

How Efficient is the Price Support Scheme (PSS) for Pulses, Oilseeds, Cotton and Copra?

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सत्यमेव परमो धर्मः

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ABSTRACT

In India price-support system is necessary on various accounts. Experience, however, suggests that minimum support prices (MSP) announced for 22 commodities are less defended for pulses, oilseeds, cotton and copra. Price support scheme (PSS) is often criticised as it is believed to crowd out private trade, it is associated with high social cost, and strengthens commodity price subsidy. To create evidence on the above, the PSS for non-cereals is evaluated with secondary information from the concerned Ministry and procurement agency. The study found that the B-C ratios of PSS operation for a bulk of non-cereals was more than one in the most of the reference years. The efficiency decreased in certain years when the international price of the commodity was low and the domestic market was less insulated. A comparison of PSS operation of non-cereals with cereals reported elsewhere showed that the former was more efficient than the latter. Available information did not support that PSS operation for non-cereals crowd out private trade in that commodity.

Keywords: Price support scheme, Minimum support price, B-C ratios, Crop insurance programmes.

1 INTRODUCTION

The role of an assured price to farmers for farm produce cannot be overemphasized. Apart from the sustainability of domestic production, this strategy is considered important for doubling the farmer's income by 2022. The farm distress is believed to be rooted in unfavourable price that farmers receive for their produce. However, development experiences, suggest that administered prices for pulses, oilseeds, cotton, and copra, unlike fine cereals, are less defended. Price intervention for these commodities is often criticized as it is considered inefficient and continuation of such policy places a large burden on society. Apart from these factors, the post-WTO framework for agriculture, too, does not approve of price support to farmers eventhough PSS is deeply concerned with sustainable agriculture production. The PSS is also found to retard the growth of private trade in the commodity. But, in a country like India, where significant spending of an average person is on food, food market cannot be left for private traders.

In this backdrop, this study evaluates PSS operation for non-cereals – a subject that has hardly been studied. Some studies (Sharma 2012, Swaminathan 1999) analysed the efficiency of PSS operation for fine cereals. Efficiency in PSS operation in non-cereals has never been reported. This study first assesses the reach of PSS operation in pulses, oilseeds, cotton and copra across time and space; subsequently, it presents the efficiency of PSS operation for non-cereals. The paper is organized into four sections. The next section (Section II) describes the kind of data and methods adopted in the present analysis. Subsequent sections (III) discuss PSS operation for pulses, oilseeds, cotton and copra across states between 2001 and 2017 and Section IV presents economics of PSS operation for different non-cereals. The final section (Section V) concludes and provides suggestions for the above study.

2 METHODOLOGY

The secondary information on the procurement of crops between 2001 and 2017 is obtained from websites of the Department of Agriculture, Cooperation and Farmers Welfare (DACFW), New Delhi. Information on the pulses was available for gram, arhar (pigeonpea), masur (lentil), moong and urad. Similarly, for oilseeds information was available for toria (mustard), groundnut, safflower, sesame and sunflower. The agencies involved in PSS operation for pulses, oilseeds and copra are the National Agriculture Cooperative Marketing Federation (NAFED), Central Warehousing Corporation (CWC), and National Consumers Cooperative Federation (NCCF). But the agencies other than NAFED have hardly ever undertaken PSS operation.¹ The present analysis is therefore based on the PSS operation of NAFED from 1999

¹ Information suggests that the NCCF had not procured any commodity till 2014. The CWC procured pigeon pea (tur) once in 2011; in subsequent years it stopped following refusal of the concerned Ministry and departments (Ministry of Consumer affairs, Department of food and public distribution, Government of India).

to 2012. The cost and return of PSS is the audited balance sheet of PSS operation of a commodity at the country level. The efficiency of PSS operation is worked out by calculating the benefit cost ratio of PSS. The benefit is the price received for procured commodities at the time of disposal; while the costs have two variants, cost of the procured commodity before entering the place of storage or godown and total cost of PSS operation (BC-tco). Therefore, the BC ratios in the present analysis are with respect to pre-godown cost (BC-pgc) and total costs of PSS operation (BC-tco).

The pre-godown cost is the most significant in procurement operation and consists of procurement price and incidentals in procuring the commodity from farmers. The total cost of operation consists of procurement price, procurement incidentals and disposal cost of the commodity. Procurement price is the MSP of the commodity. Procurement incidental consists of different statutory and non-statutory charges paid for procuring a commodity. The disposal cost consists of charges incurred in disposing or selling the procured commodity to destinations. The total cost of operation is equivalent to economic cost referred by Sharma (2012) and Swaminathan (1999). In the calculation of benefit- cost (B-C) ratio, the study ignores the time lag between commodity procurement and disposal, which is generally small (less than three months).

3 RESULTS AND DISCUSSIONS: EXTENT OF PRICE SUPPORT SCHEME FOR PULSE, OILSEEDS, COTTON AND COPRA

The procurement quantity of pulse, oilseeds, cotton and copra in PSS is presented in Table 1a and 1b. Table 1a illustrates the quantity of pulses and oilseeds procured from the states from 2001–02 to 2016–17. Similar state-wise information is not available for copra and arhar, therefore, information on these two commodities is presented separately in Table 1b. The implementation of PSS has varied across states and years. For instance, in 2007–2008 procurement of mustard was as low as 26 tons in Chhattisgarh, while it was more than 21 thousand tons in Rajasthan. Procurement not only varied across the states but also for a state across the years. For example, in 2002-2003 the quantity of mustard procured in Madhya Pradesh was 17,853 tons compared to only 163 tons in 2007–2008. This fluctuation in the quantity of procurement shows that in certain years heavy procurement was required to equalise the market price of a given commodity with MSP; other times relatively small quantity of procurement improved their market price. This trend explains the large variation in the procurement of pulses and oilseeds shown in Table 1a and 1b.

Table 1a and 1b clearly show that PSS procurement for pulses (gram, moong, lentil and urad) were generally lower than oilseeds. Pulses probably required less of government intervention in regulating the market price. For example, in arhar (pigeonpea) procurement

was meagre and localised as compared to mustard.² A significant amount of procurement of mustard in Delhi in 2001-02 probably indicates resale of mustard purchased from farmers at a price lower than the MSP. Such irregularity is difficult to detect from secondary information. Processing facilities appear to be more important in procurement of oilseeds.

Procurement of soybean in certain states (Maharashtra and Chhattisgarh), but not in MP, presents an interesting point. Infact, soybean is produced primarily in Madhya Pradesh (MP), but this has never required procurement during the reference period.³ Similarly, PSS was required in Karnataka, but not in the adjoining regions of Northern Kerala (Malappuram region), where Marico (FMCG major) was involved in procurement. These examples contradict the fact that PSS operations are a hindrance to private trade activities in the region. Contrarily, evidence suggests that market price has never come below the MSP in region endowed with a vibrant trade related to the commodity.

A glimpse of PSS operation in reference year indicated that procurement increased in certain years (2002-03, 2007-08, 2009-10). Infact, the price for these agricultural commodities during these years was low across the world that had its effect on the prices in the domestic market. As a result, the market price of the commodity remained lower than the MSP and the need for government procurement under PSS increased. It is also evident from the tables that the procurement of certain commodities has been more frequent. For instance, in coconut, the PSS operation was required in most of the reference years (2001 to 2016-17) except 2004, 2014-15.

The variables considered for explaining procurement under PSS are production in the region, market development (regulated market) and infrastructure (rural roads) in the region (Annexure Table 12). The positive association between area of crop coverage and the importance of the state in production of a crop like mustard showed that PSS coverage was high in regions that exhibit relatively high production. Conversely, for certain crops like soybean, safflower and sunflower PSS operations were necessitated in some of the new production regions. The negative association of a regulated market with procurement under PSS showed that regulated markets and similar market related infrastructure (road) reduces the occurrences of PSS. In spite of the presence of a regulated market, PSS of a certain commodity (groundnut) is required in the important producing region (Gujarat) in the event

2 Procurement of arhar was in hundred and thousands of MTs (Table 1b) while production varied between 2.2 to 3.3 million MTs during the reference period; in contrast, procurement of mustard in the year 2001-02 was 3.3 lakh tons while production during the period was 50.83 lakh tons. Nevertheless, procurement of mustard in 2001-02 was required in Rajasthan, Gujarat, Haryana, MP, Delhi, UP and Punjab.

3 Madhya Pradesh produces around 60 percent of soybean in the country. ITC supported e-Choupal provides a fair price to soybean growers in the state. The activity of the private players in e-Choupal kind has raised the prices of soybean to the extent that PSS is not required in the state.

of production glut. The world price of the commodity was also depressed. Probably market infrastructure for commodity was also not sufficient.

To summarize, the price support programme is more desired in an open economy, as world prices for agricultural commodities are volatile. As world price volatility transmits to domestic market, it depresses domestic price, and the need for PSS arises. The extent of PSS operation for non-cereals varies across crops and years. It is positively associated with the importance of a region in the production of a commodity, and is negatively associated with market and infrastructure development. The need for procurement reduces if a region is endowed with suitable market, as in case of soybean in MP and coconut in North Kerala.

Table 1a List of commodities with states and years of procurement in Price Support Scheme (PSS)

State	Year	Qty Procured (Tons)	State	Year	Qty Procured (Tons)
Mustard			Gram		
Chhattisgarh	2002-03	129.569	Andhra Pradesh (AP)	2004-05	4070.347
	2004-05	85.741	Chhattisgarh	2004-05	43003.91
	2007-08	26.63		2005-06	10465.95
Gujarat	2001-02	32810.96	Gujarat	2004-05	5391.57
	2002-03	14619.59		2005-06	37.8
	2007-08	223.72	Madhya Pradesh (MP)	2004-05	155013.9
Haryana	2001-02	36016.27	Maharashtra	2005-06	92006.41
	2002-03	75306.26		2004-05	3712.572
Madhya Pradesh (MP)	2001-02	5983.5		2005-06	23.57
	2002-03	17853.43	Rajasthan	2004-05	45929.06
	2007-08	163.56		2005-06	4323.433
Punjab	2002-03	35.975	Uttar Pradesh	2004-05	23966.92
	2007-08	219.07		2005-06	539.634
Rajasthan	2001-02	249901.63	Masur		
	2002-03	352397.34	MP	2005-06	5457.609
	2004-05	18494.51	Moong		
	2007-08	21272.49			
	2014-15	1715	Karnataka	2003-04	14
Uttar Pradesh (UP)	2001-02	902.43	Andhra Pradesh	2003-04	2294.77
	2002-03	3815.22	Rajasthan	2003-04	179.86
Delhi	2001-02	3909.23	Urad		
	2002-03	3202.145			

Table 1a List of commodities with states and years of procurement in Price Support Scheme (PSS) (contd.)

State	Year	Qty Procured (Tons)	State	Year	Qty Procured (Tons)
Sunflower			Andhra Pradesh (AP)	2003-04	4986.127
Andhra Pradesh (AP)	2006-07	14.28	Assam	2002-03	932.6
	2008-09	4669.952		2003-04	2184.87
	2013-14	4383	Bihar	2002-03	1451.1
Chhattisgarh	2005-06	3.27		2003-04	5182
	2006-07	1068.39	Chhattisgarh	2002-03	258.086
Haryana	2008-09	1645.943		2003-04	2578.126
	2009-10	811.79	Gujarat	2002-03	3956.392
	2010-11	845		2003-04	19873.59
	2014-15	4153	Madhya Pradesh (MP)	2002-03	3334.65
	2015-16	4242		2003-04	1370.503
	2016-17	4949		2010-11	129.656
Karnataka	2005-06	3151.578	Uttar Pradesh (UP)	2002-03	7747.98
	2008-09	4598.76		2003-04	21757.7
	2012-13	1529		2004-05	529.74
	2013-14	4383	West Bengal	2002-03	218.988
Odisha	2010-11	845		2003-04	4944.603
	2013-14	4383		2008-09	476.979
	2014-15	4153	Ground nut		
	2015-16	4242	Andhra Pradesh	2001-02	14306.02
	2016-17	4949		2005-06	1026.64
Punjab	2006-07	1752.23		2013-14	340325
West Bengal	2006-07	1164.72	Gujarat	2001-02	116140.8
Soybean				2013-14	340325
				2016-17	71599
Andhra Pradesh (AP)	2005-06	132	Karnataka	2001-02	3225.99
	2006-07	7		2005-06	1172.2
Chhattisgarh	2005-06	761	Orissa	2013-14	340325
Maharashtra	2016-17	161.59		2005-06	115.72
Safflower				2013-14	830
				2014-15	6230
			Rajasthan	2001-02	27789.1

Table 1a List of commodities with states and years of procurement in Price Support Scheme (PSS) (contd.)

State	Year	Qty Procured (Tons)	State	Year	Qty Procured (Tons)
Safflower			Groundnut		
Andhra Pradesh	2005-06	4376.591		2013-14	340325
	2006-07	6292.762	Uttar Pradesh	2001-02	2031.65
Karnataka	2005-06	5970.791		2004-05	418.06
	2006-07	11530.579		2005-06	1229.39
Maharashtra	2005-06	21458.058		2007-08	40.25
	2006-07	32849.739		2013-14	340325
MP	2004-05	63	Maharashtra	2013-14	340325
Sesame					
West Bengal	2005-06	2162.27			
	2006-07	370.9			
	2007-08	91.53			
	2010-11	1885			

Table 1b List of states and years for procurement of copra and arhar under PSS

Year	Qty Procured (Tons)	State
Copra		
2001-02	57259	Andhra Pradesh, Goa, Karnataka, Kerala, Tamil Nadu
2002-03	8496	Goa, Kerala
2003-04	787	Andaman & Nicobar (A&N) Islands
2005-06	5144	Karnataka, Kerala, Tamil Nadu, A & N Islands
2006-07	20941	Karnataka, Kerala, Tamil Nadu, Lakshadweep
2007-08	27672 (milling copra) 5803 (Ball Copra)	Andhra Pradesh, Goa, Karnataka, Kerala, Tamil Nadu
2008-09	478 (milling Copra) 174 (Ball Copra)	Karnataka, Kerala, A & N Islands
2009-10	66750 (milling copra) 1250 (Ball Copra) 2666 (Spl. Copra)	Andhra Pradesh, Karnataka, Kerala, Tamil Nadu, A & N Islands, Lakshadweep, Andhra Pradesh Andhra Pradesh
2010-11	30600 (Milling Copra) 895 (Ball Copra)	Karnataka, Kerala, Tamil Nadu, Lakshadweep, A & N Islands Karnataka

Table 1b List of states and years for procurement of copra and arhar under PSS (contd.)

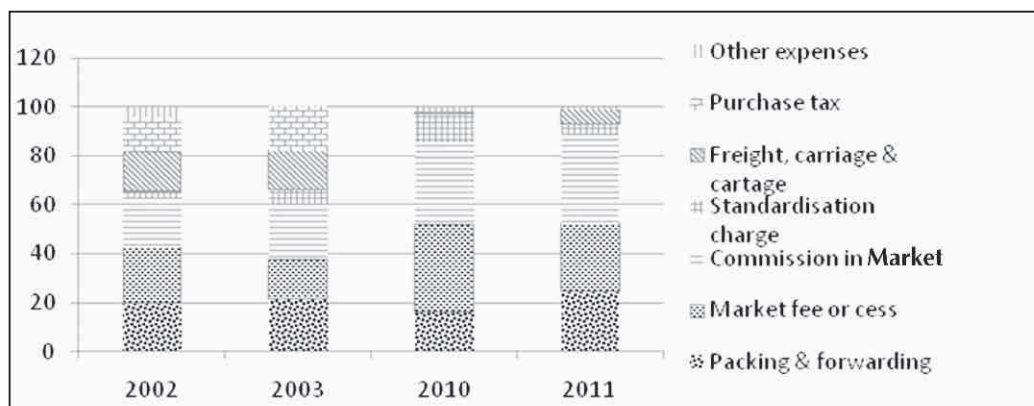
Year	Qty Procured (Tons)	State
2011-12	343 (Milling Copra)	A & N Islands
2012-13	66453 (Milling Copra)	Tamil Nadu, Lakshadweep, Kerala, Andhra Pradesh, A & N Islands
	9230 (Ball Copra)	Karnataka, Kerala
	49 (Spl. Copra)	Andhra Pradesh
2013-14	4328.71 (Milling Copra)	Tamil Nadu, A & N Islands, Kerala, Andhra Pradesh, Lakshadweep
	29535 (Ball Copra)	Karnataka
2016-17	4488.943 (Milling Copra)	Tamil Nadu, Andhra Pradesh
	10.219 (Ball Copra)	Karnataka, Andhra Pradesh
Arhar (tur)		
2001-02	3775	Andhra Pradesh, Karnataka, Delhi
2002-03	51	Andhra Pradesh
2010-11	291	Andhra Pradesh, Karnataka, Maharashtra

4 RESULTS AND DISCUSSIONS: ECONOMICS OF PRICE SUPPORT SCHEME (PSS)

This study examines the operational efficiency of PSS for non-cereals. The years of PSS operation vary across the states and crops. Since the cost of operation was not available separately for the states, the country level annual B-C ratios were worked out for each of the commodities and the same is presented in Table 2. The cost items were aggregated to reflect the cost of procurement and total cost of operation of PSS.

Procurement costs are the costs incurred during the procurement of a commodity at 'mandis' or similar procurement centres. This includes the cost of carrying procured commodity to the point of storage. The procurement cost thus consists of statutory and non-statutory charges in procuring and carrying the commodity to the point of storage (cost of the procured commodity just before entering into godown or storage). Procurement incidentals thus consist of the cost incurred in packaging and forwarding the commodity, market fee or cess, commission, freight and carriage from the place of procurement to storage. Example of different items of procurement incidentals is presented in Fig. 1 for urad for the year 2011.

Fig. 1 Procurement costs of urad in the selected years

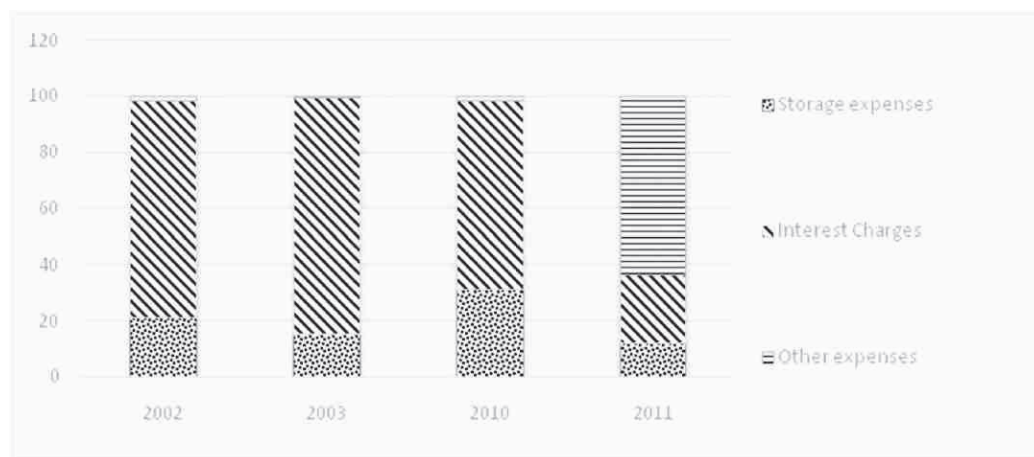


In the above fig., commissions include charges paid to commission agent in the market (if any) and also charges paid to State Federations of NAFED and Primary Agricultural Cooperative Societies (PACS) for procuring on behalf of NAFED. A commission of one per cent of MSP was provided to each of cooperative structures at the local level involved in the procurement of a commodity. The miscellaneous expenses in procurement include standardization charges, purchase tax, expenses incurred in survey and supervision of procured commodities, advertisement and publicity of procured commodities and at times drought relief tax. As is apparent from Fig. 1, a market fee often charged for procurement of a commodity was a statutory charge and this accounted for around 28 percent of procurement cost in 2011. The commission to the state agency was one of the most important non-statutory charge, followed by packaging and forwarding cost of the procured commodity. Interestingly, in this example of urad, freight, carriage and cartage believed to be important for value addition were accounted for only 6 percent of procurement cost of a commodity. Similar description of procurement costs of other non-cereals is presented in Annexure Table.

The disposal costs in PSS operation consists of costs incurred in storing the procured commodity and transporting the same from point of storage to final destination (as per the buyer's agreement). Various components of disposal costs were freight, storage, sales expenses, interest and bank charges. This is clear in the example of mustard for the year 2007 (Annexure Table 6.3). Figure 2 gives a description of the disposal cost of urad. The freight cost is the cost of transferring stored or un-stored commodity procured from one branch of NAFED to other. This also includes the carriage and cartage cost that consists of transport and handling charges in the sale of procured commodity and also transit insurance. The storage cost comprises of warehouse rent, insurance, fumigation and similar other expenses incurred in storing a commodity. The interest charge includes interest on money advanced to NAFED for PSS operation. In the earlier years (before 2002), government guarantee fee paid by

NAFED was included in interest charges. Disposal cost also includes cost incurred in undertaking miscellaneous activities related to the marketing of commodity. This comprised of brokerage and commission charges, sales tax, VAT, publicity expenses, sample expenses, packing and forwarding charges. The items of expenses incurred in selling a commodity varied across crops and commodities. Bank charges, audit fee and service charges were miscellaneous expenses in operations of PSS.

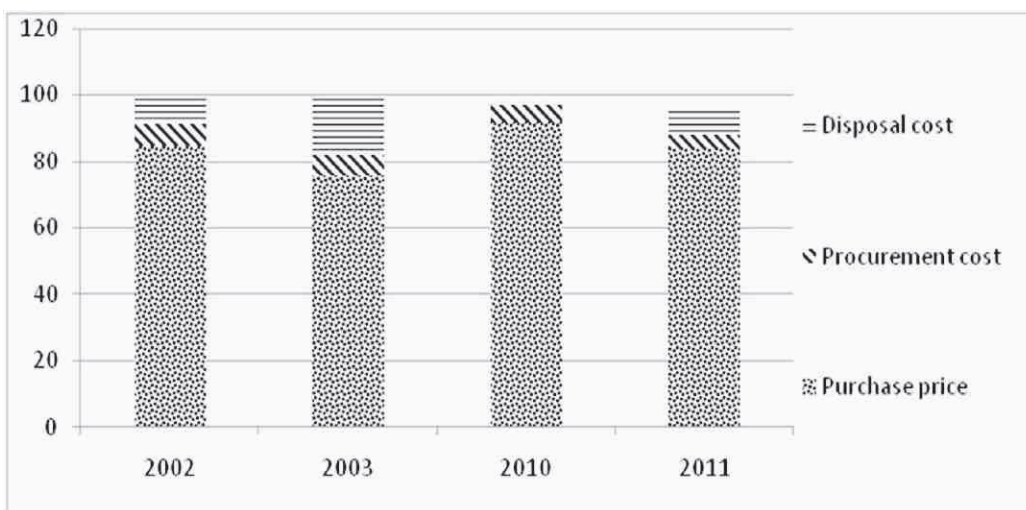
Fig. 2 Disposal Costs of Procured urad in the selected years



Some procured commodities are sold after processing. The processing charges for such crops are included in the disposal cost (Annexure Table 6.3.: Disposal cost of mustard). The audit fee is the cost incurred for hiring services of an auditor. This is fixed, irrespective of the quantity procured. Therefore audit fee at times becomes a major item of miscellaneous expenses. High miscellaneous expenses in disposal cost of mustard (see Annexure Tables 6.3) indicate the same. The cost of storage and interest for holding the stock of procured commodity in certain years accounted for more than 98 percent of the disposal cost of a commodity (see Annexure Table 1.3, an example of soybean). The sales proceeds in PSS operation is the amount earned after disposing or selling the procured commodity and clearing all incidental costs.

The study presents economics of PSS operation of different pulses, oilseeds, cotton and copra for years between 1999 and 2012. The economics of PSS is based on benefit-cost ratio, where costs are with respect to ex-godown cost and total cost of operation of PSS; the same is presented in the sixth and seventh column of Table 2. Whereas, the benefit of PSS operation in both the cases is the price of commodity realized in the market. The pre-godown cost does not include storage cost and the cost incurred in disposing of the procured commodity. While the total cost of PSS operation includes the latter cost as well.

Fig. 3 PSS operation costs in urad for the reference years



It is apparent from Table 2 that for many commodities benefit-cost ratio with respect to the pre-godown cost of a commodity (BC-pgc) has been more than one during the reference years. The B-C ratio greater than one suggests that price realized for procured commodity was higher than the cost of the commodity before reaching storage or warehouses (PGC). For a few commodities like sesame, the BC-pgc was less than one in many reference years. It was marginally less than one for moong and toria. In many commodities, the BC-pgc was fluctuating during the reference years. The BC-pgc was greater than one in milling copra in two of the eight years (2010 and 2012) and in ball copra in two of the four years (2008 and 2010). Additionally, the BC-pgc for commodities studied was one or more than one in half of the reference years: for example, in urad, in three out of six years of reference (2004, 2008 and 2010) BC-pgc was one or more than one. Similarly, the BC-pgc was one or more than one for groundnut and sunflower for majority of the reference years; for groundnut, in six out of the eight years BC-pgc was one or more than one; for sunflower, for seven of the eleven reference years the BC-pgc was one or more than one.

Though information on costs was not available for many commodities in 2001, the limited information suggests that the BC-pgc was less than one for most of the commodities during the year (2001). Incidentally, this was the year when the international price for agricultural commodities was low and the PSS operation (price of the commodity in the domestic market), to large extent, was influenced by the international price. The subdued benefit (product price) was not faced with similar behaviour of cost items, since procurement price (MSP) of commodity is a major item for procurement cost and the same is downward rigid unlike

world price (Jha and Mohapatra 2003)⁴. On a similar account, the BC-pgc was less than one for copra during many years of reference⁵. Nevertheless a significant part of coconut produced in the country are from the state of Karnatka, Kerala, Tamilnadu and market in these states fail to support high MSP. As a consequence, the need for PSS in Copra increased during the reference period.

Table 2 Economics of PSS Operation for Different Non-cereals (Pulse, Oilseeds, Cotton, and Copra).

Commodities	Year	Pregodown Cost of procured cmdt (PGC)	Total Cost of operations (TCO)	Price realized for cmdts	Benefit-Cost Ratio with		Procurement as per cent of TCO	Disposal as per cent of TCO
					Prego-down cost (PGC)	Total Cost of PSS (TCO)		
Lentil	2005	1648.4	1847.4	1802.8	1.1	1.0	6.7	9.3
Toria	2005	1792.8	1975.8	1527.9	0.9	0.8	6.5	7.3
Moong	2003	1506.5	1645.8	1337.6	0.9	0.8	8.3	6.8
Gram	2004	1518.9	1667.1	1446.6	1.0	0.9	7.2	7.5
	2005	1552.2	1685.1	1804.9	1.2	1.1	7.4	6.5
Urad	2002	1434.9	1572.8	958.9	0.7	0.6	6.7	7.3
	2003	1475.9	1803.6	1264.6	0.9	0.7	5.9	16.8
	2004	1522.6	1659.6	1753.0	1.2	1.1	6.8	6.8
	2008	2690.6	2814.4	2813.3	1.0	1.0	6.1	2.9
	2010	3575.2	3168.3	3824.4	1.1	1.2	5.6	1.2
Soybean	2011	3981.5	3947.5		0.9	0.9	4.6	6.9
	1999	923.9	1022.5	949.8	1.0	0.9	7.7	8.1
	2000	951.5	1099.1	1093.6	1.1	1.0	7.9	12.1
	2005	1109.7	1173.1	1172.5	1.1	1.0	8.5	3.1
	2006	1133.9	1372.4	1227.1	1.1	0.9	8.7	5.4
	2006	1133.9	1372.4	1227.1	1.1	0.9	8.7	5.4
Sesame	2005	1638.5	1723.4	1446.5	0.9	0.8	8.1	3.5
	2006	1693.5	1758.6	1552.2	0.9	0.9	8.2	2.2
	2007	1706.9	1783.1	1615.1	0.9	0.9	8.3	2.1
	2010	3030.6	3464.1	2044.3	0.7	0.6	5.2	11.2
Sunflower	1999	1171.4	1575.9	798.6	0.7	0.5	7.1	24.4
	2000R	1289.3	1585.7	1173.2	0.9	0.7	8.5	17.2
	2000K	1324.9	1475.8	1567.3	1.2	1.1	10.5	8.3
	2001R	1296.5	1407.6	1658.4	1.3	1.2	8.9	3.6
	2002	1309.6	1467.1	1628.3	1.2	1.1	8.4	7.5
	2004R	1341.5	1820.9	836.3	0.6	0.5	5.0	25.2
	2005R	1439.4	1753.5	1502.2	1.0	0.9	5.6	14.5
	2005K	1609.9	1731.8	1653.4	1.0	1.0	6.4	5.6
	2006R	1635.1	1810.5	1690.7	1.0	0.9	7.5	8.2
	2008-09	2369.6	2593.9	2071.6	0.9	0.8	6.0	7.2
2010K	2379.2	2512.5	2319.8	1.0	0.9	6.5	3.8	

4 For example, the MSP – one of the important constituents of the total cost of operation of PSS, accounts for around 80 per cent of total cost of operation of PSS for pulse, oilseeds, cotton and copra, though this varied across commodities and years of operation of PSS.

5 People concerned opined that with regional trade agreements (South East Asia Sri Lanka) the domestic price of the commodity is often depressed (below MSP).

Table 2 Economics of PSS Operation for Different Non-cereals (Pulse, Oilseeds, Cotton, and Copra) (contd...)

Commodities	Year	Pregodown Cost of procured cmdt (PGC)	Total Cost of operations (TCO)	Price realized for cmdts	Benefit-Cost Ratio		Procurement as per cent of TCO	Disposal as per cent of TCO
					with Prego-down cost (PGC)	Total Cost of PSS (TCO)		
Safflower	2000	1217.3	1372.1	1054.9	0.9	0.8	5.9	12.2
	2001	1332.7	1545.8	1237.9	0.9	0.8	8.6	12.2
	2002	1452.6	1606.5	1470.2	1.0	0.9	9.5	8.1
	2004	1625.7	2267.9	1202.7	0.7	0.5	5.5	26.4
	2005	1667.4	2061.5	1340.8	0.8	0.7	5.7	17.9
	2006	1736.6	1913.6	1514.9	0.9	0.8	5.9	10.9
	2007	1586.1	1743.3	1611.2	1.0	0.9	5.6	2.6
Groundnut	2000R	1282.8	1717.5	1678.1	1.3	1.0	9.2	24.3
	2000K	1343.3	1537.3	1176.2	0.9	0.8	8.1	10.9
	2001R	1451.5	1693.4	1181.9	0.8	0.7	13.6	12.6
	2001K	1441.7	1589.4	1556.1	1.1	1.0	6.4	7.8
	2004K	1602.7	1943.1	1639.1	1.0	0.8	10.4	10.9
	2005K	1685.9	1909.6	1748.3	1.0	0.9	8.7	10.4
	2006R	1724.7	1947.6	1779.3	1.0	0.9	10.5	10.1
2008K	2281.2	2463.6	2242.6	1.0	0.9	4.0	15.6	
Mustard	2000	1192.5	1520.6	1285.9	1.1	0.8	6.1	19.6
	2001	1289.5	1641.5	1418.4	1.1	0.9	5.5	20.2
	2002	1398.4	1645.1	1629.4	1.2	1.0	5.9	13.5
	2004	1711.7	2005.3	1849.7	1.1	0.9	5.6	13.2
	2005	1825.8	2197.7	1606.5	0.9	0.7	5.7	15.7
	2006	1842.9	2273.9	1871.0	1.0	0.8	5.6	17.7
	2007	1835.1	21183.3	2611.1	1.4	0.1	5.7	12.1
Cotton	2005	1909.8	2169.3	1869.0	1.0	0.9	4.0	10.6
	2008	2941.8	3361.9	2728.6	0.9	0.8	3.8	11.1
	2009	3133.9	3652.2	3612.5	1.2	1.0	7.0	12.5
Milling copra	2007	3885.3	4150.9	3445.5	0.9	0.8	6.4	4.0
	2007S	3529.9	4117.4	3219.9	0.9	0.8	4.4	12.1
	2008	4383.4	4520.8	3504.6	0.8	0.8	16.0	0.6
	2009S	4132.3	4623.1	3417.5	0.8	0.7	5.0	8.4
	2009	4721.8	5349.8	3924.3	0.8	0.7	5.1	9.5
	2010	4760.4	5083.9	4932.6	1.0	1.0	6.1	4.0
	2011	5295.5	5599.8	1446.5	0.3	0.3	13.8	2.9
2012	5335.6	5485.8		1.1	1.0	4.3	0.3	
Ball copra	2007	4112.2	5007.4	3468.9	0.8	0.7	5.4	15.8
	2008	4113.8	5733.4	4125.2	1.0	0.7	3.5	26.3
	2009	4971.3	5458.6	4253.9	0.9	0.8	5.0	6.6
	2010	4992.6	5273.3	4972.3	1.0	0.9	5.6	2.9

Note: K, R and S in the second column respectively refer to *Kharif* or *Rainy*, *Rabi* or *Winter*, and *Summer* seasons. In the table, one particular block is blank as related information is not available to work out the same.

The BC-pgc was less than one for sesame in all the years of reference. Further investigation into it revealed that sesame generally receives good price till the middle of January (*pausa sankranti*) but the process of the sale of sesame procured under PSS delays beyond the middle of January. Therefore, the benefits of PSS operation in sesame were generally weak. It may also be mentioned that the procurement agency has no control over time and place of sale of a procured commodity.

The BC ratio with respect to the total cost of operation was substantially lower than the BC ratio at a pre-godown cost of the commodity. The reason is obvious, the total cost of operation of the procured commodity was substantially higher than the cost of the commodity before entering godown/storage; while benefits in both the cases were same. The year-wise pattern of both the BC ratios was similar. In certain commodity like copra, the BC ratios have been less than one. The ratio indicates that benefits or price realized for copra in certain years was less than the cost involved in procuring the same. As discussed earlier, in an open economy the domestic price of a commodity is often depressed because of the low international price.

In sum, the costs of implementing PSS operation are procurement price and charges incurred in procuring and disposing of the commodity. The procurement price (PP) is the MSP of individual commodity announced by the Commission for Agricultural Costs and Prices (CACP). The cost of procurement of a commodity varies across years depending on situations, often beyond the control of the central agency. Some of these factors are the quantity of procurement, place and time of procurement, availability of godown with public warehouse corporations, regularity of PSS operation, and place of disposal. This aspect is examined in commodity-wise details of the cost of PSS operation in Jha 2016. The PSS guidelines of 2014 support central agency (NAFED) to take a business like decision on some of the above issues.⁵

4.1 Procurement Cost as Measure of Efficiency of PSS operation

Efficiency in the operation of procurement agency is also assessed by working out procurement incidentals as the percent of total cost of operation and the same is presented as column eight in Table 2. Figures in the table suggest that the process of procurement as a percent of the total cost of operation varies between six to nine percent of the total cost of PSS operation for the majority of commodities. In less than 10 percent of the cases, procurement as a percent of the total cost of operation exceeds 10 percent.⁶ Such a situation gradually

⁵Under PSS guidelines of 2014, in addition to service charge the central agency gets two percent over the profit earned in PSS operation.

⁶ In Table 2, in six out of 67 referred points (years and commodities), procurement cost exceeds 10 percent of total cost of operation.

arises when procurement happens in an area devoid of public storage and warehouse facilities in the vicinity.

As compared to procurement, disposal as a percent of the total cost of operation varies across commodities, from 1 to 26 percent. It is as low as 1.2 to 2.9 percent for some commodities in certain years, for example, urad in 2008 and 2010, sesame in 2006 and 2007, safflower in 2007. A low share of disposal to the total cost of operation shows the favourable situation in which a commodity is sold immediately after procurement. This reduces the cost of storage and cost of money (interest rate). In exceptional situation only, the cost of disposal as a percent of the total cost of operation exceeds 25 percent, for example sunflower in 2004 *rabi* season and ball copra in 2008. A high disposal cost suggests that the place of procurement was difficult. Many of these commodities are stored for a relatively long time before their sale. Insufficient post-harvest infrastructure in the region also increases disposal cost of a crop.

For some widely cultivated crops like groundnut and mustard, disposal as a percent of total cost of operation exceeds 20 percent in certain years, such as 2000, 2001 and 2004. Interestingly, these are the years with the low international price of agriculture commodities. A collation of observations suggests that there were difficulties in disposing of the procured commodity during these years, as domestic prices were depressed.

In summary, though many of costs related to PSS operation are beyond the control of procurement agencies (NAFED), the PSS schedule of 2014 attempts to liberate the central agency from government directions and follow commercial lines for decisions related to procurement and disposal of commodity. The schedule provides sufficient time to foster and sensitize local agency for PSS operation of non-cereals. The operational efficiency of the central agency like NAFED may improve as PSS guidelines of 2014 allow sale at a place that fetches a good price. This would reduce the price disparity across regions and may help markets to integrate.

Comparison of Procurement by NAFED with similar other Agencies'

One of the many reasons often cited against government procurement of agricultural commodities in PSS is the high cost of procurement. In this regard a comparison of the cost of procurement to total cost of operation (PTC) of NAFED with similar organisations will be revealing. In relation to FCI's procurement of cereals, Sharma 2012 showed that procurement as a percent of the economic cost for rice varied between 12.5 to 16.5 percent between 2007 and 2012. The corresponding figure for wheat varied between 13 to 17 percent. However, the present study found that the share of procurement in total cost of operation of NAFED with its sister organisations was less than 10 percent in majority of cases. The unfavourable situation (place and others) for procurement on certain occasions might have caused significantly

higher cost of procurement to total cost of operation. For example, in copra PTC was 16 and 13.8 in 2008 and 2011 respectively, incidentally on both occasions procurement has happened in Andaman and Nicobar islands (A&N island).

A comparison of these figures suggests that the PSS operation of NAFED for non-cereals is more efficient than the PSS operation of FCI for cereals. Nevertheless, the NAFED, unlike the FCI, does not receive any preferential treatment as that of access to storage from the public warehouse. The state and local level agencies involved in the procurement vary across states and commodities.⁷ The state-level agencies (KVSS and RAJFED) were charging 1 percent of MSP as their margin of procurement of non-cereals for NAFED.

4.2 Evidence on Price vis-vis Income support

In the post-WTO framework, price support for farmers is visualised as a product-based subsidy that needs to be minimized. Therefore, price supports are often not favoured in these years while income support measures are being encouraged. The crop insurance programmes as one of the income support measures is promoted in the recent years. However, in a developing country like India, the efficiency of Government expenditure in alternate development programmes should determine the course of the development programmes rather a policy on income and price support for farmers. This paper, therefore, extends calculation of B-C ratios of government expenditure for some crop insurance schemes in country namely National Agricultural Insurance Scheme (NAIS), Weather-based crop insurance programme (WCIP) and Modified National Agricultural Insurance Scheme (MNAIS).⁸

In crop insurance scheme benefit is the premium deposited by farmers for undertaking the crop insurance programme, while the claim paid to the farmers is the cost of crop insurance for the agency and government. In addition to claims, the Union and State governments also add to the farmers' premium in undertaking crop insurance. This is primarily to increase the viability of crop insurance for the agency. Thus premium paid by the government is also the cost of undertaking crop insurance programme in the country.

The BC ratios for crop insurance schemes are presented in Table 3. As apparent from the table, MNAIS started in 2011-12, but in terms of B-C ratio, there was marginal change (not an improvement) in MNAIS over NAIS. Though WCIP sounds better, the BC ratio for WCIP was

7 The state-level procurement agencies in Rajasthan for gram and mustard are the Rajasthan State Cooperative Marketing Federation (RAJFED) and Kray Vikray Sahkari Society (KVSS). Similarly, procurement of sunflower in Haryana is undertaken with Haryana State Cooperative Marketing Federation (HAFED) and Cotton Corporation of India (CCI) procures cotton in Andhra Pradesh.

8 Prime Minister's Fasal Bima Yojana was launched in January 2016. But there are not many reference points for calculation of B-C ratio, unlike other crop insurance schemes studied.

as low as 0.17. The BC ratios for different crop insurance schemes have never exceeded 0.37 indicating that only 37 percent of the cost incurred in the scheme is met by the premium submitted by farmers. These ratios are not unusual; in fact, crop insurance in many countries are sustained with government subsidy only.

Table 3 Benefit-Cost Ratios of different crop insurance schemes in India

Years	National Agricultural Insurance Scheme	Weather based Crop Insurance Scheme	Modified National Agricultural Insurance Scheme
2007-08	0.361	0.216	
2008-09	0.176	0.189	
2009-10	0.195	0.173	
2010-11	0.361	0.218	
2011-12	0.369	0.226	0.338
2012-13	0.209	0.212	0.261
2013-14	0.239	0.297	0.238

A comparison of B-C ratios of crop insurance schemes with the price-support programmes for non-cereals suggest fiscal performances of these schemes. Interestingly, the BC ratios for price support programme of non-cereals are often more than one, while it hardly exceeds 0.37 in various crop insurance programme. Therefore, a price support programme for pulses, oilseeds, cotton and copra as compared to crop insurance are more beneficial in the Indian context.

5 CONCLUSION AND SUGGESTIONS

In a developing country like India, price support to farmers is often criticized on the ground of its high cost of operation and similar other concern. Economics of PSS operation for non-cereals (pulses, oilseeds, cotton and copra) were worked out with benefit-cost (BC) ratios. The same was calculated with respect to pre-godown cost and total cost of operation. The results indicated that the PSS operation of NAFED for non-cereals was largely efficient, except the case of some commodities in certain years and states. In these years, the price (benefit) of the commodity was low on account of depressed international price. A comparison of PSS operations of non-cereals with that of cereals showed that procurement of non-cereals (arranged by NAFED) was more efficient than that of cereals managed by FCI. The regularity of PSS operation for non-cereals will further reduce many costs associated with the procurement and disposal of a commodity. Regularity of procurement would boost confidence in farmers about the effectiveness of the MSP, especially when the market price dips below MSP. Nevertheless, regularity of procurement with transparent criteria will strengthen cooperative structure at disaggregate levels.

In the present study economics of PSS operation was based on data till 2012. The PSS guidelines of 2014 would further improve its economics and address many procurement related problems. In disposal cost of PSS operation, the cost of storage and interest were important; any effort to reduce the time lag between procurement and disposal of non-cereals will decrease these costs. The regularity of PSS operation for non-cereals may encourage procurement agencies to arrange for profitable distribution of procured commodity in the country. Incidentally, the PSS guidelines of 2014 encourage profit earning behaviour of the central procurement agencies (NAFED and others) by paying them 2 percent of profit earned in PSS operation. A network for profitable disposal of the procured commodity would reduce price spread of commodities across regions and may establish a sustainable supply chain for the same.

The reach of PSS for non-cereals, unlike cereals, is wide and varied. The PSS is more required in an open economy as farmers in India are too poor to tolerate too much of price fluctuation in their produce. This can go a long way in resolving farmers' distress in country.

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Annexure Table 1.1 Brief account of PSS operation in Soybean during the selected years (in Rs/qtl)

S.No.	Particulars/Years	1999	2000	2005	2006
1	Procurement Price	845.00	865.00	1010.00	1020.00
2	Procurement Cost	78.99	86.46	99.72	119.40
3	Disposal Cost	82.75	132.04	35.49	74.45
4	Misc. Cost	15.76	15.56	27.91	158.51
5	Ex-Godown Cost (1+2)	923.99	951.46	1109.72	1133.90
6	Total cost of operation (1+---+4)	1022.50	1099.06	1173.11	1372.36
7	Sales realization	949.81	1093.59	1172.45	1227.13
8	Surplus/loss	-70.49	-0.90	6.74	-145.23
9	Amount procured (in qtls)	49177.85	545488.23	8855.87	72.72

Source: NAFED

Annexure Table 1.2 Percent share of various cost items in procurement of soybean in the selected years

Particulars/Years	1999	2000	2005	2006
Packing and forwarding	34.29	24.42	26.90	17.62
Market fee/cess	7.97	20.24	20.47	8.55
Commission	21.37	20.00	20.26	17.09
Freight	17.80	13.84	0.00	0.00
Carriage and Cartage	13.87	17.79	26.26	52.14
Miscellaneous expenses	4.70	3.71	6.11	4.61
Total Procurement cost	100.00	100.00	100.00	100.00

Source: NAFED

Annexure Table 1.3 Percent Share of various costs in the disposal of procured soybean in the selected years

Particulars of expenses	1999	2000	2005	2006
Freight	4.71	0.37	0.00	0.00
Storage	16.01	28.30	34.90	39.92
Interest	61.27	70.81	65.10	60.08
Miscellaneous	18.01	0.52	0.00	0.00
Total Disposal Expenses	100.00	100.00	100.00	100.00

Note: Miscellaneous expenses include taxes, processing, commission, survey and supervision charges
Interest includes interest by the state bank, state federation, NAFED head office and guarantee fee (before 2002)
Freight includes freight, carriage and cartage and transit insurance charges

Source: NAFED

Annexure Table 2.1 Brief account of PSS operation in sesame seed (in Rs/qtl) in the selected years

S.No.	Particulars/Years	2005	2006	2007	2010
1	Purchases price	1500.00	1550.00	1560.00	2850.00
2	Procurement cost	138.53	143.49	146.84	180.55
3	Disposal cost	59.83	37.97	37.75	386.91
4	Miscellaneous cost	25.03	27.11	38.44	46.59
5	Ex godown cost (1+2)	1638.53	1693.49	1706.84	3030.55
6	Total cost of operation (1+—+4)	1723.40	1758.56	1783.03	3464.04
7	Sales realization	1446.52	1552.22	1615.06	2044.29
8	Surplus/loss	-268.15	-187.01	53.39	-1257.00
9	Quantity procured (in qtls)	21622.75	3709.00	915.32	18846.16

Source: NAFED

Annexure Table 2.2 Percent share of various items in procurement cost of sesame in the selected years

Particulars/Years	2005	2006	2007	2010
Packing & Forwarding	24.43	24.10	23.05	27.60
Market Fee/Cess	10.83	10.80	10.62	15.79
Commissions	21.66	21.60	21.25	31.57
Carriage & Cartage	43.09	43.49	45.08	24.61
Survey & Supervision	0.00	0.00	0.00	0.44
Total Procurement Expenses	100.00	100.00	100.00	100.00

Source: NAFED

Annexure Table 2.3 Percent share of various costs in the of procured sesame seed in the selected years

Particulars	2005	2006	2007	2010
Storage expense	42.68	60.94	74.55	20.79
Interest charges	51.35	29.51	12.09	78.16
Miscellaneous expenses	5.98	9.54	13.37	1.04
Total Disposal Expenses	100.01	100.00	100.00	100.00

Source: NAFED

Annexure Table 3.1: Brief account of PSS operation in sunflower seed (in Rs/qtt) in the selected years

S.No.	Particulars/Years	1999	1999/2000	2000 K	2001R	2002	2004 R	2005R	2005K	2006R	2008/09	2010 K
1	Procurement price	1060.00	1155.00	1170.00	1170.00	1185.00	1250.00	1340.00	1500.00	1500.00	2215.00	2215.00
2	Procurement cost	111.39	134.72	154.91	126.46	124.62	91.50	99.42	109.93	135.08	154.61	164.23
3	Disposal cost	384.16	272.99	122.36	51.55	109.89	458.11	253.34	97.38	148.36	186.87	96.35
4	Misc. Cost	20.35	23.03	28.51	59.58	47.53	21.33	60.87	24.53	27.02	37.39	36.97
5	Ex-godown cost(1+2)	1171.36	1289.31	1324.91	1296.45	1309.62	1341.50	1439.42	1609.93	1635.08	2369.61	2379.23
6	Total cost of operation (1+---+4)	1575.90	1585.74	1475.78	1407.58	1467.04	1820.94	1753.52	1731.84	1810.45	2593.87	2512.55
7	Sales realization	798.55	1173.23	1567.32	1658.43	1628.27	836.30	1502.15	1653.37	1690.71	2071.57	2319.81
8	Surplus/loss	-702.86	-408.31	95.40	250.85	161.23	-974.04	-251.48	-77.16	-115.17	-518.05	-199.63
9	Quantity procured (In qtls)	36894.93	442615.96	195026.14	256.96	288.67	23165	336.32	31212.2	49996.1	137162	8443.18

Annexure Table 3.2: Percent share of various items in procurement cost of sunflower in the selected years

Particulars/Years	1999	1999/2000	2000 K	2001R	2002	2004 R	2005R	2005K	2006R	2008/09	2010 K
Packing & forwarding	44.74	26.18	22.98	36.24	40.30	30.60	37.16	31.73	35.79	31.81	39.32
Market fee/cess	9.42	5.40	1.73	20.05	20.50	13.56	2.88	27.29	12.43	15.24	13.49
Commission	18.68	17.15	15.11	18.50	19.02	27.32	26.96	0.00	18.61	24.37	26.45
Standardizations charges	0.00	0.00	0.00	0.00	0.00	15.30	0.49	0.00	3.59	0.00	3.30
Freight	0.85	0.00	0.00	7.61	0.00	0.00	0.00	0.00	0.00	0.54	1.88
Carriage & cartage	21.99	26.62	29.97	17.60	20.18	13.11	32.51	40.97	21.11	26.17	12.64
Taxes	4.29	24.34	30.21	0.00	0.00	0.00	0.00	0.00	8.37	0.06	0.00
Miscellaneous charges	0.03	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.81	2.92
Total Procurement cost	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Annexure Table 3.3: Percent share of various items in disposal cost of sunflower in the selected years

Particulars	1999	1999/2000	2000 K	2001R	2002	2004 R	2005R	2005K	2006R	2008/09	2010 K
Freight	1.63	0.23	0.03	6.81	39.23	0.18	0.00	0.00	37.25	0.39	0.84
Storage expense (Rs.)	26.30	23.95	28.27	69.69	56.86	6.78	35.53	39.67	22.12	31.14	43.94
Interest charges	69.09	75.48	71.68	23.50	3.92	93.04	64.47	58.95	38.01	65.97	54.59
Miscellaneous expenses	2.98	0.38	0.03	0.00	0.00	0.00	0.00	1.38	2.62	2.50	0.64
Total Disposal Expenses	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Note: K= Kharif, R= Rabi; Source: NAFED for all tables

Annexure Table 4.1 Brief account of PSS operation in safflower (in Rs/qttl) in the selected years

S.No.	Particulars/Years	2000	2001	2002	2004	2005	2006	2007
1	Procurement price	1100.00	1200.00	1300.00	1500.00	1550.00	1565.00	1565.00
2	Procurement cost	81.86	132.77	152.61	125.67	117.41	112.37	97.81
3	Disposal cost	167.35	188.42	129.10	597.29	368.33	209.48	44.34
4	Misc. Cost	22.92	24.63	24.78	44.99	25.72	26.83	36.15
5	Ex-godown cost(1+2)	1217.27	1332.72	1452.61	1625.67	1667.41	1736.57	1586.13
6	Total cost of operation (1+—+4)	1372.12	1545.82	1606.49	2267.96	2061.46	1913.58	1743.30
7	Sales realization	1054.87	1237.85	1470.21	1202.67	1340.78	1514.85	1611.23
8	Loss	311.41	304.80	134.89	1064.31	716.95	395.77	126.26
9	Quantity procured (in qtls)	65347.6	32017.15	20202.59	634.4	318054.4	506730.8	1173.58

Source: NAFED

Annexure Table 4.2 Percent share of various cost items in procuring safflower in the selected years

Particulars/Years	2000	2001	2002	2004	2005	2006	2007
Packing & forwarding	36.40	21.53	17.74	15.92	27.19	33.70	31.51
Market fee/cess	12.75	4.44	3.46	26.26	11.17	10.15	15.97
Commission	26.88	18.08	17.04	23.87	26.40	27.85	32.00
Standardization charges	0.00	0.04	0.90	11.28	7.33	0.31	0.00
Freight	14.79	0.00	0.00	22.28	0.00	0.00	0.00
Carriage & cartage	9.18	29.10	26.79	0.39	15.16	27.98	20.53
Taxes	0.00	26.81	34.07	0.00	12.75	0.00	0.00
Total procurement cost	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Source: NAFED

Annexure Table 4.3 Percent share of various costs in the disposal of procured safflower in the selected years

Particulars	2000	2001	2002	2004	2005	2006	2007
Storage expense (Rs.)	19.95	22.63	21.46	24.74	20.83	25.76	48.01
Interest charges	58.78	73.98	49.88	75.12	79.07	74.18	51.99
Miscellaneous expenses	21.27	3.38	28.66	0.14	0.10	0.05	0.00
Total Disposal Expenses	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Source: NAFED

Annexure Table 5.1 Brief account of PSS operation in groundnut pod (in Rs/qttl) in the selected years

S.No.	Particulars/Years	2000 R	2000K	2001 R	2001 K	2004 K	2005 K	2006 R	2008 K
1	Procurement price	1120.56	1220.00	1220.00	1340.00	1500.00	1520.00	1520.00	2100.00
2	Procurement cost	157.08	123.30	231.48	101.92	202.71	165.96	204.65	181.17
3	Disposal cost	416.93	167.86	213.77	123.30	211.60	197.53	195.25	131.99
4	Miscellaneous cost	22.93	26.13	28.11	24.17	28.73	26.10	27.71	50.37
5	Ex-godown cost (1+2)	1282.79	1343.28	1451.48	1441.73	1702.71	1685.96	1724.65	2281.17
6	Total cost of operation (1+—+4)	1717.50	1537.30	1693.36	1589.39	1943.04	1909.59	1947.60	2463.53

Annexure Table 5.1 Brief account of PSS operation in groundnut pod (in Rs/qty) in the selected years (Contd.)

S.No.	Particulars/Years	2000 R	2000K	2001 R	2001 K	2004 K	2005 K	2006 R	2008 K
7	Sales realization	1678.03	1176.15	1181.94	1556.02	1639.05	1748.26	1779.26	2242.63
8	Loss	39.47	351.07	495.70	22.43	303.99	146.56	168.34	217.50
9	Quantity procured (in qtls)	1559.28	287078.13	4521.55	1634936	4180.57	34282.77	1157.2	402.5

Note: K= Kharif, R= Rabi

Source: NAFED

Annexure Table 5.2 Percent share of various items in procurement cost of groundnut in selected in the years

Particulars/Years	2000 R	2000K	2001 R	2001 K	2004 K	2005 K	2006 R	2008 K
Packing & forwarding	49.99	40.86	24.36	38.02	26.48	33.84	20.84	49.33
Market fee/cess	7.21	9.68	5.29	9.91	18.50	10.95	7.42	28.98
Commission	14.27	19.79	10.54	26.13	7.40	15.03	14.85	11.59
Freight	0.00	0.00	23.55	3.15	5.46	3.44	0.00	2.61
Carriage & cartage	0.00	28.80	15.06	21.43	12.56	17.13	18.07	7.49
Purchase tax	28.53	0.84	21.08	1.17	29.60	13.14	0.00	0.00
Miscellaneous charges	0.00	0.02	0.00	0.19	0.00	6.47	38.81	0.00
Total Procurement charges	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Note: K= Kharif, R= Rabi

Source: NAFED

Annexure Table 5.3 Percent share of various costs in the disposal cost of procured groundnut pod in the selected years

Particulars	2000	2000K	2001 R	2001 K	2004 K	2005 K	2006 R	2008 K
Freight	0.00	0.00	0.00	0.17	2.03	0.76	0.00	3.26
Storage expense	63.33	7.90	39.61	35.32	33.95	44.07	82.50	46.03
Interest charges	36.67	66.31	60.39	62.58	63.14	54.41	17.50	42.89
Miscellaneous sales expenses	0.00	25.79	0.00	1.94	0.88	0.76	0.00	7.82
Total Disposal Expenses	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Source: NAFED

Annexure Table 6.1: Brief account of PSS operation in mustard (in Rs/qty) in the selected years

S.No.	Particulars/Years	2000	2001	2002	2004	2005	2006	2007
1	Procurement price	1100.00	1200.00	1300.00	1600.00	1700.00	1715.00	1715.00
2	Procurement cost	93.26	89.53	98.43	111.66	125.75	127.88	120.19
3	Disposal cost	298.06	330.98	221.58	265.18	344.16	403.18	255.46
4	Misc. Cost	29.29	20.98	25.10	28.42	27.81	27.84	27.73
5	Ex-godown cost(1+2)	1192.46	1289.53	1398.43	1711.66	1825.75	1842.88	1835.19
6	Total cost of operation (1+---+4)	1520.62	1641.49	1645.12	2005.25	2197.71	2273.90	2118.38
7	Sales realization	1285.95	1418.39	1629.45	1849.66	1606.50	1871.00	2611.72
8	Loss	-232.23	3.40	-4.82	-151.02	-575.73	-295.43	496.37
9	Quantity procured (in qtls)	2450562.51	3295240.28	4676295.2	185802.58	20841140.35	22018912.00	219054.70

Source: NAFED

Annexure Table 6.2 Percent share of various costs in procuring mustard seed in the selected years

Particulars/Years	2000	2001	2002	2004	2005	2006	2007
Packing & forwarding	35.53	34.46	38.93	32.37	31.74	37.16	41.79
Market fee/cess	18.07	19.20	19.77	22.97	19.81	14.72	14.26
Commission	23.59	26.77	26.31	28.60	26.19	26.49	28.46
Sample expenses	0.07	0.00	0.00	0.00	0.00	0.00	0.00
Standardizations charges	0.19	2.77	0.55	1.93	1.28	3.50	0.17
Freight	9.95	6.54	3.30	5.70	10.93	9.08	9.27
Carriage & cartage	11.69	10.04	10.68	8.39	8.95	8.52	6.04
Miscellaneous expenses	0.90	0.21	0.47	0.04	1.09	0.44	0.02
Total Procurement cost	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Source: NAFED

Annexure Table 6.3 Percent share of various costs in the disposal cost of procured mustard seed in the selected years

Particulars	2000	2001	2002	2004	2005	2006	2007
Freight	2.74	9.89	13.93	39.65	8.74	26.70	0.42
Storage expense	16.27	13.50	12.63	11.91	19.56	12.87	23.79
Interest charges	55.66	42.92	37.63	35.33	61.07	47.20	75.32
Processing Charges	10.13	13.08	14.03	0.00	6.56	8.84	0.00
Miscellaneous Sales expenses	15.19	20.51	21.78	13.11	4.08	4.37	0.47
Total Disposal Expenses	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Source: NAFED

Annexure Table 7.1 Brief account of PSS operation in urad (in Rs/qtl) in the selected years

S.No.	Particulars/Years	2002	2003	2004	2008	2010	2011
1	Purchases price	1330.00	1370.00	1410.00	2520.00	2900.00	3300.00
2	Procurement cost	104.99	105.95	112.65	170.60	175.17	181.55
3	Disposal cost	114.22	303.44	112.59	82.45	37.38	270.73
4	Misc. Cost	23.57	24.27	24.40	41.35	55.71	195.18
5	Ex godown cost	1434.99	1475.95	1522.65	2690.60	3575.17	3981.55
6	Total cost of operation (1+—+4)	1572.87	1803.56	1659.64	2814.41	3168.26	3947.47
7	Sales realization	958.93	1264.61	1753.00	2813.26	3824.40	0.00
8	Surplus/loss	-610.96	-533.11	113.08	1.19	169.71	-465.91
9	Quantity procured (in qtls)	178997.96	1523570.88	5297.49	4769.79	1296.56	15.68

Source: NAFED

Annexure Table 7.2 Percent share of various costs in procuring urad in the selected years

Particulars/Years	2002	2003	2004	2008	2010	2011
Packing & forwarding	19.88	21.34	17.25	17.28	15.90	24.34
Market fee/cess	22.79	16.44	31.29	14.77	36.42	29.09
Commission	19.87	22.19	12.52	29.54	33.11	36.32
Standardizations charges	2.78	5.86	0.00	0.00	11.84	4.50
Freight	7.15	4.25	0.00	0.00	0.00	0.00
Carriage & cartage	9.19	12.00	13.92	37.80	0.87	5.76
Purchase tax	13.83	17.89	25.03	0.00	0.00	0.00
Other expenses	4.50	0.02	0.00	0.61	1.85	0.00
Total procurement cost	100.00	100.00	100.00	100.00	100.00	100.00

Source: NAFED

Annexure Table 7.3 Percent share of various costs in the disposal of procured urad in the selected years

Particulars	2002	2003	2004	2008	2010	2011
Storage expense	21.35	15.46	26.13	26.20	31.50	12.44
Interest charges	77.03	84.10	71.65	73.29	67.12	23.91
Miscellaneous sales expenses	1.62	0.45	2.22	0.52	1.38	63.55
Total Disposal Expenses	100.00	100.00	100.00	100.00	100.00	100.00

Source: NAFED

Annexure Table 8.1 Brief account of PSS operation in milling copra (in rs/qttl) in the selected years

S.No.	Particulars/Years	2007	2007 Spl	2008	2009 Spl	2009	2010	2011	2012
1	purchases price	3620.00	3350.00	3660.00	3900.00	4450.00	4450.00	4525.00	5100.00
2	procurement cost	265.28	179.90	723.45	232.32	271.83	310.35	770.51	235.66
3	disposal cost	165.58	498.91	26.63	386.76	509.48	204.14	163.79	16.69
4	miscellaneous cost	100.11	88.55	110.71	104.01	118.49	119.45	140.52	133.52
5	Ex-godown cost	3885.28	3529.90	4383.45	4132.32	4721.83	4760.35	5295.51	5335.66
6	total cost of operation (1+—+4)	4150.98	4117.36	4520.79	4623.09	5349.80	5083.95	5599.82	5485.86
7	sales realization	3445.46	3219.95	3504.54	3417.46	3924.31	4932.59	1446.53	0.00
8	surplus/loss	696.56	880.59	1010.42	1185.39	1402.66	123.10	874.04	142.22
9	quantity procured (in qttls)	120099.45	156496	4895.76	26658	612815.76	309196.33	3367.04	17533.74

Note: Spl= Special grade

Source: NAFED

Annexure Table 8.2: Percent share of various costs in procuring milling copra in the selected years

Particulars/Years	2007	2007 Spl	2008	2009 spl	2009	2010	2011	2012
Packing & forwarding	15.17	31.45	7.11	35.91	16.73	16.14	8.35	19.52
Market fee/cess	10.22	18.62	0.00	16.79	7.70	5.17	0.00	19.91
Commission	20.32	18.62	8.13	16.79	31.74	24.15	11.75	39.82
Carriage & cartage	32.30	30.80	47.14	24.52	28.63	36.45	41.04	13.08
Freight	18.51	0.00	35.40	0.00	11.80	14.68	34.26	0.00
Miscellaneous expenses	3.48	0.51	2.22	5.99	3.40	3.41	4.61	7.68
Total procurement expenses	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Note: Spl= Special grade

Source: NAFED

Annexure Table 8.3 Percent share of various costs in the disposal of procured milling copra in the selected years

Particulars	2007	2007 Spl	2008	2009 Spl	2009	2010	2011	2012
Freight	0.16	24.33	3.76	0.00	0.00	0.00	0.00	0.00
Storage expense	24.47	11.24	90.79	30.65	25.18	38.97	42.96	76.63
Interest charges	73.31	47.79	5.45	69.35	74.82	60.14	51.30	23.37
Miscellaneous								
Sales expenses	2.06	16.64	0.00	0.00	0.00	0.89	5.74	0.00
Total disposal								
Expenses	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Note: Spl= Special grade

Source: NAFED

Annexure Table 9.1 Brief account of PSS operation in ball copra (in Rs/qttl) in the selected years

S.No.	Particulars/Years	2007	2008	2009	2010
1	Purchases Price	3840.00	3910.00	4700.00	4700.00
2	Procurement Cost	271.91	203.78	271.33	292.67
3	Disposal Cost	791.34	1505.36	357.42	154.70
4	Misc. Cost	104.13	114.28	129.81	125.93
5	Ex-Godown Cost	4112.15	4113.78	4971.33	4992.67
6	Total cost of operation (1+—+4)	5007.37	5733.42	5458.55	5273.30
7	Sales realization	3468.85	4125.23	4253.84	4972.32
8	Surplus/deficit	1499.48	1671.33	1195.29	268.96
9	Quantity procured (in qtls)	191570.45	1739.60	12498.00	8948.80

Source: NAFED

Annexure Table 9.2 Percent share of various cost items in procurement of ball copra in the selected years

Particulars/Years	2007	2008	2009	2010
Packing & forwarding	21.39	29.44	19.35	20.07
Market fee/cess	17.26	23.02	20.79	15.37
Commission	14.23	19.19	17.32	0.00
Carriage & cartage	41.65	28.34	39.37	36.49
Miscellaneous expenses	5.47	0.00	3.17	28.07
Total procurement expenses	100.00	100.00	100.00	100.00

Source: NAFED

Annexure Table 9.3 Percent share of various items in the disposal cost of procured ball copra during the selected years

Particulars	2007	2008	2009	2010
Freight	8.34	20.30	0.00	22.56
Storage expense	18.12	40.42	30.85	35.49
Interest charges	69.04	13.15	69.15	36.64
Miscellaneous expenses	4.51	26.13	0.00	5.32
Total disposal expenses	100.00	100.00	100.00	100.00

Source: NAFED

Annexure Table 10.1 Brief account of PSS operation in cotton (in Rs/qtl) in the selected years

S.No.	Particulars/Years	2005	2008	2009
1	Purchases Price	1822.93	2813.44	2878.20
2	Procurement Cost	86.90	128.43	255.68
3	Disposal Cost	230.11	374.05	455.94
4	Miscellaneous Cost	29.38	46.01	62.39
5	Ex-godown Cost	1909.84	2941.86	3133.89
6	Total cost of operation (1+—+4)	2169.33	3361.92	3652.22
7	Sales realization	1869.07	2728.59	3612.47
8	Surplus/loss	-294.80	-588.37	-39.56
9	Quantity procured (in qtls)	184152.19	18085370.54	13911.16

Source: NAFED

Annexure Table 10.2 Percent share of various items in procurement cost of cotton in the selected years

Particulars/Years	2005	2008	2009
Market Fee/Cess	40.54	22.60	11.82
Administrative expenses for procurement	0.00	43.81	0.00
Commissions	34.60	0.00	22.51
Transit Insurance	0.00	3.16	19.59
Standardization Charges	0.00	6.25	4.01
Carriage & Cartage	24.13	16.41	2.39
Miscellaneous Expenses	0.74	7.76	39.68
Total Procurement Expenses	100.00	100.00	100.00

Source: NAFED

Annexure Table 10.3 Percent share of various costs in the disposal of procured cotton in the selected years

Particulars	2005	2008	2009
Freight	0.02	0.78	1.78
Storage expense	9.83	14.82	14.54
Processing charges	42.60	36.63	28.88
Interest charges	46.10	45.43	54.28
Miscellaneous expenses	1.45	2.35	0.52
Total disposal expenses	100.00	100.00	100.00

Source: NAFED

Annexure Table 11 Net imports in value of some pulses, oilseeds and coconut between 2001-02 and 2017-18

	H S code	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09
oil seeds										
Safflower	120760	-200.52	-113.83	-1193.33	-2117.83	-915.86	-767.92	-1192.59	-2,145.88	0
Sunflower	1206	-475.57	-344.99	-582.12	-410.49	-1076.44	-724.49	-1071.99	-350.5	-2306.76
Mustard	120750	249.64	-1213.29	-1997.45	-1659.73	-1889.64	-1135.25	-1689.6	-6204.07	-11430.88
Soybean	1201	-7130.2	-525.45	-189.84	-28950.6	-353.48	-839.23	-632.54	-1190.14	-9040.89
Coconut Dessicated	080111	-24.7	-53.46	-145.91	758.79	2761.22	199.7	-72.17	-273.11	-458.87
Other coconuts	080119	-147.15	-111.19	-310.02	-349.43	-337.16	-578.07	-642.89	-1379.69	-3437.57
Copra	1203	-58.41	33.06	31.21	156.02	49.97	-113.73	-521.67	-539.53	-5,580.07
Cotton Linters	140420	-1,524.23	-782.89	-166.96	-1,663.41	-766.03	-2,333.88	-1,881.66	-4,277.60	-2,288.69
oil seeds	H S code	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Safflower	120760	0	0	0	0	-3,392.62	-2898.75	-2514.96	-2317.47	-2103.67
Sunflower	1206	-1163.4	-1960.9	-2727.74	-3955.91	-2984.09	-3591.15	-1656.61	-236.83	-1852.56
Mustard	120750	-3999.11	-4053.21	-12159.15	-13,324.36	-14255.44	-11457.62	-6201.42	-6258.91	-7422.42
Soybean	1201	-5747.45	-3882.49	-11228.84	-26094.89	-74179.49	-96922.58	-74616.56	-47538.38	-73534.55
Coconut Dessicated	080111	-457.85	-1,008.92	-2289.75	-1450.15	-3856.43	-2295.63	-3084.13	-14,451.24	-10898.77
Other coconuts	080119	-5,576.41	-9707.05	-19234.39	-20569.64	-27575.39	-35,763.63	-39,143.81	-47,715.37	-40992.2
Copra	1203	-9,113.03	-9,926.58	-11,380.60	-8,715.91	-7,243.52	-7890.63	-3441.13	-12,977.80	698.73
Cotton Linters	140420	-13,409.97	-24,808.29	-12790.39	-18,281.02	-18333.85	-18,266.79	-22,288.60	-24,634.64	-14131.06
Pulses	H S code	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09
Moong/urad	071331	5,006.98	5,679.26	6,135.21	32,988.20	13,056.62	17,141.85	105,413.87	85,636.41	126,113.84
Lentils (Mosur)	07134000	-36,738.65	-8,976.19	-8,355.67	-10,005.80	-25,967.23	-58,256.59	-21,580.60	50,343.04	14,151.91
Tur/ Arhar	07136000	0	0	0	0	0	0	0	0	0
Pulses	H S code	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Moong/urad	071331	316,357.8	230,921.5	179,913.9	251,598.5	273,675.6	359,569.56	437,266.6	442,538.51	171,115.13
Lentils (Mosur)	07134000	107,932.1	60,826.10	36,333.33	160,405.4	268,518.4	336,863.15	662,994.1	412,554.56	299,660.81
Tur/ Arhar	07136000	0	0	0	0	175,539.0	262,703.91	326,567.5	394,993.57	133,874.81

Note: Negative imports mean there has been exports in the commodity.

Source: <http://commerce-app.gov.in/eidb/>

Annexure. Table 12 Association of procurement (in PSS) with possible determinants during the reference period (2001-12)

Commodities	States	Importance of state in Prodn.	Road Infrastructure (Road per hundred sq km of geographical area)	Market Infrastr (APMC/ Net sown area in 000ha)
Mustard	Chhattisgarh, Gujarat, Haryana, MP, Punjab, Rajasthan, UP	0.9	-0.49	-0.58
Gram	AP, Chattisgarh, Gujarat, MP, Maharashtra, Rajasthan, UP	0.93	-0.53	-0.21
Safflower	AP, Chhattisgarh, Gujarat, MP, Maharashtra, Rajasthan, UP	0.99	-0.95	-0.54
Sunflower	Chhattisgarh, Karnataka, Punjab, Haryana, AP, West Bengal(WB)	0.98	0.17	-0.24
Groundnut	AP, UP., Karnataka, Orissa, Gujarat, Rajasthan	0.85	-0.28	0.53

Source: Computed

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