

The Economics of Foodgrain Management in India

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Foreword

In the rush to produce urgent policy documents and briefing notes that any government has to do, it is easy to let matters that may not be quite as urgent to go unattended. However, the not-so-urgent often includes matters of great importance for the long-run well-being of the nation and its citizenry. Research papers on topics of strategic economic policy fall in this category. The Economic Division in the Department of Economic Affairs, Ministry of Finance, has initiated this Working Paper series to make available to the Indian policymaker, as well as the academic and research community interested in the Indian economy, papers that are based on research done in the Ministry of Finance and address matters that may or may not be of immediate concern but address topics of importance for India's sustained and inclusive development. It is hoped that this series will serve as a forum that gives shape to new ideas and provides space to discuss, debate and disseminate them.

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The views expressed in this paper are those of the author and do not necessarily reflect the views of the Ministry of Finance or the Government of India.

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Abstract

The simultaneous occurrence of high food inflation and large foodgrain stocks in our granaries has been a matter of widespread concern in India. The aim of this paper is to understand the fundamentals of our foodgrain market and policy that leads to this situation and to suggest policies for rectifying this. The central argument of the paper is that, in creating a better foodgrains policy, it is imperative that we look at the entire system of food production, food procurement and the release and distribution of food. Trying to correct one segment of this complicated system is likely to end up in failure or, at best, have limited success. The paper argues that there are two different motives for foodgrain procurement by the state—to provide food security to the vulnerable population and to even out foodgrain price fluctuation from one year to another. Further, how we procure the food has an impact on how we release the food, and vice versa. Inspired by the sight of foodgrain going waste, it is often made out to be that our central problem is that of poor foodgrain storage. This paper disagrees with this popular view. While we no doubt should improve our storage facilities, it is important to be clear that this in itself will not lower the price of food. To achieve that we need to redesign the mechanics of how we acquire and release food on the market. The paper shows that industrial organization theory can shed light on this stubborn policy problem.

1. Introduction

Less than 15% of India's national income comes from agriculture and close to 60% of India's labor force lives off agriculture. There is little surprise in the fact that India's rural population leads impoverished lives.

From October, 2009, to March, 2010, the year-on-year food-price inflation announced every week hovered around 20%. It peaked in the week ending 28 November, and has been declining slowly and with some fluctuation since then. The overall food price index has actually held virtually steady from end November, 2009, when it was at 296, to early July 2010, when it was again at 296. The main increase in the food price index actually took place between June and November 2009. Since November the prices have been high but with little inflation. The food inflation figure of over 14% in June 2010 reflects the fact that food price in May 2010 is over 14% higher than it was in June 2009. While, as the above numbers illustrate, there are differences between changes in the inflation rate and changes in the level of food price index, it is undoubtedly true that food prices have been high since late 2009.

What is troubling is the amount of food stocks that we have continued to hold during this period of high prices. As Table 1 shows, our grain procurement remains fairly steady from year to year and, it may be added, that our reserves are way above our stated buffer norms. This should immediately make us suspect that we may not have succeeded in the role of evening out fluctuations in food production as effectively as it could have. This is a matter to which I will return at greater length later in the paper. Let it simply be noted here that, in December, 2009, with food-price inflation above 20%, it was decided to release wheat. Ever careful not to cut deeper into the government's coffers, it was decided to set the price of wheat above the Minimum Support Price (MSP) at which the Food Corporation of India (FCI) had acquired the wheat, with some add ons for storage and transportation. There are no surprises in the fact that there was no demand for

the wheat thus put on sale; the sales in Delhi were actually zero. Evidently, the strategy used for releasing foodgrains has scope for improvement¹.

Table 1. Aggregate Foodgrain Procurement, 2004-2010 (lakh tonnes)²

Year	Rice	Wheat	Coarse grains	Total procurement (Rice+Wheat+Coarse Grains)
2004-05	246.85	167.95	8.27	423.07
2005-06	276.56	147.87	11.51	435.94
2006-07	251.06	92.26	0.00	343.32
2007-08	287.36	111.28	2.03	400.67
2008-09	336.85	226.89	13.75	577.49
2009-10	297.12*	253.82	4.08*	555.08

*As of 9 July 2010. The reporting cycle for rice is October 1 to September 30.

Around May-June 2010 the international price of wheat was approximately 30% cheaper than wheat in India. In other words, India's residents were paying more than what they would have had to if they could access the international market or, even better, if our own grain was released on the market. Though, as this paper will clarify, the *mechanism* of the release is important and needs to be designed carefully to ensure that the impact on prices is substantial, the above table testifies to the fact that the *quantities* released have been quite inadequate.

The above four observations, in the four opening paragraphs, may appear at first sight to be disparate observations on the Indian economy. In reality, they have a common thread running through them. They illustrate a pervasive weakness that runs through India's foodgrains policy. In the name of helping the farmer and the

¹ The intricate relation between food price inflation, food price level and food stocks is described well in Panagariya (2010).

² The source of this and other tables that follow is the Ministry of Finance.

consumer, and likely even with the earnest intention of doing so, we have ended up creating a foodgrains policy framework that has not got high marks on either account. Many of India's poor households do not get adequate, nutritious food and many of our farmers remain impoverished, especially the small ones with no marketable surplus. In the name of helping our farming regions we have intervened and created special incentives which hold back large segments of the population in agriculture, who actually deserve to move out to industry and manufacturing. While India does need to increase agricultural productivity, creating wrong incentives can stall the natural process of industrialization and the emergence of labour-intensive manufacturing activities in some regions, by keeping disproportionately large numbers of people engaged in agricultural activity.

We have, rightly, tried to put in place a mechanism for acquiring food so as to subsidize the poor and have ready reserves should hard times come. Yet we need to work much harder to develop a good system to release the grain when those hard times come. This was the lament with which the well-known Abhijit Sen Committee Report (Abhijit Sen, 2002) began, but the problem continues to persist even today. It also has to be understood that, if too large a fraction of foodgrain output is procured by the state at prices fixed by the state, this will amount to the backdoor nationalization of grain trade.

Fortunately, there is now a new resolve to correct these defects in the system. We can see this in the various right-to-food campaigns in the country and the government's decision to enact a food security bill, which will enshrine people's right to a basic amount of food as a *legal* prerogative. Enshrining as a legal right what is impossible to fulfill is not a good idea since that debases the very idea of a right and promotes lawlessness by adding to the list of laws that are there only to be violated. However, the right to food is well within the powers of the Indian government to satisfy under most realistic scenarios and, moreover, this is a need that all civilized societies ought to try to fulfill. Hence, this is a move in the right direction and it provides an opportunity to improve our food distribution system.

Yet, despite all the good intention, we can get this policy wrong. It is critical to understand that it is not enough to throw money at the problem. The new bill

needs to be accompanied by a new mechanism for reaching support to the poor³. We have to design the entire foodgrains policy skillfully in order to ensure that we can fulfill the right to food that we are about to confer on our citizens, and at the same time ensure that our fiscal system is able to withstand the expenditure. This is in fact a slightly misleading statement since, if our fiscal policy does breakdown through a hemorrhaging deficit, then, sooner or later, our ability to fulfill the people's right to food will also falter.

The design of an effective and efficient foodgrains policy is not an easy task. It is not enough to be driven by determination. The popular saying, "Where there is a will, there is a way" is a lie, which has misled lots of youngsters. There are many objectives for which no matter how strong the will, there is no way. The intelligent policy maker realistically assesses the available options and then selects and designs a feasible programme. For economic policy one has to understand the restrictions placed on the policy maker by the laws of the market, and then design mechanisms that can steer through and utilize those laws instead of being undone by them.

The popular view, understandably alluring, that all the government has to do to support poor consumers and poor farmers is to direct subsidies at them, and make sure that anybody caught cheating the system and adulterating food is punished misses the important question: punished *by whom*? For that we have to rely on another layer of bureaucracy and police force, which will open another layer of opportunity for cheating the system.

It would be wonderful if people were innately honest and self-monitored their behavior; and government ought to educate the citizenry to develop these qualities. But to *assume* that they have these qualities when they do not is to risk designing a flawed mechanism that will be pilfered and adulterated, as indeed happens widely in our food distribution system. The recent report of the Justice Wadhwa committee (Wadhwa Committee, 2009) documents this at some length. A

³ This point is made very effectively in Ninan (2010). The article rightly points to the need to direct some of the zest that we have shown to the quantity to be given at subsidized rate to how this may actually be delivered. The decision concerning the quantity would be moot if we do not resolve the mechanism question. Dutta (2010a, p.4) rightly points to the concurrence of high prices and overflowing warehouses as "an absurd situation."

comprehensive study by Khera (2010) shows that 67% of the wheat meant to be delivered to the poor misses the target. In other words, to reach one kilogram of wheat to poor households we end up directing three kilograms of wheat at them.

In designing effective policy we have to recognize that the level of honesty varies from one society to another⁴, politically unpalatable though such a view may be⁵. We have to realistically assess the level of honesty among the enforcers of a society and then create systems that take account of this in laying out the mechanism through which the policy is to be administered.

The exasperation that our citizenry feels about foodgrain rotting in poorly maintained storage facilities is understandable⁶. However, the solution may not be as obvious as appears at first sight. Consider one popular demand, namely, that the government should simply open its granaries and let the poor take the food at very low prices. What is not immediately obvious is that even this has an important design aspect to it. If the grain is just given away at a low price to whoever comes to buy, it is likely that a part of this food will get picked up by traders and resold to government through the procurement window. In other words, government will

⁴ It is possible to argue that many of these behavioral traits are not innate qualities at all but equilibrium responses. Given that societies can have multiple equilibria, two innately identical societies can exhibit very different kinds of behavior. Basu and Weibull (2003) demonstrate this formally for punctuality traits of human beings in a game-theoretic model.

⁵ Actually it is not politically unpalatable once we recognize that innately human beings are very similar and the differences we see in behavior of different groups are a response to their histories and also possible equilibrium responses to one another. This in turn means that societies can undergo changes in these qualities. The qualities of honesty and trustworthiness in a group have value to the group that may not be there for each individual. I believe that societies that manage to inculcate these traits in their individuals tend to prosper economically (see Basu, 2010, Chapter 6), just like not smoking in a crowded hall may not be in the interest of the individual being told to desist from smoking but is good for the collectivity of people in the hall. To that extent it is imperative to try to inculcate the quality of honesty in society. But that does not change the fact that in designing policy we have to take the people to be what they are and not what they ought to be. This may well be the single biggest underlying flaw in the design of our policies.

⁶ This was what prompted a Bench of Justices of the Supreme Court of India on 27 July 2010 to admonish the government for wastage of procured foodgrains. This has also been widely reported in the popular media. For some recent writings on this see, for instance, 'India Lets Grain Rot Instead of Feeding the Poor,' by S. Halarankar and M. Randhawa and 'After Rot, Panel Moves to Stem Grain Drain,' by Z. Haq in **Hindustan Times**, of, respectively, 27 July and 30 July, 2010.

end up subsidizing repeatedly for the same foodgrain. This shows that one has to take a holistic view of the system of foodgrain management—production, procurement and release. This does not make the problem insoluble nor the wastage of food pardonable but simply means that we have to give a lot of thought into the design of our foodgrain policy in its totality. This is the reason for this paper.

My central argument is that, in creating better foodgrains policy, it is imperative that we look at the entire system of food production, food procurement and the release and distribution of food. Trying to correct one segment of this complicated system is likely to end up in failure and, at best, have limited success. The paper argues that there are two different motives for foodgrain procurement by the state—to provide food security to the vulnerable population and to even out foodgrains price fluctuation from one year to another. Further, how we procure the food has an impact on how we release the food, and vice versa. Inspired by the sight of foodgrain going waste, it is often made out to be that our central problem is that of poor foodgrain storage. This paper disagrees with this popular view. While we no doubt should improve our storage facilities, it is important to be clear that that in itself will not lower the price of food. To achieve that we need to redesign the mechanics of how we acquire and release food on the market. And that is not a trivial problem. It entails some intricate economic analysis.

This paper is not meant to be popular reading, nor does it directly address the subject of crafting policy. It analyzes some broad principles of economics that we have violated in our existing strategy and which explains why we have not had adequate success in enriching farmers and protecting consumers. The paper also outlines some foundational principles that we have to keep in mind in designing our foodgrains policy. Though it does not actually spell out a policy design, it may be viewed as a “user’s manual” for the economist entrusted with the task of designing policy. The paper does not go into the long-run problem of agricultural productivity and strategies for increasing this. This is indeed an important problem and much has been written on it⁷. But my focus is more on the short to medium term problem, which takes productivity as given and shows how we can be much

⁷ For a recent comprehensive treatise on the subject see Vaidyanathan (2009).

more effective in targeting food to those who need it most and also stabilize price fluctuations, by intelligently reforming our foodgrains policy.

Before launching into the analysis, I should highlight some broad premises that will underlie the entire analysis. First, it is assumed that a modicum of self-sufficiency in food is desirable. This immediately means that the state will have the responsibility of maintaining a certain amount of food stocks. There are economists who believe that we should not do so, leaving it instead to private traders to maintain their own stocks and use imports and exports to even out fluctuations in endogenous prices. The position taken in this paper is that for, especially, a big country like ours, it is politically risky to rely entirely on private traders and international trade to iron out excessive price fluctuations. Nations can be held to ransom and at this early stage of India's development we do not want that to happen at least for a few vital food items. Second, this means that we will have to have some system of announcing a minimum support price and acquiring food stocks from the market. There can be questions on the precise mechanics of how such a system is to be run but the need for some system of procurement is treated as an axiom in this paper.

1. India's Foodgrain Market: Description

There has been a popular feeling that the recent inflation is caused by poor foodgrain management. As is so often the case with complex economic matters, reality is more complicated than popular perception. In the case of recent Indian experience (second half of 2009), it is both true that food inflation is high and our foodgrain management leaves a lot to be desired. But it is not clear that the latter is causing the former. Poor management may keep the prices of some foodgrains higher than they need be, but the inflation, defined as a sustained increase in price,

is not caused by this, which would typically require a sustained deterioration in foodgrain management for which there is no evidence⁸.

This, however, does not change the fact that we need to improve our agricultural productivity and the management of the market for foodgrains. The latter is the subject matter of this paper. As explained above, the flaw in the system is that, while we have steadily procured foodgrain, especially wheat and rice, we have not done equally well in releasing the grain when the need arises. Doing the former and not the latter has meant that the net effect has been to raise the average price of food. Also, a good market intervention, as discussed in greater detail in the next sections, entails buying up when prices are low and selling when prices are high. Comparing procurement and inflation data in Table 2 it is clear that little effort has gone into creating such a cycle. The years 2006-07 and 2007-08 were years of low inflation for both rice and wheat. There is no evidence of extra procurement in those years. In fact wheat procurement actually fell in those two years. Given that 2009-10 is an inflationary year, one would expect the adjustment of MSP to ensure lower procurement but that was not the case. Clearly, there is need to re-evaluate our procurement and release systems.

The theory of how we can improve our foodgrain management will be discussed in the next sections. However, some simple lessons that will come out of that can be stated in advance. First, we have to have a ready set of rules of how and when to release foodgrain, a kind of Standard Operating Procedure (SOP). There should be no need to have special cabinet committees to take the decision. If prices are rising, there has to be a rule about the *automatic* release of food. Moreover, the release should be in small batches—the reason for this will become clear later.

Second, after we release the food, we should not try to excessively monitor what the buyer of the food does with it. As per present practice, the food that is released through open market operations by the FCI is sold to millers, and only rarely to traders. These millers are then prohibited from selling the wheat to yet other buyers and make profit from this. However, if our aim in releasing food is to

⁸ In a recent article, Chandrasekhar and Ghosh (2010) provide some convincing evidence of how the margin between wholesale and retail price of some grains have actually grown. But it is not clear if this can be put down to something in the management of our foodgrains policy

lower the price, it is not clear why we should prohibit further reselling of the food. And the instinctive urge to prevent anybody from making a profit—and creating a bureaucracy to monitor this—does more harm than good. What we should do instead is allow people to strive to make a profit but design a system which uses this striving to achieve social well-being.

Table : 2 Monthly Inflation of Wheat and Rice

	Rice	Wheat	Rice	Wheat
Weight	2.45	1.38	2.45	1.38
	WPI of rice and wheat (1993-94=100)		Year-on-year inflation (%)	
Apr-06	174.6	198.9	2.17	9.95
May-06	176.4	199.2	3.46	10.67
Jun-06	177.3	200.0	2.07	8.93
Jul-06	177.3	201.1	0.85	8.06
Aug-06	178.3	207.4	0.45	12.23
Sep-06	179.7	216.8	1.07	17.25
Oct-06	181.5	221.2	1.91	18.29
Nov-06	182.0	228.4	2.94	19.58
Dec-06	181.1	233.7	4.38	19.11
Jan-07	181.1	234.5	4.68	14.11
Feb-07	181.9	232.1	4.96	11.05
Mar-07	183.7	224.5	5.82	7.21
Apr-07	185.5	218.5	6.24	9.85
May-07	186.0	217.0	5.44	8.94
Jun-07	186.5	217.1	5.19	8.55
Jul-07	188.4	222.6	6.26	10.69
Aug-07	190.6	224.3	6.90	8.15
Sep-07	192.6	224.2	7.18	3.41
Oct-07	193.2	227.1	6.45	2.67
Nov-07	194.1	230.2	6.65	0.79
Dec-07	193.1	229.8	6.63	-1.67
Jan-08	195.5	231.4	7.95	-1.32
Feb-08	196.8	232.6	8.19	0.22
Mar-08	198.9	233.4	8.27	3.96
Apr-08	201.7	233.4	8.73	6.82
May-08	200.8	232.6	7.96	7.19
Jun-08	200.7	233.8	7.61	7.69

Jul-08	203.1	240.8	7.80	8.18
Aug-08	203.2	239.9	6.61	6.95
Sep-08	203.0	241.7	5.40	7.81
Oct-08	214.9	238.5	11.23	5.02
Nov-08	218.5	239.3	12.57	3.95
Dec-08	222.2	240.9	15.07	4.83
Jan-09	225.2	243.6	15.19	5.27
Feb-09	230.5	246.8	17.12	6.10
Mar-09	232.2	244.2	16.74	4.63
Apr-09	231.3	246.8	14.68	5.74
May-09	233.8	249.9	16.43	7.44
Jun-09	235.8	249.0	17.49	6.50
Jul-09	237.4	248.6	16.89	3.24
Aug-09	238.8	247.6	17.52	3.21
Sep-09	244.8	253.4	20.59	4.84
Oct-09	245.6	260.7	14.29	9.31
Nov-09	248.0	279.7	13.50	16.88
Dec-09	251.7	288.1	13.28	19.59
Jan-10	253.3	289.7	12.48	18.92
Feb-10	252.5	288.9	9.54	17.06
Mar-10	250.8	279.4	8.01	14.41
Apr-10	251.6	269.9	8.78	9.36

The consequence of having such severe rules about what the buyer of food from FCI can do with the food means that the zest for buying FCI food will be low. At times when the price of food is high and we want to lower it, it is a mistake to curb the traders' and the millers' freedoms. This would result in poor off-take of foodgrains and prices remaining high. We can see this in Tables 3, 4 and 5. In general, we manage to release less food than we plan and, moreover, the release is even more inadequate when done through the Open Market Sale Scheme (OMSS).

The right policy is to place as little restriction on the buyers of foodgrains as we can and to permit them to make profits by selling the foodgrain to the ultimate consumers. The profit of the trader and the miller is of course not the aim of the government but it is the instrument through which government can reach food to the poor. It is the self-interest of the baker that Adam Smith had written about in 1776 that can be an instrument for reaching benefits to the ultimate consumer.

Table 3 Allocation and Offtake of Wheat, 2009-10, under TPDS (in thousand tonnes)

STATE/UTs	ALLOTMENT	OFFTAKE	%OFFTAKE
Andhra Pradesh	254.51	30.16	11.90
Arunachal Pradesh	9.43	8.98	95.30
Assam	277.51	223.13	80.40
Bihar	1534.22	1001.24	65.30
Chhattisgarh	238.20	155.80	65.40
Delhi	445.34	436.54	98.00
Goa	7.48	6.27	83.90
Gujarat	1289.04	712.83	55.30
Haryana	980.47	501.67	51.20
Himachal Pradesh	312.10	289.83	92.90
J & K	224.13	223.14	99.60
Jharkhand	583.93	368.46	63.10
Karnataka	357.44	296.07	82.80
Kerala	249.88	223.96	89.60
Madhya Pradesh	2807.66	2708.11	96.50
Maharashtra	2793.98	2099.03	75.10
Manipur	19.09	14.27	74.80
Meghalaya	17.16	16.72	97.40
Mizoram	7.49	7.46	99.70
Nagaland	34.37	33.58	97.70
Orissa	392.82	371.12	94.50
Punjab	1213.92	987.53	81.40
Rajasthan	1945.46	1919.34	98.70
Sikkim	2.94	2.95	100.20
Tamilnadu	210.40	211.12	100.30
Tripura	28.04	24.32	86.70
Uttar Pradesh	4318.53	3945.01	91.40
Uttarakhand	260.44	233.81	98.80
West Bengal	1922.27	1908.12	99.30
A&N Islands	8.76	4.45	50.80
Chandigarh	22.10	22.05	99.80
D & N Haveli	0.64	0.34	52.70
Daman & Diu	2.03	0.32	16.00
Lakshadweep	0.00	0.00	-
Puducherry	11.94	3.33	27.90
Grand Total	22783.71	18991.04	83.40

Table 4 STATEMENT SHOWING THE CONSOLIDATED LIFTING POSITION OF WHEAT RELEASED TO THE BULK CONSUMERS UNDER OMSS (D) FOR OCTOBER, 2009 to MARCH, 2010 (in thousand tonnes)

State	Allotment	Qty Lifted	% Qty lifted
Andhra Pradesh	91.19	54.25	59.49
Arunachal	0.00	0.00	
Assam	85.07	12.50	14.69
Bihar	12.95	4.60	35.52
Chhattisgarh	12.24	6.34	51.78
Delhi	247.27	186.11	75.27
Goa	6.32	3.72	58.85
Gujarat	13.06	5.46	41.80
Haryana	83.82	69.55	82.97
Himachal	4.28	0.00	0.00
J & K	154.24	88.60	57.44
Jharkhand	11.10	8.35	75.22
Karnataka	200.75	131.24	65.37
Kerala	87.71	62.34	71.07
Madhya	43.02	22.20	51.60
Maharashtra	247.39	115.70	46.77
Manipur	0.00	0.00	
Meghalaya	0.00	0.00	
Mizoram	0.00	0.00	
Nagaland	0.00	0.00	
Orissa	59.76	31.07	51.99
Punjab	234.73	134.28	57.21
Rajasthan	37.60	22.85	60.77
Sikkim	0.58	0.00	0.00
Tamilnadu	115.14	61.51	53.42
Tripura	0.00	0.00	
Uttar Pradesh	115.76	68.21	58.92
Uttarakhand	60.81	53.85	88.56
West Bengal	126.62	54.70	43.20
A&N Islands	0.00	0.00	
Chandigarh	21.63	19.01	87.90
D & N Haveli	0.00	0.00	
Daman & Diu	0.00	0.00	
Lakshadweep	0.00	0.00	
Puducherry	8.43	2.90	34.40
Grand Total	2,081.44	1,219.31	58.58

Table 5. STATEMENT SHOWING THE LIFTING POSITION OF WHEAT BY STATE/UT GOVERNMENTS/ NAFED/ NCCF FOR DISTRIBUTION TO RETAIL CONSUMERS UNDER OMSS (D) FOR OCTOBER, 2009 to MARCH, 2010 (in thousand tonnes)

Name of the State/UT	Allotment	Lifting	% lifting
Andhra Pradesh	18.68	0.00	0.00
Arunachal Pradesh	3.07	0.00	0.00
Assam	132.49	34.18	25.80
Bihar	11.76	0.44	3.74
Chhattisgarh	9.88	1.09	11.03
Delhi	181.29	96.15	53.03
Goa	3.21	1.60	50.00
Gujarat	34.22	15.99	46.72
Haryana	43.25	0.00	0.00
Himachal Pradesh	99.05	11.28	11.39
J & K	81.58	22.58	27.68
Jharkhand	7.35	0.00	0.00
Karnataka	38.26	3.03	7.93
Kerala	81.32	23.63	29.06
Madhya Pradesh	110.98	14.92	13.44
Maharashtra	149.54	2.60	1.74
Manipur	6.32	0.00	0.00
Meghalaya	7.35	3.68	50.00
Mizoram	3.77	2.04	54.01
Nagaland	15.14	1.00	6.60
Orissa	65.72	0.00	0.00
Punjab	177.96	0.00	0.00
Rajasthan	174.96	138.75	79.30
Sikkim	1.48	0.64	43.22
Tamilnadu	65.09	34.54	53.07
Tripura	8.94	0.00	0.00
Uttar Pradesh	106.24	0.00	0.00
Uttarakhand	52.96	0.00	0.00
West Bengal	375.74	0.00	0.00
A&N Islands	1.60	0.00	0.00
Chandigarh	0.00	0.00	
D & N Haveli	0.09	0.09	100.00
Daman & Diu	0.00	0.00	
Lakshadweep	0.25	0.00	0.00
Puducherry	0.76	0.00	0.00
Grand Total	2070.33	408.23	19.72

This does not mean that we should not have any strategy to limit the profit, but simply that this must not be done by creating disincentives for the trader or the miller for buying up grain and selling wheat and rice and other products from these on to the ultimate consumer. Further, trying to control profit by policing and raids usually creates another layer of corruption. The secret of keeping profits low and delivering food to the ultimate consumer is to release the procured grain in small quantities to large numbers of traders and millers and giving them the freedom to make profits. Competition will drive the prices down through natural market forces. Good policy consists of exploiting the laws of the market, not denying that they exist.

This leads to a general remark on the infamous market versus government debate. One mistake that is easy for government to make is to over-estimate its own powers. If government can acquire all the food and release it at fair price to all the people, if it can ensure that all farmers get fertilizers at low prices and the price of fuel and oil that people have to pay do not rise and so on, then that would be wonderful. But it would be a big mistake for government to assume that the government can do all this, create a large machinery for it, and then discover that it cannot. It is a common refrain of government that policy x went wrong because the traders cheated or the local governments did not do their job. While these may indeed be factors and we should teach people not to cheat and to do the job they are supposed to do, in the end we have to assume people and agencies to be what they are. To assume otherwise and design policy is to preordain failure.

The theoretical analysis that follows keeps exactly this in mind. Consumers will be consumers, traders will be traders and the laws of the market will be what they are. Our aim in government is to take these givens into account and then design policies for delivering benefits to the citizens.

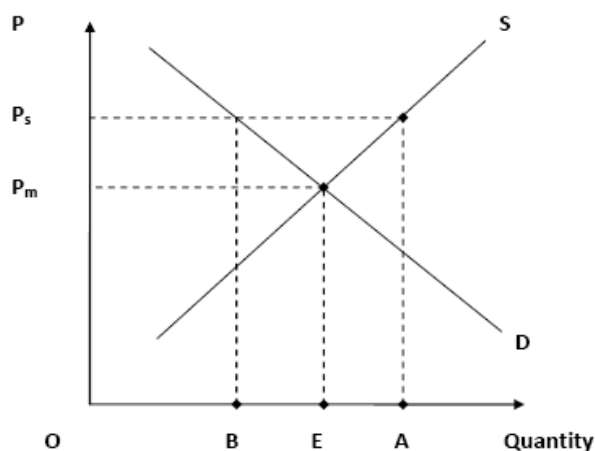
2. Theory of Food Market Intervention

As always in constructing theoretical models, some aspects of reality have to be overlooked or brushed aside. It is the careful selection of *relevant* reality, and

omission of the rest that lends strength to such analysis. In what follows, I use a simple structure to convey some of the central ideas of foodgrain management. We can focus on any particular grain. For the most part I will think of this to be wheat. In the figure below I have drawn a demand and a supply curve for wheat represented by, respectively, D and S.

As the price of wheat declines, the demand for wheat rises and the supply of wheat falls. This explains the slopes of the two curves. If the market is left free, with no government intervention, the price will settle at p_m , where demand equals supply. This is referred to as the ‘free market equilibrium price.’

Figure 1



There are good reasons not to leave everything to the free market, even though there is a conservative school of thought that will advise you to do just that. We may feel that at p_m farmers get too low a price for their labor or that p_m is too high a price for the poor households. In India we have grappled with both these perceptions and they call for some carefully scripted government action. Consider the case for supporting the farmers. One method that has actually been used in India is to announce a Minimum Support Price, that is, a price at which

government offers to buy up as much as the farmers are willing to sell. If the MSP is set below p_m , a moment's inspection of Figure 1 makes it clear, no one will sell to the government and the market price will continue to be p_m . Hence, for an MSP to have an impact, it has to be set above the market price, for instance, at the point marked p_s in the figure.

Before moving on, it is worth pointing out that it is not merely the need to support farmers that lead to an MSP policy but the valid perception that the state ought to keep a stock of foodgrains ready for bad times that can lead to the same kind of intervention. I shall return to this later.

Suppose now government announces a MSP of p_s , as shown in the figure. It is clear that farmers will sell OB units of grain directly to ordinary people and BA units of grain to the government. Government buys up the supply in excess of the market demand. In India, in a typical year government buys up a little less than one-third of the total production. In other words, BA is typically close to one-third of OA. Contrary to a belief within the government bureaucracy, there is nothing sacrosanct about this ratio.

With this MSP policy government will now have reserves equal to BA units of wheat in its storage facilities. The amount of money the government would have spent acquiring this grain is equal to BA multiplied by the MSP, in this case, p_s .

Now, consider the problem of off-loading this grain. If government decides to sell this grain at a price above p_s in order not to incur a loss, there will be no buyers. This is because those willing to buy grain at a price above the MSP would have already got their grain (in this example, OB units of grain). If this is the pricing policy used by FCI, there is no way government will be able off-load the stocks on to ordinary consumers. Observers often fret at reports of procured grain lying unattended to, rotting and being eaten up by rats, and the belief is that this is the reason consumers do not get to consume this food. But that gets the causality wrong. Ordinary people do not get to buy the grain not because rats get at it but because of flaws in our foodgrains policy.

It is often argued in official documents that unless food is sold by government at a price above the purchase price (plus other sundry costs like that of

storage and transport), this will add to the fiscal deficit. What this misses out on is that, if by trying to sell it at such a price we do not manage to sell at all, the fiscal burden on government is even greater. This is because the cost of procurement is a sunk cost. What needs to be realized is that, from a fiscal accounting point of view, not selling procured grain is exactly equivalent to selling it at zero price.

It is important to recognize that the overall impact of the pricing policy just described is to raise the price of foodgrains, for at least a segment of consumers, to above what they would have had to pay (to wit, p_m) if there were no government intervention in the market for food. This is because an effective MSP is, by definition, a price higher than the free market equilibrium price. There is no getting away from the fact that having a minimum support price policy and selling some grain at or above the MSP (for instance, to households above the poverty line, APL) means that we are selling grain to some consumers above the price they would have faced in a complete free-market outcome.

If all consumers are to get food below p_m , the only way to do this is for government to buy up the entire food production at a price above p_m , for instance, at p_s , and off load it on the market at some price, P , which is below p_m . This by definition places a fiscal burden on the state. Government would spend $(p_s - P)$ multiplied by OA to run this operation. And there would be another problem, it will be in the interest of people to buy the grain at P and sell it back again to government at p_s and pocket the subsidy $p_s - P$ per unit of grain. It is not impossible that this “revolving door strategy” of using the same grain to earn subsidy multiple times from the government has been employed by traders. I shall return to the problem of revolving door subsidy and to pricing strategies that can deter or minimize such action later in the paper.

What the Indian government does in practice is to try to sell some grain at above the MSP (and this operation often has little success for the reasons explained above), and also releases some foodgrain below the market price to below poverty line (BPL) households and to some other special, vulnerable segments of the population. The net effect of this kind of government action is to give an upward push to the price of foodgrains that prevail in the open market. After government procurement, the ‘market’ price is no longer p_m but p_s .

So for people who buy foodgrains at the market price, the price they face is above the price they would have had to pay in case there was no government intervention. This is inevitable but it is important to remember that people who buy foodgrains at market price in India includes millions of poor people who either do not have BPL cards or live in areas without easy access to outlets run by our public distribution system (PDS)⁹.

If we (1) want farmers to get a price above the free market price, p_m , (2) want consumers to get as much or more food than what they would have got if the food market was left completely free, then it is inevitable that government has to incur a fiscal cost. To ask for (1), (2) and that all government operations in the food market be commercially viable—let me call this (3)—is to ask for the impossible. Objectives (1) and (2) inevitably place a fiscal burden on the state and make (3) impossible. This is as should be.

But it means that we have to be careful to design a system where the fiscal burden is kept to a minimal. Otherwise, a large deficit will undo all that such a policy of intervention tries to achieve by unleashing inflation. Also, while subsidizing the poor will mean asking the non-poor to pay more (in the end someone has to pay for the additional burden), we have to ensure that we do not end up designing a system of intervention which raises the *average* price of food for all consumers. I make this warning explicit because some of our interventions have made this mistake. This will be clear from the analysis in the next section.

4. **Redesigning India's Foodgrains Policy: Price Stabilization**

An ideal foodgrains policy ought to have the following features.

- (i) Government should maintain a buffer with the aim of using it to hold down prices during times of food shortage, and
- (ii) Government must make sure that the poor and the vulnerable have access to food at all times.

⁹ For a brief description of the PDS and its evolution and also other related programmes, see Desai et al (2010).

This second feature is connected to the general idea of food security (Datta, 2010).

If trade remained open at all times, holding a buffer would be considered a costly and unnecessary strategy; but this overlooks the politics of trade and the fact that nations can be held to ransom by threatened stoppage of trade. In 1974 when, facing a famine, Bangladesh needed to import food from the US, it was denied this on the ground that Bangladesh had trading relation with Cuba. It is therefore natural for most nations to want to be reasonably self-sufficient in food. India is no exception. Both the above objections are achievable for India but neither would be a trivial exercise. This explains why, despite pronouncements to the contrary, we still have so many gaps in our food policy. What we have underestimated is the need for careful design to enable us to achieve the above objectives.

To analyse foodgrains policy to achieve (i) and (ii), we must begin by recognizing that agricultural production tends to be vulnerable to exogenous shocks, stemming from a variety of factors such as fluctuations in weather conditions, floods, pest attacks and fluctuations in wage rates. For simplicity assume that foodgrain supply can be high (good weather) or low (bad weather) with probability half each.

Figure 2 describes these two scenarios. Let D be the aggregate demand curve for food. The aggregate supply curve is S_G if the weather is good and S_B if the weather is bad. If, as just discussed, the purpose of maintaining foodgrains reserve with the government is to be self sufficient in times of food shortage, we have to have a policy whereby food is acquired by the state when supply is plentiful (that is, the weather is good) and released when the supply is meager (that is, the weather is bad). To be a net buyer of food under all circumstances, as our government has tended to be, is wrong strategy. We have to be prepared to switch the MSP window on and off.

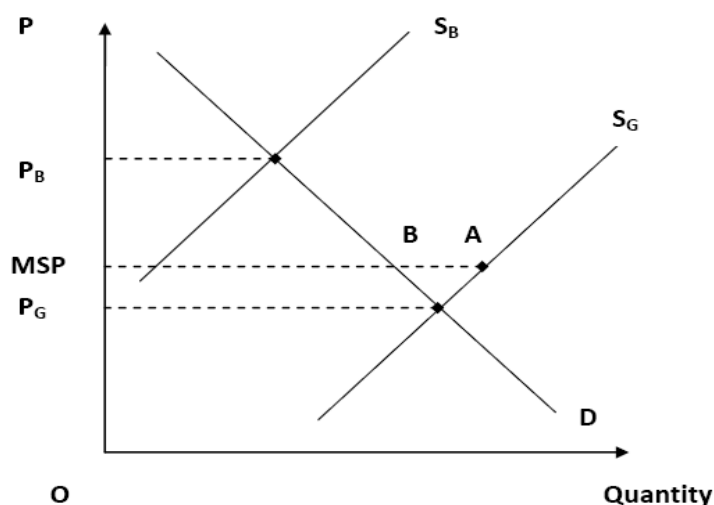
There is one caveat worth stressing here. I am here considering a procurement and release policy that is entirely concerned with self-sufficiency and price stabilization. I am at this time ignoring the objective of providing cheap food at all times for the poor and vulnerable, that is, objective (ii), mentioned above.

This will be discussed in section 5. Note for now that if government was procuring for both objectives (i) and (ii) then it would have to procure over and above what is needed to hold prices down in times of shortage. This can be a fairly substantial amount. Of the 33.6 million tonnes of rice was procured in 2008-09, 22 million tonnes were for the PDS system. Under such circumstance it is possible that the state would have to procure foodgrains in good and bad times, in order to have enough grains for price stabilization *and* support for the poor and vulnerable. However, the broad thrust of my argument would still be unchanged. We need to vary our procurement, taking in more when the weather is good, supply plentiful and prices low and less (and may be nothing) when the weather is bad and prices high.

I should clarify that this does not mean that we actually close down the MSP window in periods of food shortage but simply not raise the MSP in such periods. In the Figure 2, if we hold on to the MSP shown, then automatically there will be no procurement in periods of bad weather. It is fine to aim to acquire one-third—or whatever fraction we decide to settle on—of the aggregate food stock produced but the aim must be to do so *on average*, buying more in good times and less in bad times.

As is evident from Figure 2, if there is no state intervention, in good weather the equilibrium food price will be, p_G , as shown in the figure, and, in bad weather, food price will be p_B , as shown. The average food price, call it p' , will be a weighted average of p_B and p_G , where the weights are given by the probabilities of bad and good weather, respectively. We shall take the view that p_B is intolerably high and so we need state action to hold down prices during bad weather. One way of achieving this is for the government to announce an MSP above p_G and below p_B . This will allow government to buy up foodgrains during times of bounty and release them in times of shortage. Figure 2 illustrates a particular MSP. This will mean that in good weather government will buy BA units of foodgrain and the market price of foodgrain in times of good weather will be the MSP.

Figure 2



The procurement of food during times of bounty is just one side of the coin. To have a successful food management system it is equally important to have a method of food disbursement during times of food shortage. Interestingly,—and this is a point that is not understood well at all in government—the amount of dampening effect we have on food price depends critically on “how” the food grain is released. The same total amount of grain off-loaded on the market through different mechanisms can have very different effects on the price.

Also note that, if the government procures more than it releases the average market price will be higher than p' . This is not surprising at all. If government becomes a net hoarder, its effect has to be to raise the average price. A small increase in average price in order to stabilize excessive fluctuations may be worth it. But in the case of India the release has fallen well short of procurement. The statement by a senior member of this government¹⁰ that, when it comes to hoarding, it is the Government of India that leads the pack is not off the mark¹¹.

¹⁰ Queries concerning which ministry he or she is in will go unanswered.

¹¹ This same point is articulated very cogently in a recent newspaper article by Panagariya (2010).

Table 6. Details of minimum buffer norms fixed and the actual stock position of Rice and Wheat in the Central Pool during 1.04.2003 to 1.04.2010 (in lakh tonnes)

DATE	RICE		Wheat		Total		Percentage at which actual stock position is higher vis – a-vis buffer norms
	Actual stock	Minimum Buffer norms	Actual stock	Minimum Buffer norms	Actual stock	Minimum Buffer norms	
1.04.2003	171.57	118	156.45	40	328.02	158	207.61
10.7.2003	109.74	100	241.94	143	351.68	243	144.72
1.10.2003	52.41	65	184.27	116	236.68	181	130.76
1.1.2004	117.27	84	126.87	84	244.14	168	145.32
10.04.2004	130.69	118	69.31	40	200	158	126.58
1.7.2004	107.63	100	191.52	143	299.15	243	123.11
1.10.2004	60.92	65	142.23	116	203.15	181	112.24
1.1.2005	127.63	84	89.31	84	216.94	168	129.13
1.4.2005*	133.41	122	40.66	40	174.07	162	107.45
1.7.2005	100.71	98	144.54	171	245.25	269	91.17
1.10.2005	48.49	52	102.9	110	151.39	162	93.45
1.1.2006	126.41	118	61.88	82	188.29	200	94.15
1.4.2006	136.75	122	20.09	40	156.84	162	96.81
1.7.2006	111.43	98	82.07	171	193.5	269	71.93
1.10.2006	59.7	52	64.12	110	123.82	162	76.43
1.1.2007	119.77	118	54.28	82	174.05	200	87.03
1.4.2007	131.72	122	47.03	40	178.75	162	110.34
1.7.2007	109.77	98	129.26	171	239.03	269	88.86
1.10.2007	54.89	52	101.21	110	156.1	162	96.36
1.1.2008	114.75	118	77.12	82	191.87	200	95.94
1.4.2008	138.35	122	58.03	40	196.38	162	121.22
1.7.2008	112.49	98	249.12	201#	361.61	299	120.94
1.10.2008	78.63	52	220.25	140	298.88	192	155.67
1.1.2009	175.76	138**	182.12	112	357.88	250	143.15
1.4.2009	216.04	142	134.29	70	350.33	212	165.25
1.7.2009	196.16	118	329.22	201	525.38	319	164.70
1.10.2009	153.49	72	284.57	140	438.06	212	206.63
1.1.2010	243.53	138	230.92	112	474.45	250	189.78
1.4.2010	267.13	142	161.25	70	428.38	212	202.07

* New buffer norms w.e.f. April 2005

Buffer norms for wheat includes Food Security Reserve of 30 lakh tonnes from 1.7.2008 onwards

** Buffer norms for rice includes Food security reserve of 20 lakh tonnes from 1.1.2009 onwards

I may remark here that, as pointed out in Government of India (2010, Chapter 2), to commit to holding a certain minimum reserve at all times is a meaningless policy. It is exactly equivalent to holding no reserves. If the reserves are never to be used, they may as well not be there. There is no advantage in holding reserves that must be held at all times. In fact their only effect is the price increase that will occur as a consequence of the procurement of the reserves from the market. If we look at the data concerning stocks and norms, shown in Table 6, what stands out is the fact that we hold stocks way above the minimum buffer norm and the minimum buffer norm is virtually never violated.

Before moving on to a formal analysis, I want to make a remark by way of digression. If there was no government intervention in the market described in section 3, it is unlikely that the price would fluctuate between p_B and p_G . It is likely that traders would enter the market buying up in times of plenty when price is low and selling when there is a shortage and price is high. In other words, they would do some of the same job that a well-meaning government does. This simply shows that speculation and hoarding is not always bad as is frequently presumed. Hoarders who are large enough to *create* shortages can do harm but that must not lead us to castigate and stop all forms of hoarding. Hoarding and speculation done by small traders and ordinary consumers actually play a useful social role.

To understand properly the economics of foodgrains release policy we need to resort to a little algebra. Let the demand function displayed in Figure 2 be given by:

$$D = D(p), D'(p) < 0 \quad (1)$$

Let the supply function for bad weather displayed in Figure 2 be given by:

$$S = S(p), S'(p) > 0 \quad (2)$$

Hence, the equilibrium price in bad weather, p_B , is defined implicitly by

$$D(p_B) = S(p_B) \quad (3)$$

Recall that in good weather the government accumulates grain and in bad weather releases grain or that is, at any rate, what a good government ought to do. Suppose government has X metric tonnes (or, in brief, units) of grain that it wishes

to release on the market during bad weather (when the natural food supply is low). The way the FCI releases much of this grain is to have large packages, say of 1000 metric tonnes each, and sell these to $X/1000$ buyers. Then it is up to these buyers to consume and supply the grain thus acquired to consumers, as they desire.

It will now be argued that the efficacy of the policy depends enormously on the size of these packages. This has been discussed in several meetings of expert groups and I want to here explain the logic of this formally. For wide applicability it is useful to tell this story in somewhat abstract terms. Suppose government creates single packages or bundles containing x units of grain and sells these to X/x ($\equiv n$) traders.

Let us check how these traders will behave. Note that the market ‘available’ to these traders is given by

$$D(p) - S(p) \equiv d(p) \quad (4)$$

I am here following the kind of analysis done originally by Stigler (1950) and later extended by Encaoua and Jacquemin (1980), Dixit and Stern (1983) and Basu (1992), involving a limited number of oligopolistic traders or firms and a price-taking fringe of buyers and sellers. So what is being assumed here is that the demand and supply functions, $D(p)$ and $S(p)$, come from small price-taking agents. The residual demand, $d(p)$, is what is catered to by the traders who receive grain from FCI as part of the government’s food release policy. If, for instance, the price of food is p'' , the price taking agents will demand and supply $D(p'')$ and $S(p'')$, respectively. Hence, the traders who have acquired grain from FCI will face a net demand of $D(p'') - S(p'') = d(p'')$.

It is worth checking that the bad weather free market equilibrium price, p_B , is given by $d(p_B) = 0$.

To analyze how these traders will behave I will make one more simplifying assumption, purely for mathematical ease. I will assume that $d(p)$, defined above, is a linear function. So from now on

$$d(p) = a - bp, \quad (5)$$

where $a > 0$, $b > 0$. I shall refer to this as the ‘net demand function’.

Clearly we may write the inverse net demand function as:

$$p = A - Bd(p), \quad (6)$$

where $A = a/b$ and $B = 1/b$.

Suppose FCI has, by whatever mechanism it chooses, handed over x units of grain to each of n traders (recall $n = X/x$). What will the equilibrium price of grain be? To answer this, first ignore the fact that each trader has a limited amount of grain (x units) in hand and ask how much grain would each trader sell on the market in a Cournot equilibrium?

To answer this, in turn, first write the profit that a single trader expects to earn when it sells q units of grain and all other traders together sell Q units. This is given as follows¹².

$$\pi = q(A - B(q + Q)) \quad (7)$$

This assumes that grain that is not sold on the market by the trader is wasted. If the trader earns some nominal price μ for grain not sold on the market, then we would have to add $\mu(x - q)$ to the expression in (7) to get the actual figure of profit. I mention this here since it will acquire some significance in a later discussion.

Each trader tries to maximize his profit by choosing q , while taking Q to be given. Doing this maximization and working out the Cournot-Nash equilibrium, it is easy to check that each trader will supply the following amount in equilibrium.

$$q^* = a/(1 + n)$$

In case q^* exceeds x , it is not possible for a trader to supply q^* . Given that profit functions of traders are strictly quasi-concave (this is easy to check), each trader will supply $a/(1 + n)$ or x , whichever is smaller. That is, the trader will supply $\min\{a/(1 + n), x\}$.

¹² Of course we can allow for there being fixed costs associated with this activity. But since that will not have any effect on the first order condition and, therefore, on the behavior of the trader, it is fine to ignore this here.

Since there are n traders, aggregate supply in the Cournot-Nash equilibrium will be, Q^* , defined by:

$$Q^* = \min \{na/(1 + n), nx\}.$$

Keeping in mind that $n = X/x$, that is, n is the ratio of the total grain released and the amount released in each bundle, we get:

$$Q^* = \min \{Xa/(x + X), X\}$$

Consider the case where

$$Xa/(x+X) < X \tag{8}$$

Then, as x is made smaller, the equilibrium aggregate supply of foodgrains, Q^* , will keep rising. Hence, the Cournot-Nash equilibrium price of food, p^* , given by $p^* = A - AX/(x + X)$ will keep falling.

This establishes that, if the government's aim (in times of drought) is to lower the price of foodgrains, it is not enough to release a large quantity of foodgrains, X . In addition, this should be released in small batches to many traders or directly to consumers.

Another interesting by-product of this theory is worth noting. If (8) holds, it means each trader, having acquired x units of grain, will choose to sell only a part of it and would not mind simply dumping the rest. This has nothing to do with speculative hoarding. It is natural behavior on the part of oligopolists. One way to correct this is not to release food in bundles as the FCI does but at a fixed price per unit, giving traders the right to buy exactly the amount they want. In other words, we may consider releasing the food the same way that it is procured. That is, by announcing a price and then letting people buy the amount they want. The only problem with this is that we have to take some care to ensure that a few traders do not end up cornering the entire stock. If this happens then food prices will not fall sufficiently and, in addition, there is the risk that these traders will sell the grain

back to government when the procurement season comes. We can make the release price higher to curtail this risk but that in turn could hurt the consumer.

The main point remains that the method of fixing bundle size and then asking for tender calls from traders, as is often done by the FCI, is worth re-evaluating. This is an important matter but I do not go into this here, since it is not central to the concern of this paper. Let me stay with the assumption that FCI sells food in bundles of a certain size. If now (8) holds, each trader will have surplus grain in hand. That being so, the trader will not mind selling the surplus back to the FCI at the MSP. This means that we will get a certain amount of “foodgrain recycling,” that is, the same food being sold repeatedly to the FCI, with the subsidy being picked up by the trader each time.

We may argue that, since grain can be sold back to FCI typically in the next round of open market purchase by government and procurement of wheat occurs each year after a few months of no procurement—as can be seen from Table 2, above—, traders will incur some losses from decay and pilferage before they can sell to the FCI. A simple way to capture this is to assume that traders manage to get a discounted price $\beta(MSP)$, where $\beta < 1$, when they re-sell the grain to FCI. As long as this is positive, there will be some foodgrain recycling. But if x is made small, the gap between X and $Xa/(x+X)$ falls and so the recycling goes down. This is one more reason to release foodgrain in small batches.

One caveat is worth mentioning here, Once we allow the possibility of selling foodgrain back to government, the opportunity cost of not selling grain on the market as discussed in the above model is not zero, but $\beta(MSP)$. This means that when a trader supplies q ($\leq x$) units of grain to the market, and all others together supply Q , the trader’s profit is given by

$$\pi = [A - B(q + Q)]q + (x - q)\beta(MSP)$$

The algebra presented above was done under the assumption of $\beta = 0$, that is, all unsold grain is simply wasted, there is no opportunity to recycle the same grain to the government at the MSP. A more detailed analysis would entail making

correction for this, by using the above expression to represent each firm's maximand, but the substance of the analysis would remain unchanged. I therefore do not develop this formulation any further.

The above formulation shows how the MSP policy can have a feedback effect on the market price of foodgrains. These feedbacks are not studied at any length in the present paper but deserve greater attention in the future.

5. **Food Security for the Vulnerable**

I have not yet addressed the subject of the government's special responsibility to the poor and vulnerable households, that is, objective (ii), mentioned at the start of section 4. The importance of this objective cannot be overstated. If we do not provide special support to the poor, small relative price changes or exchange entitlement shifts can lead to widespread suffering and even famines (Sen, 1981; Dreze and Sen, 1989; Basu, 2009).

In India, a large part of objective (ii) is attempted to be satisfied by releasing to BPL households a part of the grain acquired by the government at a lower-than market price, through the approximately 500,000 fair-price shops or ration shops scattered across the nations. The Food Security Bill, currently being debated, tries to enshrine this same commitment as law.

As mentioned earlier, we have to be careful in granting rights too easily, since if we grant rights that are impossible to satisfy, then this simply devalues the meaning of a right and also perpetrates the culture of having laws that are meant to be violated. This can devalue the efficacy of all the laws in a nation (Basu, 2010). But the right to food is an achievable right, with some qualifications carefully spelled out and so, to that extent, is a move in the right direction that India is about

to take¹³. The important qualification pertains to the possibility that there may come a time in the future when there is just not enough food for everybody. This can happen, for instance, following a nuclear war or an environmental calamity. What would it mean, in such a situation, for government to guarantee food security to all?

One way of making a commitment to food security while allowing for the above contingency is to assert that the government will try to ensure that as long as some people have enough to eat, everybody should have the right to a certain basic amount of food. Stated in this manner food security for all does not entail the false promise that there will be food for all at all times, but simply that government will ensure that everybody has access to a certain minimal amount of food and, in case there is an overall shortage of food in the nation (which cannot be corrected through imports) then everybody will share in the shortage.

With this clarification, let me leave the abstract theoretical underpinnings of the right to food aside and turn to some practical policy matters. Basically a food security law should take the form of ensuring that the poorest and the most vulnerable people are given access to a certain minimal quantity of food. The better off people, it will be assumed, have the ability to fend for themselves.

The important lesson to keep in mind is that to achieve this objective it is not enough to have the right intentions. One has to design a delivery mechanism which can work in the kind of world that we have. India's rationing system has not worked well enough not for lack of good intention but because of insufficient attention to the details of the delivery mechanism. The problem arises from the fact that in India the food subsidy is handed to poor households via the ration shops. The government delivers subsidized grain to the store owner and the owner is then instructed to hand this over at the pre-specified price to BPL households and to some other categories of vulnerable households.

¹³ It is also arguable that under certain parameters transferring food to some households confers positive externalities on others (Angelucci and De Giorgi, 2009)

If the store owners were perfectly honest, this would work fine. But if they are not, then it is easy to see that many of them will give in to the temptation of making some easy money by selling off some of this subsidized grain on the open market where the price is higher and turning away some of the deserving poor households or adulterating the grain that is to be sold to those households. In reality both these happen. A recent study by Khera (2010) shows that 67% of the wheat meant to reach the poor end up missing the target, being pilfered or sold on the open market en route.¹⁴

It is easy to respond to this by asking for better policing. Here again we have to be realistic. Trying to police such a large system by creating another layer of police and bureaucracy will come with its own problems of corruption and bureaucracy. This is where the question of systems design arises. An economic system is like an engineering system. We may and should lecture people on the importance of honesty and integrity but till that message sinks in, it would be foolish to work on the assumption that people are robotic units that do the job they are supposed to do flawlessly. We have to take the laws of the market and the incentives people respond to and then design an optimal system for doing the job we want to get done.

It is with this in mind that the **Economic Survey 2009-10** discussed the option of designing a better mechanism for delivering food grain to the poor (Government of India, 2010, Chapter 2)¹⁵. The basic idea is that the subsidy should be handed over directly to the poor household instead of giving it to the PDS shop owner with the instruction that he or she transfer it to the poor. This can be done by handing over food coupons to BPL households, which they can use as money to buy food from any store. The store owner can then take the coupon to any bank

¹⁴ It should be pointed out, in fairness to the ration shop owners, that the government sets the official prices for them to receive and sell foodgrain with such slender profit margin that, if the store owners were totally honest, they would not be able to make a living wage from running a ration shop full time (Khera, 2010). Clearly, we are caught in a vicious circle. Prices are set based on the assumption that store owners will earn money illegally and store owners comply.

¹⁵ For a short lucid description of such a system see Nandakumar (2010). While the proposal discussed there is not identical to the one in the **Economic Survey 2009-10**, the broad thrust is the same.

and change it back for cash.¹⁶ To allow for differences in preferences, we can allow individual households to buy any food items within a pre-specified range with these coupons. The subsidy does not have to be a fixed amount for wheat and another for rice but a lump-sum for a list of goods (see Planning Commission, 2010). In the parlance of economics this can lead to a Pareto improvement.

Note that, since the stores get full price from the poor and, more importantly, the same price from the poor and the rich, they will have little incentive to turn the poor away. Further, the incentive to adulterate will also be greatly reduced since the poor now have the right to go to any store with their coupon. Note that a system of coupons will imply that private traders will have a much larger part in the delivery system. Since buyers will have the right to go to any store to buy food using a combination of money and coupons they will go to stores that charge the most competitive prices and assured quality.

Worries have been expressed about fake coupons. But this is not a problem special to coupons. Even with money we have to contend with this problem. There is indeed a certain amount of faking of money that occurs¹⁷ but that does not paralyze the system as a whole. It will be likewise for coupons.

Concerns are also expressed that with coupons some households may not buy food at all and sell of the coupons and buy other goods. This is a legitimate concern. But that is no reason to jettison the coupons system. That would be like not offering poor workers a higher wage on the ground that they may spend it on alcohol. My preference is to in fact make the selling of coupons legal. After all, even in programmes, like the current one in India, where actual foodgrains are given to the households, we do not monitor to make sure that the goodgrains actually go down the alimentary canals of the poor. We take the view that, once we

¹⁶ The idea of using coupons or smart cards to give the subsidy directly to the household is not a novel idea. It has been tried in several nations, including Sri Lanka and the United States. Several commentators on the Indian economy have proposed variants of it (see, for instance, Ahluwalia, 2010; Dutta 2010; Jha and Ramaswami, 2010; Planning Commission, 2010).

¹⁷ RBI estimates that 8 notes per million pieces of paper currency circulating in India is fake.

have reached food to them, if they decide to exercise their individual freedom and not eat it, that is their choice. We may not like their choice but trying to monitor it is likely to create greater problems.

Likewise with the coupons system. We are empowering the households to be able to have more food. If they then choose to spend the extra buying power on some other goods and services, it is not worth the bureaucracy trying to control this. It will be after all poor households that will gain from the doling out of the coupons. If they choose not to take the benefit in the form of food and buy something else, then it is not as big a tragedy as the benefit going to the owners of PDS stores as often happens in the current system.

Having come to this position, it is possible to take the argument even further and argue for not a direct grain transfer, nor a coupons transfer but cash transfer to the poor. This is the idea of a negative income tax and it has been proposed time and again in the economics literature. In India this has been argued for by Shiela Dixit, Chief Minister, National Capital Territory of Delhi. In a well-argued paper released by her government (Government of National Capital Territory of Delhi, 2010) it is proposed that we go for cash transfer in lieu of giving subsidized food and fuel. The paper points to the “large scale diversion of food grains” and the “manipulation of quantities and part supply of commodities” that occur under the current system¹⁸.

This is a legitimate policy suggestion and a system with directed cash transfers would, arguably, be better than the current one involving the direct delivery of foodgrains to the poor through pre-specified ration shops. Nevertheless, it could be argued that the best option is the intermediate arrangement of giving

¹⁸ All this is not to deny that payment in kind also has some advantages. Theoretical arguments have been constructed to show that in situations with asymmetric information in-kind transfers may have advantage, in particular, that of self-selection (see, for instance, Blackorby and Donaldson, 1988; Singh and Thomas, 2000). On balance however, it seems to me that the advantages of payment in coupons or smart card outweigh the disadvantages. Some recent computations by Desh Deepak Verma of the Ministry of Consumer Affairs, Food and Public Distribution show that the gains from switching to a cash subsidy system can be between Rs. 12,700 crores and Rs. 15,500 crores.

food coupons to the poor. This does create some incentive for poor households to spend their handout from the government actually on food, since all other uses will entail some transactions cost¹⁹.

What we may wish to do is to hand over the coupons to the adult woman in the household. There is ample evidence that the same amount of transfer handed over to the woman instead of the man in the household gets spent on goods that raise what would by most observer criterion be considered more central to the well-being of the household (Mencher, 1988; Sen, 1990; Desai and Jain, 1994; Kanbur and Haddad, 1994; Agarwal, 1997). Moreover, the act of handing out coupons to women could lead to the benefit of empowering the women and raising the amount of say they have in household decisionmaking (Basu, 2006; Jhabvala, Desai and Dave, 2010). This same effect has now been reported from the employment of women under the National Rural Employment Guarantee Scheme (Pankaj and Tankha, 2010).

It should be pointed out that “coupons” do not have to literally mean paper coupons. We can take advantage of the age of electronics to use more foolproof substitutes such as the smart card or, even better, no cards or coupons but direct banking executed from one’s hand-held cell phone. This latter is currently under development by the same authorities that are working on the UID system.

Let me finally turn to the criticism that it will not be the genuine poor who get hold of the food coupons. Better off households and corrupt intermediaries may corner a part of the coupons supplied by the government. All that can be said about this problem is that it is not special to the coupons system. We currently face exactly the same problem whereby many of the BPL household certificates have been cornered by non-poor households. If we dovetail the coupons system with the UID or Aadhaar system that India is about to implement, then some of this problem can be addressed (UID Authority of India, 2010). But even if we cannot

¹⁹ There are also interesting theoretical arguments why gifts to specific products can be socially efficient (Bruce and Waldman, 1991). For a recent analysis of the economics of cash transfers, with illustrations from the Brazilian experience, see Vyasulu (2010).

do so, all that this criticism means is that the coupons or smart card or ration administered through the mobile banking system has several advantages over the current system but there are some dimensions on which it is no better. But since a policy that is better in some dimensions and as good in other dimensions is a better policy, the policy being recommended here seems well worth attempting.²⁰

It should be clarified that how we enhance the capability of the poor and vulnerable households to acquire some minimal amount of food—(i) through receiving subsidized grain from the local PDS store or (ii) by receiving the subsidy directly as coupons or an electronic transfer to their bank need not alter ones stand on whether and to what extent India needs to have a system for procuring a certain amount of essential foodgrains from the farmers and then releasing them partly at subsidized rates to the poor and partly on to the market in times of food shortage. In other words, how we resolve the policy problem addressed in this section does not necessarily have a bearing on what stand we take on the subject of food procurement and release.

However, once we switch to a smart card or food coupons system and give BPL households the right to buy their food from any store, the current PDS system will lose much of its relevance. The poor and vulnerable will still get subsidized food (and hopefully much more than what they actually get currently). But there will be no need for the foodgrain trade to be channeled through the government and the FCI, as currently happens. In such a scenario the state's involvement in the market will be much smaller and will pertain mainly to holding stocks for emergencies and unexpected food shortages. Given the need for state action in so many areas the release of the state from this particular activity should be a matter of welcome.

Further, the subject matter of this paper, to wit, the regulatory framework of the foodgrain market, must not detract from the dire need to invest more in agriculture and increase agricultural productivity. Indeed, it is hoped that if we

²⁰ Recent evidence from the field in the related area of school vouchers suggests that the coupons system can lead to substantial gains, as reported in a recent article by Saranya Kapur in **Economic Times** (15 July, 2010).

manage to make our foodgrain market more efficient, along the lines suggested in this paper, this will increase the incentives for farmers to produce more²¹. So these reforms could also have a long run positive effect through higher productivity.

²¹ The latter is addressed directly in Dev and Rao (2010).

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