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Food Subsidy in India: Its Components, Trends, Causes and Reforms for Public Policy

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ABSTRACT

Food prices play an important role in the well-being of the poor and poverty reduction in developing countries. Therefore, there are government interventions in foodgrains markets in one form or another for several decades, starting during the Second World War. Government interventions can be either through direct participation as a provider or as a buyer (procurer) of foodgrains, or indirect participation in markets through taxes, subsidies, regulations, etc. The main objectives of these interventions are to ensure remunerative prices to the farmers in order to increase foodgrains production, improve access to food for economically vulnerable people, and stabilise foodgrains prices and availability in the country. This paper is an attempt to address some of the issues related to food subsidy in India. It deals with the components, magnitude and trends in food subsidy. It examines the main sources of food subsidy and factors affecting subsidy and discusses the policy options for containing food subsidy and draws out emerging issues for policy reforms.

Keywords: Food subsidy, Food prices, Poverty reduction, Public distribution system.

JEL: Q11, Q18, Q13, D40.

I

INTRODUCTION

Food prices play an important role in the well-being of the poor and poverty reduction in developing countries. Therefore, government interventions in foodgrains markets have existed in one form or another for several decades, starting during the Second World War. Government interventions can be either through direct participation as a provider or as a buyer (procurer) of foodgrains, or indirect participation in markets through taxes, subsidies, regulations, etc. In India, government intervention in foodgrains markets has a long history and it has passed through several phases (Chand, 2003). The main interventions started in the mid-1960s with the establishment of Agricultural Prices Commission (later on renamed as Commission for Agricultural Costs and Prices) and Food Corporation of India and have dominated India's foodgrains markets. The major forms of intervention by government include procurement of foodgrains at minimum support price/ procurement price, food stock management through storage and buffer stocks,

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distribution of essential foodgrains through public distribution system (PDS) at subsidised prices, direct as well as indirect intervention in internal and external trade and other legal controls on hoarding (Pal *et al*., 1993). The main objectives of these interventions are to ensure remunerative prices to the farmers in order to increase foodgrains production, improve access to food for economically vulnerable people, and stabilise foodgrains prices and availability in the country.

Although there has been a decline in the share of expenditure on food items in the last few decades but the poor consumers still spend a large share of budget on food in developing countries (Pinstrup-Andersen, 1985). For example, in India the proportion of expenditure on food items has declined by about 10 percentage points in rural areas and by about 16 percentage points in urban areas between 1987-88 and 2009-10 (NSSO, 2012) but bottom decile class of consumers (based on monthly per capita consumer expenditure) spends about 65 per cent of total expenditure on food items in rural areas and about 62 per cent in urban areas (Sharma *et al.*, 2012). The relative importance of individual food commodities in food budgets also varies among consumers, e.g., in case of poorest among poor (bottom decile), cereals account for more than 30 per cent of the food expenditures (36.3 per cent in rural and 30 per cent in urban areas), while in case of rich people (top decile expenditure group), cereals account for less than 20 per cent of food expenditure (16.2 per cent in rural and 11.50 per cent in urban areas). On the other hand, the share of high value products, namely, livestock products and fruits and vegetables is high, 46.6 per cent in rural areas and 44.6 per cent in urban areas. Therefore, the level of food prices is important determinant of their purchasing power. Even small food price increases may adversely affect the ability of poor consumers to meet their basic needs, including nutritional requirements. Wage goods prices also influence wages and employment in other sectors of the economy, and thus have impact on the urban poor (Pinstrup-Andersen, 1985). Because of the high budget share spent on food among both rural and urban poor, the negative impact of high food prices is much more severe among the poor than the rich people. Therefore, the role of the state in providing food subsidies to the poor consumers has been advocated for redistributive objectives, especially to ensure minimum level of food and nutritional security to all sections of the society and for accelerating agricultural growth. However, food subsidies are under increasing criticism because of their large impact on government budget deficits and inefficiency because it is generally argued that the benefits often do not reach the poor (Ali and Adams, 1996). This paper is an attempt to address some of the issues related to food subsidy in India. Section II deals with the components, magnitude and trends in food subsidy. The next section examines the main sources of food subsidy and factors affecting subsidy. The following section discusses the policy options for containing food subsidy and the final section summarises the key findings and emerging issues for policy reforms.

II

FOOD SUBSIDY: COMPONENTS, MAGNITUDES AND TRENDS

In this section we examine magnitude of food subsidy in India, its components and how it has changed over time. Food subsidy comprises two components, consumer subsidy and cost of maintenance of buffer/strategic buffer. The consumer subsidy is difference between economic cost (Minimum Support Price (MSP) plus procurement incidentals plus distribution costs) and the central issue price (CIP) of foodgrains under various Targeted Public Distribution System (TPDS), other welfare schemes and open market sales scheme (OMSS) under market intervention schemes. The economic cost consists of two elements: (i) cost of procurement, and (ii) cost of FCI operations involving handling, storage and transportation. Various components of economic cost, procurement costs/incidentals and distribution costs are shown in Figure 1.

Carrying costs of the buffer/strategic stock comprise freight, handling expenses, storage charges, interest costs and transit and storage shortages and administrative overheads.

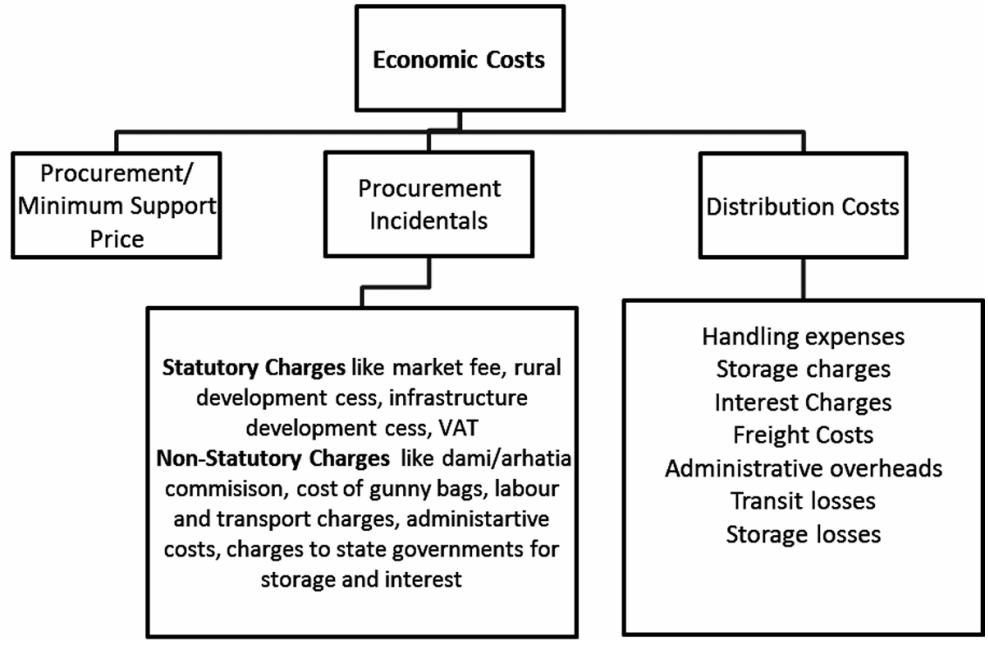


Figure 1. Components of Economic Cost

There are several ways to examine the trends in food subsidy and the most common indicator is the rate at which the subsidy is growing and whether rate of growth is accelerating, decelerating or stagnant. This is examined by looking at changes in food subsidy considering the average amount of food subsidy, annual

compound growth rate, subsidy as percentage of GDP and agricultural GDP and share in all budgetary subsidies. In order to capture the trends in shorter period we have calculated five yearly averages (Period I: 1991-92 to 1995-96, Period II: 1996-97 to 2000-01, Period III: 2001-02 to 2005-06, and Period IV: 2006-07 to 2011-12) and compound annual growth rates (CAGR) in subsidies and the results are presented in Table 1. Data on food subsidy refers to budgetary allocations under the heading "food subsidy" reported in the annual budget documents of the Central government.

TABLE 1. TRENDS IN FOOD SUBSIDY IN INDIA: 1991-92 TO 2011-12

Particulars	1991-92 to 1995-96	1996-97 to 2000-01	2001-02 to 2005-06	2006-07 to 2011-12	All Period
(1)	(2)	(3)	(4)	(5)	(6)
Total subsidies (` crore)	12075	21791	42509	131274	55691
Food subsidy (`crore)	4333	8912	23146	49070	22685
CAGR (per cent)	20.6	16.8	6.4	25.5	17.2
Percentage of total GDP	0.4	0.5	0.8	0.7	0.6
Percentage of agricultural GDP	2.1	2.5	5.1	5.3	3.8
Per cent of all budgetary subsidies	36.0	40.8	54.6	38.8	42.4

Sources: The authors' calculations from Government of India (2011a and 2012a) and Food Corporation of India (2012a).

It is evident from Table 1 that total subsidies in India have increased significantly in the post-reforms period, from ` 12075 crore in Period I to ` 131274 crore in Period IV (an increase of more than 10 times). Food subsidy accounted for over 42 per cent of all budgetary subsidies during 1991-92 to 2011-12. The food subsidy has witnessed a sharp uptrend since 1991-92 and increased from ` 4,333 crore during Period I to about ` 49,070 crore during Period IV, an increase of over 11 times in last two decades. As a result, its share in total central government subsidies under non-plan expenditure has increased from 36 per cent to 54.6 per cent between Period I and III and then declined to 38.8 per cent during Period IV because fertiliser subsidy increased at a much faster pace during this period. As a percentage of agricultural GDP, the food subsidy increased from 2.1 per cent to 5.3 per cent between Period I and IV, while as percentage of total GDP it increased from 0.4 per cent to 0.7 per cent during the same period. Food subsidy, which increased at an annual compound growth rate of about 20.6 per cent during 1991-92 and 1995-96, grew at a lower rate (6.4 per cent) during first half of last decade mainly due to low offtake of foodgrains and marginal increases in procurement prices. However, there has been a significant increase in food subsidy during the last six years and it grew at an annual compound growth rate of 25.5 per cent during 2006-07 and 2011-12 and food subsidy more than doubled from ` 23,146 crore to ` 49,070 crore during the corresponding period and is expected to be ` 85,000 crore as per 2012-13 revised estimates (Government of India, 2013). During the post-reforms period (1991-92 to 2011-12), food subsidy was, on an average, 0.6 per cent of total GDP, 3.8 per cent of agricultural GDP and 42.4 per cent

of all budgetary subsidies of the central government and grew at an annual compound growth rate of over 17 per cent.

There are two significant points to note, firstly, food subsidies have increased significantly in the post-reforms period and secondly, food subsidies as a share of GDP have also increased more during the last decade compared with the nineties.

The issue prices of foodgrains do not cover the total costs of procurement, stockholding and distribution and to cover the gap the government gives food subsidy. The trends in the average consumer subsidy on rice and wheat and share of consumer subsidy and buffer subsidy during the period 1991-92 and 2011-12 are given in Table 2. As shown in Table, the consumer subsidy has increased manifold in case of both wheat and rice during the last two decades. The average consumer subsidy on wheat for households covered under the Antyodaya Anna Yojna (AAY) has increased from ` 743 per quintal in Period III to about ` 1212 per quintal during Period IV and in case of Below Poverty Line (BPL) households, from ` 528 to about ` 997 during the corresponding period. In case of Above Poverty Line (APL) households, the average subsidy has more than doubled from less than ` 333 during the first half of 2000s to ` 802 in the recent period. Almost a similar trend was observed in case of rice, where the average subsidy for APL households increased by more than two times from ` 426 in Period III to ` 983 during Period IV and for BPL consumers from ` 664 to ` 1213 and in AAY from ` 929 per quintal in 2001-02 to 2005-06 to ` 1478 per quintal during the same period.

TABLE 2. TRENDS IN CONSUMER SUBSIDY ON RICE AND WHEAT (`/QUINTAL) AND SHARE OF CONSUMER AND BUFFER SUBSIDY IN TOTAL SUBSIDY IN INDIA: 2002-03 TO 2011-12

(`/*QTL*)

	Wheat (`/qtl.)			Rice (`/qtl.)			Share (per cent) in Total FCI subsidy	
Year	APL*	BPL	AAY	APL	BPL	AAY	Consumer	Buffer
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1991-92 to 1995-96	174	N.A.	N.A.	188	N.A.	N.A.	72.9	27.1
1996-97 to 2000-01	199	545	N.A.	174	643	N.A.	79.7	20.3
2001-02 to 2005-06	333	528	743	4275	664	929	81.8	18.2
2006-07 to 2011-12	802	997	1212	983	1213	1478	89.5	10.5
All period	397	720	971	469	878	1199	81.8	18.2

Sources: Government of India (2012a) and FCI (2012).

*The Targeted Public Distribution System (TPDS) was introduced in June, 1997 and The Antyodaya Anna Yojana was launched in December 2000, so data for 1991-92 to 1995-96 shows average for universal public distribution system.

The share of buffer subsidy in total food subsidy witnessed a declining trend, while the share of consumer subsidy increased from about 73 per cent in early-1990s to nearly 90 per cent in the recent period. The share of cost of carry/buffer subsidy varied from 10.5 per cent during Period IV to about 27 per cent in Period I.

The main reasons for increase in food subsidy include steep rise in minimum support/procurement prices in recent period, accumulation of large stocks of grains, rising economic costs of foodgrains, increase in the quantum of offtake of foodgrains under targeted public distribution system and other welfare schemes and unchanged central issue prices (CIP) of foodgrains (Government of India, 2012e). It is generally believed that high food subsidies are mainly because of inefficient functioning of Food Corporation of India. Therefore in order to identify the major causes of rising food subsidy, we have analysed various components of food subsidy and are discussed in the next section.

III

THE SOURCES OF RISING FOOD SUBSIDY

Food subsidies are one of the most prominent features of the Indian economy. Because of its socio-political importance to the economy, the food subsidies have been the subject of discussions. The recent spike in subsidies in general and food subsidy in particular is a growing policy challenge for the government. The food subsidy in India more than tripled between 2006-07 and 2011-12 and several factors have contributed to this increase. Some of these factors are directly influenced by policy decisions and some to efficiency/inefficiency of institutions/organisations involved in procurement, handling and distribution as well as inflation. In this section we examine the various factors affecting food subsidy in the country.

3.1 *Rising Economic Costs*

The economic cost of foodgrains to Food Corporation of India (FCI) is of strategic importance as it has direct impact on food subsidy. The minimum support price (MSP) is one of the major components of economic costs and accounts for about 70 per cent of FCI's economic cost of foodgrains while share of procurement incidentals and distribution costs is about 30 per cent (Sharma, 2012). However, FCI has no control on MSP as well as on large number of other cost items of procurement incidentals and distribution costs. These aspects are examined in this section to explore the possibility of containing/reducing subsidies.

3.1.1 *Rising Minimum Support Prices*

One of the important factors behind rising subsidy is high food prices in domestic and world markets. Although some of the factors are structural and cyclical but in the short term, a continuing trend of high and volatile food prices is likely in developing Asia and need urgent attention (ADB, 2011). As shown in Table 3, minimum support price of paddy (common) increased from ` 303 per quintal in Period I to ` 447 in Period II (an increase of 47.5 per cent), ` 548 in Period III (22.6 per cent increase

over Period II) and ` 891 in Period IV (62.6 per cent increase over Period III). Almost a similar trend was observed in the case of wheat, where MSP increased by about 62 per cent during the second half of 1990s, 25 per cent during first half of last decade and recorded a very steep increase (about 60 per cent) between Period III and IV.

TABLE 3. TRENDS IN MINIMUM SUPPORT PRICE/PROCUREMENT PRICES OF RICE AND WHEAT IN INDIA: 1991-92 TO 2011-12

Particulars (1)	1991-92 to 1995-96 (2)	1996-97 to 2000-01 (3	2001-02 to 2005-06 (4)	2006-07 to 2011-12 (5)	All period (6)
			Rice		
Procurement price (`/qtl)	303	447	548	891	564
CAGR (per cent)	11.4	7.8	2.0	11.4	7.0
Percentage of economic cost	47.2	44.3	44.8	49.9	46.7
Percentage of cost C2	116.2	112.0	108.1	118.2	113.4
Consumer subsidy as per cent of procurement price	46.2	91.3	107.4	130.9	95.7
			Wheat		
Procurement price (`/qtl)	308	499	624	992	624
CAGR (per cent)	12.5	10.4	1.1	10.9	7.6
Percentage of economic cost	59.9	62.0	66.5	69.7	64.8
Percentage of cost C2	114.5	124.9	121.0	128.7	122.4
Consumer subsidy as per cent of procurement price	57.1	64.9	74.0	99.9	75.2

Source: Same as in Table 1.

The compound annual growth rate in MSP witnessed a declining trend between Period I and Period III (from 11.4 per cent to 2 per cent in case of rice and 12.5 per cent to 1.1 per cent in wheat) but increased at a much higher rate during 2006-11 (11.4 per cent in rice and 10.9 per cent in wheat). The procurement price as a percentage of economic cost of rice increased from 44.3 per cent in Period II to 49.9 per cent in Period IV while in case of wheat it increased from about 60 per cent in Period I to 69.7 per cent in Period IV. Procurement price as a percentage of cost C2 in rice was the lowest (108.1 per cent) during Period III and the highest (118.2 per cent) in Period IV, while in case of wheat it was the lowest (114.5 per cent) in Period I and the highest (128.7 per cent) in Period IV. These results clearly show that procurement prices of wheat and rice have risen sharply after 2005-06. This massive increase in MSP has led to a rapid rise in food subsidy in the country. Consumer subsidy as a percentage of procurement price, which was 46.2 per cent in early-1990s has risen sharply and reached a level of 130.9 per cent in Period IV in case of rice and from 57.1 per cent to 99.9 per cent in case of wheat during the same period. These trends clearly show a widening gap between economic cost and central issue price of foodgrains in the country, leading to increase in rate of food subsidy, particularly during the last decade.

3.1.2 *Procurement Incidentals*

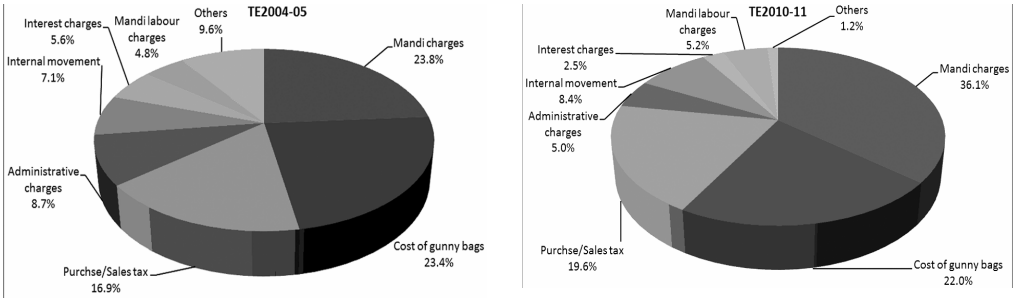
The procurement incidentals include statutory charges such as market fee, rural development/infrastructure development cess and VAT and non-statutory charges like dami/arhatia commission, mandi labour charges, cost of gunny bags, handling charges, internal transport and interest charges. Some of these charges are under the direct control of FCI and in some cases FCI has no role. Therefore, it is important to examine the trends in procurement costs, its components and their effects on food subsidy. The trends in procurement incidentals during the last two decades are given in Table 4 and changes in various components of procurement costs between triennium ending (TE) 2004-05 and 2010-11 are shown in Figure 2.

TABLE 4. TRENDS IN PROCUREMENT INCIDENTALS (PI) OF RICE AND WHEAT IN INDIA: 1991-92 TO 2011-12

Particulars (1)	1991-92 to 1995-96 (2)	1996-97 to 2000-01 (3)	2001-02 to 2005-06 (4)	2006-07 to 2011-12 (5)	All period (6)
			Wheat		
Procurement incidentals (PI) (`/qtl)	81.0	119.2	152.9	202.5	145.0
CAGR (per cent)	8.4	4.1	7.9	8.9	6.1
PI as percentage of economic cost	14.9	15.0	16.2	14.3	15.0
PI as percentage of consumer subsidy	46.9	38.6	33.2	20.6	33.5
			Rice		
Procurement incidentals* (PI) (`/qtl.)	46.0	67.7	51.4	267.3	119.2
CAGR (per cent)	22.0	8.1	-10.6	13.9	11.2
PI as percentage of consumer subsidy	36.1	17.6	8.9	22.8	20.7
PI as percentage of economic cost	6.7	6.7	4.3	14.9	8.5

Source: Same as in Table 1.

*For rice, from 2006-07 in procurement incidentals, weightage of levy rice incidentals is also included, therefore, are not comparable to earlier periods.



Source: FCI (2012).

Figure 2. Changes in Components of Procurement Costs of Wheat During TE2004-05 and TE2010-11

As can be seen from Table 4, procurement incidentals in case of wheat have increased from ` 81 per quintal in Period I to ` 119.2 in Period II and reached a level of ` 202.5 in Period IV, at a compound annual growth rate of 6.1 per cent between 1991-92 and 2011-12. It is interesting to note that procurement incidentals as a percentage of economic cost have remained more or less unchanged during the last two decades and witnessed a declining trend as percentage of consumer subsidy (46.9 per cent in Period I to 20.6 per cent in Period IV). In case of rice, procurement incidentals increased at an annual growth rate of 11.2 per cent in the post-reforms period. However, it must be noted that procurement incidentals of rice during Period IV are not comparable to the earlier periods as levy rice incidentals are also included in the recent years.

As regards procurement incidentals of foodgrains (per quintal), as is evident from Figure 2, State level statutory charges (mandi charges and purchase/sales tax/VAT) accounted for more than 55 per cent of the procurement incidentals during the TE 2010-11 in case of wheat. The share of these expenses has increased from about 40 per cent in TE 2004-05 to 55.7 per cent in TE 2010-11 but FCI has no control on these costs. There are large variations in statutory levies imposed by various State governments, e.g. in case of wheat the extent of such levies varied from 1.45 per cent in Maharashtra to 11.5 per cent in Haryana and 14.5 per cent in Punjab. In case of rice it varied from 1.5 per cent in Karnataka to 11.5 per cent in Haryana, 12.5 per cent in Andhra Pradesh and 14.5 per cent in Punjab (Government of India, 2012c).

The second important component of procurement costs is cost of gunny bags which accounted for 22-23 per cent of total procurement cost and it is mandatory for procurement agencies to use 50 kg new gunny bags only, therefore, FCI has no control on this component. The share of administrative charges, which are directly under FCI control, has declined from 8.7 per cent in TE2004-05 to 5 per cent in TE2010-11. Other components of procurement incidentals include internal movement, interest charges, mandi labour charges, custody and maintenance charges, etc., and account for about 15-20 per cent. Almost a similar trend was observed in case of rice (FCI, 2012).

The above analysis clearly shows that a large share (80-90 per cent) of procurement costs is not within the control of the FCI and can do little to reduce these costs. Therefore, it is unfair to blame the FCI for high procurement costs and thereby high food subsidy. There is a need to address issue of high statutory levies on foodgrains by different state governments to contain food subsidy. The high cost of gunny bags and shortage of quality bags during peak procurement season also requires urgent attention to reduce foodgrains losses and improve its quality, thereby, containing food subsidy.

3.1.3 *Distribution Costs*

The third component of economic cost is distribution cost consisting of freight, interest, handling and storage charges, transit and storage losses and administrative overheads, and typically constitutes about 16-17 per cent of the pooled economic cost of foodgrains.

The distribution cost of rice more than doubled between Period I and Period IV from ` 118 per quintal to ` 261 and in case of wheat from about ` 114 to ` 238 (Table 5). The distribution costs recorded the highest growth rate during 1996-97 and 2000-01 with CAGR of about 4.8 per cent during the last two decades. Distribution costs as a percentage of economic costs recorded a marginal decline while as a percentage of consumer subsidy, a significant decline in both rice and wheat. These results show some improvement in the efficiency of food distribution system in the country.

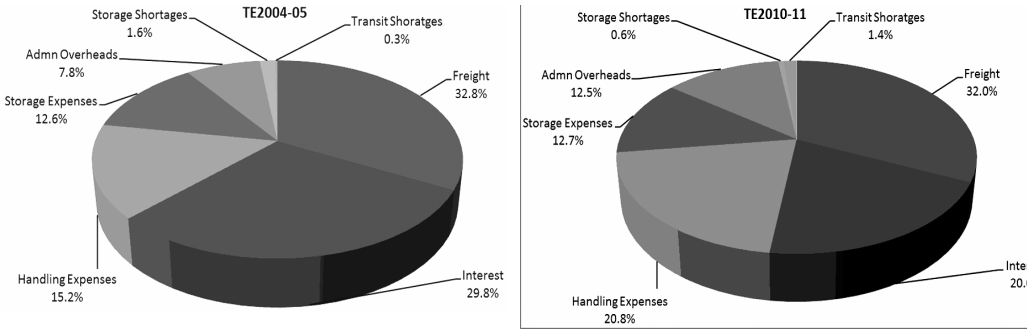
TABLE 5. TRENDS IN DISTRIBUTION COSTS (DC) OF RICE AND WHEAT IN INDIA: 1991-92 TO 2011-12

Particulars	1991-92 to 1995-96	1996-97 to 2000-01	2001-02 to 2005-06	2006-07 to 2011-12	All period
(1)	(2)	(3)	(4)	(5)	(6)
			Rice		
Distribution cost (DC) (`/qtl)	118	174.9	204	261	197
CAGR (per cent)	-0.5	0.0	23.8	-3.5	4.8
DC as percentage of economic cost	17.5	17.5	16.4	15.2	16.5
DC as percentage of consumer subsidy	87.5	46.7	34.3	23.7	44.9
			Wheat		
Distribution cost (DC) (`/qtl)	114	152	180	238	177
CAGR (per cent)	-2.9	3.8	18.0	-2.5	4.7
DC as percentage of economic cost	21.1	18.9	18.8	17.2	18.8
DC as percentage of consumer subsidy	64.8	48.0	38.5	24.9	42.1

Source: Same as in Table 1.

Among various components of distribution costs, freight charges have the largest share and account for about one-third of the distribution costs. Interest cost is the second largest component of distribution costs with an estimated share of about 20 per cent in TE2010-11 (Figure 3). The share of handling expenses has increased from 15.2 per cent in TE2004-05 to 20.8 per cent in TE2010-11 while the share of storage expenses has remained almost unchanged at about 12.5 per cent during the period.

Administrative expenses have increased from 7.8 per cent to 12.5 per cent during the last decade. It is interesting to note that storage losses, for which the FCI is generally blamed, have declined from 1.6 per cent in TE2004-05 to 0.6 per cent in TE2010-11. In contrast transit losses have increased during the same period. Large part of distribution costs like freight and interest charges are fixed by other agencies/departments/ministries and FCI has little control on these costs. However, FCI can make efforts to reduce handling and administrative expenses, which are



Source: FCI (2012).

Figure 3. Changes in Components of Distribution Costs of Foodgrains During TE2004-05 and TE2010-11

within its control. The decentralised procurement policy can help in reducing some of costs like handling expenses and storage and transit losses.

The above results clearly show that steep increase in Minimum Support Prices of foodgrains and high procurement incidentals and distribution costs (mostly outside the control of FCI) were responsible for rising economic costs and consequently food subsidy. Our findings in this respect are consistent with Swaminathan (1999) who reported that increase in procurement price was a critical factor in the increase in economic costs of rice and wheat during the 1990s.

3.2 *Central Issue Price of Foodgrains*

Another problem of rising food subsidies is constant central issue price of foodgrains during the last decade. The Targeted Public Distribution System (TPDS) was introduced in the country from June 1, 1997 in order to target poor households and also contain and limit food subsidy. The TPDS envisaged that every Below Poverty Line (BPL) family would be entitled to a certain quantity of foodgrains at specially subsidised prices. While BPL population was offered foodgrains at half the economic cost; the APL, who were not to have a fixed entitlement to foodgrains, were supplied grains at their economic cost (Government of India, 2005). The High Level Committee on Long Term Grain Policy (HLC) constituted by the Department of Food and Public Distribution in its report had recommended that APL price should be reduced to 80 per cent of economic cost and BPL price to 50 per cent of the economic cost excluding statutory levies (Government of India, 2003). In order to make TPDS more focused and targeted towards poorest segment of the BPL population, the "Antyodaya Anna Yojana" (AAY) was launched in December 2000 for one crore poorest of the poor families. The trends in Central Issue Price (CIP) of foodgrains for different categories of households are given in Table 6.

TABLE 6. TRENDS IN CENTRAL ISSUE PRICE (CIP) OF RICE AND WHEAT IN INDIA: 1991-92 TO 2011-12

(`/qtl)

Particulars (1)	1991-92 to 1995-96 (2)	1996-97 to 2000-01 (3)	2001-02 to 2005-06 (4)	2006-07 to 2011-12 (5)	All Period (6)
			Rice		
Average CIP_{APL}	453	835	802	795	725
Average CIP_{BPL}	-	404	565	565	522
Average CIP_{AAY}	-	-	300	300	300
CIP_{APL} as per cent of economic cost	69.5	81.6	65.7	45.7	64.4
CIP_{BPL} as per cent of economic cost	-	30.6	46.2	32.5	29.0
CIP_{AAY} as per cent of economic cost	-	5.1	24.6	17.3	12.6
CIP_{APL} as per cent of consume subsidy	365.0	206.5	138.3	71.3	180.6
CIP_{BPL} as per cent of consumer subsidy	-	71.5	97.5	50.7	57.4
CIP_{AAY} as per cent of consumer subsidy	-	10.2	51.7	26.9	23.5
			Wheat		
Average CIP_{APL}	339	603	610	610	544
Average CIP_{BPL}	-	291	415	415	382
Average CIP_{AAY}	-	-	200	200	200
CIP_{APL} as per cent of economic cost	64.8	74.4	65.1	43.7	60.9
CIP_{BPL} as per cent of economic cost	-	27.8	44.3	29.7	26.9
CIP_{AAY} as per cent of economic cost	-	4.7	21.3	14.3	10.8
CIP_{APL} as per cent of consumer s subsidy	206.6	188.9	134.9	63.4	141.3
CIP_{BPL} as per cent of consumer subsidy	-	67.5	91.8	43.1	52.8
CIP_{AAY} as per cent of consumer subsidy	-	10.9	44.2	20.8	20.0

Source: The authors' calculations from Government of India (2012a and 2012d) and FCI (2012).

As discussed in the earlier section, the MSP as well as economic cost of wheat and rice have increased significantly during the last decade but there has been no revision in CIP of foodgrains since July 2002 and that has led to steep increase in food subsidy. The central issue price of rice for APL is ` 795 per quintal, BPL ` 565 and Antyodaya Anna Yojna (AAY) is ` 300 since July 2002. In case of wheat the CIP is ` 610 per quintal for APL, ` 415 for BPL and ` 200 for AAY households since July 2002. In contrast, the wholesale price index has increased from 100 in 2004-05 to 172.3 in 2011-12 in case of rice and to 168.3 in case of wheat (Government of India, 2012e). The difference between CIP and economic cost of foodgrains has increased significantly during the last decade. For example, CIP of rice for BPL, which was about 46.2 per cent of total economic cost in first half of the last decade, declined to 32.5 per cent during 2006-11, while in case of wheat it declined from 44.3 per cent to 29.7 per cent during the same period. In case of APL households, the ratio

of CIP to economic costs has fallen from about 0.66 to 0.46 between Period III and IV, which is much lower than recommended (0.80) by the High Level Committee. The CIP as a percentage of consumer subsidy for BPL households has declined from 97.5 per cent in Period III to 50.7 per cent in Period IV for rice and from 91.8 per cent to about 43.1 per cent in case of wheat. In case of AAY, it has declined from 51.7 per cent to 26.9 per cent for rice and from 44.2 per cent to 20.8 per cent for wheat between Periods III and IV. This increasing gap between economic cost and CIP has led to unprecedented increase in food subsidy in the country.

3.3 *Increasing Procurement of Foodgrains and Carrying Cost of Stocks*

The foodgrains production which was hovering around 200 million tonnes up to 2005-06 reached a record level of 244.78 million tonnes in 2010-11 and is estimated to be over 257 million tonnes in 2011-12 as per Fourth Advance Estimates (Government of India, 2012d). Due to record production of foodgrains and steep increase in MSP during last few years, procurement of foodgrains has also increased significantly.

As on June 1, 2012, FCI was holding 82.4 million tonnes of foodgrains, the highest ever stocks, and reached a level of about 66.3 million tonnes on February 1, 2013, which is still much higher than buffer and strategic norms of 25 million tonnes of foodgrains as on 1st January. The long term trends in procurement of foodgrains are presented in Table 7. It is evident that there has been significant increase in procurement of foodgrains during the last few years. For example, procurement of rice increased from 11.6 million tonnes in Period I to 15 million tonnes in Period II (an increase of about 29 per cent in case of rice and 19 per cent in wheat). However, rice procurement increased by about 40 per cent and that of wheat by 63.5 per cent between Period III and IV. Procurement quantity as percentage of annual average buffer stock norms increased from about 138 per cent in early-1990s to 294 per cent in the recent period in case of rice and from about 117 per cent to 211.5 per cent in wheat. The procurement volume of rice accounted for 15 per cent of total production during Period I, and increased to 17.6 per cent in the second half of 1990s and reached a level of 32.7 per cent in Period IV. In case of wheat, procurement volume was about 17 per cent of total production during early-1990s, marginally increased to 17.1 per cent during Period II but recorded a significant increase during Period III and reached a level of 29.4 per cent in Period IV, with the highest procurement (33.7 per cent) in 2011-12. In terms of the share of procurement in the production of each crop, a higher percentage of wheat production was procured by government agencies in comparison to the share of rice during the 1980s and early-1990s but share of rice (29.8 per cent) increased during the 2000s compared with wheat (25.8 per cent). While rice accounted for most of the procurement up to mid-1960s, the share of wheat in the total procurement increased substantially from late-1960s and share of rice and wheat remained more or less the same during the 1970s and 1980s (Sharma,

2012). However, there was an improvement in the share of rice in total procurement of foodgrains during the 1990s and 2000s and accounted for 59.7 per cent of total procurement during the last decade. The procurement as a percentage of the marketed

TABLE 7. TRENDS IN PROCUREMENT OF RICE AND WHEAT IN INDIA: 1991-92 TO 2011-12

Particulars	1991-92 to 1995-96	1996-97 to 2000-01	2001-02 to 2005-06	2006-07 to 2011-12	All Period
(1)	(2)	(3)	(4)	(5)	(6)
			Rice		
Procurement (million tonnes)	11.6	15.0	22.7	31.5	20.7
CAGR (per cent)	2.8	11.4	8.9	6.3	6.9
Percentage of annual average buffer stock norms	137.9	169.9	244.4	294.0	215.5
Percentage of production	15.0	17.6	26.3	32.7	23.3
Percentage of marketed surplus	@	@	36.2	42.8	-
			Wheat		
Procurement (million tonnes)	10.2	12.1	15.1	24.7	16.0
CAGR (per cent)	16.8	19.8	-14.1	21.1	6.0
Percentage of annual average buffer stock norms	116.7	131.8	157.2	211.5	157.0
Percentage of production	16.9	17.1	21.7	29.4	21.6
Percentage of marketed surplus	@	@	32.1	42.7	-

Source: Same as in Table 6.

@Data on marketed surplus ratio was not available for the 1990s, so shares could not be computed.

surplus shows that more than 40 per cent of the marketed surplus in both wheat and rice is procured by the government, thus making the government one of the largest buyer. In some states like Punjab, Haryana and Andhra Pradesh, the state is virtually a monopsonist in the domestic market and so is the case with Chhattisgarh in case of rice and Madhya Pradesh in wheat. It has been argued that absence of competition is not healthy for long term efficiency in procurement operations as well as for the farmers (Government of India 2012b).

Since 2007-08, procurement of foodgrains (wheat and rice) by government has increased substantially but a serious problem of quality covered storage capacity has emerged. Total procurement of foodgrains has increased from 35.5 million tonnes in 2002-03 to about 62.3 million tonnes in 2011-12. The procurement of rice, which was about 16.4 million tonnes in 2002-03, reached a level of about 37.7 million tonnes in 2011-12. The procurement of wheat, which witnessed a declining trend in the first half of last decade, increased significantly during the last five years and reached a record level of over 38 million tonnes in 2012-13, which is around 9.8 million tonnes higher than the earlier record procurement in 2011-12 (FCI, 2013).

3.4 *Buffer Stock Norms, Allocation and Offtake of Foodgrains*

The government's buffer stock policy plays an important role in feeding Targeted Public Distribution System (TPDS) and other welfare schemes, ensuring national food security during bad agricultural years and stabilising prices during period of

production shortfall through open market sales (Government of India, 2012f). During 2001-02 and 2002-03, there were excessive public stocks of foodgrains, much above the minimum buffer stock norms, as we have today. The actual stocks of rice and wheat as on July 1, 2002 were 63 million tonnes against a minimum norm of 24.3 million tonnes (FCI, 2012a). The proponents of free market economy argued for free trade and unrestricted participation of private sector in foodgrains procurement and trade. The exports of foodgrains were liberalised and private sector was also allowed to procure foodgrains from the market. India exported about 15.1 million tonnes of wheat and rice during 2002-03 and nearly 10 million tonnes in 2003-04 (Government of India, 2012a). Consequently, the stocks started depleting and reached a level of 12.6 million tonnes against a minimum norm of 16.2 million tonnes on October 1, 2006, which forced India to import about 5.5 million tonnes of wheat during 2006-07 and 1.8 million tonnes during 2007-08, at a price much higher than domestic prices. These developments concerned the policy planners and concerted efforts were made to increase production as well as procurement of foodgrains.

During the period between January 2001 and July 2012, 10 out of 47 quarters wheat stocks were less than buffer stock norms and in case of rice in four quarters only, otherwise stocks were higher than buffer norms (Table 8). These excessive foodgrains stocks have also contributed to high food subsidy as there is very high positive association (r=0.96) between food stocks and carrying cost of stocks. For example when foodgrains stocks were low during 2005-06 and 2006-07, carrying costs were also low but as stocks started building up since 2007-08, the carrying costs also increased and reached a level of about Rs. 6336 crore during 2010-11 (FCI, 2012a). There have been large fluctuations in wheat stocks and it varied from about 48 per cent of buffer stock norms on July 1, 2006 to as high as 651 per cent in August 2002, while rice stocks are less volatile. The foodgrains stocks reached a record level of 82.4 million tonnes (32.2 million tonnes of rice and 50.2 million tonnes of wheat) in June 2012 and there is again a pressure from protagonists of free markets to open up foodgrains exports. However, it is a well-known fact that world agricultural markets are thin and hence highly volatile. According to a study by International

TABLE 8. ACTUAL STOCKS VIS-À-VIS BUFFER STOCK NORMS: JANUARY 2001 TO JULY 2012

Crop	Stocks < norms	Stocks 100-150 per cent of norms	Stocks 150-200 per cent of norms	Stocks 200-300 per cent of norms	Stocks >300 per cent of norms	Highest (per cent)	Lowest (per cent)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Wheat	10	7	13	10	7	651 (Aug. 2002)	48 (July 2006)
Rice	4	18	8	15	2	330 (Oct. 2001)	80.6 (Oct 2003)
Total	10	12	7	15	3	345.4 (Jan 2002)	71.9 (July 2006)

Source: FCI (2012a,b).

Monetary Fund in 2008, "*exports of food are much more concentrated across countries than imports and for the four main traded cereals (corn, wheat, rice, and soy) and total food, the number of net exporters is small compared to the number of net importers. Exports are also more heavily concentrated than imports and the largest five exporters account for 80-100 per cent of exports over four cereal groups compared to a range of 22-51 per cent for imports"* (IMF, 2008). Therefore, India needs to have a cautious and calibrated trade policy for agricultural commodities in general and foodgrains in particular. As the government is committed to implement National Food Security Bill (NFSB), it would need about 60-65 million tonnes of grains annually to meet the requirement.

The Public Distribution System (PDS) in the country has a very long history, dating back to pre-Independence era (Tarozzi, 2005). Originally conceived as an instrument to achieve food price stabilisation in few urban centres has gradually widened its reach and evolved into a major poverty alleviation programme with specific objective of providing food security to vulnerable sections of the society (Mooij, 1999). The trends in offtake of foodgrains under TPDS and various other welfare schemes are presented in Table 9.

TABLE 9. TRENDS IN OFFTAKE OF RICE AND WHEAT IN INDIA: 1991-92 TO 2011-12

Particulars (1)	1991-92 to 1995-96 (2)	1996-97 to 2000-01 (3)	2001-02 to 2005-06 (4)	2006-07 to 2011-12 (5)	All Period (6)
			Rice		
Offtake (MT)	9.3	10.1	20.8	27.4	17.4
CAGR in procurement (per cent)	-2.7	-5.5	21.3	5.6	7.6
Offtake as per cent of allocation	74.5	72.4	52.1	80.1	70.3
Offtake as percent of procurement	83.0	71.2	95.3	87.4	84.4
Offtake as per cent of average buffer stock norms	110.5	116.2	223.8	254.9	180.1
			Wheat		
Offtake (MT)	6.6	6.5	18.0	18.1	12.6
CAGR in procurement (per cent)	-12.4	-16.7	18.6	18.3	7.4
Offtake as per cent of allocation	65.7	62.3	49.4	76.5	64.7
Offtake as per cent of procurement	74.2	60.7	127.5	77.3	84.5
Offtake as per cent of buffer stock norms	75.8	72.3	186.5	153.4	123.5

Source: Same as in Table 6.

The average offtake of foodgrains was stagnant during the 1990s but increased significantly during the last decade from 9.3 million tonnes of rice in Period I to 27.4 million tonnes in Period IV and from 6.6 million tonnes to 18.1 million tonnes in wheat (Table 9). The offtake as a percentage of total allocation was the lowest (49.4 per cent in case of wheat and 52.1 per cent in rice) during 2001-05 but increased during the last 6 years. However, due to increase in procurement, offtake volume of foodgrains as a percentage of total procurement witnessed a declining trend between

Period III and Period IV, from 95.3 per cent to 87.4 per cent in rice and 127.5 per cent to 77.3 per cent in wheat. The average offtake in case of wheat reached a level of 88 per cent and in case of rice 95.2 per cent during 2010-11. However, there was some decline in offtake of both rice and wheat (82.5 per cent in wheat and 93.1 per cent in rice) during 2011-12. Table 9 further shows that offtake as percentage of annual average buffer stock norms has increased significantly in both rice and wheat during the last two decades. Since the government incurs a huge subsidy (` 1619.2 on rice, ` 1237 for wheat for BPL and ` 1884 for rice and ` 1452 on wheat for AAY) on foodgrains distributed under the TDPS, increase in offtake of foodgrains leads to higher food subsidy bill.

3.5 *Determinants of Food Subsidy*

In this section we investigate the factors that influence food subsidy. There are several factors that affect food subsidy but we test the impact of main variables such as procurement price, procurement volume, procurement incidentals/costs, distribution costs, central issue price and offtake of foodgrains. George (1996) provides a description of various factors which influence food subsidy. The general estimating model used to examine the impact of major determinants on food subsidy is:

$$FS_t = a_0 + a_1 PP_t + a_2 PQ_t + a_3 PC_t + a_4 DC_t + a_5 CIP_t + a_6 OQRS_t + U_t$$

Where, FS_t is total food subsidy (` crore) in current prices; t denotes year

The following independent variables were hypothesised to influence the food subsidy either positively (+) or negatively (-):

Procurement Price (PP) = Weighted average of procurement price of rice and wheat (`/qtl) based on procurement quantity of rice and wheat (+)

Procurement Quantity (PQ) = Total procurement of rice and wheat in lakh tonnes (+)

Procurement Costs (PC) = Weighted average of procurement costs of rice and wheat (`/qtl) based on procurement volume and incidentals (+)

Distribution Costs (DC) = Distribution costs of foodgrains (`/qtl) (+)

Central Issue Price (CIP) = Weighted average of central issue price of rice and wheat (`/qtl) based on actual offtake and CIP of foodgrains for AAY, BPL and APL households (-)

Offtake Quantity ($OQRS_t$) = Average offtake quantity of foodgrains in lakh tonnes (+)

We have tried two alternative functional forms, namely, Linear and Cobb-Douglas. The results of Cobb-Douglas regression equation were used for interpretation as it was found better when compared with linear production function. We estimated the regression equation using annual time series data, from 1992-93 to

2011-12 using ordinary least squares (OLS) method and estimates are reported in Table 10.

TABLE 10. ESTIMATION RESULTS FOR DETERMINANTS OF FOOD SUBSIDY IN INDIA

(1)	Coefficient (2)	Standard error (3)	Rank@ (4)
Intercept	-3.1601*	2.9786	-
Procurement Price (PP)	0.9502***	0.3461	1
Procurement Volume (PQ)	0.5828*	0.3521	3
Procurement Costs (PC)	0.1947	0.3214	5
Distribution Costs (DC)	0.1954	3.6590	4
Central Issue Price (CIP)	-0.0452	0.2128	6
Offtake Quantity (OQRS)	0.4831***	0.1877	2
R^2	0.986	-	-
Adjusted R^2	0.961	-	-
F	78.2912***	-	-

***,**and* Significant at 1,5 and 10 per cent level respectively.

@Based on standardised coefficients (ignoring signs) of given coefficients x (s.d. of X_i/s.d of Y_i), where s.d. is standard deviation, X_i is i-th explanatory variable and Y is dependent variable.

The overall fit of the model is satisfactory as indicated by the value of R^2 (0.98) and the adjusted R^2 of 0.96. All explanatory variables used in the model had theoretically expected signs. The coefficient of procurement price (PP) is positive and significant at one per cent level, indicating that increase in procurement price increases food subsidy. The coefficient of procurement quantity (PQ) was also positive and significant at 10 per cent level. Similarly, procurement costs (PC) and distribution costs (DC) had positive but non-significant coefficient. The coefficient of CIP shows that food subsidy declines with an increase in central issue price (CIP) of foodgrains. The estimated coefficient of CIP was negative but non-significant. The coefficient of offtake quantity was positive and significant at one per cent level of significance. In terms of relative importance, procurement price was the most important factor affecting food subsidy, followed by offtake quantity and procurement volume. CIP turned out to be the least important factor in influencing expenditure on food subsidy and possible reason for this could be almost constant prices during the study period.

3.6 *Likely Impact of Alternative Policy Reforms on Food Subsidy*

The Targeted Public Distribution System (TPDS) which was introduced in 1997 with the objective of targeting the food subsidies to the poor and reducing fiscal deficit has been criticised for exclusion of a large number of deserving households due to problems associated with identification, exclusion and leakages and diversion of grains, etc. (Mane, 2006, Swaminathan, 2000, Dutta and Ramaswami, 2001 and Jha and Ramaswami, 2010). Without getting into the debate of merits and de-merits of TPDS and open-ended procurement policy, we analysed following policy reforms and impact of these reforms on change in amount of food subsidy:

1. PQ is equal to Average Annual Buffer Stock Norm + Quantity of Production, when Average Farm Harvest Price (FHP) is 'lower' than Average Cost A_2 plus cost of family labour used in farming of the foodgrains procured in major states.
2. PQ is equal to Average Annual Off take (OQ) + Quantity of Production when Average Farm Harvest Price (FHP) is 'lower' than Average Cost A_2 plus cost of family labour used in farming of the foodgrains procured in major states.
3. PP is equal to Average of Cost C_2 of cultivation of foodgrains procured in 'Various States'.
4. CIP is same for the APL and AAY families as that for the BPL families.
5. OQRS increases at the annual compound growth rate that is highest in one of the four Periods stated earlier. This is visualized considering that PDS is universal as well as foodgrains procurement by the State Governments is desirable.
   A. Impact of 1, and 3 to 5 stated above together on change in amount of food subsidy.
   B. Impact of 2, and 3 to 5 stated above together on change in amount of food subsidy.

The results show that option (A) would lead to a substantial reduction in subsidy bill (37.1 per cent under Scenario (A) and 45.3 per cent under Scenario (B), while reduction in subsidy is of lower order under option (B). Since average annual offtake of foodgrains has been higher than annual buffer stock norms, it is recommended that policy reforms option B may be implemented as it would reduce subsidy burden and also meet foodgrains requirements for various programmes including PDS as well as food security concerns.

TABLE 11. LIKELY IMPACT OF ALTERNATIVE POLICY REFORMS ON AMOUNT OF FOOD SUBSIDY

(` crore)

		Option A*		Option B**	
Year	Actual	A†	B‡	A	B
(1)	(2)	(3)	(4)	(5)	(6)
2009-10	58443	32403	28386	43748	40570
2010-11	63844	39248	34157	54057	50095
2011-12	72823	51067	44117	69738	64299
Average	65037	40906	35553	55848	51655
		(37.1)	(45.3)	(14.1)	(20.6)

Note: Figures in parentheses show percentage reduction in subsidy compared with actual amount of subsidy during TE2011-12.

*Option A: Impact of policy reform 1, and 3 to 5 stated above together on change in amount of food subsidy.

**Option B: Impact of policy option 2, and 3 to 5 stated above together on change in amount of food subsidy.

†Since there are no precise estimates of quantity of production sold (farm harvest price) below Cost A2 plus cost of family labour, assuming that about 10 per cent of rice and wheat production is sold below Cost A2+FL.

‡Assuming that 5 per cent of production is sold below Cost A2+FL.

IV

POLICY OPTIONS FOR CONTAINING FOOD SUBSIDIES

The food subsidy programmes play an important role in India's social safety net but have been widely criticised on several grounds such as that they benefit the non-targeted population, are highly inefficient, and lead to higher fiscal deficit. High inflation particularly food inflation has been a major challenge as food inflation has been in double digits in recent years. High food prices exert an upward pressure on inflation particularly in developing countries including India where such prices account for a major proportion of the inflation basket. For example, CPI weightage for food accounts for 56.5 per cent in rural areas and 35.8 per cent in urban areas at all-India level but is much higher for poor sections of the society, 69.15 per cent for agricultural labourers (AL), 66.77 per cent for rural labourers (RL) and 46.2 per cent for industrial workers in India (Government of India, 2011 and 2012f). These percentages are much higher in less developed States like Bihar (76.1 per cent for AL and 74.1 per cent for RL), Odisha (78.2 per cent for AL and 77.8 per cent for RL) and West Bengal (77.7 per cent for AL and 75.9 per cent for RL). To make things worse, when agricultural input subsidies are reduced to contain budget deficits, for example on fertiliser and other inputs, also leads to higher inflation. As food inflation affects the poor disproportionately, it is a major cause of concern for policy planners. In this section we discuss some of the policy reforms options to contain food subsidies.

4.1 *Decentralised Procurement: Promote Public-Public and Public-Private Partnership (PPP)*

There has been lot of discussion in policy circles about public-private partnership for promoting efficiency in agricultural sector. However, in food procurement and distribution system we believe that bringing more State governments on board (public-public partnership) would improve efficiency in the system and therefore reduction in food subsidy. The decentralised procurement policy was introduced in 1997-98 to encourage procurement in non-traditional States and coarse cereals, thereby extending the benefits of MSP to local farmers. This system was expected to improve efficiency of the Public Distribution System (PDS) and enable supply of various foodgrains more suited to local tastes for PDS as well as saving in transportation cost. Under this scheme, the State Governments undertake procurement of foodgrains on behalf of Government of India, and also store and distribute these foodgrains under PDS and other welfare schemes. The Central Government reimburses the entire expenditure incurred by the State Governments on the procurement operations (Government of India, 2012e).

Before introduction of decentralised procurement policy, procurement was highly concentrated in few States. For example in 1997-98, Punjab (64.1 per cent), Haryana (24.6 per cent) and Uttar Pradesh (6.6 per cent) accounted for over 95 per cent of total wheat procurement and Punjab (38.7 per cent), Andhra Pradesh (24.7 per cent) and

Haryana (8.1 per cent) contributed over 70 per cent of rice to the central pool. However, after introduction of decentralised procurement, rice procurement has become more diversified, e.g., the share of traditional states like Punjab, Andhra Pradesh and Haryana has declined from over 70 per cent to 55 per cent between TE2001-02 and TE2011-12 while the share of non-traditional states like Chhattisgarh, Odisha, West Bengal and Bihar has increased significantly during the period. The share of Chhattisgarh has increased from 6.7 per cent in TE2001-02 to 11.1 per cent in TE2011-12, Odisha from 4.9 per cent to 7.7 per cent, West Bengal from 1.3 per cent to 4.3 per cent and Bihar from 0.2 per cent to 3.3 per cent.

In case of wheat the share of Punjab has declined significantly from 52.5 per cent in TE2001-02 to 38 per cent in TE2012-13 while the share of Haryana has remained constant at about 25-26 per cent. Madhya Pradesh has increased its share from 3.2 per cent in TE2001-02 to 18.2 per cent during TE2012-13 and this steep increase in its share is mainly attributed to bonus (` 100/quintal) offered by the state government during 2012-13. The share of Uttar Pradesh, the largest wheat producing state in the country, has not increased during the last decade and the State has opted out of the decentralised foodgrains procurement system.

It is evident that rice procurement has become more diversified but wheat procurement is still concentrated in few states. Total procurement of rice from decentralised states has increased from about 2.7 million tonnes in TE2001-02 to 9.7 million tonnes in TE2011-12, at an annual compound growth rate of over 16 per cent. In case of wheat, procurement has increased only in Madhya Pradesh, from about 4 lakh tonnes in TE2001-02 to about 5.5 million tonnes in TE2012-13. In other states such as Chhattisgarh, Uttarakhand and Gujarat wheat procurement has not increased.

The above results clearly show that participation of States in procurement of rice has improved during the last decade but still there is a need to involve more states in procurement operations. For example, West Bengal, the largest producer of rice with estimated share of about 16-17 per cent of total rice production in the country, has less than 5 per cent share in total rice procurement and 9.7 per cent of total rice production is procured. The share of procurement (as per cent of total rice production) varied from less than 5 per cent in Karnataka (3.3 per cent), Jharkhand (2 per cent), Assam (0.2 per cent) to 80.9 per cent in Punjab, 71.4 per cent in Chhattisgarh, 68.8 per cent in Andhra Pradesh and 46.8 per cent in Haryana. In case of wheat, except Punjab (71.6 per cent), Madhya Pradesh (70.9 per cent) and Haryana (67 per cent), share of procurement is low (Rajasthan, 16.4 per cent, Uttar Pradesh, 10.6 per cent, Bihar, 7.5 per cent and Gujarat, 3 per cent). Therefore, there is a need to involve more states like Assam, Bihar, Karnataka, and Jharkhand in rice procurement and Rajasthan, Bihar, Gujarat and Maharashtra in wheat procurement. In addition, the share of coarse cereals in total procurement of foodgrains is negligible and has witnessed a declining trend during the last decade. For example, total procurement of coarse cereals has declined from about 3.4 lakh tonnes during the TE2003-04 to 1.9 lakh tonnes in TE2011-12. The efforts should be made to bring

more states in the fold of decentralised procurement as well as increase the basket of crops, mainly coarse cereals, in procurement operations with active participation of States. These efforts would reduce transportation and handling costs as well as improve storage and distribution efficiency.

There is a serious shortage of quality storage facilities/infrastructure and warehouse capacity available in the country in public, co-operative and private sector is about 108.75 million tonnes. The covered storage capacity available with FCI, Central Warehousing Corporation (CWC) and State Warehousing Corporations (SWCs) for storing foodgrains is about 60 million tonnes, which is not sufficient to meet the requirement and as a result, a substantial quantity of foodgrains is stored in Cover and Plinth (CAP) storage (Government of India, 2012a). In view of the need for increased procurement and storage of foodgrains to fulfill requirements under proposed National Food Security Bill, it is high time that additional modern storage capacity for foodgrains is created through private sector participation and public-private partnership models. Therefore, there is a need to promote public-public partnership (decentralised procurement) through effective involvement of more states in procurement operations and public-private partnership in augmenting quality storage capacity.

4.2 *Stop Open-Ended Procurement of Foodgrains*

The procurement of foodgrains is open-ended and government agencies purchase all the quantities offered by the farmers at government announced procurement price in many states. This open ended procurement policy has led to excessive stocks of foodgrains causing high procurement, distribution and carrying costs. During the mid-1960s to mid-1970s, government used to announce minimum support price (MSP) and procurement price (PP). The MSP was based on the variable cost of production (cost A2 plus cost of family labour used in production) and MSP was required to ensure farmers remain in business as long as their variable costs are covered and also to encourage farmers to adopt new technologies without fear of a price collapse if the output increased substantially (Desai *et al*., 2011). The procurement price (PP) was determined based on both the variable cost as defined above and the fixed cost of production. PPs were set above minimum support prices. But over time, the distinction between the two disappeared and in effect, the government purchased whatever quantity was offered at the announced procurement prices. Inevitably, this led to political pressure not only for raising procurement prices, and open ended procurement policy but also lowering standards for the grains to be procured. In order to contain food subsidy, the practice of using MSP must be restored in the context of higher risks associated with rapid production increases from the preferred technical change and MSP should be announced before the sowing season. Secondly, procurement of the needed quantity for TPDS and welfare schemes as well as for buffer stock should be undertaken at PP, determined based on both the

variable cost and fixed cost of production, and purchases by the government in excess of this quantity should be undertaken only if farm harvest price (FHP) fall below average cost A2 plus family labour. In recent years, with substantial increase in procurement price, foodgrains procurement has been much higher than buffer stock norms and average offtake volumes, resulting in an inevitable build-up of stocks and high carrying costs resulting in significant increase in food subsidy bill. It is clear that any inefficiency in FCI and/or increase in procurement prices, excessive stocks and unchanged issue prices would raise the subsidy cost, so restricting procurement based on actual requirement rather than open-ended procurement policy will help in reducing food subsidy burden.

4.3 *Periodic Increase in Central Issue Price*

Food subsidy is provided to meet the difference between economic cost of foodgrains and their sales realisation at Central Issue Prices fixed for Targeted Public Distribution System (TPDS) and other welfare schemes. In addition, the Central Government also procures foodgrains for meeting the requirements of buffer stock, so part of the food subsidy also goes towards meeting the carrying cost of buffer stock. The subsidy is provided to Food Corporation of India, for procurement and distribution of wheat and rice and for maintaining the buffer stock of foodgrains as a measure of food security. Under the scheme of decentralised procurement, State specific economic cost is determined by the Government of India and the difference between the economic cost and the Central Issue Price is given to the States as food subsidy. It is clear from the foregoing discussion that the difference between economic costs and CIP, which was about ` 5.33 per kg in 2001-02, increased to ` 16.19 per kg in 2011-12 for rice and from ` 4.34 per kg to ` 12.37 per kg for wheat for BPL households. The corresponding subsidies for AAY households are much higher (` 7.98 in 2001-02 and ` 18.84 in 2011-12 in case of rice and ` 6.53 in 2002-03 and ` 14.52 in 2011-12 for wheat), while in case of APL households are comparatively lower at ` 13.54 per kg in 2011-12 for rice and ` 10.41 per kg for wheat in 2011-12. The total cost of food subsidies that amounted to about 2.2 per cent of agricultural GDP during the 1990s increased significantly to about 5 per cent during the last decade. It is evident that any increase in procurement and distribution costs and/or increase in procurement prices would increase the subsidy bill at unchanged issue prices. Therefore, there is a need to increase CIP every year to contain food subsidy bill. The High Level Committee on Long Term Grain Policy had also recommended that APL price should be 80 per cent of the economic cost and for BPL 50 per cent excluding statutory levies. There is ample evidence that shows that Targeted PDS has failed and led to huge socio-economic costs due to the errors of exclusion and serious issues of leakages and inefficiency. Since the cost of a universal PDS is not very high, there is a need to have same CIP for APL, AAY and BPL households.

4.4 *Reduction in Procurement Incidentals and Distribution and Carrying Costs*

The pattern of changes in procurement price and handling charges (procurement and distribution costs) has clearly indicated that procurement prices have been primarily responsible for increase in consumer subsidy. The procurement price of wheat has increased from ` 700 per quintal in 2006-07 to ` 1285 per quintal in 2012-13, an increase of about 84 per cent, while procurement price of paddy has more than doubled from ` 620 in 2006-07 to ` 1250 in 2012-13. The changes in the handling cost show that it has gone up from about ` 450 per quintal during 2006-07 to about ` 602 per quintal during 2012-13 in case of wheat and from ` 483 to ` 785 per quintal for rice during the same period. The breakup of the procurement costs for TE2004-05 and TE2010-11 indicated that procurement incidentals have increased mainly due to increased share of statutory charges such as market fee, rural development cess, infrastructure development cess, and purchase/sales tax/VAT imposed by state governments and non-statutory charges like dami/arhatia commission, mandi labour charges and cost of gunny bags, which are not under the control of FCI. One of the options to contain rising food subsidy due to rising procurement incidentals could be to implement the recommendation of the High Level Committee and declare a procurement price inclusive of all expenses with a uniform maximum limit of allowance for State levies. In case of distribution costs, freight, interest and handling costs are the major components and accounted for more than 70 per cent of total distribution costs. Effective participation of state government in procurement and distribution of foodgrains can reduce freight and handling costs.

During the Period TE2004-05 and TE2010-11, the share of transit shortages has increased from about 0.3 per cent to 1.4 per cent of total distribution costs. The main factors responsible for transit loss in foodgrains are pilferage and theft en route, driage, multiple handling, poor quality of gunny bags, use of hooks on bags by labourers, spillage through wagon holes, and spillage at transhipment points. However, storage losses have declined significantly from 1.6 per cent during the TE2004-05 to 0.6 per cent during the TE2010-11, showing an improvement in storage efficiency. These losses are mainly due to loss of moisture, insect-pest and disease infestation, quality deterioration of stocks, rodents, spillage of grain from gunny bags, etc. Most of these losses can be controlled if scientific storage facilities are created in the country and private sector can play an important role in this aspect. The second element of food subsidy is the cost of carrying buffer stock, which FCI has to maintain as a measure of food security to guard against situations of scarcity of foodgrains and also to enable the Government to intervene effectively to stabilise market prices in time of price rise in the market. Carrying cost is influenced by the size of foodgrains stocks, expenses on storage and handling, interest on capital, freight, administrative overheads and storage loss. It is estimated that interest on capital accounted for the major share of the cost of carrying stock and the storage charges were the next important item. Since the government has adopted open-ended

procurement policy leading to excessive stocks during the last 5-6 years and that has led to increase in subsidy bill. There is a need to have need-based procurement rather than open-ended procurement of foodgrains. The above discussion clearly reveals that most of cost items are not within the control of FCI and are influenced by other institutions/organisations such as banks, warehousing corporations, railways, and State government. Therefore, it is unfair to blame the FCI for these inefficiencies.

V

CONCLUDING OBSERVATIONS

India's food subsidy system has been a major component of the social safety net for the poor, guaranteeing the availability of foodgrains at affordable prices, helping to reduce malnutrition and ensuring price stability in the country. The results highlight a number of issues in the food subsidy debate. The results show that food subsidy has grown very sharply in the post-reforms period (from ` 4333 crore in Period I to ` 49070 crore in Period IV), in fact, by more than 300 per cent in a period of just six years between 2006-07 and 2011-12. The food subsidy as a percentage of total GDP and agricultural GDP has also increased over the years (from 2.1 per cent of agricultural GDP in Period I to 5.3 per cent in Period IV). The share of buffer subsidy has declined while the share of consumer subsidy has increased during the period. The rising economic cost, mainly due to increase in procurement prices, high procurement and offtake of foodgrains and constant central issue price has been mainly responsible for increase in food subsidy. For example, procurement prices of rice and wheat have increased at an annual compound growth rate of about 11 per cent during 2006-07 and 2011-12 and this had led to significant increase in economic cost of rice from ` 1391 per quintal in 2006-07 to ` 2184 in 2011-12 and wheat from ` 1178 to ` 1652. Procurement incidentals, another important component of subsidy, have increased by about 6 per cent in rice and over 11 per cent in case of wheat. Under procurement costs, the component that contributed the most to food subsidy was statutory charges like mandi charges and purchase/sales tax/VAT, which vary from less than 2 per cent in some states to 14.5 per cent in States like Punjab. Distribution costs have increased by less than 5 per cent in both foodgrains. In addition procurement and offtake of foodgrains has also increased significantly during the last decade. The increase in procurement prices, open-ended procurement policy, high foodstocks, rising offtake and unchanged central issue prices have led to increase in food subsidy. However, most of these factors are beyond the control of FCI. While other components of food subsidy that are under the control of FCI (administration charges, storage losses, etc.) have shown some improvement during the last decade and there is still need and scope to improve efficiency in operations of FCI but that may not lead to significant reduction in the subsidy. The results of regression analysis clearly show that procurement price, offtake quantity and

procurement quantity are important determinants of amount of food subsidy. Therefore, appropriate steps are needed to contain/reduce food subsidy.

Government intervention in the form of procurement should be selective and quantity of procurement should not exceed average annual offtake at procurement price equal to Cost C2 and amount of production where average farm harvest prices fall below Cost A2 plus cost of family labour (original concept of MSP). In order to reduce leakages and corruption under TPDS, it is desirable to have same CIP for all households as that for BPL families. In addition, proactive steps are needed to encourage more states to participate in procurement and distribution of foodgrains including coarse cereals, private and/or public-private partnership in creating scientific storage facilities to reduce storage losses (both quality and quantity), and reduction in state-level statutory and non-statutory charges.

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REFERENCES

ADB (2011), "*Global Food Price Inflation and Developing Asia*", Asian Development Bank, Manila, Philippines, March, 2011.

Ali, S.M. and R.H. Adams, Jr. (1996), "The Egyptian Food Subsidy System: Operation and Effects on Income Distribution", *World Development*, Vol.24, No.11, pp. 1777–1791.

Chand, Ramesh (2003), *Government Intervention in Foodgrain Markets in the New Context*, Policy Paper 19, National Centre for Agricultural Economics and Policy Research (NCAP), New Delhi.

Desai, Bhupat M., Errol D'Souza, John W. Mellor, Vijay Paul Sharma and Prabhakar Tamboli (2011), "Agricultural Policy Strategy, Instruments and Implementation: A Review and the Road Ahead" *Economic and Political Weekly*, Vol. 46, No. 53, December 31, pp. 42-50.

Dutta B. and B. Ramaswami (2001), "Targeting and Efficiency in the Public Distribution System: Case of Andhra Pradesh and Maharashtra", *Economic and Political Weekly* Vol.36, No.18, May 5, pp. 1524–32.

Food Corporation of India (FCI) (2012), *Annual Report 2010-11 and earlier Issues*, New Delhi.

Food Corporation of India (FCI) (2012a), *Progressive Procurement of Rice during Kharif Marketing Season and Wheat during Rabi Marketing Season 2012-13 (as on 12/07/2012*), New Delhi.

Food Corporation of India (FCI) (2012b), *Month-wise Stock Position vis-a-vis Buffer Norms and Strategic Reserve for Last Ten Years (as on 1st of month*), New Delhi.

Food Corporation of India (FCI) (2012c), *Agency-wise Procurement of Wheat, Paddy and Rice during Last Five Years*, New Delhi.

Food Corporation of India (FCI) (2013*), Agency wise Procurement of Wheat and Paddy since RMS 2008-09* data accessed from http://fciweb.nic.in//upload/Procurement/Agency%20wise%20procurement_wheat_RMS%202008_09.pdf, on March 4, 2013.

George, P.S. (1996), "Public Distribution System, Food Subsidy and Production Incentives", *Economic and Political Weekly*, Vol.31, No.39, September 28, pp. A-140-A-144.

Government of India (2003), *Economic Survey 2002-03 – Report of the High Level Committee on Long Term Grain Policy*, Department of Economic Affairs, Ministry of Finance, Government of India.

Government of India (2005), Performance Evaluation of Targeted Public Distribution System, Programme Evaluation Organisation, Planning Commission, New Delhi.

Government of India (2011), *Consumer Price Index Numbers for Agricultural and Rural Labourers (Base: 1986-87 = 100), Annual Report 2009-10*, Labour Bureau, Ministry of Labour and Employment, New Delhi.

Government of India (2011a), *Agricultural Statistics at a Glance 2011*, Directorate of Economics and Statistics, Department of Agriculture and Cooperation, Ministry of Agriculture, New Delhi, March 2012, pp. 27-28.

Government of India (2012), *Expenditure Budget Vol. 1, 2012-13*, Ministry of Finance, New Delhi, p. 18.

Government of India (2012a), *Foodgrains Bulletin May 2012 & Earlier Issues*, Department of Food & Public Distribution, Ministry of Consumer Affairs, Food and Public Distribution, New Delhi.

Government of India (2012b), *Price Policy for Kharif Crops - The Marketing Season 2012-13:* Vol. I, Commission for Agricultural Costs and Prices, Department of Agriculture and Cooperation, Ministry of Agriculture, New Delhi, March, pp. 27-28.

Government of India (2012c), *Fourth Advance Estimates of Production of Foodgrains for 2011-12*, Agricultural Statistics Division, Directorate of Economics & Statistics, Department of Agriculture and Cooperation, Ministry of Agriculture, New Delhi.

Government of India (2012d), *Economic Survey 2011-12 and earlier Issues*, Department of Economic Affairs, Ministry of Finance, New Delhi.

Government of India (2012e), *Annual Report 2011-12 and earlier Years*, Department of Food and Public Distribution, Ministry of Consumer Affairs, Food and Public Distribution, New Delhi.

Government of India (2012f), *Consumer Price Index Numbers for Industrial Workers (Base: 2001 = 100), Annual Report 2010*, Labour Bureau, Ministry of Labour and Employment, New Delhi.

Government of India (2013), *Expenditure Budget Vol. 1, 2013-14*, Ministry of Finance, New Delhi, p. 18.

International Monetary Fund (IMF) 2008, *Food and Fuel Prices—Recent Developments, Macroeconomic Impact, and Policy Responses: An Update*, Washington, D.C., U.S.A. www.imf.org/external/np/pp/eng/2008/091908.pdf.

Jha, Shikha and B. Ramaswami (2010), *How can Food Subsidies Work Better? Answers from India and the Philippines*, ADB Economics Working Paper Series No. 221, Asian Development Bank, Manila, Philippines.

Mane, Rahul Prahlad (2006), "Targeting the Poor or Poor Targeting: A Case for Strengthening the Public Distribution System in India", *Journal of Asian and African Studies*, Vol.41, No.4, pp. 299-317.

Mooij, J. (1999), *Food Policy and Indian State: The Public Distribution System in South India*, Oxford University Press, New Delhi.

NSSO (2012), *Key Indicators of Household Consumer Expenditure in India, 2009-10 NSS 66th Round July 2009 to June 2010 and Earlier Issues*, National Sample Survey Office, Ministry of Statistics and Programme Implementation, Government of India, New Delhi.

Pal, Suresh, D.K. Bahl and Mruthyunjaya (1993), "Government Interventions in Foodgrains Markets", *Food Policy*, Vol. 18, No. 5, October, pp. 414-427.

Pinstrup-Andersen, Per (1985), "Food Prices and the Poor in Developing Countries", *European Review of Agricultural Economics*, Vol. 12, No. 1/2, pp. 69-85.

Sharma, Vijay Paul, Dinesh Jain and Sourovi De (2012), *Managing Agricultural Commercialization for Inclusive Growth in South Asia*, Policy Research Paper, Global Development Network (GDN), New Delhi, June 2012.

Sharma, Vijay Paul (2012), *Food Subsidy in India: Trends, Causes and Policy Reform Options*, Working Paper WP2012-08-02, Indian Institute of Management, Ahmedabad, August 2012.

Swaminathan, M. (1999), "Understanding the Costs of the Food Corporation of India", *Economic and Political Weekly*, Vol.34, No.52, December 25, pp. A-121- A-132.

Swaminathan, M. (2000), "Consumer Food Subsidies in India: Proposals for Reform", *Journal of Peasant Studies*, Vol.27, No.3, pp. 92-114.

Tarozzi, Alessandro (2005), "The Indian Public Distribution System as a Provider of Food Security: Evidence from Child Nutrition in Andhra Pradesh", *European Economic Review*, Vol.49, pp. 1305-1330.