low compared to the funds spent on the schemes. The major criticism of government based anti-poverty programmes relates to lack of people's participation. Instead, there seems to be a more technocratic top-down approach in implementing these programmes. There is a need to involve Panchayats, NGOs, self-help groups, and community-based organizations to strengthen government employment programmes.

More Involvement of Panchayats: With the 73rd and 74th Constitutional Amendments, people at the village level are now empowered through participation in local government to exercise their rights and manage their own developmental activities. It opens up space for potentially meaningful and creative local development efforts with in-built pressures for accountability. Thus, people's participation through Panchayats would serve to strengthen Government activities. There are, however, apprehensions that given the highly stratified and unequal socio-economic structure of Indian villages, the dominant landowning elite class would effectively control power and that they are unlikely to be concerned about the welfare of the poor and the women. However, over time poorer sections are likely to participate in the panchayat system.

JRY is implemented through panchayats. However, as mentioned in the concurrent evaluation, only 43 per cent of the heads of elected panchayats imparted training for implementing the JRY works. Therefore, there is a need for more orientation of heads of village panchayats through training programmes. In general, panchayats are working better in West Bengal and Kerala.

Voluntary Organizations (NGOs, CBOs): Wherever the voluntary organizations have shown interest, the effectiveness of Government programmes have improved. NGOs and CBOs (Community Based Organizations) thus play vital role in strengthening the hands of the Government. The voluntary organizations also make the Panchayats accountable. For accountability two instruments are needed. They are: (a) Right and access to information and (b) social mobilization. The activities of Government at the

local levels have to be transparent and the people should have the right to information regarding funding and other activities. The NGOs and CBOs can also facilitate for social mobilization of people and in particular women. Also some of the special employment programmes like DWCRA can be given to self help groups for implementation.

(f) Leakages Under the Programmes

There are many stories throughout India on leakages under JRY. There is no accountability for officials as well as panchayats. The right to information and involvement of voluntary organizations can reduce the leakages.

(g) Better in Drought Years?

An interesting dimension of the rural works programmes is that they seem to work remarkably well during drought years as relief programmes. There is evidence that the poor have better access to food during periods of scarcity as compared to normal years[51]. It is worth examining why the bureaucracy that works efficiently during drought years fails in the normal years.

(h) Need for linkages with Sectoral Programmes for Productive Employment

The special employment programmes may have to be continued in the short run until growth process generates the required employment. However, it is necessary to recast the employment programmes with a view to making them more effective in meeting not only the short term objective of providing temporary work, but also in building up the productive capacity of individuals/areas which in turn, would make greater employment on a more sustainable basis feasible (Nayyar, 1995). For example, public works programmes should create assets that can provide a sustainable productive employment in future. They should not be relief programmes. The case for using rural

[51] Regarding this, it is worth quoting here R.K.Laxman's cartoon in the Times of India (December 3, 1996). A villager goes to see a minister. The minister's P.A. conveys the villager's observation to the minister as follows. "He is grateful for rushing food during the recent drought. He is asking what to eat when there no drought, sir'. Also see Sainath (1996) for interesting stories on droughts.

public works as a development tool and for providing productive employment has been argued by Hirway and Terhal (1994).

The most glaring weakness of the expenditures made every year in public works is that they are not conceived in the framework of the overall development plan. Rao (1992) discusses the lack of integration of employment-generation programmes with development programmes in India. Action plans of JRY are nothing more than lists of schemes having hardly any interconnections between them. Again there is hardly any integration between the JRY programmes and the schemes of various line departments. The potentialities of JRY-type programmes can be fully utilized if the projects under these schemes are identified in the framework of the planned development of an area. Some novel experiments can also be tried for effective utilization of these programmes at local level. For instance, one can try Zimbabwe-type public works in which the government provides only the casual wage cost and requires the community to mobilize its own resources for non-wage expenses.

(i) Mid-year Utilization of Funds

There are problem when one looks at mid-year utilization rates of funds under poverty alleviation programmes. This has been done in a study by Rajaraman (2001a and 2001b). The study focuses on some major schemes of the Ministry of Rural Development for the year 2000-2001. The utilization rates of these funds, for most of the schemes, were less than 50% of the funds allocated for the first six months. In other words, in the first six months, less than 25 per cent of the annual allocation was used. The utilization rate of the two major employment schemes (the Employment Assurance Scheme and JGSY, the successor of JRY) was 42 per cent (of 50 per cent). This, according to Rajaraman, is especially surprising, "since the first six months of the fiscal year from April encompass the agricultural slack season, when the demand for rural employment should be at its peak." (Rajaraman, 2001a: 20). The utilization rates at the end of the year are, however, much higher "suggesting hasty, wasteful utilization in the second half of the fiscal year" (ibid: 20). Underutilization of funds seems to be more in the poorer

States. “A simple regression shows a statistically significant rise in the mean mid-year utilization rate of 4 per cent for every increase in the SDP of Rs. 1000 per capita. The worse-off states are also less efficient in using JGSY funds” (Rajaraman, 2001b). So, although these schemes are meant to alleviate poverty, the poor States make less efficient use of them than the better-off States.

Several reasons can be mentioned for explaining this underutilization. First, new schemes bring new guidelines and require new procedures. It takes time before State governments or local bodies are fully aware of these and are able to fulfill the criteria. Second, for some schemes, the central government gives a grant that has to be complemented by matching funds from the States. If these matching funds are not available, the CSS grant will not be given. Third, there can be a deliberately created or unintentional delay in the central bureaucracy, with spillover effects for the next year’s allocation (which is partly based on spending figures of the previous year). Fourth, some schemes presuppose the availability of local infrastructure, such as rural primary health centers. If this infrastructure does not exist, the schemes make no sense and funds are not allocated. Some central schemes are also not relevant in each and every state. Fifth, there may be other forms of institutional disability or lack of interest. State governments may not be able to produce a well-designed plan (for instance for a rural road) and can therefore not receive the money. It may also be that low priority is given by some state governments to implement the schemes. This can be the case, for instance, when the states are ruled by a party that does not participate in the central (coalition) government. It may also be that there is hidden or open opposition.

4.6 TASK FORCE AND STUDY GROUP ON WAGE EMPLOYMENT

The Task Force on Employment Opportunities (2001)[52] reviews the special employment programmes. The Report says that wage employment programmes can play a very useful role in providing supplementary employment to vulnerable sections of the

[52] Montek Ahluwalia is the Chairman of the task force.

population especially in seasonal lean periods, which are common in agriculture. They are also a potentially useful form of a social safety net to deal with situations of exceptional distress such as droughts. In the absence of an extensive system of social security the use of employment programmes as a form of social security to deal with a targeted population has a great deal of merit. According the report, wage employment programmes should focus on maximizing the developmental impact in rural areas through the creation of durable assets that serve as economic and social infrastructure. The Task Force concludes that 'in a situation where resources are severely constrained and there are several other demands on the system our ability to expand the total volume of resources devoted to special employment programmes in the years ahead will be limited. In these circumstances a large expansion of size of these programmes in future is unlikely to take place and is also difficult to justify given the experience thus far" (p.5.16).

On the other hand according to the Special Group on Targeting Ten Million Employment Opportunities per year (GOI, 2002)[53], of the proposed 50 million job opportunities to be generated over the Tenth Plan, nearly 20 million should come from specific employment generation programmes and 30 million from growth buoyancy. The Study Group says that there is a need to launch specific employment-generating programmes in some areas where aggregate growth has little impact.

4.7 TENTH FIVE-YEAR PLAN PROPOSALS

During the Tenth Five Year Plan (2002-2007), Swarnajayanti Gram Rojgar Yojana (SGRY) would be the single wage-employment programme. The programme would seek to provide productive employment opportunities in employment-intensive sectors. The government would try to generate a shelf of projects for execution under SGRY that fits into the overall development plan of an area.

[53] S.P.Gupta is the Chairman of the study group.

SGRY would have three streams. (i) To address the need of rural infrastructure in all the states. (ii) To provide focused attention in areas facing endemic poverty and (iii) To respond to natural calamities.

The wage employment programmes provides only short-term relief to the poor. Long-term sustainable poverty reduction in the underdeveloped regions can come about only if other sectors of the economy grow rapidly. It is imperative, therefore, to ensure that the growth process is inclusive and pro-poor. Agricultural growth still holds the key to poverty alleviation in the Indian context. There is considerable scope for increasing agricultural productivity through expansion of irrigation, better land and water management practices and infrastructure support. The planning of works under the SGRY would be undertaken keeping this in mind. Many assets have been created but maintenance has been neglected. Therefore, a specific proportion of allocations under SGRY would be used for the maintenance of assets. Panchayati Raj Institutions (PRIs) would play a major role in the planning, implementation and monitoring of wage employment programmes and allocations under the SGRY would be routed through them.

4.8 CONCLUSION

This chapter shows that India needs public works as one of the mechanisms for poverty alleviation. The public works are often criticized, with some justification, for creating unproductive (low productive) assets. It is also argued that these programmes provide only short-term relief and supplementary income (current benefits) and are not useful for long-term benefits[54]. It may be noted, however, that they are not meant to function as a permanent escape route from poverty. Their main value derives from the insurance or stabilization function that they perform with respect to incomes of the poor.

[54] Another valid criticism of public works is that they do not increase the skills of workers. Also, in future, skill based workers are going to get much higher wages and the wage employed people continue to get lower wages (Dantwala, 1996). The gap between unskilled and skilled would widen further particularly after the introduction of economic reforms in the country.

Moreover, as mentioned above, the success of a public works programme needs to be judged against alternative poverty alleviations programmes. In other words, one has to examine whether there are any other programmes that can reach the poor cost effectively as compared to public works. Our analysis in this chapter shows that wage employment programmes such as the EGS, JRY and EAS seem to be more pro-poor than programmes such as the IRDP (self-employment programmes) and the PDS.

However, a case can be made for creating productive assets under wage-employment programmes without diluting the primary objective of poverty alleviation. Effective involvement of panchayats, planning of projects at the local level using local priorities, involvement of voluntary organizations, the right to information at the panchayat level, social mobilization etc. can contribute to the creation of productive assets and better maintenance of the created assets. Also, for the effectiveness of the programmes, it is important that projects under these schemes are identified in the framework of the planned development of an area.

In the changing context of trade liberalization, public works can also be used to promote diversification of agriculture.

Finally, special wage employment programmes are not a substitute for a sustained and broad based growth process. However, in a country like India, which has surplus labor and poor infrastructure, public works can be a useful component for providing food security at the household level.

5. INTEGRATED CHILD DEVELOPMENT SERVICES AND FOOD SECURITY

5.1 INTRODUCTION

This Chapter examines two direct food based intervention programs for pre-school children in India, the Integrated Child Development Service (ICDS) operational in most parts of the country and the Tamil Nadu Integrated Nutrition Project (TINP) well known for its achievement in reducing undernutrition in the south Indian state of Tamil Nadu. Such an analysis could provide insights about 'successes' and 'failures' and hence would be helpful in any policy reformulation during the phase of economic restructuring. This study is based on secondary data and available literature focusing on the decade of 1990s. The emphasis would be on the three main aspects of any intervention program namely: *targeting* - whether it covers the entire group for whom it has been designed, *effectiveness* -does the program bring about the anticipated results, and *efficiency* -for a unit of money spent per person, how much eventually reaches the individual and the benefit-cost ratio of such a program.

The Integrated Child Development Services target children below the age of six years and expectant and nursing mothers across rural and urban areas in India and a similar program in rural Tamilnadu in India is assisted by the World Bank. These are both direct intervention programs having a food and a non-food component and the impacts can be considered short term in nature. Though there have been a large number of studies looking at the impact of ICDS and TINP on the nutritional status of children, this study proposes to study the impact of such intervention programs during a decade when market reforms have been initiated at both the national and sub-national levels. Many studies have looked into the potential impact of the reforms on poverty and food security in India, but there is little consensus on the issue. However, given the potential risk of an adverse impact, the importance for safety nets cannot be ignored. Moreover, while the need for such safety-net programs during times of reform may in fact be greater, reform measures might also affect the level of social sector expenditure within

the country, leaving a smaller amount of resources for such programs. This brings to light the need for effective, efficient and well-targeted spending of the scarce resources intended to reach the vulnerable sections of society.

Section 2 looks at the location and trends in nutritional status of children which gives an understanding of the magnitude and current status of the problem of undernutrition among children in India. Sections 3 and 4 are a discussion of the performance of the ICDS and TINP respectively. Section 5 concludes the study.

5.2 LOCATION AND TRENDS IN NUTRITION STATUS AMONG CHILDREN IN INDIA

Malnutrition among children can be classified into protein energy-malnutrition and micronutrient malnutrition. The former is captured mainly through anthropometric measures like weight for age, height for age and weight for height. If the growth indicator of the child falls two standard deviations below the reference median on weight for age, height for age or weight for height then the child is considered to be *underweight*, *stunted* or *wasted* respectively. Each of these measures reflects different aspects of undernourishment. Underweight indicates chronic and acute undernutrition, stunting indicates chronic undernutrition caused by inadequate nutrition over a long period of time and wasting indicates prevalence of acute undernutrition due to seasonal variations in food security and recent episodes of illness. The present study uses underweight as the indicator of undernutrition as most studies uniformly report this measure and it takes into account both chronic and acute undernutrition. Micronutrient undernourishment is primarily analyzed by deficiency of iron, vitamin A and iodine but is undertaken in this study.

The information base on nutritional status is inadequate to do a trend analysis across states or across income classes or occupational classes particularly based on the outcome approach. The data set provided by the National Institute of Nutrition (NIN) is the only source that provides information on select states in India for the rural areas. The

database for input approach is available from the NSS data at regular intervals at the household level but intakes of individual members of the household like children or women are not given. The NIN does provide information on intakes for individual members of the household but its coverage is limited to a few states for the rural areas. Given the limited database the following aspects can be summarized on the nutritional status of children:[55]

Prevalence rate of *moderate plus severe undernourishment is still very high* ranging from 35 percent to 50 percent and above in many rural areas as shown in Table 41. However, severe undernourishment (below 3 standard deviation of the reference median) has come down over time in all the states in India in both the rural and urban sectors.

5.2.1 Rural areas show larger percentages of undernourishment than urban areas.

The relation between level of economic development (indicated by per capita growth rate in state domestic product) *and nutritional status is very weak*. States like Maharashtra and Tamil Nadu where per capita (real) state domestic product has grown significantly in the last decade have not shown dramatic improvements in measures of nutritional status of children. Nevertheless, the prevalence of under nutrition is lower in states with high growth rates of state domestic product (SDP) than in states with low growth rates of SDP. Also, in all the states the percentage of undernourished children are larger among poorer households even though richer households also show prevalence rates ranging from 15 to 30 percent in 1998-99 (Table 41).

Apart from income, other socio-economic determinants of nutritional status are family size, literacy status of the head of the household and mother, and the occupation of the head of the household, as shown in Table 41.

[55] These observations are summarised based on author's own calculations and studies by Ramana *et.al* (1997), NIN reports on nutritional status for select states, World Bank (1999, 2001).

Not only does the general standard of living of the household directly affect the nutritional status of the children, but it is also found that the percentage of undernourished children is higher among households where adults are chronically energy deficient.

Children belonging to the socially disadvantaged groups like the scheduled castes and scheduled tribes show a lower nutritional status (Table 42).

Gender differentials in nutritional status are not apparent.

Based on the NIN data Kerala and Tamil Nadu reduced the severely malnourished by one fourth among children below five years since mid 1970s while most of the other states reduced by one half. However, there is a marginal decline in the moderately malnourished in all states except Orissa.

The percentage of normal status for children below five years showed slow improvement till 1990 and seems to have picked up in 2000 for all the states covered under the NIN database.

The analysis of the district profile data of DWCD across states indicates that severe undernutrition rates are the highest in Bihar (about 25%) followed by Rajasthan (about 11%) and the remaining states below 5 percent.

However when moderate malnutrition magnitudes are compared, states like Bihar, Tripura and Rajasthan show a prevalence rate of above 40 percent, with Himachal Pradesh, Haryana, Punjab and Manipur in the range of 20-30 percent and the remaining states (excluding the southern and eastern states) in the range of 15 to 20 percent.

Table 41—Percentage of Undernourished Children across Place of Residence and Standard of Living in India

State	Annual per Capita Growth Rate of SDP@	Place of Residnce				Standard of Living		
		Rural		Urban		1998-99		
		1992-93	1998-99	1992-93	1998-99	Low	Medium	High
Andhra Pradesh	3.6	52.1	40.7	40.2	28.6	48.5	36.5	16.1
Bihar	2.1	51.8	36.6	37.3	27.3	59.5	52.1	32.7
Gujarat	4.9	45.8	49.3	40.5	38.1	63.0	46.2	25.9
Haryana	3.1	39.4	35.6	33.0	31.3	42.8	40.8	23.5
Himachal Pradesh	5.1	48.3	28.7	30.2	44.8	52.7	46.3	33.1
Jammu & Kashmir	2.5	na	37.2	42.6	20.7	58.7	34.7	21.1
Karnataka	5.8	25.5	28.0	24.3	22.4	54.6	45.3	20.0
Kerala	4.0	30.6	58.4	22.9	44.3	35.8	28.8	19.2
Madhya Pradesh	2.8	59.4	53.2	50.1	44.1	61.5	58.0	33.6
Maharashtra	3.5	57.5	55.5	45.5	45.3	60.4	49.5	27.5
Orissa	2.3	44.7	31.8	38.4	18.6	61.9	48.9	27.8
Punjab	2.7	47.4	51.9	40.0	46.0	45.9	37.0	19.2
Rajasthan	4.6	41.1	38.3	43.9	33.5	57.6	52.4	37.2
Tamil Nadu	5.4	57.3	53.6	32.3	42.6	47.2	35.4	10.3
Uttar Pradesh	3.0	na	52.6	Na	31.5	61.5	51.1	34.4
West Bengal	5.5	54.2	49.6	39.8	38.4	56.5	44.2	21.4
All India	-	59.9	49.6	45.2	38.4	56.9	46.8	26.8
Standard Deviation	-	10.63	10.26	8.40	9.62	8.55	8.23	7.55

Source: Deaton and Dreze (2002) for the annual per capita growth rate of SDP; Radhakrishna (2001) for 1993-94 and various National Family Health Survey Reports for 1998-99 for undernourished children.

Notes: (1) Undernourished Children are classified based on weight for age below 2 standard deviation from the median.
(2) The data is for the children are below the age of 4 years in 1993-94 and below the age of 3 years for 1998-99.
(3) The Standard of Living is calculated based on the asset holding of households and the details are in National Family Health Survey: 1998-99 (2001), pp34-35.(4) The standard deviation does not include All India values.@ SDP: State Domestic Product.

Table 42—Percentage of Undernourished Children Across Socio-economic Variables in 2000 for Rural Areas in Select States

Social groups	Scheduled Caste	Scheduled Tribe	Backward Caste	Others
	68.6	62.4	58.8	56.4
MPCI[@] (Rs.)	**<300**	**300-600**	**600-900**	**>900**
	64.9	59.2	51.2	43.3
Occupation	**Landless Agri. Labourer**	**Other labour**	**Owner Cultivator**	**Others**
	67.9	66.8	70.3	68.4
Education of head of household	**No literacy**	**Read & Write**	**School Education**	**College Education**
	65.2	61.7	58.2	17.8
Family Size	**1-4**	**5-7**	**8-10**	**>=10**
	58.8	60.3	61.9	65.1

Source: NIN (2002)
Note: (1) This covers only the rural areas in the states of Andhra Pradesh, Gujarat, Karnataka, Kerala Madhya Pradesh, Maharashtra, Orissa, Tamilnadu and West Bengal.
(2) The nutritional status is according to the weight for age standard deviation classification.
@ Monthly per capita income.

Clearly the above summary indicates that there are overall improvements in prevalence of severe undernutrition among children in the 1990s though large variations exist across states as well as across economically and socially disadvantaged groups. It is apparent that to reduce undernutrition to the developed country levels would require not only socio-economic development but, more importantly direct intervention by the state to address this issue in a large scale. There has been state intervention in India since mid 1970s to address the problem of child undernutrition and the next section analyzes the performance of this scheme.

5.3 INTEGRATED CHILD DEVELOPMENT SERVICES (ICDS)

5.3.1 About the Program

ICDS forms a part of the government's nutrition direct food based transfer program. The integrated package consists of nutrition, health and early child development services as the efficacy of one service depends on the complementary support it receives from other services. The Scheme was started in 1975-76 on an experimental basis in 33 blocks. Based on encouraging results, it was decided to expand the coverage of the scheme and as on 30.9.99, 4200 Centrally Sponsored ICDS Projects have been operational. As on 30.9.99, 370908 *Anganwadis* were providing supplementary nutrition to 25.78 million children and 5.16 million mothers and pre-school education was available to 12.69 million children. The VIII Five Year Plan witnessed the massive expansion of ICDS Scheme throughout the country. During this period, further 1346 projects were operationalised bringing the total coverage of 3946 Projects under ICDS (General). There was also substantial growth in the number of beneficiaries of supplementary nutrition in Centrally Sponsored ICDS Projects from 17.27 million in the beginning to 22.11 million at the end of the VIII Five Year Plan. Since the beginning of 1990 the World Bank started providing credit for some components of the ICDS project in a few select states.

The World Bank assisted ICDS projects are:

ICDS-I Project which was in operation since 1990 in the States of Orissa and Andhra Pradesh, ended on 31st December, 1997. This Project covered 191 blocks of Orissa and 110 blocks of Andhra Pradesh at a total cost of Rs. 3436.8 million.

ICDS - II Project in Bihar and Madhya Pradesh became operational in September, 1993 for a period of seven years and will come to an end in September, 2000. This Project covers 210 blocks in Bihar and 244 blocks in Madhya Pradesh in predominantly tribal and difficult area, in a phased manner. There are 75 and 177 tribal blocks in Bihar and Madhya Pradesh respectively. In addition to normal ICDS activities this project

provides some additional services which include civil works, strengthening of health services and training, community mobilization, communication, women's empowerment, etc.

ICDS-III Project has been started in five states of Kerala, Maharashtra, Rajasthan, Tamil Nadu and Uttar Pradesh in March, 1999 after getting clearance from the Govt. of India on 26.3.99. The total cost of the Project is Rs. 1000.11 crores for a period of five years from 1998-99 to 2003-2004 (excluding country-wide training cost). The Project has been divided into two primary components Service Delivery and Programme Support- which include Service Quality Improvement, Women's Empowerment , Staffing and Infrastructure Development, Management and Institutional Development, Community mobilization, Monitoring and Evaluation etc.

Andhra Pradesh Economic Restructuring (APER) Project was launched in Andhra Pradesh in March 1999 covering a total of 251 blocks for a total period of 5 years from 1998-99 to 2003-2004. The project components under this Project are nearly the same as that of ICDS-III Project.

The services under ICDS are interlinked with various sectors with the aim of providing a lasting benefit on the well being of children and their mothers.

The services provided by the ICDS in its current form are as follows:

a) Supplementary nutrition program (SNP)
b) Immunization
c) Health check-up
d) Referral services
e) Non-formal pre-school education (PSE)
f) Nutrition and health education (NHE).

The classification of beneficiaries and their availing of the services as mentioned above are given below:

Children	0-12 months:	(a) to (d)
	1-3 years	(a) to (d)
	3-6 years	(a) to (e)
Girls	11-18 years	(f)
Mothers	Expectant and nursing	(a) to (d)
Women	11-45 years	(f)

This program is implemented by the department of women and child development at the center in coordination with the state governments with the aim of holistic development of the child. The financing of ICDS is both by the government and international agencies. The central government bears the operational cost including the establishment cost and the health component with support from United Nations International Children's Fund (UNICEF) for equipments. The state government finances the supplementary food distributed to the beneficiaries and the local transportation, storage, fuel and condiment costs. Some states receive food aid from the World Food Program (WFP) and the Cooperative for Assistance and Relief Everywhere (CARE) to meet the supplementary food requirements**.** The Swedish International Development agency (SIDA) provided support to over 40 ICDS centers in Tamil Nadu up to 1998. Apart from this the World Bank provides training and management in some states for ICDS.

5.3.2 Targeting

The number of operational ICDS projects varies substantially across the states and looking at the state level figures may not give a clear picture whether within a state they are appropriately distributed across the economically backward regions. A survey study in mid 1980s showed that there was a clear shortfall in the regions where they were required the most and there was a certain gap between the allotted and operational

projects. At the same time even within the project regions not all eligible beneficiaries were enrolled.

The identification of child beneficiaries is based on their nutritional and socio-economic status. Special attention is supposed to be given to children with very low levels of nutritional status. Targeting also takes place area wise and for vulnerable sections of the populations. In the former case emphasis is given to relatively backward areas with large number of poor people, tribal areas and drought prone areas and in the latter case children belonging to households of landless agricultural laborers, marginal farmers or households whose monthly income is below a certain amount (in 1984, this was taken as Rs. 500 per month) are considered.[56] The coverage of beneficiaries could be classified according to project location: rural, urban and tribal. In 1995-96 the rural projects constituted about 81 percent, tribal 13 percent and urban 6 percent. Consequently the number of beneficiaries has also grown over time with different rates for different groups.

Among the various services provided by ICDS, the children in SNP has grown at a faster rate and is the largest among the beneficiaries. This is followed by the children, attending the PSE who numbered about 3.7 million in 1992. The number of mothers attending SNP has grown at a rather slow pace, from about 0.5 million in 1981 to about 2.7 million in 1992. If a comparison of the coverage of child beneficiaries is made between 1981 and 1992, it is observed that increases have mainly taken place in tribal areas with the rural and urban areas showing a marginal improvement. Further, it is noted that the beneficiaries mainly belong to the lower income groups and vulnerable groups. In 1999 the coverage under SNP of children and mothers was only about 40 percent in rural/urban areas and 75 percent in tribal areas. For PSE the coverage was 50 percent in rural/urban areas and 75 percent in tribal areas.[57]

[56] In 1992 also the same income criteria was being used without an attempt to convert it to real terms.
[57] These are as reported in NIPCCD (1992).

The National Sample Survey data collects information on food intakes and expenditures across households for a large number of disaggregated commodities and is available at unit record once in five years since mid 1980s. This data also provides information on the number of meals taken outside the house out which one of the components is the meal taken in school. The data indicates hardly any positive numbers for households in many of the states across all expenditure classes in both rural and urban areas. The average number of meals per household was about three for all India rural in 1993-94, which increased to four in 1999-2000 for the poorest per capita expenditure class. The states with positive numbers are in Gujarat, Kerala and Tamil Nadu in 1993-94 increasing to a larger number in the 1999-2000 survey (mainly in the rural areas) with the exception of Bihar, Haryana, Himchal Pradesh, Punjab, Rajasthan and Uttar Pradesh. Tamil Nadu figures are the highest at about 25 meals for 1993-94 and 21 for 1999-200 in rural areas but this would include children up to the age of fifteen as the state also provides noon meals scheme at the school level. Thus large-scale survey data like NSS shows near absence of beneficiaries across rural and urban areas indicating a rather poor targeting. However this aspect needs to be explored further particularly when the scheme is being universalized in the X Plan (of the central government) period.

5.3.3 Impact of ICDS

The impact of ICDS has usually been studied based on the health outcomes from the different services provided. There is virtually no evidence of the impact of ICDS on the impact on household food security and poverty and one can perhaps infer about positive improvements in these two aspects based on the assumption that one of the reasons for improved health status is quantitative and qualitative improvement in food intakes. Further, the improved health status improves productive efficiency of an individual thereby bringing more income to a household and hence alleviating the poverty status of the household.

Based on the outcome indicators, there seems to have been a definitive improvement in infant mortality, nutritional status, morbidity pattern, immunization coverage and utilization of health services once ICDS was introduced. The PSE of children in ICDS areas has had an impact on enrollment and scholastic performance in the later years with better language, cognitive and conceptual skills compared to children from non-ICDS areas. Apart from SNP the other services under nutrition component are NHE and prophylaxis against nutritional anemia and vitamin A deficiency. It is understood that the NHE component of the program for women and mothers has had a significant impact on their awareness about their personal and child's nutritional needs. The present study focuses only on the impact of the nutrition services as it is directly linked to household food security with the focus on improving intra-household distribution.

5.3.4 Supplementary Nutrition[58]

Supplementary nutrition is a major component of the program in terms of importance and cost. All the beneficiaries who attend the *anganwadi* center are given the feed. The children in the 3-6 years attend the pre-school and have the lunch provided by the center whereas the expectant and nursing women and children in the 0-2 years age group come to center for their supplementary feed. In some sense self-targeting takes place with regard to supplementary feeding as richer households usually do not prefer to eat this food, however children from these households may attend the pre-school. The food to the children is provided either as ready to eat food or hot cooked meals or sometimes dry ration. The effectiveness in terms of impact has been the maximum for cooked meals as in the other two cases there is tendency for the food being shared by other members of the household. The nutrition supplement is supposed to be provided for 300 days in a year; however, there is a significant variation across the states in the

[58] This section summarises the findings from Subbarao (1989), NIPCCD (1992), Ramana et. al. (1997), World Bank (1998a 1998b and 2001).

number of days. Tamil Nadu is the only state, which shows the target days being achieved whereas states like Bihar are at the lower end (Shariff, 2002).

Low birth weight (LBW) is the one of the main causes of infant mortality and high morbidity rates and is the first step leading towards an undernourished child (among the survived children). One of the ways to improve low birth weight is to improve the nutritional and health status of the expectant mothers and the SNP feeding to expectant mothers under ICDS seems to have a definitive impact in improving LBW. Table 43 shows that there is definitely a positive difference between the ICDS and non-ICDS with larger impact in the tribal areas. However, if the absolute percentages within the ICDS areas are compared only about 60 percent of children are 2.5 kgs and above at birth and there is still a large gap in achieving the best results. What is starker is the percentage of the mothers who know the birth weight of their child in both ICDS and non-ICDS areas. Even within the ICDS areas there does not seem to have been adequate knowledge and facilities to document the birth weights as is seen from the large proportion of women who either did not know or failed to recall the weights. However, the presence of ICDS project does have a small impact in creating the awareness as noted in the higher percentage compared to non-ICDS area.

The target age group of children in ICDS is below the age of 6 years; the 0-3 year children are brought to the feeding center by the mother for their ready to eat *laddu* preparation and the 3-6 age old children obtain food at the pre-school center. The NIPCCD evaluation finds a large proportion of children below normal nutritional status along with the fact that average weight was below the normal weight for different age groups in the ICDS areas.

Studies indicate that the targeting of the 0-3 year olds is usually poor for two reasons: (a) irregularity in obtaining the quota (due to dependence on an adult for coming to the center) and (b) possibility of sharing the food with other members of the household or not completing the entire meal as they are not under the surveillance of the ICDS worker once they get back home. The NIPCCD evaluation showed lower mean weight for age and also higher proportion of children below the required standard compared to

the 3-6 year olds even in the ICDS areas. Table 43 shows that between ICDS and non-ICDS areas severe malnutrition status (reflected by grade III & IV) is not very different in both the age groups as well as across the locations. However, in the 0-3 years age group the urban area had smaller (larger) proportion of children with normal (grades I & II) nutritional status than in non-ICDS areas.

Table 43—Difference between ICDS and Non-ICDS areas in select indicators

	Rural	**Tribal**	**Urban**	**All**
Low Birth Weight				
	-26	-38	-20	-15
Mothers who knew birth weights (%)				
ICDS	24	19	30	24
Non-ICDS	18	9	27	17
Weight for Age				
0-3 years				
Gr I	1	-1	6	1
Gr II	-2	3	7	2
Gr III & IV	3	1	1	2
Normal	-2	-3	-14	-5
3-6 years				
Gr I	1	-1	7	2
Gr II	1	4	7	4
Gr III & IV	3	1	-2	2
Normal	-5	-4	-12	-8

Source: NIPCCD (1992).

The NIPCCD study looks at the impact based only on ICDS and non-ICDS areas however there could be significant differences within ICDS areas between beneficiaries and non-beneficiaries. A better understanding of the performance would be to look at the improvements within ICDS areas over the period of time as many of these outcomes take effect after a longer time and also knowledge dissemination about nutritional

requirements etc. takes time. Ramana *et al*. (1997) analyze the results from the district profile survey (again for select states only) for the period 1988 to 1996 to get an understanding of the trend within ICDS areas.[59]. The main findings are: severe malnutrition level which was below 5 percent in the beginning of the survey period came down to nearly nil levels at the rate of 0.34 percent per year. The total (moderate plus severe) malnutrition levels showed a fall of about 0.69 percent per year. This analysis is mainly based on the northern and North-eastern states. Another study indicates that between 1975-79 and 1988-90, the contribution of ICDS to the decline in the percentage of severely malnourished is about 8% and notes that in the absence of ICDS, it would have still declined by 5.8 percentage points.[60]

There clearly seems to be lack of enough evidence to highlight the achievements of ICDS and whatever little data there is indicates only a marginal improvement since the introduction of the program in the mid 1970s.

5.3.5 Other Services

Apart from supplementary nutrition, regular health check-ups, growth monitoring, immunization and education for the pre-school children are the other components of the ICDS package. Several government departments and voluntary organizations provide many of these services but there is a definitive difference in its utilization between ICDS and non-ICDS areas according to the NIPCCD study. The difference was large in the education component compared to the health check-up and immunization component. However, even within the ICDS areas utilization of services by the expectant and nursing mothers was less than 50 percent (except in the case of pre-school education for 3-6 years which was about 56 percent) showing that accessibility and higher awareness due to the presence of ICDS did not make a significant impact. The tribal areas showed a larger utilization rate compared to the rural and urban areas. The community participation in

[59] This survey covered 131 districts in the states of Haryana, Punjab, Bihar, Rajasthan, Manipur, Sikkim, Mozoram, Meghalaya, Tripura, Goa, Daman and Diu and was conducted by the department of woman and child development of the central government.
[60] This is reported in Radhakrishna (2000).

rendering services to ICDS was only about 8 percent, which was higher in the tribal areas.

5.3.6 Investment and Efficiency

There are very limited studies that look into the cost effectiveness of investment in ICDS. The possible reasons for absence of cost-benefit studies could be lack of adequate information on costs as well as impacts. Before the results from these studies are summarized an analysis of the public expenditure by the central and state government is considered. The expenditure by the government on nutrition indicates a commitment towards providing social security to the poor through schemes that have a nutrition component.

5.3.7 Trends in Government Expenditure on Nutrition and Malnutrition Reduction

In 1997-98 the entire food based transfer program accounted for about 0.9 percent of the GDP. Out of this 97 percent was the government's share and remaining by the international aid agencies. The direct nutrition interventions (ICDS Program and various other supplementary feeding programs like Balwadi Nutrition Program, Day Care Center Scheme, Iron and Vitamin A supplementation) accounted for 19% while the value of food grains transferred through employment programs was at 0.4%.[61] Among the direct intervention programs ICDS has the largest share in which the supplementary nutrition program accounts for two-thirds of the cost. The ICDS scheme is managed by the department of woman and child development of the government of India and the expenditure on this component accounts for more than 80 percent of the entire expenditure by this department. The expenditure (in constant 1993-94 prices) for ICDS was about 2 crores in 1988-89, which increased three fold to about 6 crores by 1997-98 indicating the emphasis on this project by the government since the VIII Plan period.

[61] These figures are form World Bank (2001).

As the central government bears mainly the operational cost and a small proportion of the food cost the state level expenditure on nutrition indicates the amount spent on supplementary feeding for ICDS. There are however states like Gujarat, Orissa and Tamilnadu where the mid-day-meal schemes are in operation for the school going children up to the age of 15 years and the nutrition expenditures is higher for these states.

The studies that have analyzed social security expenditures in India during the 1990s indicate that the expenditure on nutrition constitutes less than 10 percent (of total revenue expenditure) in all the states except Tamil Nadu with about 18 percent share during the period 1991-95. Though the expenditure on nutrition includes other schemes of individual states apart from the ICDS, the expenditure on supplementary nutrition component of ICDS forms a major share in all the states.[62]

The rate of growth in real expenditure on nutrition dipped towards mid 1990s across the states but after 1994 posted a 10 percent average growth rate across states. Tamil Nadu posted the highest annual growth rate (37%) in nutrition expenditures in real terms (1997/98 prices) during this period. Table 44 shows the share of nutrition expenditure as percent of total revenue expenditure across states for select years since 1970s. No definitive picture emerges regarding the trend except for Tamil Nadu has consistently increased its share from 0.3% to about 4% in 1991. However, since 1990 there is a clear decline for all the states except Andhra Pradesh. The state of Tamil Nadu still spent a larger share of about 2.5 to 3 percent in the entire decade of 1990s. In Andhra Pradesh the average share increased to about 6.5 percent in 1995-99 from 0.27 percent in 1991-95 and then declined to 4.1 percent in 1999-2002. No clear reason merges from the studies for this pattern in Andhra Pradesh.

[62] At the central level this constitutes more than 90 percent after 1997 (World Bank, 2001).

Table 44—Select Indicators on Nutrition Expenditure Across States

	Ratio of Nutrition Expenditure to Total Revenue Expenditure[1] (%)				Ratio of Plan to Total Expenditure[2] (%)		Ratio of Expenditure to outlay[3] (%)
	1990-91	1991-95	1995-99	1999-02	1991-95	1995-00	1997-98
Andhra Pradesh	0.3	0.3	6.5	4.1	67.6	2.8	62.9
Bihar	0.2	0.2	0.0	0.2	58.9	92.6	43.4
Gujarat	1.4	1.7	1.3	0.9	100.0	100.0	91.1
Haryana	0.5	0.5	0.3	0.3	45.6	37.0	99.0
Himachal Pradesh	na	0.2	0.2	0.2	77.3	69.8	100.0
Jammu and Kashmir	na	0.1	0.0	0.0	33.3	37.3	88.4
Karnataka	1.6	0.8	0.7	0.6	29.7	45.6	100.1
Kerala	0.2	0.2	0.1	0.0	24.8	12.8	86.7
Madhya Pradesh	0.4	0.3	0.6	0.5	39.6	37.6	17.8
Maharashtra	0.6	0.6	1.0	0.4	62.9	76.4	84.6
Orissa	0.7	0.6	1.5	0.7	55.7	82.9	70.5
Punjab	0.0	na	Na	na	Na	Na	98.0
Rajasthan	0.6	0.4	0.5	0.6	75.0	96.0	55.6
Tamil Nadu	4.0	3.3	2.9	2.6	36.7	37.3	116.4
Uttar Pradesh	0.0	na	Na	na	Na	Na	15.1
West Bengal	0.3	0.1	0.1	0.3	53.6	73.6	48.1

Source: Colum 1 and 2 databank of National Institute of Public Finance, Delhi.
Column 3 Annual plan expenditure annexure 6.5 from planning commission document, http://planningcommission.nic.in.

The plan and non-plan components of nutrition expenditures indicate the new investments and recurring expenditures respectively and a comparison of the two could indicate any possible expansions in the nutrition schemes at the state level. Some states like Bihar show only plan expenditures during the entire decade. In Andhra Pradesh for the pre-1995 period the plan component was in the range of 60-70 percent but after 1995 this changed dramatically and reduced to about 3-4 percent with the non-plan taking up the major share. The other state with a large shift is Rajasthan while most of the remaining states show a marginal increase/decrease or constancy in the plan/non-plan shares.

An important aspect noted in the mid term appraisal of the 9th Plan of government of India is the effective utilization of funds allocated to the social sectors schemes. It is observed that the amount allocated in the plans is usually underutilized by the state as well as the central government as only a proportion of the amount allocated under the planned heading is actually expended. The reason for this could be that resources are not available when expenditures have to be made and perhaps indicates a lack of priority by the governments to find resources to finance the schemes under this head.

Given that a lower amount is spent than allocated it would be informative to know how much of the amount spent is productive. As the share of nutrition expenditure is a very small component in the social expenditure as well as total expenditure (even smaller as a proportion of domestic product) except in Tamil Nadu, one may expect only a weak correlation between this expenditure and child (and adult) malnutrition status. Firstly no clear trend emerges as to the outlay and nutritional status of children across the states. Richer states like Gujarat and Maharshtra have lower expenditures as a proportion of total expenditures but the number of undernourished children is very large. Tamilnadu spends a substantial amount of its total expenditure on nutrition has lower level of malnutrition and Andhra Pradesh which has substantially increased proportion of nutrition expenditure over the years is showing reductions in malnutrition levels. The states like Bihar and Uttar Pradesh, which have higher numbers of percentages of children malnourished, have not altered their priorities.

Studies have shown that instead of universal targeting of the nutrition schemes if targeting is done either for children in poorer households or malnourished children then perhaps the expenditure could be more effective. Though the ICDS has been in operation for more than two decades there are very few studies that conduct a cost-benefit analysis of it. Only recently some evidence has been provided towards this extent.

5.3.8 Benefit cost ratios and cost effectiveness

The costs in a program like ICDS mainly includes wages of the workers, cost of food, health and education services. The quantification of benefits is more difficult as improvement in undernutrition is not just improvements in physical growth but also improvements in cognitive abilities in the school going age, having tremendous impact on earnings and productivity as an adult.[63] In other words, a program like ICDS could have long term economic and non-economic benefits due to a qualitatively better labor force with lower absenteeism and increased innovation in individual tasks arising from a healthier individual and reductions in human costs of mortality and illness with reduced costs of health care.

The benefit cost ratio estimated varied from Rs.2.3 to Rs.26.4 depending on various assumptions about program efficiency and productivity loss (combination of three parameters: productive life expectancy, average annual wage rate for an adult and average rate of employment) for different nutritional deficiency disorders.[64] The highest benefit cost ratio was for protein energy malnutrition programs followed by the iodine deficiency and anemia programs. Since the benefits are difficult to capture in such programs the alternative approach is to look at the cost effectiveness of the program. With the focus on provision of supplementary nutrition in ICDS it is estimated that in order to transfer Re.1 worth of food to the beneficiary it costs about Rs. 1.22. A comparison with the indirect food transfer program namely the public distribution system in the country ICDS cost about 80 percent less to transfer 100kcal of nutrition to a beneficiary. This effectiveness would improve further if leakages are plugged and targeting is towards needy children as mentioned in the previous section.

The experience of other nations on malnutrition reduction programs indicates that the most cost effective interventions are related to micronutrient programs where the cost per unit is less and effects are dramatic followed by (well-designed) education programs

[63] The cost-effectiveness of investments in various nutrition programs around the world is discussed in Horton (1999).
[64] These results are from Ramana *et. al* (1997).

for changing behavior. The next cost-effective programs are the feeding programs, provided they are highly targeted and are supplemented with nutrition and health education. Thus there is clearly a need for restructuring the existing ICDS for better impacts given limited resources learning from experiences of other countries particularly China and Thailand. Within India TINP in rural Tamil Nadu has been successful in its impact and targeting and a brief discussion on its performance is useful in understanding the role of management and political will required for effective functioning of such programs.

5.4 NUTRITION SECURITY FOR PRE-SCHOOL CHILDREN IN TAMILNADU[65]

5.4.1 About the Nutrition Program

Tamilnadu has a history of feeding programs for children dating back to the mid-1950s with as many as 25 nutrition programs in operation in the early 1980s. These schemes were mainly to combat hunger and the focus was not so much on the nutritional aspect. The main beneficiaries of these feeding programs have been the children and later on old age pensioners and pregnant and nursing mothers were added. Since the beginning of 1980 the government reorganized its nutrition programs and they were combined into the three feeding programs- Puratchi Talaivar M.G.R.Nutritious Meal Program (PT MGR NMP), Tamilnadu Integrated Nutrition Project (TINP) and the ICDS. These schemes have a food and a non-food component to improve the nutritional status of the beneficiaries. The food component consists of providing either supplementary food in the nutrition or welfare centers or noon meals in the school. The non-food component includes periodic growth monitoring, pre-school education and health-care, immunization, nutrition and health education and post-natal care for mothers. The schemes vary in terms of beneficiaries, geographic coverage and its component.

[65] This section draws heavily from Reddy *et.al* (1992), World Bank (1994), NIN (2001) and Rajivan (2001) and Horton (1999).

Table 45 shows the different schemes that have been in operation in Tamilnadu since the 1980s. The standard ICDS in Tamilnadu was introduced in the year 1975 when the scheme was initiated by the central government. To begin with, three projects were launched at three places on an experimental basis, which have now been expanded to 113 projects covering 67 projects in rural areas, 44 projects in urban areas and 2 projects in tribal areas. Each project covers 60 to 130 (Anganwadi) Centres with each such Centre covers about 1000 - 1500 population.

The main objective of the PT MGR NMP scheme (which is a mid-day feeding program) is to provide adequate nutrition to economically disadvantaged children; to improve the health and nutritional status of children; to develop their mental and physical ability and to increase the enrolment in schools and reduce dropouts. This scheme is now a combination of 'hunger-health-nutrition' effort and also includes social security for the old, destitute and widowed. The school going children eat at the school and the other beneficiaries eat at the pre-school centers. The food provided consists of hot cooked rice along with vegetable supplements. Since 1999-2000 all child welfare centers (CWCs) except 718 Municipal centers have been brought under the standard Integrated Child Development Services Scheme and World Bank Assisted Integrated Child Development Services Scheme - III. The details of the current status of the program are in Table 46.

The success story of two important nutrition programs the Tamilnadu Integrated Nutritious Meal Program (TINP) I and II in reducing severe malnutrition in the state has been the focus of many studies.[66] Apart from this the other main contributions were the creation of a well-functioning health system at the grass roots level to supplement the nutrition component and a training and communication center to serve the workers and functionaries across the state.

[66] The WB ICDS III is the ongoing program and is an extension of the TINPs. There are no reports as yet evaluating program whose project term is nearing completion.

Table 45—Various Nutrition Schemes in Tamilnadu

Sl. No.	Scheme	Beneficiaries	Services Provided	Year of Starting or Duration
1	Integrated Child Development Services (ICDS)	Children in the age group of 0 to six years and pregnant and nursing women	Supplementary nutrition, pre-school education, health check up, immunization, health education and referral services	1975-76
2	Puratchi Talaivar M.G.R. Nutritious meal Program (PT-MGR-NMP)	Children in the age group of 2+ to 4+	Nutrition, education and health care	1982
		Children in the age group of 5+ to 9+	Nutrition and education	1982
		Old age pensioners, ex-servicemen	Nutrition	1983
		School students in the age group of 10 to 15 years	Nutrition and Education	1984
		Pregnant Women	Nutrition	1995
3	Tamilnadu Integrated Nutrition Project (TINP)-I	Children below 3 years	Selective supplementary nutrition, growth promotion for child below 3 years and educating the family and the mother on feeding practices	1981-1989
4	Tamilnadu Integrated Nutrition Project -II	Children below 3 years, children 3-5+ years and pregnant and nursing mothers	As in TINP-I plus immunization, micronutrient supplementation and education for preschool children (3-6 years)	1991-1997
5	WB-ICDSIII	Children below 3 years, children 3-6 years, pregnant and nursing mothers, adolescent girls	As in TINP-II plus nutrition and health education, health services by health personnel, referral services and training to adolescent girls for self development and skill formation	1998-2003
6	National Program of Nutritional Support to Primary Education	Children studying in class I to V	Cooked food equivalent to 100gms of rice for 10 academic months	1995

Table 46—Direct Nutrition Coverage in Tamil Nadu, 2002-2003

Sl.No	Scheme	Number Of Centers	Number of Children Covered	Number of Adults Covered	Total Covered
Child Welfare Centers					
1	ICDS (General)	10420	440050	104586	544636
2	TINP (WB ICDS III)	19500	787247	293334	1080581
3	PTMGR NMP (Urban)	718	30096	3105	33201
Total		**30638**	**1257393**	**401025**	**1658418**
School Nutritious Meal Centers					
1	PTMGRNMP (Rural)	38925	6015252	Nil	6015252
2	PTMGRNMP (Urban)	2087	476410	Nil	476410
Total		**41012**	**6491662**		**6491662**
Total (All Centers)		**71650**	**7749055**	**401025**	**8150080**

Source: Government of Tamilnadu (2002a).

The state-level schemes have been sponsored primarily by the state governments, with substantial assistance from foreign donor agencies like Swedish International Development Assistance (SIDA), the World Bank (International Development Assistance-IDA) and Danish International Development Assistance (DANIDA) from time to time. Unlike the other nutrition schemes in Tamil Nadu, the general ICDS is a centrally sponsored scheme and all expenses (including salaries of State, District and Project Level functionaries) except the expenditure on weaning food are reimbursed by the Government of India.

A recent district level data on the prevalence of undernutrition shows much lower prevalence rates compared to the ICDS data as shown in Table 47. The percentage of normal and mildly undernourished children in the age-group 0-3 years varies from 85% to about 98% with some states showing very similar rates. The rank correlation between 1996 (during TINP II period) and 2001 (during WB ICDS III) is about 0.65. Though there seems to be some link between economic and social development and nutritional impact the rank correlation between prevalence rates 2001 and (a) Gross District Domestic Product (GDDP) (b) percentage of agriculture in GDDP (c) and female literacy rates are 0.37, 0.31 and 0.30 respectively. The inference that can perhaps be drawn from these low correlation values is that the program is effective irrespective of the socio-economic indicators. Since a lot has been written and analyzed about the TINP the present study summarizes the main findings in the following section.

How different is TINP?

- The percentage of expenditure on nutrition in total revenue expenditure is highest in TN.
- Reduction in severe malnutrition among 6-60 months old children in 5 years during TINP-I.
- TINP-II showed systematic improvements in severe and moderate malnutrition reductions with increase in normal and mild malnourished categories for the children and reductions in low birth weights.
- Regular growth monitoring and selective feeding based on this information were identified as the main causes of success.
- Immunization of children and mothers was regular with (universal) coverage of 90% and massive doses of micronutrient supplementation like Vitamin A, iron and folic acids with a coverage rate varying from 35 to 60 percent.
- Better targeting of the schemes due to decentralization.
- Better management of the schemes leading to low level of leakage.

- Good coordination with health services in the later stages of the program.
- The nutrition centers in rural areas had two workers, one looking after the needs of the 0-3 year olds and the other to take care of pres-school education and nutrition of the 3-6 year olds. This resulted in good impacts for both the age groups unlike the experience in ICDS areas, which favored the 3-6 year olds.
- Calorie-protein content of the food supplement is clearly stated with regular surveillance of the quality. Few deviations form quality had been observed.
- Some success seems to have been achieved in changing permanent nutritional behavior.
- Institutional sustainability is apparent as the program is now being completely managed by the staff as the World Bank input has come to an end.
- Strong political commitment to implement and improve the nutrition schemes.
- A recent policy note by the state government indicates a plan for (a) making the state malnutrition free along the United Nations advocated approach of "nutrition throughout the life-cycle" (b) change in focus of the programs from management to prevention of malnutrition (c) convergence of health and nutrition services under one department (d) focusing on nutrition and education of the adolescent girls and (e) economic empowerment of women.

Though Tamilnadu has been leading in nutrition expenditures as a percentage of total revenue expenditure and is among the leading states on per capita social security expenditure there is declining trend in the 1990s towards 2000-01. As in ICDS there are very few studies analyzing the cost-effectiveness or cost-benefit of the successful nutrition programmes in Tamilnadu. However indications are that as supplementary nutrition was selective and the food cost having the largest share in the total cost of the project there was a definitive reduction in project cost resulting in sustainability of the project. It is found that the unit cost of TINP was about US$9-12 per year per child and is among one of the cost effective programs around the world. At the same time the ratio of mobilizers to children was 1: 300 and is considered to be good enough to achieve sustainable impacts as not only effective investment but also a required level of effort is

required in achieving the desired result. As in any other nutrition program the impacts have been studied only on the basis of growth monitoring and other impacts of better nutritional and health status like school achievement, improved living conditions and job opportunities have not been ascertained.

Table 47—Nutritional Status of 0-36 month old Children and Rankings for Select economic and social indicators by districts in Tamil Nadu

	Normal and Mild malnutrition (%)[1]	Rankings Based on				
		Normal and Mild Malnutrition Rates[2]		Gross District Domestic Product[3]	Agriculture's share in GDDP[3]	Female Literacy Rate[4]
		1996	2001	1998-99	1998-99	2001
Coimbatore	96.6	1	2	1	4	4
Cuddalore	90.5	19	14	13	15	10
Dharmapuri	90.5	11	14	4	17	14
Dindigul	94.1	5	7	9	12	
Erode	95.4	8	4	5	5	12
Kanniyakumari	97.8	1	1	16	6	1
Madurai	94.3	4	6	6	16	4
Nagapattinam	87.7	16	16	17	8	5
Ramanathapuram	90.6	10	13	18	9	8
Salem	95.6	12	3	3	3	12
Sivagangai	93.1	13	9	19	11	9
Thanjavur	91.1	15	11	14	14	6
Tiruchirapalli	93.0	14	10	15	2	11
Tirunelveli	91.1	6	11	7	13	5
Tiruvannamalai	89.6	7	15	8	7	3
Toothukudi	94.5	2	5	10	18	2
Vellore	94.0	3	8	2	1	8
Villupuram	86.0	14	17	12	10	13
Virudhunagar	90.7	9	12	11	19	7

Sources: (1) Government of Tamilnadu (2002b) Table 27.8.
(2) Based on Rajivan (2001) for 1996 and author's own calculation based on 2001 rates.
(3) Government of Tamilnadu (2002b), Table 5, Chapter 12.

5.5 CONCLUSION

About 50 percent of children below three years are undernourished in rural India and about 38 percent in urban India. In several large states, over 40-50% of adults suffer from chronic energy deficiency. The results of the NSSO 1999-2000 quinquennial consumer expenditure survey, used to roughly approximate nutritional intake, suggest that the poorest 20% of the rural population consumed on average 1,700 calories or less per day, in contrast to the average RDA of 2400 calories. The poorest 20% of the urban population consumed on average 1650, calories per day or less, compared to the average RDA of 2,100 calories. All this clearly shows the need to improve the nutrition status of the population in India suffering from undernutrition and persistent hunger as well as others who are at the risk of being so in the near future.

There are a large number of studies showing that complex set of factors determine hunger and malnutrition. Not only household food insecurity but also a cleaner environment, people's knowledge and behavior influence the nutritional status. Policies can influence all causes to help improve the nutritional status of the households. In India, the central and state governments, implement several food based transfer programs to alleviate household undernutrition - the Targeted Public Distribution System, food for work programs, mid-day school feeding program, and nutrition programs that include food supplementation, such as the Integrated Child Development Services Program, Balwadi Nutrition Program, and Day Care Center Scheme.

The present study has looked at the performance of the Integrated Child Development Service focusing mainly on the decade of 1990s along with a discussion of trends in nutrition expenditure as a proportion of revenue expenditure and the nutritional status of pre-school children. The nutrition expenditure by the states mainly consists of expenditure on food supplementation for the ICDS program except in few states where mid-day meal for school children is also provided. At the national and sub-national levels there is a decline in allocations in terms of share of revenue expenditure to nutrition

expenditure. Despite this decline Tamilnadu and Andhra Pradesh showed higher values. *A comparison of the nutritional status of children, one in the early part and one in the later of the decade, show significant improvements at the all India level as the states.* However what emerges is that there is no clear link between nutrition expenditure in the state or the economic growth of the state.

The recent evaluation studies of the ICDS has shown improving trends in child nutritional status in the project areas. The studies found a reduction in severe undernutrition but minimal impact in reducing moderate undernutrition. The projects also contributed to a reduction in the infant mortality rate and the incidence of low birth weights. Most noteworthy among these is the national evaluation which found that the nutritional status of children in ICDS areas were only slightly better than in non-ICDS areas. The percentage of severely malnourished children under-three in ICDS areas is lower by 1.8 percentage points than the non-ICDS areas, and for children 3-6 years old, by 1.5 percentage points. The percentage of moderately malnourished children in ICDS areas is 2.5 and 3.4 percentage points lower than in the non-ICDS areas for the two subgroups. The two major limitations of this study are that it does not address the issue of the cost-effectiveness of the programs and that it does not provide regional disaggregates. In contrast to the rather unsatisfactory impact of the scheme like ICDS, the TINP stands apart in its impact. The good progress in reducing severe malnutrition without any fear of the reversal of impacts is the achievement of this program. The important lessons are effective management of the scheme with little leakages, education of the mother and adolescent girls about good nutrition and health practices, and increasing participation by the community as well as the involvement of the government machinery in sustaining the project at a high level of efficiency. However, the question of sustainability in terms of the cost of the program and its contribution in reducing moderate and mild undernutrition is yet to be answered.

There is an increasing concern towards improving the efficiency and effectiveness of these programs provided by the state and three major factors can be attributed towards this concern. First, despite the fact that many of these programs have been in existence

for nearly a decade or more and that the government spends considerable resources on these transfer programs, the impact seems to be limited as is observed from the persistence of large number of undernourished adults and children. Second, there is apprehension over the impact of the market oriented economic reforms that were set in motion in 1991 on the poor. Therefore not only is the state expected to provide social safety nets to guard against potential adverse impacts on the poor, but it must also ensure that there is improved targeting and cost efficiency of the programs, as it may well be the case that budgetary allocations for social expenditure during times of reform are reduced.

A final remark is that this study finds the need to improve the database on the nutrition programs being implemented by the government. There is a provision for management information system (MIS) for all the ICDS blocks that is supposed to keep track of bottlenecks in the program and maintain regular records of the nutritional status, immunization rates, and participation rates. However, data is not very easily available for analysis. More importantly this database does not include relevant information about the socio-economic status of the households to identify and track the beneficiaries and vulnerable groups. By maintaining an updated database it would be possible to (1) track the status of the beneficiaries after they leave the program (2) to identify the vulnerable groups who could be affected by reforms so that they may be better targeted. The study also finds that most evaluations in the past have focused on analyzing the impact based on anthropometric indicators. There is considerable scope to fine-tune the research further by including aspects such as the status of cognitive development, school achievement or poverty status of the household. Information on these aspects will go a long way in convincing (a) the policy makers about the need for such programs and (b) the participants about the positive impacts so that there is better community participation, which will enable more effective outcomes.

6. SUMMARY AND CONCLUSIONS

Although there is little consensus on the impact of trade liberalization on poverty and food security, it is nevertheless acknowledged that there is a need to guard against any potentially harmful effects on the poor and vulnerable sections of society. Against this background, government programs aimed at food security and poverty alleviation gain increased importance in the reform era. This study aims to evaluate several such programs that are currently in place in the country from the point of view of their impact, efficiency and financial sustainability. The purpose is to determine the weaknesses in the system and propose policy options for reform, keeping in mind possible challenges of the future.

Specifically, the study examines the changing consumption patterns in India for various expenditure classes and in the rural and urban areas. Against this understanding of the consumption patterns, the study evaluates the various government programs in operation that aim to provide subsidized food to the poor and needy sections of the population. In particular, the PDS, public works programs, and certain food-based direct intervention programs such as the ICDS and TINP are studied with a view to suggest how they can be improved in terms of cost effectiveness, impact on the targeted population and financial sustainability. This chapter puts together the findings and conclusions of the study.

6.1 CHANGES IN PATTERNS OF FOOD CONSUMPTION

To achieve the first objective, trends in food consumption patterns are analyzed in the second chapter of this report, and the following important results emerge:

1. The consumption patterns of an average Indian are undergoing significant changes. In general there is an expansion of the shares of non-cereal food and non-food in the consumption basket, while the share of cereals is shrinking. This is true even for the bottom 30% of the population.

2. Total food consumption is stagnating in the recent periods in absolute terms.
3. The substitution of non-cereals with cereals is resulting in a decline of calorie intake and is not contributing substantially to protein intake.
4. While the decline in the cereals consumption can be explained by the slow down in the growth in the incomes of the poor and adverse prices of cereals versus non-cereal food, its decline in the seventies and eighties seem to be related to shifts in tastes and preferences.
5. The complete set of expenditure and own and cross price elasticities are estimated by the demand system. The following results emerge from the exercise:
    a. There are marked differences in consumption behavior among the income groups and between rural and urban areas.
    b. Estimated price effects indicate the importance of cereal price, especially in rural areas.
    c. The simulation exercise indicates that the adverse relative price of cereals dampens the demand of not only cereals but also that of other food items.
    d. The adverse movements in the relative price of cereals together with lower growth in rural incomes may have resulted in the stagnant food consumption in rural areas.
6. It is noted that during the economic reform period, cereal prices increased faster than in the 1980s. The increase in prices in the 1990s was primarily on account of the increase in procurement price. Procurement prices rose due to devaluation and because the government wanted to compensate the farmer for the prevailing restrictions on trade.
7. Consumption of non-cereal food, particularly fruits and vegetables, has increased faster during the reform period than in the 1980s.

6.2 AN EVALUATION OF THE PUBLIC DISTRIBUTION SYSTEM

The second important part of the analysis studies the effectiveness of public distribution of food within the country. In particular, the objective is to examine the performance of the Public Distribution System (PDS) with a view to provide suggestions for cost-effective and better-targeted alternatives. This is probably the first study to look at the impact of the PDS on consumption and poverty after the introduction of targeting in 1997.

Two basic questions are addressed with respect to the performance of the PDS:

(a) Does the target group receive significant subsidy?

(b) Are the subsidies provided in a cost-effective manner?

The evaluation of performance is in terms of extent of food subsidy provided, coverage, impact on consumption and calories, impact on the poor in particular, leakages from the system and targeting errors, and cost effectiveness. The political economy of the PDS is also discussed. The following are the findings from this exercise:

1. The impact on consumption by the poor increased in rural areas between 1986-87 and 1999-00 and poverty also declined during this period. The impact on urban areas has been more or less same.
2. A higher impact of the PDS on consumption by the poor is found in certain states like Andhra Pradesh, Orissa and Tamil Nadu. However, overall the impact of the PDS on the poor is still marginal at the all-India level.
3. The finding in terms of the political economy of the PDS is that the dealers of the PDS, the bureaucrats, politicians, and the Civil Supplies departments have a vested interest in keeping the present system in operation.

Based on the findings, three options for reform are suggested: (i) revamping the existing PDS through decentralization, (ii) introducing food stamps, and (iii) replacing it with the food-for-work program. In the short run the authors also recommend that decentralization of the PDS and better targeting through village-level government units,

known as Panchayats, can be attempted. The study is also in favor of linking the PDS with employment programs and the ICDS in order to improve targeting. This aspect is discussed in greater detail in a later section of the study. In the medium term, a move toward food stamps and the replacement of the PDS with a food-for-work or cash-for-work program are suggested.

6.3 THE IMPACT OF PUBLIC WORKS PROGRAMMES ON FOOD SECURITY

The third part of the study looks at the impact of the Public Works Programmes on food security in the country. Public works programs play an important role in raising economic access of the poor. The case for RWPs (Rural Works Programs) lies primarily in the self-targeting nature of the schemes. However, public works are often criticized, with some justification, for creating unproductive (low productive) assets, providing only short-term supplementary income, and for not raising the skill-levels of workers. The analysis shows that wage employment programs like the Employment Guarantee Scheme, Jawahar Rojgar Yojana and Employment Assurance Scheme seem to be more pro-poor than programs like the Integrated Rural Development Program (self-employment programs) and the Public Distribution System. They also achieve the additional objective of creating productive assets. However, the authors recommend the effective involvement of Panchayats (village-level government units) in order to ensure better planning of projects at the local level using local priorities and greater involvement of voluntary organizations as ways to ensure that the assets created may be more productive and better maintained.

Finally, the authors also make the point that in the changing context of trade liberalization, public works also can be used promoting diversification of agriculture. Although they are not a substitute for a sustained and broad based growth process, the authors believe that in a country like India, which has surplus labor and poor infrastructure, these programs can be a useful component for providing food security at the household level.

6.4 A STUDY OF TWO SPECIFIC DIRECT FOOD-BASED INTERVENTION PROGRAMMES

The next section of the report analyzes two direct food-based intervention programs for pre-school children in India, namely the Integrated Child Development Service (ICDS) and the Tamilnadu Integrated Nutrition Project (TINP). These schemes are evaluated using three parameters: *targeting* - whether they cover the entire group for whom they have been designed, *effectiveness* – do the programs bring about the anticipated results, and *efficiency* - for a unit of money spent per person, how much eventually reaches the individual and the benefit-cost ratio of the programs. The important findings of the study are presented below:

1. About 50 percent of children below three years are undernourished in rural India and about 38 percent in urban India. Even in states like Maharashtra and Tamil Nadu where per capita (real) state domestic product has grown significantly in the last decade, commensurate improvements in nutritional status cannot be seen.
2. The recent evaluation studies of the ICDS have shown improving trends in child nutritional status in the project areas. The studies found a reduction in severe under-nutrition but minimal impact in reducing moderate under-nutrition. The projects also contributed to a reduction in the infant mortality rate and the incidence of low birth weights.
3. A national evaluation of the ICDS, however, revealed an unsatisfactory performance overall. The nutritional status of children in ICDS areas was found to be only slightly better than in non-ICDS areas. The percentage of severely malnourished children below the age of three in the ICDS areas is lower by 1.8 percentage points than the non-ICDS areas, and for children 3-6 years old, by 1.5 percentage points. The percentage of moderately malnourished children in ICDS areas is 2.5 and 3.4 percentage points lower than in the non-ICDS areas for the two subgroups. The two major limitations of this study are that there has not been

an evaluation of the cost-effectiveness of the ICDS program and regional disaggregates have not been provided.

4. The Tamil Nadu Integrated Program on the other hand has been hailed a success. The scheme has reduced severe malnutrition without any apparent need to fear a reversal of the problem. The important lessons to be drawn from this scheme's success are effective management with very few leakages, educating the mother and adolescent girls about good nutrition and health practices, and increasing participation by the community and the involvement of the government in running the program efficiently. However, the questions of sustainability in terms of the cost of the program and its contribution in reducing moderate and mild under-nutrition are yet to be addressed.

5. This study finds that there is a paucity of relevant, reliable and timely data to study the trends in nutritional status even in the areas where the ICDS program is being implemented. There is a provision for a Management Information System (MIS) for all the ICDS blocks that is supposed to keep track of bottlenecks in the program and maintain regular records of the nutritional status, immunization rates, and participation rates. While this is a good idea. the data must be made more accessible for research purposes.

6. The study also finds that most evaluations have assessed impact on anthropometric indicators, rather than aspects like improvements in cognitive development, school achievement of the child or poverty status of the household. Information on these aspects will go a long way in convincing (a) the policy makers about the need for such programs and their efficient management, and (b) the participants about the impacts in order to encourage greater community participation, which would result in more effective outcomes.

6.5 A FEW RELATED POLICY SUGGESTIONS

The evidence in support of a shift in tastes from cereal to non-cereal crops suggests a large potential for the food processing industry in India. However, although it is one of the largest producers of raw material for the food processing industry in the world, the industry itself is underdeveloped in India. Less than 25% of fruit and vegetable production is processed compared with 70% in Brazil, 78% in the Philippines and 80% in Malaysia. By any standards therefore the unutilized potential of food processing in India is enormous. Expansion of this sector is an ideal way of bringing industry to rural areas, expanding the value chain of agricultural production, providing assured markets for farmers and enabling them to diversify into higher value horticultural crops, and expanding employment by creating high quality non-agricultural work opportunities in rural areas.

Further with the diversification towards non-cereal crops, employment is expected to increase – especially in the case of fruits and vegetables, fisheries, and animal husbandry. For example, in Maharashtra, the requirement of person days per hectare per crop season for wheat is 143 while for vegetables it is 200. The corresponding numbers for fruits and grapes are 855 and 2,510 respectively. However, there is a higher risk and uncertainty associated with diversification. Also, technology, infrastructure and markets have to be improved in order to shift the farmers to non-food grain crops.

6.6 CONCLUDING REMARKS

This study has shown the critical need to examine the safety nets in India in the era of reforms. By providing a detailed analysis of some of the major government-operated programs in place today, the hope is that there is a better understanding of the specific areas where the government needs to focus its attention and resources to achieve better targeting and greater cost-efficiency. In this way the reforms can be undertaken with greater confidence and without sacrificing the goals of social welfare.

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