

Acharya, S. S.

Working Paper

National food policies impacting on food security: The experience of India, a large populated country

WIDER Research Paper, No. 2006/70

Provided in Cooperation with:

United Nations University (UNU), World Institute for Development Economics Research (WIDER)

Suggested Citation: Acharya, S. S. (2006) : National food policies impacting on food security: The experience of India, a large populated country, WIDER Research Paper, No. 2006/70, ISBN 9291908487, The United Nations University World Institute for Development Economics Research (UNU-WIDER), Helsinki

This Version is available at:

<https://hdl.handle.net/10419/63330>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



UNITED NATIONS
UNIVERSITY

UNU-WIDER

World Institute for Development
Economics Research

Research Paper No. 2006/70

National Food Policies Impacting on Food Security

The Experience of India, a Large Populated Country

S. S. Acharya*

July 2006

Abstract

India accounts for 16.7 per cent of the world's food consumers. With the exception of China, India's size in terms of food consumers is many times larger than the average size of the rest of the countries. At the time of independence in 1947, India was in the grip of a serious food crisis, which was accentuated by the partition of the country. The demand for food far exceeded supply, food prices were high and more than half of the population living below the poverty line with inadequate purchasing power. With high rates of population growth, the dependence on imported food increased further. However, the situation improved considerably after the mid-1960s, when new agricultural development strategy and food policies were adopted. The production of staple cereals increased substantially, mainly contributed by productivity improvements. The dependence on food imports decreased and the country became a marginal net exporter of cereals. There was also an improvement in physical and economic access of

.../.

Keywords: agriculture, marketing, subsidies, food policy, food security, distribution, nutrition, India

JEL classification: Q18, H53, I18

Copyright © UNU-WIDER 2006

* Institute of Development Studies, Jaipur; email: ssacharya@idsj.org

This paper was prepared for the UNU-WIDER project on Hunger and Food Security: New Challenges and New Opportunities, directed by Basudeb Guha-Khasnobis. The project was carried out in collaboration with the Indian Council of Social Science Research (ICSSR) and the UN Food and Agriculture Organization (FAO).

UNU-WIDER acknowledges the financial contributions to its research programme by the governments of Denmark (Royal Ministry of Foreign Affairs), Finland (Ministry for Foreign Affairs), Norway (Royal Ministry of Foreign Affairs), Sweden (Swedish International Development Cooperation Agency—Sida) and the United Kingdom (Department for International Development).

ISSN 1810-2611 ISBN 92-9190-848-7 (internet version)

households to cereals and other nutritive food products. The proportion of households reporting hunger went down and the incidence of economic poverty reduced. This paper reviews the Indian approach to tackling the severe problem of food insecurity, which India faced immediately after independence. It reviews the evolution of food policy, the major policy instruments deployed, intervention in food marketing system, and the current status of food security/insecurity. The paper also identifies the lessons emerging from the experience of India. In developing countries characterized by large segments of the rural population dependent on food production for livelihood and by the high incidence of poverty, food insecurity and malnutrition, the strategy to improve food security must encompass programmes to increase food production that combine improved technology transfer, price support to food producers and supply of inputs at reasonable prices to farmers, improvements in food marketing system, employment generation, direct food assistance programmes, and improvement in the access to education and primary health care.

Acronyms

Acronyms are given in the Appendix.

The World Institute for Development Economics Research (WIDER) was established by the United Nations University (UNU) as its first research and training centre and started work in Helsinki, Finland in 1985. The Institute undertakes applied research and policy analysis on structural changes affecting the developing and transitional economies, provides a forum for the advocacy of policies leading to robust, equitable and environmentally sustainable growth, and promotes capacity strengthening and training in the field of economic and social policy making. Work is carried out by staff researchers and visiting scholars in Helsinki and through networks of collaborating scholars and institutions around the world.

www.wider.unu.edu

publications@wider.unu.edu

UNU World Institute for Development Economics Research (UNU-WIDER)
Katajanokanlaituri 6 B, 00160 Helsinki, Finland

Camera-ready typescript prepared by Liisa Roponen at UNU-WIDER

The views expressed in this publication are those of the author. Publication does not imply endorsement by the Institute or the United Nations University, nor by the programme/project sponsors, of any of the views expressed.

1 Introduction

India accounts for 16.7 per cent of the world's food consumers. India's size in terms of food consumers is many times larger than the average size of the rest of the countries, except China. At the time of independence in 1947, India was in the grip of a serious food crisis, which was accentuated by the partition of the country. The demand for food far exceeded supply, food prices were ruling at high levels and more than half of the population were living below the poverty line with inadequate purchasing power. With high rates of population growth, the dependence on imported food increased further. However, the situation improved considerably after the mid-1960s, when new agricultural development strategy and food policies were adopted in the country. The production of staple cereals increased substantially, mainly contributed by productivity improvements. The dependence on food imports reduced and the country became a marginal net exporter of cereals. There was also an improvement in physical and economic access of households to cereals and other nutritive food products. The proportion of households reporting hunger went down and the incidence of economic poverty was reduced.

The objective of this paper is to review the Indian approach to tackling the severe problem of food insecurity, which it faced immediately after independence. It reviews the evolution of food policy, the major policy instruments deployed, intervention in food marketing system, and the current status of food security/insecurity. The paper also identifies the lessons emerging from the experience of India. The paper has been divided into eight sections. The second section briefly presents the evolution of the food policy in India and the approaches to food security. The current status of food security and insecurity is analysed in section 3. The next three sections detail the three major instruments of the food security policy. Price support policies pursued in the country are described in section 4. Section 5 examines the magnitude of input subsidies in Indian agriculture. Direct food and other assistance programmes for improving household food and nutrition security and magnitude of food subsidy are presented in section 6, while some salient features of food marketing system that affect food security are given in section 7. Lessons emerging from the Indian experience are presented in the last section.

2 Food policy and approach to food security in India

India's food security problem can be traced to the discontinuation of rice supplies from Burma during the Second World War and infamous Bengal Famine of 1943 (Sheriff 2004). At that time, although a campaign 'grow more food' (GMF) was launched in 1943, the food policy revolved mainly around food imports, rationing, and controls (Knight 1954). After the partition of the country, the food situation worsened due to the proportionately smaller area under cereals inherited by India. At the time of independence, with relatively high foodgrain prices the country experienced a wide gap between demand and supply. The problem was compounded by the relatively high rate of population growth. Tackling the problems of food shortage and the provision of food security for the rapidly increasing population was, therefore, the priority areas of development planning at that point of time (Bhalla 1994).

For analysing the evolution of food policy and agricultural development strategy, the period after India's independence can be divided into four phases, viz., 1947 to

mid-1960s, the mid-1960s to the early 1980s, the 1980s, and from the early 1990s to the present day. The main concern of the food policy until the mid-1960s was to ensure that the gap between demand and supply of food did not result in an excessive rise in consumer prices of food. Similarly to the pre-independence period, emphasis continued to be focussed on food imports, price controls and food rationing. During the early 1960s, the intensive agriculture district programme (IADP) and intensive agriculture area programme (IAAP) were launched in selected districts having the potential to increase food production. A programme of land reforms was also initiated with the view of increasing access to land for the food-insecure landless households. However, these initial efforts did not make much impact on solving the food shortage problem until the middle of the decade.

By the mid-1960s, India's imports of foodgrains had reached 16 per cent of its total foodgrains needs. Imports of this magnitude were beyond the country's purchasing power. Foodgrains, mainly wheat, were imported at concessional prices from USA under Public Law 480. Furthermore, the country faced an unprecedented severe drought for two consecutive years, which worsened the situation to such a level that the then-prime minister had to appeal to his countrymen to fast one day a week in efforts to alleviate the food shortage. This was the turning point in the approach of tackling the food shortage. At this point of time, a new agricultural development strategy was launched to maximize the production of foodgrains. The new strategy was built on a foundation of three elements, viz., (i) the provision of an improved high-yielding technological package for the farmers; (ii) the delivery of modern farm inputs and services, including credit; and (iii) the assurance of remunerative pricing and marketing environment to the farmers. To achieve these objectives, several policy instruments were used, which were also reviewed from time to time and modified on the basis of experience gained. Some of the main instruments reflecting the policy orientation (Acharya 2002b) are:

- i) The creation, strengthening and expansion of the national agricultural research system (NARS) to develop and perfect new production and post-harvest technologies.
- ii) The establishment, strengthening and expansion of agricultural education and training system for agriculture extension workers and the transfer of new technology to the farmers.
- iii) Arrangements for the production, imports and distribution of high-yielding farm inputs like improved seeds, fertilizers, plant protection chemicals and other services, including credit, to the farmers.
- iv) The creation and expansion of physical and institutional infrastructure which included primary market yards, roads, transport and communication facilities, farmers' cooperatives and public sector organizations for improvement of the marketing system to handle and distribute marketed surplus.
- v) Regulation of traders' marketing practices through a series of legal and other regulatory instruments such as levies, stock limits, movement restrictions and specifications on packaging as well as quality standards.
- vi) Building-up and the maintenance of buffer stocks of cereals and the distribution of cereals through public distribution system, supplementary

nutrition programmes, anti-poverty and employment generation programmes, and open market releases.

- vii) Establishing minimum support prices for main agricultural commodities including foodgrains and arrangements for price support purchases and procurement by public/cooperative agencies.
- viii) The provision of food and input subsidies, explicit or implicit, to reconcile the conflicting objectives of the foodgrain producers and consumers.
- ix) Regulation of imports and exports of foodgrains through several instruments including tariffs.

During the early 1980s, a balance between demand and supply of foodgrains was in sight. Thus the objective of agricultural development was modified from 'maximizing the production of foodgrains', to 'evolving a production pattern consistent with the emerging demand pattern'. For achieving the new strategic objective, three support approaches were extended to non-foodgrain crops, i.e., technology, inputs and marketing. As a result, the production of non-cereal food items such as edible oilseeds, fruits, vegetables, spices and livestock products increased.

Apart from measures to improve macrofood and nutritional security, attention to household and individual food security was intensified during the 1980s, and several schemes to provide food assistance, create employment opportunities, and provide supplementary nutrition programmes were launched. Policy instruments for improving household food security implicitly followed the entitlement approach, which recognized that people, especially in the rural areas, derive their livelihoods from production-, exchange-, labour-, and transfer-based entitlements (Acharya 2002e). Marginal and small farmers earn their livelihood and meet their food requirements mainly through self-production on their farms. For these households whose marketable surplus is negligible, provision of production inputs such seeds, fertilizers, and irrigation water at reasonable prices was considered as the means of assuring food security. Similarly, for the jute growers, rural artisans, etc. who enter the market to exchange their surplus products for food and for those people who are net buyers of food, the functioning and efficiency of the agricultural marketing system was considered important. Programmes aimed at improving the marketing system (market yards, periodic market places, rural roads, storage structures, transportation facilities and communication network) were viewed as measures of food security for the families depending on the market for their livelihood. Agricultural labourers and non-farm labour families earn their livelihood by selling their labour, and consequently rural wage rates, level of food prices and employment opportunities were treated as critical for the food security of these families. Others (disabled, old and destitute) live on transfers from the government, and/or social charitable organizations. In situations of natural calamity or armed conflict, the affected families also depend on transfers. Therefore, direct food assistance programmes or transfer payments were perceived as essential for tackling the transitory food insecurity of such communities/families.

The sequencing and mix of programmes were based on the perception that (i) adequate availability of food at the national level is a necessary, but not sufficient, condition assuring for physical access of all households to food; (ii) physical access to food is a necessary, but not sufficient, condition for ascertaining economic access to food; and (iii) physical and economic access of all households to food is a necessary, but not

sufficient, condition for all individuals (especially women and children) to receive and consume adequate food quantities.

In 1991 in response to the financial crisis faced by the country, a programme of economic reforms was launched. Initially, the programme focussed on the industrial and trade sectors and consisted of delicensing, decontrol, and economic liberalization. Liberalization gained momentum when India became a signatory to the new international trade agreement in 1994. With industry and trade being increasingly liberalized, the need for agricultural reforms also became obvious. However, the approach to agricultural reform was cautious and gradual, and policy during this period was marked by some major changes of the earlier regime. Agricultural commodity imports were gradually liberalized and import duties reduced. The farm-input subsidies (fertilizers, canal water and electricity for irrigation) which earlier had been considered an important component of the food security policy were rigorously reviewed and steps taken to contain them. Measures were also initiated to liberalize the domestic marketing of agricultural commodities. The importance of value addition and processing of agricultural products was recognized and several schemes were introduced to provide incentives for these activities. Aware of the emerging surplus of certain farm products, efforts were also made to access the overseas markets through liberalization and the provision of incentives to promote exports. Attention shifted to the concern for household food and nutritional security: the food assistance and employment generation programmes launched earlier were more focussed and targeted more to vulnerable groups. Their scale was also increased considerably.

3 Current status of food security in India

The food policy and agricultural development strategy adopted by India to improve food security situation paid rich dividends, and the ensuing improvements in food security can be assessed from several angles.

The most significant change was the increase in the domestic output of foodgrains, particularly cereals (Table 1). The production of cereals increased from 72.1 million tons during the triennium ending (TE) 1964/5 to 130.2 million tons during TE 1984/5 and further to 186.4 million tonnes during TE 2003/4.

Increase in the production of staple food (cereals) has kept pace with the population growth. Per capita net output of cereals, which had increased from 110.4 kg in 1951 to

Table 1
Production of foodgrains in India (million tons)

Period	Cereals				Pulses	Total foodgrains
	Rice	Wheat	Coarse	Total		
TE 1951/2	21.8	6.3	16.1	44.2	8.3	52.5
TE 1964/5	36.5	11.0	24.6	72.1	11.3	83.4
TE 1974/5	41.0	23.5	26.0	90.5	10.0	100.5
TE 1984/5	55.2	44.1	30.9	130.2	12.2	142.4
TE 1994/5	78.1	60.8	32.6	171.5	13.4	184.9
TE 2003/4	84.3	70.0	32.1	186.1	13.2	199.3

Note: TE = Triennium ending.

Source: Acharya (2002a); Gol (2004; 2004/5).

Table 2
Total growth rates of production of cereals in India

Period	Rice	Wheat	Coarse cereals	All cereals
1949/50 to 1964/5	3.50	3.98	2.25	3.21
1967/8 to 1980/1	2.22	5.65	0.67	2.61
1980/1 to 1989/90	3.62	3.57	0.40	3.03
1990/1 to 1999/2000	1.90	3.81	1.48	2.10
1967/8 to 2001/02	2.78	4.34	0.54	2.77

Source: Gol (1999, 2000, 2002a, 2003).

130.9 kg in 1964, went up further to 166.1 kg in 1984 and has hovered around that level for the last 20 years. The long-term growth rate of all cereals, which was 2.61 per cent per annum over the period 1967/8 to 1980/1, and 2.77 per cent per annum over 1967/8 to 2001/2, has exceeded the Indian rate of population growth (Table 2).

Owing to the increase achieved in the production of cereals, the dependence on imports for meeting the staple food needs of the population dropped considerably. Net imports as a percentage of net domestic output had increased to unprecedented levels during the mid-1960s. For example, in 1966 the net import of cereals at 10.3 million tons represented 19 per cent of net production. Reviewed on quinquennial basis, cereal imports totalled 8.2 per cent of net output during 1961-65 and 9.6 per cent during 1966-70, declining to 4.4 per cent of net production during 1971-75, 1.5 per cent during 1981-85 and only 0.4 per cent during 1986-90. Since then, India has become a net exporter, accounting for 0.1 per cent during 1991-95, 1.3 per cent during 1996-2000 and 4.0 per cent during 2001-03 of net cereal production.

In addition to the increase in domestic cereal production, the inter-year instability in production was reduced considerably. This happened for two reasons. First, the irrigated area under cereals expanded considerably, reducing the dependency on uncertain rainfalls. Out of total cereal area, irrigated areas increased from 23.1 per cent in 1964/5 to 50.1 per cent by 2000/1. And second, the share of more stable grains (wheat) increased while unstable grains (coarse cereals) decreased. Wheat had accounted for 15.2 per cent of total cereals in TE 1964/5, increasing to 37.6 per cent in TE 2003/4. On the other hand, the share of coarse cereals declined from 34.1 per cent to 17.2 per cent during this period.

Another noteworthy feature of India's advancements in macro food security is that 97.4 per cent of the incremental output of cereals between TE 1964/5 and TE 2003/4 were due to improvements in the per hectare productivity (yield); area expansion accounted for only 2.6 per cent. For example, during this period, the area under cereals increased from 93.7 million hectares to 97.3 million hectares and the average yield per hectare went up from 770 kg during TE 1964/5 to 1,946 kg during TE 2003/4. The improvement in yield resulted from advancements in technology, irrigation, and the diversion of low-yielding crops to high value produce.

There has been considerable improvement in the physical access to food in different parts of the country, helped by several initiatives and measures. First, the share of rice, the production of which is more geographically dispersed, has continued to be quite considerable. Rice contributed 42 per cent of the increase of 114.3 million tons in cereal production between TE 1964/5 and TE 2003/4. Moreover, rice itself became geographically more dispersed. Second, the network of public distribution system was

expanded, enabling foodgrains to reach the deficit, geographically difficult regions (hilly or desert) and tribal dominated areas.¹ Finally, systematic measures to expand food marketing infrastructure increased physical access to food. These included the creation of market yards in rural areas, storage and warehousing facilities, expansion of the road network, transport and communication facilities, and incentives to promote food processing and packaging industries.²

Yet another important development has been the continuous improvement in the economic access of consumers to food. The increase in retail prices of the two staple food items (rice and wheat) has been lower than the increase in per capita income, and thus the proportion of consumer income required to buy a unit quantity of rice or wheat has continued to decline. For example, the proportion of annual per capita income needed in the rural areas to purchase a quintal of wheat has declined from 15.4 per cent in 1973/4 to 8.7 per cent in 1983/4, 5.9 per cent in 1990/1, 5.0 per cent in 1994/5 and finally to 4.4 per cent in 1999/2000. A similar declining trend is noticed for urban communities, as well as in the case of rice for both rural and urban areas (Acharya 1997, 2002a, 2004a).

A related development needs to be mentioned: in addition to the expansion in the availability of cereals and the decline in their relative prices vis-à-vis incomes, the per capita consumption of cereals has also tended to drop in recent years (Dev 2003), going from 173.6 kg per year in 1987/8 to 160.8 kg in 1993/4 and further to 152.6 kg in 1999/2000. The decline in consumption has been sharper in coarse cereals, and has occurred even among the lowest 30 per cent of consumers, reflecting a shift towards more nutritive foods like fruits, vegetables and livestock products. Long-term data from National Sample Survey Organization also indicate a declining trend in the per capita consumption of cereals in both rural and urban areas from the early 1970s to 1999/2000, accompanied by a decrease in the proportion of expenditures on cereals and an increase of that on milk, meat, eggs, fruits and vegetables (Selvarajan and Ravishankar 1996; Dev 2003).

Improved availability of staple food at declining real prices has contributed to improved nutritional security. Farmers have shifted from the low-yielding coarse cereals to non-cereal food products since the middle of the 1980s (Acharya 2003a), a fact which has *inter alia* helped to increase production and availability of edible oils, sugar, fruits, vegetables, spices, milk, eggs, meat and fish/fish products. During the last two decades, the output of fruits and spices increased at a total rate of 3.07 to 3.91 per cent per annum, while the production of vegetables, edible oilseeds, milk and fish recorded increase of 4.33 to 4.56 per cent per annum during this period. The annual production rates of sugar, eggs and meat were even higher: sugar increased at the rate of 6.10 per cent, eggs 6.21 per cent and meat 8.59 per cent during this period (Table 3). As the production growth of all these food items was considerably higher than the population growth, per capita production of nutritive foods went up substantially in India.

In addition to the advancements made in macro food security, there has been considerable improvement in food availability, and a reduction of hunger at the

¹ For details on public distribution system, see subsequent section of this paper.

² For details of improvement in agricultural marketing infrastructure during the last 50 years in India, see Acharya (2004b) and brief account in the subsequent section of this paper.

Table 3
Production of other food products in India

Items	Total production (million tons)			Per capita production (kg p.a.)	
	1980/1	2003/4	CGR % p.a.	1981 (688.5) ^(f)	2002 (1050.6) ^(f)
Edible oilseeds/oil ^(a)	9.4	25.1	4.36	6.4	8.6
Fruits	23.8 ^(b)	47.7 ^(c)	3.07	34.5	45.4
Vegetables	45.4 ^(b)	97.5 ^(c)	4.33	65.9	92.8
Spices	1.4	2.9 ^(d)	3.91	2.0	2.8
Sugar	5.1	19.9	6.10	8.2	16.3
Milk	31.6	88.1	4.56	45.9	82.2
Eggs ^(e)	10.1	40.4	6.21	14.7	39.7
Meat	0.8	4.9 ^(c)	8.59	1.2	4.7
Fish	2.4	6.4	4.36	3.5	5.9

Notes: (a) Production of oilseeds and per capita production of edible oils.
(b) Pertains to 1984/5.
(c) Pertains to 2002/3.
(d) Pertains to 1999/2000.
(e) Production in billions and per capita production in number.
(f) Population in millions.

Source: Gol (2003/4, 2004, 2004/5); Singhal (2003).

Table 4
Incidence of poverty in India

Year	Poverty ratio (%)			Number of poor (millions)		
	Rural	Urban	Total	Rural	Urban	Total
1977/8	53.1	45.2	51.3	264.3	64.6	328.9
1983/4	45.7	40.8	44.5	252.0	70.9	322.9
1987/8	39.1	38.2	38.9	231.9	75.2	307.1
1993/4	37.3	32.4	36.0	244.0	76.3	320.3
1999/2000	27.1	23.6	26.1	193.2	67.1	260.3
2007*	21.1	15.1	19.3	170.5	49.6	220.1

Note: * Projected.

Source: Gol (2003/4: 204).

household level. In the rural areas, which account for nearly three-fourths of the poor in India, the percentage of households reporting sufficient food availability every day throughout the year for all family members increased from 81.1 per cent in 1983 to 96.2 per cent in 2000. The percentage of households with at least one member not getting enough food daily during some months declined from 16.2 per cent in 1983 to 2.6 per cent in 2000, and the percentage of households with at least one member without sufficient daily food throughout the year came down from 2.4 per cent in 1983 to 0.7 per cent in 2000 (NSSO 2001).

Economic poverty is an important factor affecting food security at the household level. Over the years, the incidence of both rural and urban poverty has declined considerably (Table 4). The percentage of population below the poverty line declined from 51.3 per cent in 1977/8 to 38.9 per cent in 1987/8 and finally to 26.1 per cent in 1999/2000 which, according to some scholars, may have been even lower (Bhalla 2003). However, the absolute number of poor or food-insecure people continues to be large.

Another disquieting aspect of food security is nutritional status, particularly with regard to children and women. Based on the reports of National Nutritional Monitoring Bureau

(NNMB), Radhakrishna and Ravi (2004) have observed that 47.7 per cent of the children (under 3 years) still suffer from malnutrition and the incidence of child malnutrition is higher in the rural areas. Even among adults, the incidence of chronic energy deficiency (CED) is quite high, with 37.4 per cent of males and 39.4 per cent of females suffering from CED in 2000/1.

4 Agricultural price support policy

4.1 Policy objectives and framework

Price support for foodgrain producers has been an important instrument of the agricultural and food policy pursued by India since the mid-1960s. These instruments included minimum support prices, subsidized farm inputs, food marketing system improvements, and direct food assistance and employment generation programmes. The broad policy framework was initially outlined in the terms of reference of the Agricultural Price Commission (APC), set up in 1965 to advise the government on a regular basis for developing a balanced and integrated price structure. In formulating price policy, the APC was to recognize, on the one hand, the need to provide incentives to farmers for adopting new technology and maximizing production, and on the other hand, to the likely effect of price policy on the cost of living, wage levels and industrial cost structure. In 1980, when the demand and supply of foodgrains appeared to be in balance, the framework of the policy was modified. The emphasis of the APC policy (later renamed Commission for Agricultural Costs and Prices, CACP), shifted from maximizing the production of foodgrains to developing a production pattern consistent with the country's overall economic needs. The issue among farmers and consumers of a fair split of the gains accruing from technology and public investment was also explicitly recognized, and CACP was to monitor the terms of trade for the agricultural sector. Policy was reviewed again in 1986 when its long-term perspective was emphasized. This implied that in order to make the farm sector more vibrant, productive and cost effective (Acharya 2004b), policy should be extended to major factors which would influence agricultural prices in the long term.

4.2 Salient features of support prices

For almost 20 years until 1991, the distinction between the support price and procurement price of wheat and rice (paddy) was blurred. Each year, the procurement prices were announced and procurement targets fixed. To meet the procurement targets, government imposed movement restrictions in the surplus-producing areas, which was a disincentive for the farmers. Procurement targets also affected farmers' price support; once the target quantity had been procured, public agencies exited the market and farmers were left without support price for their produce. Thus, target-based procurement was becoming an obstacle to the support prices of rice and wheat growers in major producing areas. Therefore, in 1991, the government decided to eliminate the system in favour of fixed minimum support prices only, also for rice and wheat (as was being done for other farm products).

Currently, minimum support prices in the nature of a price guarantee to farmers, are applied by the Indian government to 25 farm products, which include paddy, wheat,

maize, pearl millet, sorghum, ragi, barley, chickpea, pigeon pea, blackgram, greengram, lentils, groundnut, mustard, sesame, soyabean, sunflower seed, safflower, nigerseed, and dried coconut. If market prices fall below the support level, government agencies buy the quantities offered at support prices, but the support is linked to specified quality standards. Farmers also have the option to sell on the open market. On the other hand, while there is no obligation on the part of farmers to sell to government agencies, these are bound to buy all quantity offered by the farmers at guaranteed prices.

Determination of the support levels is governed by the cost of production; changes in input prices; input-output price parity; trends in market prices; emerging demand and supply situation; inter-crop price parity; effect on the cost of living; effect on general price level; effect on industrial cost structure; international price situation; and parity between prices paid and prices received by the farmers (terms of trade). Support prices, usually announced at the time of sowing, are fixed for the year and applied across all areas of the country. Inter-year changes in support prices are essentially non-negative (medium-term guarantee to farmers). A central nodal agency is designated for each commodity or group of commodities to undertake support operations, and for cereals this agency is the Food Corporation of India (FCI) and for pulses and oilseeds, the National Agricultural Cooperative Marketing Federation (NAFED). The resulting stockpiles are used in various ways. For example, on the part of rice and wheat, these are used for (i) meeting the requirements of the public distribution system and food assistance programmes; (ii) creating buffer stocks to even out inter-year fluctuations in supplies and prices; and (iii) open market operations, including supplies to flourmills and exporters.

4.3 Public-private share in grain trade

Farmers have the option of selling to private traders or to public agencies, but generally deal with the public agencies only when the support price is more favourable than that offered by private traders. In the last 10 years, there has been positive development

Table 5
Share of government purchases in total output of rice and wheat (in million tons)

Particulars/period	Total production	Marketed surplus	Purchases by:		% share in total marketed surplus	
			Public agencies	Private trade	Public agencies	Private trade
Wheat						
TE 1992/3	53.6	28.1	8.4	19.7	29.9	70.1
TE 2002/3	72.9	53.4	18.7	34.7	35.0	65.0
% Increase	36.0	90.0	122.6	76.1	–	–
Rice						
TE 1992/3	73.9	31.6	11.7	19.9	37.0	63.0
TE 2002/3	83.7	61.6	19.9	41.7	32.3	67.7
% Increase	13.3	94.9	70.1	109.5	–	–
Total						
TE 1992/3	127.5	59.7	20.1	39.6	33.7	66.3
TE 2002/3	156.6	115.0	38.6	76.4	33.6	66.4
% Increase	22.8	92.6	92.0	92.9	–	–

Notes: * For the TE 1992/3, MS to output ratio was taken as 42.7 per cent for rice and 52.4 per cent for wheat (Acharya 2004b). For the TE 2002/3, the ratio was taken as 73.6 per cent for rice and 73.3 per cent for wheat (Gol 2004).

in the level of price support operations of two major cereals, viz., rice and wheat, with price support purchases increasing from 20.1 million tons during TE 1992/3 to 38.6 million tons during TE 2002/3. The increase was more pronounced for wheat (Table 5).

Public agencies purchased greater quantities, but so did private trade, and these handled 76.4 million tons of rice and wheat during TE 2002/3 compared to 39.6 million tons a decade earlier. If viewed in terms of the total market surplus of these staple foodgrains, there was no change in percentage shares of purchases made by the public and private sectors.

4.4 Impact and issues

An assessment of the impact of price support policies should be based on the achievement of specified objectives, incentives or disincentives to farmers as well as the distortions, if any, created in the marketing system. The policy has been instrumental in reducing price uncertainty for farmers, thus inducing them to adopt new technology and thereby increase the output of foodgrains and attain macro food security. The price support programme, in conjunction with other policy instruments, has helped to improve physical and economic access to food. Despite these positive impacts of the price support policy, certain other issues have been raised and debated. The first issue is the level of support prices: farmers consider the level inadequate, but consumer groups feel differently. The conflicting interests were reconciled with complementary instruments of input subsidies on the one hand and distribution of subsidized food on the other. Further, the level of support prices is a political-economic decision, and the government has relied mostly on recommendations made by CACP, the autonomous expert body. Whenever the government has deviated substantially from their recommendations, distortions emerge. For example, during 1999-2002, the government fixed minimum support prices (MSPs) of rice and wheat at levels much higher than recommended by CACP (Acharya and Jogi 2003). This lack of prudence led not only to excessive stocks, but also increased public cost for the foodgrain policy. Apart from undue hikes in the levels of MSPs for rice and wheat, relaxation of the fair-average quality norms, inappropriate timing of price rises for grains for the public distribution system (PDS), and improper meshing of export-import policy contributed to the accumulation of government stocks in 2002. To overcome similar difficulties, there have been suggestions to declare CACP a statutory body.

The second issue relates to operational incentives for the private sector's grain trade. The often cited example is the fact that the intra-year price rise for rice and wheat has been considerably lower than storage costs, discouraging private sector investment in storage and trading activities. Private sector involvement in the foodgrain trade continues to be large, and a curb on intra-year price rise has benefited both foodgrain producers and consumers. Petty traders, who generally operate in short-term markets, have not been adversely affected, and it is most likely the large foodgrain traders or trading giants, who cannot operate profitably. The question that arises is whether a country that is facing serious food shortages should prioritize its concern on farmers, consumers and petty traders, or on the large-scale trading companies.

The third issue relates to the efficiency of the Food Corporation of India vis-à-vis private trade in price support operations and subsequent distribution of foodgrains. The efficiency of FCI has been questioned on the ground of its economic cost and

subsequent outlay on food subsidies. Several aspects of FCI's operations need to be noted. First, both the purchase price (support price) and the issue price are determined by the government. Second, around 70 per cent of FCI's total expenditures for procurement and distribution are spent on items over which it has no control (Acharya 1997; GoI 2002b). The same costs would also have to be incurred by private trade unless it is able to evade some of the statutory taxes/charges (Acharya 1997). Third, losses occurring during storage and transit are estimated to be around one per cent which, in comparison to private channels, is not unduly high. Fourth, FCI's establishment charges and administrative overhead are estimated to be 2.8 per cent of its economic costs, and thus are no higher than private-trade net margins. Fifth, a recent study commissioned by the Union Ministry of Consumer Affairs, Food and Public Distribution (Chand 2003) has pointed out that in order to encourage the private sector to purchase wheat and paddy from the markets of surplus-producing states, retail prices in deficit states during lean months should be approximately at the same level as FCI's economic costs on wheat/rice.

Another important issue relates to the problem of ineffective implementation of price support operations for rice and wheat in certain states³ where, despite surplus yields of the last decade, farmers cannot get the minimum support prices. This situation has evolved mainly because the nodal agency (FCI) and state agencies in these new surplus states are not fully geared to undertake price support operations, as FCI continues to focus on large volume purchases from the traditional surplus-producing states. Decentralization of procurement and a refocusing of FCI operations towards the non-traditional cereal states, measures that are being currently pursued, may help in this regard.

5 Farm input subsidies

Farm input subsidies were used in conjunction with support prices to reconcile the conflicting interests of foodgrain producers and consumers. Input subsidies in India's agricultural sector constitute either (i) direct or explicit subsidies and (ii) indirect or implicit subsidies. Direct subsidies are payments to farmers intended to cover a part of the cost of inputs or equipment (improved seeds, plant protection equipment and improved farm implements). Direct subsidies are provided to well-defined target groups such as small or marginal farmers or those belonging to scheduled castes or tribes. The implicit or indirect subsidies arise as a result of the pricing policy for certain inputs such as fertilizers, electricity and canal water. There is no direct payment to producers, but as the inputs are supplied at less than the cost of production or supply, this amounts to an implicit subsidization of the input for the farmers. Implicit or indirect subsidies on fertilizers, electricity for irrigation and canal irrigation water account for more than 99 per cent of total subsidies in Indian agriculture.⁴

³ Excluding Punjab, Haryana, Western Uttar Pradesh and Andhra Pradesh.

⁴ Fertilizer subsidy is borne by the central government. For the domestic fertilizers (nitrogenous), the subsidy is the difference between farmers' price (government fixed) and retention price (based on manufacturer's normative costs) that is paid by the government to fertilizer plants. For phosphatic and potassic fertilizers, which are now decontrolled, the subsidy is the funds distributed to the state governments for keeping the selling prices of these fertilizers in check. There is no quantitative

Table 6
Major input subsidies in Indian agriculture

Particulars	1980/1		1990/1		2000/1	
	Current prices	Constant prices (1993/4)	Current prices	Constant prices (1993/4)	Current prices	Constant prices (1993/4)
Subsidy (Rs billion)						
Fertilizer	5.0	15.4	43.9	59.6	138.0	83.9
Electricity	3.3	10.2	46.0	62.5	269.5	163.9
Canal water	5.8	17.9	24.7	33.5	96.9	58.9
Total	14.1	43.5	114.6	155.6	504.4	306.7
Subsidy (billion US\$)*	0.3	0.9	2.5	3.4	11.2	6.8
Subsidy as % of GNP	1.1		2.3		2.7	
Subsidy as % of GDP ag.	2.6		6.4		10.0	

Note: * Rs 45 per US\$.

Source: Acharya and Jogi (2004a; 2004b).

Table 7
Farm input subsidies according to farm size, 2000/1

Size	Total subsidy (US\$ billion, current prices)	No. of farms (in millions)	Subsidy per farm (US\$)	Subsidy per ha. of operated area (US\$)	% of total operational area	% of total subsidy
Marginal (less than 1 ha.)	1.9	71.2	26.7	68.9	17.2	17.3
Small (1-2 ha.)	2.1	21.6	97.2	69.7	18.8	19.1
Semi-medium (2-4 ha.)	2.8	14.3	195.8	70.8	23.8	24.6
Medium (4-10 ha.)	3.1	7.1	436.6	73.8	25.3	27.2
Large (above 10 ha.)	1.3	1.4	928.6	54.6	14.8	11.8
Total	11.2	115.6	96.9	68.6	100.0	100.0

Source: Computed from Acharya and Jogi (2004b).

Table 8
Crop-wise subsidy in Indian agriculture, 2000/1

Crops	% of total subsidy	Subsidy per hectare (current prices)		Subsidy per ton of output	
		Rupees	US\$	Rupees	US\$
Rice	32.1	3,587	79.7	189	4.2
Wheat	27.5	5,039	112.0	186	4.1
Gram	1.8	1,495	33.2	201	4.5
Groundnut	2.5	1,827	40.6	187	4.2
Mustard	4.0	3,306	73.5	354	7.9
Sugarcane/sugar	5.1	6,099	135.5	90	2.0
All food crops	95.6	2,661	59.1	NE	NE
Cotton	4.4	2,573	57.2	451	10.0
Total	100.0	2,658	59.1	NE	NE

Note: NE = not estimated.

Source: Acharya and Jogi (2004b).

restriction on farmers for buying fertilizers. In the case of electricity, the subsidy is estimated at the state level as the difference between the unit cost of generation, transmission, and distribution and user charges collected from farmers multiplied by the total electricity reportedly supplied to the agricultural sector. This is the loss incurred by electricity companies/departments that is reimbursed by the state governments. The subsidy on canal water is the difference between the water charges collected from the farmers and cost of operation and maintenance of irrigation works. The subsidy on electricity and canal water is borne by state governments.

Major input subsidies to the country's agriculture sector at current prices were estimated to total Rs 14.1 billion in 1980/1, Rs 114.6 billion in 1990/1 and Rs 504.4 billion in 2000/1, or in dollar terms for 2000/1, US\$11.2 billion. At constant (1993/4) prices, the input subsidies increased at the rate of 13.5 per cent per annum during the 1980s and 7.0 per cent per annum during the 1990s. As a proportion of agricultural GDP, farm input subsidies accounted for 2.6 per cent in 1980/1, 6.4 per cent in 1990/1 and 10 per cent in 2000/1.

Agriculture in India is basically small-holder farming. According to the 1995/6 agricultural census, there are 115.6 million farm holdings with an average operational area of 1.41 hectares. Nearly 62 per cent (71.2 million) of these holdings operate on less than one hectare (average 0.4 hectares) and 19 per cent (21.6 million) on 1-2 hectares of land (average 1.42 hectares) (Table 7). Marginal and small farmers account for 36.4 per cent of total subsidies, and this is slightly higher than their share (36 per cent) of total cultivated area. In contrast, the so-called large farms (average cultivated area 17.2 hectares) accounted for 11.8 per cent of total subsidies, which is lower than their share (14.8 per cent) of cultivated area. The average subsidy of US\$68.60 per hectare of cultivated area applied across the different farm-size groups, except for large size farms where it was considerably lower. In access to fertilizers, electricity or canal water, there is no preferential treatment with regard to size of the farm.

Input subsidies are mainly focussed on food crops (Table 8), constituting as much as 95.6 per cent of the total. Breakdown by different crops was rice 32.1 per cent, wheat 27.5, sugarcane 5.1, mustard 4.0, groundnut 2.5 and gram (chickpea) 1.8 per cent. The subsidy was, on average, US\$59 per hectare of cropped area, but varied from around US\$33 for gram to US\$136 for sugarcane. If subsidy is compared to output, it was close to US\$4 per ton for wheat and rice, around US\$8 for mustard, and only US\$2 per ton for sugar.

Farm input subsidies, particularly their rising levels, have remained one of the most debated aspects of the agricultural policy since the launch of economic reforms in 1991. However, the withdrawal of subsidies has been cautious and gradual for several factors. Input subsidies have been considered not only from the fiscal perspective of the electricity or irrigation department, but more importantly, their overall role in food security and agricultural development of the country has been recognized. Input subsidies have enabled the country to improve its food security and to keep food prices low, improving access to food for the population, while providing reasonable returns to farmers. Furthermore, the subsidies are not net transfers to the farmers. For example, of the total fertilizer subsidies, farmers receive an estimated 62 per cent and 38 per cent goes to the industry (GoI 2004/5). A considerable portion of power and canal water subsidies are wasted because of inefficient production and distribution systems. Thus, the burden of subsidies can be reduced with more efficient production and distribution systems of key farm inputs. With better supply systems of electricity and canal water, farmers would be willing to pay higher user charges. As already mentioned, the share of marginal and small farmers in total input subsidies is quite significant. Their food security depends on self-production, and thus the option of compensating this group for increased user charges with higher support prices is not feasible, as the marketed surplus of the small and marginal farmers is either negligible or very low. Furthermore, many crops are not covered by the support policy. It is also being argued that subsidies on farm inputs cannot be seen in isolation of the multiple subsidies in other sectors of the economy, and consequently their withdrawal is less painful. Total subsidies in the union

budget alone (unrecovered cost of non-public goods) were estimated at Rs 1158 billion in 2003/4 (GoI 2004/5), including subsidies on LPG and kerosene.

6 Direct food and other assistance programmes

Apart from food production and agricultural development programmes, the problem of food insecurity and malnutrition at the household level was tackled through measures such as direct food assistance, wage employment, food-for-work, and some other welfare schemes. Historically, poor households in India have relied on traditional family and community-based mechanisms of social protection to cope with deprivation. However, the process of change has eroded many of these traditional systems. Therefore, the country's post-independence history of social development has highlighted food as a cornerstone of the national strategy to accord some measure of social protection to vulnerable citizens. India's development policy after independence has always had a niche for food-based anti-poverty and social protection programmes (Medrano 2004). Once a fairly satisfactory situation with respect to macro food security had been achieved, even the Apex Court (Supreme Court) intervened with a series of directives to central and state governments for implementing programmes to eliminate hunger and malnutrition within a stipulated timeframe. The joint government-judiciary endeavour received an additional boost with the 'right to food' campaign launched by civil society and non-governmental organizations (NGOs).

Government's food assistance and related intervention have sought to address food insecurity on three fronts. Chronic food insecurity is alleviated through subsidized food distribution, food-for-work, and employment generation programmes. Nutritional insecurity, primarily of pregnant and nursing women and children, is addressed through supplementary nutrition and school feeding programmes. Transitory food insecurity is covered with food assistance as part of disaster relief and long-term disaster preparedness and prevention programmes. Over the years, the nature of food assistance has changed considerably. In the 1960s, national assistance policies focused on food production, and food assistance was mainly intended to augment food availability. The goal was to target the entire population through undifferentiated generalized food distribution as well as to build food reserves. Over the years, food assistance has been motivated more by the need to alleviate poverty and hunger, and currently by the prevention of malnutrition. According to UNWFP (2002), food assistance strategy in India has moved from 'food for the nation' to 'food for the people' and most recently to 'food security for the vulnerable'.

Current direct food and other assistance programmes in India fall broadly into five groups, viz., (i) distribution of subsidized foodgrains; (ii) supplementary nutrition programmes for children and women; (iii) food-for-work and wage employment programmes; (iv) self-employment augmentation programmes; and (v) welfare or social assistance programmes for specific vulnerable groups.

6.1 Distribution of subsidized foodgrains

India has one of the largest subsidized food distribution systems in the world, known as the *public distribution system*. There are four current programmes in this group. The

first is the public distribution system (PDS), which is based on the purchase of foodgrains (rice and wheat) by the FCI from farmers at minimum support prices and their subsequent allotment to the states according to the criteria of prevalent poverty levels and state level production of foodgrains. This is an attempt to balance the availability of food between surplus and deficit states. The PDS serves three objectives, viz., providing price support to farmers, supplying grain at subsidized prices to consumers, and stabilizing market prices through the maintenance of buffer stocks and release of foodgrains to the open market. The PDS is supplemental in nature and is not intended to provide the entire requirement of foodgrains to a household. The system was initially started as universal food distribution programme, but due to problems in getting subsidized foodgrains to vulnerable groups, the system has undergone several changes.

With the view of making the programme more pro-poor, the targeted public distribution system (TPDS) was launched in the country in June 1997 (Taimini 2001). Under this programme, all identified poor families (i.e., those living below the poverty line, BPL) are provided with 35 kg of rice or wheat at subsidized price (usually half of FCI's costs). Around 81.6 million families, who have been issued BPL ration cards, are being assisted under TPDS. The per capita per month poverty line, at 1999/2000 prices, has been defined as Rs 327.56 for rural areas and Rs 454.11 for urban communities. Families above the poverty line (APL) (non-income tax payees) are also entitled to receive grain but at a price closer to cost. The TPDS is a joint responsibility of the central and state governments and currently operates through a network of 462,676 fair-price shops. As the issue price for APL families is almost equal to market price, TPDS is now increasingly becoming self-targeted. During 2003/4, foodgrains to BPL families totalled 18.6 million tons, including 3.8 million tons to the poorest 12.5 million families, at a total subsidy cost of around Rs 103 billion. In comparison, the provision to APL families was 4.2 million tons of foodgrains, at little subsidy cost.

The second is the grain scheme for the poorest of the poor, *Antyodaya Anna Yojana* (AAY) that was launched in December 2000 for additional targeting of the poorest of the poor. The scheme now covers 20 million poorest BPL families, who are supplied 35 kg of grain per month at Rs 2 per kg for wheat and Rs 3 per kg for rice. The utilization of allocated food under this scheme is quite satisfactory (Medrano 2004). During 2003/4, 3.82 million tons of foodgrains were supplied under this scheme (GoI 2004/5), involving a subsidy cost of around Rs 30.6 billion.

The third is the *Annapurna* scheme (APS) which was launched in April 2000 and targets all indigent senior citizens without viable means of income or family support. Under APS, an allotment of 10 kgs of grain per month is provided free of cost to specific individuals. The village *panchayats* are entrusted with the responsibility of identifying the beneficiaries and implementing the scheme. Around 65,000 individuals are being assisted under the scheme, with a subsidy of around Rs 78 million. The fourth element is the scheme for the prevention of starvation deaths (SPSD). The SPSD was initially launched in the late 1990s in the tribal and geographically difficult areas and later extended to drought affected areas. Under this scheme, a specified quantity of foodgrains is stocked in the village grain banks to be supplied free of cost at the discretion of village *panchayats* to families facing starvation. The scheme is working well and serving its purpose in regions where non-governmental and voluntary civil society organizations are active.

6.2 Supplementary nutrition programmes (SNPs)

The primary objective of the supplementary nutrition programmes (SNPs) is to prevent or alleviate malnutrition in vulnerable children and mothers. There are two important components: one is the ambitious scheme, integrated child development service (ICDS) which has a supplementary nutrition programme for children below 6 years of age and expectant/nursing mothers as an important goal. The scheme, known as *Anganwari Yojana* (childcare centres), was launched in 1975 and now covers 4.8 million expectant and nursing mothers and 22.9 million children (under 6 yrs) through a network of 4,200 projects, covering 75 per cent of the development blocks and 273 slum pockets in urban areas. Centrally sponsored and implemented through state governments, services are provided at community centres where beneficiaries gather daily. Food supplements, which may include a hot meal or snacks, vitamin A and iron and folic acid tablets, are provided according to nutritional needs. According to several evaluation studies, the performance and impact of ICDS have varied across states, depending mainly on the efficiency of implementation system.

The second component is the national programme of nutritional support to primary education (NPNSPE), or the 'mid-day meals' (MDM), as it is commonly known. The MDM programme was started by the Tamil Nadu government in the 1980s, but the NPNSPE, introduced in 1995, has the twin objective of improving the nutritional status of primary school-aged children and of increasing enrolment, regular attendance and retention in schools. The plan is based on foodgrains being supplied to the states free-of-charge while costs for transport from the FCI godown to schools and cooking are to be borne by the state governments. Three options are available to the states under the scheme, viz., (i) providing a hot, cooked meal consisting of 100 gm of foodgrains per child per day for 200 school days; (ii) distributing pre-cooked meals; and (iii) dispensing 3 kg of wheat or rice per child per month for 10 months. Although the programme is supplementary in nature (offering 300 kcal and 8-12 gm of protein), it has helped both to improve nutrition and to increase school enrolment and retention. During 2003/4, around 106 million children benefited. Under the programme, 3.2 million tons of foodgrains were used, at a subsidy cost of around Rs 31.7 billion.

The two food-based interventions, viz., the targeted public distribution system (TPDS) and supplementary nutrition programme (SNP) (including MDM) now serve almost half of the population of India, channelling about 25 million tons of foodgrains annually, at a subsidy of around Rs 140 billion.

6.3 Food-for-work (FFW) and wage employment programmes

The food-for-work programme was initially started in 1977/8 with a view to improve both income and nutrition. In the first half of the 1980s, two wage employment programmes (with a foodgrain component), namely the national rural employment programme (NREP) and the rural landless employment guarantee programme (RLEGP) were introduced. These were merged in 1989 into a single component, the *Jawahar Rozgar Yojana* (JRY). The JRY was targeted at BPL families in rural areas. In 1993, a centrally sponsored scheme, the employment assurance scheme (EAS), was introduced within 1,778 backward development blocks for providing assured employment for 100 days to a maximum of two adults per family. Seventy-five per cent of the costs were borne by the central government and rest by the states. It was a demand driven scheme

until 1999, after which resources were allotted to the states on the basis of the incidence of poverty. The scheme provided 2-2.5 million days of employment per year. The programme with a provision of minimum wage rates was self-targeting in nature and catered to the employment needs of unskilled workers. It played a significant role in protecting the consumption levels of the rural poor, particularly during natural disasters, but the employment opportunities provided were considerably less than demand.

In September 2001, all earlier rural employment programmes were merged into an umbrella rural employment programme called *Sampoorna Gramin Rozgar Yojana* (SGRY), with the basic objectives remaining the same. Under this scheme, the cash component is shared by central and state government in the ratio of 75:25. The works undertaken are labour intensive, wages are fixed at a minimum confirmed by the state, and payment is made in the form of 5 kg of foodgrains plus cash. In 2002/3, it created 313 million days of employment and provided 1.5 million tons of foodgrains. In 2003/4, the created employment was equivalent to 373 million man-days. The scheme is being implemented by the *panchayati raj* institutions (the grassroots units of self-government). The basic problem with most of these programmes is the inadequate scale, i.e., the employment actually provided falls substantially below the demand. With this shortcoming in view, the NGOs and civil society organizations (CSOs) have been pressing for some type of employment guarantee for solving the problem of food insecurity.

In response to public demand, in November 2004 the government launched a national food-for-work programme in 150 most backward districts for providing guaranteed employment for 100 days to BPL families. Simultaneously, a bill was drafted and in December 2004, the government introduced the National Rural Employment Guarantee (NREG) Bill in Parliament. This obligates the government to provide at least 100 days of wage employment every year to every household whose adult members volunteer to do unskilled manual work. The bill was passed by Parliament and the NREG scheme was launched in 200 districts of the country in February 2006.

6.4 Self-employment augmentation programme

For a multi-prong approach to food insecurity and poverty, another programme, the integrated rural development programme (IRDP), intended at augmenting the opportunities for self-employment was launched. The IRDP was the first major self-employment scheme started in the late 1970s and was aimed at providing bank credit, subsidy, and technical assistance (inputs and outputs marketing) for the acquisition of income-generating assets to poor rural families (small and marginal farmers, agricultural labourers and artisans). The IRDP was supported by two allied programmes, viz., TRYSEM (the training of rural youth for self-employment) and DWCRA (the development of women and children in rural areas). By March 1999, nearly 54 million families had benefited from the IRDP, 4.6 million youth trained under TRYSEM and 4.1 million women assisted under DWCRA (Radhakrishna, Rao and Ray 2004).

In April 1999, the IRDP and affiliated programmes were merged into *Swarnjayanti Gram Swarozgar Yojana* (SGSY). The objective was to help poor families overcome the poverty line with training, capacity building and income-generating assets through a mix of bank credit and subsidy. In 2003/4, there were 0.9 million assisted families, the

equivalent of 392 million days of employment. Cumulatively, 4.58 million families have been assisted since 1999 under the SGSY, with an investment of Rs 95.2 billion.

6.5 Other social assistance programmes

In addition, there are several other programmes for transfer payments or other forms of assistance targeted at vulnerable sections: for example, the national old age pension scheme under which all persons aged over 65 years and without any source of income are paid a monthly cash pension (currently Rs 75). Under the national maternity benefit scheme, all BPL pregnant women are given a cash assistance of Rs 500 approximately 8-12 weeks prior to the birth of the first two children. All BPL cardholders are entitled for free health checkups and treatment. Under the national family benefit scheme, in the event of the death of primary breadwinner, a BPL family receives within four weeks a lumpsum assistance of Rs 10,000. Apart from these, several other assistance programmes are available to BPL families to support dwelling units, children at higher levels of education and other miscellaneous purposes.

6.6 Food subsidy

Food subsidy in the union budget is the difference between procurement and handling/distribution expenses minus the realization from foodgrains issued under different programmes. The food subsidy is thus the amount reimbursed by the government to FCI for its foodgrain activities. In India, food subsidy has served the multiple objectives of minimum guaranteed prices to farmers, maintenance of buffer stocks, supply of subsidized foodgrains to different identified sections of the population, food for work and wage employment programmes, supply of relief food during natural disasters and open market sales for stabilizing market prices. Therefore, the magnitude of food subsidy is obvious from the government policies relating to each of the objectives mentioned above.

The food subsidy in India, which was 0.43 per cent of GDP in 1990/1, increased to 0.58 per cent in 2000/1 and peaked sharply at 0.93 per cent in 2003/4 (Table 9). At current prices, the food subsidy increased from Rs 24.5 billion in 1990/1 to Rs 120.1

Table 9
Food subsidy in India

Year	Rupees (in billion)		US\$ (in billion)		Subsidy as % of GDP
	Current prices	Constant prices (1993/4)	Current prices	Constant prices (1993/4)	
1990/1	24.5	33.3	0.54	0.73	0.43
1996/7	60.7	47.3	1.35	1.05	0.44
1997/8	75.0	54.8	1.67	1.22	0.52
1998/9	87.0	58.8	1.93	1.31	0.52
1999/2000	92.0	59.9	2.04	1.33	0.49
2000/1	120.1	73.0	2.67	1.62	0.58
2001/2	174.9	106.5	3.89	2.37	0.77
2002/3	241.8	141.4	5.37	3.14	0.98
2003/4	258.0	146.5	5.73	3.25	0.93

Note: 1US\$ = INR 45.

Source: Gol (2003/4; 2004/5).

billion in 2000/1 and further to Rs 258 billion in 2003/4. At constant (1993/4) prices, the food subsidy expanded from Rs 33.3 billion in 1990/1 to Rs 73 billion in 2000/1, recording an annual growth rate of 8 per cent. The increase in food subsidy during the last three years was more sharp, at around 26 per cent per annum, reflecting higher increases in support prices, the maintenance of higher levels of food stocks, increase in the per unit food subsidy, and more pronounced food assistance, food-for-work and food based welfare programmes.

According to certain studies, some subsidized foodgrains are diverted to the open market. Consequently, it has been suggested that a food coupon or food creditcard system should be tried instead of the distribution of foodgrains in kind. Under this system, the card holder would not need go to a designated fair price shop (PDS outlet) but could buy the foodgrains from any retail shop and the retailer, in turn, could claim the subsidy (the difference between the market and subsidized prices) from the government. There are two essential pre-requisites for this system to succeed. First, the food marketing system must be efficient even in remote rural areas. There are villages with no retail shops. Even when an outlet exists, the retailer might be operating, as is usually the case, on a very low turnover and may hesitate to accept food creditcards. And second, the system of repayment of subsidy by the government to retailers must be prompt. Given the likely bureaucratic hurdles in the government system, retailers may become averse to supplying grains on food cards. However, to study the feasibility of this alternative, a food creditcard system is being implemented on a pilot basis in the selected districts during the current 10th five-year plan.

7 Food marketing system

Efficiency of the food marketing system plays a significant role in improving food security by increasing physical access and also by reducing transaction costs. These, in turn, increase prices for food producers and/or reduce prices for consumers. The landless agricultural labourers or marginal farmers constitute the largest group of food-insecure people. These and even most of the small farmers enter the food market as buyers. First, they sell their small surpluses in the post-harvest season because of cash needs and become buyers of food later in the season. Studies show that wheat growing marginal farmers sell 24 per cent of their production, whereas their marketable surplus is only 4 per cent. For the paddy growing marginal farmers, the marketed quantity consists of 28 per cent of output, even when their consumption needs exceed production by 9 per cent (DMI 1995). The food marketing system, therefore, is quite important for the food security of these vulnerable groups.

7.1 Marketing channels and market structure

Considerable part of the food produced on the farms is retained by families, especially by marginal and small farmers, for domestic consumption. With the increase in per farm output, the proportion sold in the market has increased considerably over the last 50 years. The marketed surplus–output ratio for all agricultural commodities, which was only 33.4 per cent in 1950/1, increased to 64.1 per cent in 1999/2000 and has in recent years gone up to around 70 per cent (Acharya 2003b). The share of private trade in handling the marketed surplus continues to be large, accounting for approximately 80

per cent of all agricultural commodities, with farmers' cooperatives and public agencies handling around 10 per cent each (Acharya 1994). Direct marketing by farmers is being promoted through the establishment of farmers' markets, but the proportion of marketed surplus going directly from producers to consumers is small. Actual buying and selling of commodities at wholesale level takes place in market yards and sub-yards specially created for the purpose. At present for the exchange of food and other products, there are 2,354 main market yards, 4,807 sub-market yards and 27,294 periodic market places in the country. These are managed mostly by the agricultural produce market committees and local government institutions. Buyers pay a fee to the managers of the yards.

The wholesale foodgrains trade is handled, in addition to the FCI and cooperatives, by approximately two million private wholesalers (Acharya 1998a). Apart from wholesalers, processors who enter the market as bulk buyers and sellers also play an important role. There are around five million retailers and 462,676 fair price shops (under PDS). Nearly three-fourths of the PDS outlets are in the private sector.

Despite a considerable increase in food processing units, the extent of value addition and processing continues to be grossly inadequate: only 10 per cent is processed, 15 per cent semi-processed and the remaining 75 per cent still constituting fresh food. In India, the value addition to food production is only 7 per cent, as compared to 23 per cent for China, 45 per cent for the Philippines and 188 per cent for the United Kingdom (FICCI 2002). Food processing is dominated in India by an unorganized small sector. For example, the traditional unorganized sector handles more than half (51 per cent) of the total 67 per cent output of milk transferred from the villages, and only 16 per cent is processed in the organized sector versus the world average of 52 per cent. But the processing segment of the food market is growing rapidly and attracting investment since the launch of economic reforms in 1991. The multiplier of food industry is quite large at 2.4 and has a strong impact on employment and farm incomes. The main hurdle to the expansion of this sector is the multiplicity of food related laws. A unified Food Law has now been drafted and is at an advanced stage of finalization.

According to one estimate, gross marketing margins in agricultural commodities total Rs 1,009 billion, consisting of Rs 151 billion as statutory charges, Rs 207 billion as net margins of market functionaries and Rs 651 billion as the cost of performing various marketing functions. Around 77 per cent of the marketing cost, amounting to Rs 500 billion, is estimated to be avoidable loss occurring during handling, transport and storage (Acharya 2003b). The government of India has recently launched a scheme to provide incentives to cooperatives and private entrepreneurs for setting up facilities in the villages for cleaning, grading, and packaging, which would help reduce such losses.

7.2 Regulatory framework

The current regulatory framework of food marketing system can be understood to encompass two broad components, viz., (i) regulation of agricultural produce wholesale markets; and (ii) regulation of other marketing activities. At the time of independence, the farmers' marketing practices and the methods prevalent in trade circles were perceived to generate losses to the farmers in terms of unduly low prices, higher cost of marketing and physical losses of produce. One of the improvement measures was the regulation of trade practices and establishment of market yards in the countryside. The

government circulated a model law in the 1950s and based on this model, state governments enacted their own legislation. All primary assembly markets (7,161) were brought under the ambit of State Acts. Each market is supervised by a committee, with more than half the members representing farmers of the area. The regulation helped to visibly open process of price determination, establish reliable weighting, standardize market charges, eliminate malpractices in the markets, settle disputes between farmers and traders, reduce physical losses of produce, and to provide amenities to the farmers in market yards. Even though the market regulation programme has served its initial purpose well, in the current situation several questions relating to its operations and even its relevance have been raised (Acharya 2004b). In this context, the central government has recently circulated another Act to replace the old legislation for the purpose of breaking the monopoly of existing regulated markets.

Apart from the regulation of primary wholesale markets, several other legal instruments were enacted by central and state governments to influence the conduct of the market. Legal instruments, which influenced the food marketing system until the early 1990s, included the Essential Commodities Act, which limited the agro and food processing industry to a small scale, and a multiplicity of food-related laws.⁵ After the launch of economic liberalization in 1991, there has been considerable dilution of these regulations. Several of these Acts/Orders have been repealed, rescinded or lifted during the last five years. Nevertheless, due to the threat of their reimposition, private sector sentiment has not improved and private investment in food marketing and processing continues to be slow.

7.3 Marketing infrastructure

Apart from regulatory measures and direct intervention, the structure, conduct and performance of food marketing system depend on the status of physical and institutional infrastructure. Infrastructure is important not only for the performance of marketing functions but also for the transfer of price signals leading to improved marketing efficiency (Acharya 1994). Several measures were taken to improve marketing infrastructure.⁶ Grading and standardization were encouraged, and grade standards for 163 agricultural commodities (mostly food products) have been specified under the AGMARK label. However, at the farm level, the extent of grading continues to be inadequate (7.3 per cent). Transportation facilities were increased and road coverage increased from 0.4 million km in 1950/1 to 2.6 million km in 1996/7. There was also an increase in railway routes, but nearly half of the villages are still isolated from the road or railway network. The storage capacity in the public sector went up from 7000 tons in the 1950s to around 40 million tons in 2000/1. The cold storage capacity, which was a meagre 0.3 million tons, had expanded to 15.4 million tons by March 2001. There has been considerable growth in agro-processing capacity and telecommunication facilities in rural areas. The Ministry of Food Processing Industry and the National Horticulture Board have launched several incentive schemes to attract investment to food processing.

Apart from physical infrastructure, there has been considerable expansion of both public and cooperative sector institutional infrastructure for improving the marketing system of

⁵ An illustrative list of 222 such Acts/orders is available in Acharya (2004b) and GoI (2002c).

⁶ For a review of the importance and progress of marketing infrastructure, see Acharya (2004b).

farm products. Public sector organizations in food marketing include the Food Corporation of India, commodity boards (tea, coffee, and spices), the State Trading Corporation, central and state warehousing corporations, and state agricultural marketing boards. The cooperative network is a three tier structure consisting of primary, secondary and national organizations, and includes primary agricultural marketing cooperatives, commodity specific marketing and processing cooperatives, and National Agricultural Cooperative Marketing Federation. In addition, the National Cooperative Development Corporation promotes, guides and supports rural economic activities on cooperative principles. Apart from public and cooperative sector organizations, the *panchayati raj* institutions as local self-government organizations (220,000 at village level, 4,567 at block level and 349 at district level) oversee the functioning of food marketing system at the local level.

7.4 Some recent initiatives

A comprehensive empirical study on Indian foodgrain markets by Wilson (2001) has shown that despite government intervention, rice and wheat markets in the country are highly integrated and integration increased further during the 1990s. However, as mentioned earlier, there are considerable costs in agricultural marketing system that could be avoided. Several initiatives have been undertaken recently to improve the efficiency of the food marketing system. Direct marketing is being encouraged through the training of farmers and establishment of farmers' markets. Contract farming, which involves the linking of farmers with the marketing and input firms, is being encouraged and is fast emerging in several commodities and areas. Information technology is being increasingly deployed to improve market integration and farmer-processor linkages. Private sector, cooperatives or farmers groups are being encouraged to establish alternative market yards. Several trading activities have been delicensed and private investment, including foreign direct investment, is being encouraged to cover bulk handling, storage and processing of food. Futures trading in food products has been permitted and small-scale reservation in food and agro-processing has been reduced.

8 Lessons from the experience of India

India accounts for nearly one-sixth of the world consumers. At the time of independence in 1947, the country faced a series of serious food crises. The demand for food far exceeded the supply. Food prices were at high levels and more than half of the population were poverty-stricken without adequate purchasing power to have access to food. The food and agricultural development policy pursued since the mid-1960s helped to increase the production of staple cereals and other food products, improve physical and economic access of households to food, and reduce the incidence of hunger, food insecurity, and poverty. Based on a quick survey of India's food policy, approach to food security, its current food security situation, important policy instruments and strategic initiatives, it is obvious that there are quite a few lessons and emerging issues, which need attention for achieving the goal of food security for all.

The best assurance of food security in agriculture-dominant countries can be provided through the accelerated growth of food and/or other agricultural products and the introduction of cost-reducing technological changes in agriculture through a judicious

combination of investment in agricultural research and technology transfer system, the creation of rural infrastructure and the provision of an incentive framework for the farmers (Acharya 2002c).

Further, as the agricultural sector is dominated by marginal and small farmers, their participation in the growth process is quite critical. Most of the rural poor and food-insecure households either own small landplots or work as farm labourers. The strategy to alleviate hunger and achieve 'food security for all' must, therefore, involve advancing the production and incomes of small farms. This in turn implies broad-based efforts to develop agriculture, animal husbandry, fisheries and forestry. Farmers must continue to receive adequate incentives to produce food and other farm products.

National policies must ensure that small and poor farmers have access to land, water and animal grazing resources. Property rights of small farmers and fishermen must be secured. Institutional reforms are needed to ensure the rights of the poor to common property resources of water and grazing lands on an equitable basis.

India's food security policy is built on various livelihood entitlements, viz., production based-, exchange based-, labour based- and transfer based-entitlements. A combination of policies and programmes was intended to help different food-insecure communities and sections of people. These included the supply of farm inputs at lower prices, price support to farmers, keeping the food prices at reasonable level through procurement, building buffer stocks and the public distribution system, food-for-work and other employment oriented programmes, and direct food assistance schemes. The rationale of the food and input subsidies has also been viewed in this context (Acharya 2001). Several issues relating to the financial and environmental sustainability and consequently to the economic costs of the package are, however, being raised. The debate revolves around the question whether the food security of the poor can be assured at a lower cost by phasing-out food and input subsidies? It is now being increasingly realized that although farmers must continue to receive adequate incentives for producing food and other agricultural commodities, the emphasis should shift from general input subsidies to the provision of specific targeted subsidies, the continuous introduction of pre- and post-harvest cost reducing technologies, support for more efficient food processing methods, and the development of institutional mechanisms to reduce the prices to farmers and the elimination of risks regarding yield and income (Acharya 2002e).

As the livelihood of a large section of population depends on the production of food, great care is needed in the liberalization of the food product trade. Studies have shown that unrestricted trade liberalization in foodgrains may expose both the small producers and poor consumers to the high volatility inherent in international food prices (Chand and Jha 2001). Several safeguards available in WTO's Agreement on Agriculture should be prudently used.

Some studies (Patnaik 2003) have shown that economic reforms have adversely affected the access of the poor to food and have forced many families into the trap of food insecurity. Liberalized imports of edible oils with low tariffs have resulted in low prices for the oilseeds that are mostly grown by resource-poor dryland farmers. The low oilseed prices have induced the closure of a large number of tiny rural processing units, eliminating in the process the employment opportunities of many families. Despite the gains to consumers of edible oil by way of lower prices, the net social welfare of

liberalized imports has been estimated as being close to zero (Chand and Jha 2001). This implies a redistribution of welfare/income from the mostly poor oilseed growers (whose livelihood depends to a large extent on oilseed production) to the consumers (whether poor or not so poor, but for whom only a small proportion of their total expenditures goes to cooking). Therefore, the need exists for caution in deciding the speed and sequencing of trade liberalization and economic reform policies. Liberalization of domestic markets must precede the opening up of trade and the reduction of import duties on agricultural commodities (Acharya 1998b).

An efficient marketing system significantly contributes to the alleviation of hunger and the improvement of food security. The policy environment and development initiatives in developing countries require several changes for reducing avoidable costs in marketing and for encouraging private sector investment and participation in marketing. Governments should reformulate market-related policies and make complementary investments in rural marketing infrastructure for attracting private investment to value addition and food processing (Acharya 2003c).

So long as poverty persists and transient food insecurity occurs at frequent intervals, direct food assistance programmes will continue to be important in the fight against hunger, food insecurity and malnutrition (Acharya 2002d). Chronic food insecurity is becoming increasingly concentrated in certain regions and communities, which makes the targeting of food assistance programmes a viable proposition. Furthermore, the success of programmes aimed at reducing food insecurity depends on an environment with active and vibrant civil society organization, voluntary groups and cooperatives. The food assistance programmes should include a combination of (i) distribution of subsidized foodgrains in pre-decided quantities to targeted families; (ii) supply of adequate foodgrains free of cost to the poor, old and destitute; (iii) provision of one meal a day to poor schoolchildren during school hours; (iv) supplementary nutrition dispersion (including micro-nutrients) to infants and expectant/nursing mothers; (v) food-for-work programme for willing able-bodied adults; and (vi) an employment guarantee programme in all areas.

Experience has shown that whenever India needed to enter the world market to buy foodgrains (wheat), the price was higher than the world market average (Chand and Jha 2001). This is because in the world wheat market, the characterization of India as a small country is not favourable to India. Therefore, a large populated country like India should continue to maintain a reasonably high degree of self-sufficiency in foodgrains.

The experience of India provides a major lesson for developing countries that are characterized by large segments of the rural population depending on food production for livelihood and by the high incidence of poverty, food insecurity and malnutrition: the strategy to improve food security must encompass programmes to increase food production that combine improved technology transfer, price support to food producers and supply of inputs at reasonable prices to the farmers, improvements in food marketing system, employment generation, direct food assistance programmes, and improvement in the access to education and primary health care.

Appendix: list of acronyms

AAY	<i>Antyodaya Anna Yojana</i> (grain scheme for the poorest of the poor)
APC/CACP	Agricultural Price Commission, later renamed as Commission for Agricultural Costs and Prices, CACP
APS	<i>Annapurna</i> (scheme for indigent senior citizens)
BPL	families living below the poverty line
CSOs	civil society organizations
DWCRA	programme for the development of women and children in rural areas
EAS	employment assurance scheme
FCI	Food Corporation of India
GMF	grow more food programme
IAAP	intensive agriculture area programme
IADP	agriculture district programme
ICDS	programme for integrated child development service
IRDP	integrated rural development programme
JRY	<i>Jawahar Rozgar Yojana</i>
MDM	programme for mid-day meals
MSPs	minimum support prices
NAFED	National Agricultural Cooperative Marketing Federation
NARS	national agricultural research system
NGOs	non-governmental organizations
NNMB	National Nutritional Monitoring Bureau
NPNSPE	national programme of nutritional support to primary education
NREP	national rural employment programme
NREG	National Rural Employment Guarantee Bill
PDS	public distribution system
RLEGP	programme for rural landless employment guarantee
SGRY	<i>Sampoorna Gramin Rozgar Yojana</i> (rural umbrella employment programme)
SGSY	<i>Swarnjayanti Gram Swarajgar Yojana</i> (the golden jubilee self-employment scheme for rural areas)
SNPs	supplementary nutrition programmes
SPDS	scheme for prevention of starvation deaths
TPDS	targeted public distribution system
TRYSEM	programme for training of rural youth for self-employment
UNWFP	United Nations World Food Programme

References

- Acharya, S. S. (1994). 'Rural Non-Farm Sector and Its Role in Economic Development in the Changing Scenario'. *Agricultural Economics Research Review*, 16 (2): 83-90.
- Acharya, S. S. (1997). 'Agricultural Price Policy and Development: Some Facts and Emerging Issues'. *Indian Journal of Agricultural Economics*, 52 (1): 1-47.
- Acharya, S. S. (1998a). 'Agricultural Marketing in India: Some Facts and Emerging Issues'. *Indian Journal of Agricultural Economics*, 53 (3): 311-32.
- Acharya, S. S. (1998b). 'Domestic Market Reforms: Should They Precede Agricultural Liberalization'. Paper presented in the annual conference of Agricultural Economics Research Association of India, 21-22 September, Hisar: Haryana Agricultural University.
- Acharya, S. S. (2000). 'Subsidies in Indian Agriculture and Their Beneficiaries', *Agricultural Situation in India*, LVII (5): 251-60.
- Acharya, S. S. (2001). 'Domestic Agricultural Marketing Policies, Incentives and Integration', in S. S. Acharya and D. P. Choudhri (eds), *Indian Agricultural Policies at the Crossroads*. New Delhi: Rawat Publications, 129-212.
- Acharya, S. S. (2002a). 'Food Security and New International Trade Agreement: Perspectives from India', in G. S. Bhalla, J. L. Racine and F. Landy (eds), *Agriculture and the World Trade Organization: Indian and French Perspectives*. Paris: Editions de la Maison des sciences de l'home, 151-78.
- Acharya, S. S. (2002b). 'Indian Agricultural Policy at the Crossroads: Directions for the Tenth Plan'. *Agricultural Situation in India*, Special Number (August): 207-16.
- Acharya, S. S. (2002c). 'Experiences in Rice Policies, Strategies and Programmes in South Asia Region'. Paper presented at the Workshop on Harmonization of Policies and Coordination of Programmes on Rice in ECOWAS Sub-Region, 25-28 February. Accra: FAO Regional Office for Africa.
- Acharya, S. S. (2002d). 'Towards Sustainable Food Security at State Level – A Case of Rajasthan with Special Reference to Role of Food Assistance Programmes'. Paper presented in Consultation on Food and Nutritional Security, organized by World Food Programme, 25-26 June, Jaipur.
- Acharya, S. S. (2002e). 'Towards Hunger Free Asia: Some Facts and Emerging Issues'. Plenary paper presented in IV Conference of Asian Society of Agricultural Economists, 20-22 August, Alor Setar (Malaysia).
- Acharya, S. S. (2003a) 'Crop Diversification in Indian Agriculture'. *Agricultural Situation in India*, Special Number (August): 239-50.
- Acharya, S. S. (2003b). 'Rural Non-Farm Sector and Its Role in Economic Development in the Changing Scenario'. *Agricultural Economics Research Review*, 16 (2): 83-90.
- Acharya, S. S. (2003c). 'Agricultural Marketing in Asia and the Pacific: Issues and Priorities', in *Proceedings of the Mini Roundtable on Agricultural Marketing and Food Security in Asia*, FAO, Bangkok, RAP Publication 2003/ 02.

- Acharya, S. S. (2004a). 'Food Security in Developing Countries of Asia: Some Facts and Emerging Issues'. Paper presented at the ICSSR and UNU-WIDER Workshop on Hunger and Food Security, 31 January. New Delhi.
- Acharya, S. S. (2004b). 'Agricultural Marketing and Rural Credit', in *Millennium Study of Indian Farmers*, Vol. 17. New Delhi: Academic Publishers for the Indian Ministry of Agriculture.
- Acharya, S. S., and R. L. Jogi (2003). 'Minimum Support Prices for Agricultural Commodities in India: Some Issues'. IDSJ Working Paper No. 132. Jaipur: Institute of Development Studies, 1-26.
- Acharya, S. S., and R. L. Jogi (2004a). 'Farm Input Subsidies in Indian Agriculture'. *Agricultural Economics Research Review*, 17 (January-June): 11-41.
- Acharya, S. S., and R. L. Jogi (2004b). 'Input Subsidies and Agriculture: Future Perspectives'. Paper presented at the IRMA Silver Jubilee Workshop on Governance in Agriculture, 18-19 December.
- Bhalla, G. S. (1994). 'Policy for Food Security in India', in G. S. Bhalla (ed.), *Economic Liberalization and Indian Agriculture*. New Delhi: Institute for Studies in Industrial Development, 133-78.
- Bhalla, S. S. (2003). 'Recounting the Poor: Poverty in India, 1983-99'. *Economic and Political Weekly*, 38 (4): 338-49.
- Chand, R. (2003). 'Government Intervention in Foodgrain Markets in the New Context'. Policy Paper 19. Study report prepared for Ministry of Consumer Affairs, Food and Public Distribution. New Delhi: National Centre for Agricultural Economics and Policy Research.
- Chand, R., and D. Jha (2001). 'Trade Liberalization, Agricultural Prices and Social Welfare', in S. S. Acharya and D. P. Choudhri (eds), *Indian Agricultural Policy at the Crossroads*. New Delhi: Rawat Publications, 7-126.
- Dev, S. M. (2003). 'Right to Food in India'. Working Paper No. 50. Hyderabad: Centre for Economic and Social Studies.
- Directorate of Marketing and Inspection (DMI). (1995). 'Production, Utilization and Marketable and Marketed Surplus of Wheat, Rice and Maize'. Faridabad: Government of India, 53-72.
- Federation of Indian Chambers of Commerce and Industry (FICCI) (2002). *Indian Agriculture Unbound: Making Indian Agriculture Globally Competitive*. Platinum Jubilee Series Policy Paper. New Delhi: FICCI.
- Government of India (GoI) (1999). 'Agricultural Statistics at a Glance'. New Delhi: Ministry of Agriculture.
- GoI (2000). 'Agricultural Statistics at a Glance'. New Delhi: Ministry of Agriculture.
- GoI (2002a). 'Agricultural Statistics at a Glance'. New Delhi: Ministry of Agriculture.
- GoI (2002b). 'Report of the High Level Committee on Long-term Grain Policy'. New Delhi: Department of Food and Public Distribution, Ministry of Consumer Affairs, Food and Public Distribution.

- GoI (2002c). 'Report of Inter-Ministerial Task Force on Agricultural Marketing Reforms'. New Delhi: Ministry of Agriculture.
- GoI (2003). 'Agricultural Statistics at a Glance'. New Delhi: Ministry of Agriculture.
- GoI (2003/4). 'The Economic Survey'. New Delhi: Ministry of Finance.
- GoI (2004). 'Agricultural Statistics at a Glance'. New Delhi: Ministry of Agriculture.
- GoI (2004/5). 'Agricultural Statistics at a Glance'. New Delhi: Ministry of Agriculture.
- Knight, H. (1954). *Food Administration in India*. Stanford: Stanford University Press.
- Medrano, P. (2004). 'The Experience with Food Safety Nets in India'. Paper presented at National Food Security Summit, 4-5 February. New Delhi.
- National Sample Survey Organization (NSSO) (2001). 'Reported Adequacy of Food Intake in India 1999-2000'. Report No. 474 (55/1.0/7). New Delhi: Ministry of Statistics and Programme Implementation.
- Patnaik, U. (2003). 'Food Stocks and Hunger: The Causes of Agrarian Distress'. *Social Scientist*, 31 (7-8): 15-40.
- Radhakrishna, R., and C. Ravi (2004). 'Malnutrition in India: Trends and Determinants'. *Economic and Political Weekly*, 39 (7): 671-6.
- Radhakrishna, R., V. M. Rao, and Shovan Ray (2004). 'Beyond Quantification of Poverty: Emerging Issues in Poverty Reduction'. *Indian Journal of Labour Economics*, 47 (2): 323-48.
- Selvarajan, S., and A. Ravishankar (1996). 'Foodgrain Production and Consumption Trends in India'. *Agricultural Economics Research Review*, 9 (2): 142-55.
- Sheriff, A. (2004). 'Food and Nutrition Security in India: The Micro-Level Dimension', in B. Dorin and T. Jullien (eds), *Agricultural Incentives in India – Past Trends and Perspective Paths towards Sustainable Development*. New Delhi: Manohar Publishers, 21-38.
- Singhal, V. (2003). 'Indian Agriculture'. New Delhi: Indian Economic Data Research Centre.
- Taimini, B. K. (2001). *Food Security in the 21st Century: Perspective and Vision*. New Delhi: Konark Publishers Pvt. Ltd.
- United Nations World Food Programme (UNWFP) (2002). 'Tackling Hunger: UNWFP's Efforts to Help Eliminate Food Insecurity in India: A Review of Strategic Actions'. New Delhi: UNWFP, 1-32.
- Wilson, E. J. (2001). 'Testing Integration of Agricultural Produce Markets in India: Conceptual and Empirical Considerations using Wholesale Prices', in S. S. Acharya and D. P. Choudhri (eds), *Indian Agricultural Policy at the Crossroads*. New Delhi/Jaipur: Rawat Publications, 213-46.