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Agriculture

Grain stocks: Is it a problem of storage capacity?

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Bharat Ramaswami
Ashoka University
bharat.ramaswami@ashoka.edu.in

Foodgrains rot due to insufficient storage capacity, even as millions go to bed hungry. This column argues that increasing capacity is only a partial resolution. The crisis has happened before and will happen again unless different ways are found to support farmers and consumers.

Since 2010, the problem of insufficient storage capacity has attracted both political and media attention. Commentators in the media bemoan that India lets grains rot when there are people that go to bed hungry. Similar comments have echoed in the Parliament. In September 2010, hearing the Right to Food public interest petition, the Supreme Court asked the government to distribute to the poor the foodgrains that would otherwise rot. Since then, the mismatch between stocks and capacity has if anything worsened. Peak stocks in 2012 went beyond 80 million tonnes. In 2013, the early projections are that stocks will cross 90 million tonnes.

It is useful to break up the issue into two questions: how much storage capacity is required for public stocks and second, what policies will bring capacity in line with grain purchases.

How much storage capacity is required?

Crop harvests occur at particular points in time (*rabi* in the case of wheat and predominantly *kharif* in the case of rice) while consumption is continuous through the year. Hence the crop needs to be carried from the harvest months to the other months when there is no harvest. This constitutes the demand for seasonal storage. As there is no seasonal pattern in the consumption of either rice or wheat, the demand for seasonal storage (both public and private) can be worked out from timing of crop harvests and the principle that grain must be allocated equally over time.

To estimate the storage capacity for seasonal public stocks, we suppose that that grains are not carried over from one marketing year to another. Of course, total storage also includes stocks that are carried over years. The needs of such annual storage can be separately computed and added to the seasonal storage. So to assume zero storage over crop marketing years is to simply focus on the seasonal storage issue.

Thus, in the case of rice, we suppose public stocks are zero on October 1 (the beginning of the kharif marketing year). Say, the amount of rice that is procured for subsidised distribution is x. One-fourth of x is used in the quarter of the calendar year (October-December) and the carry-over is three-fourths of x on January 1, which is then progressively reduced to half and one-fourth of x in the succeeding quarters. A similar scheme can be worked out for wheat. Storage requirements taper off at the end of the marketing years for rice (September) and for wheat (March) respectively.

It can be easily seen that the peak demand for storage occurs on January 1 and this constitutes the storage capacity that must be planned for[1]. With the passage of the Food Security Act, it is expected that grain procurement would go up. The Rangarajan Committee estimated a food distribution requirement ranging from 64 to 74 million tonnes of grain (Economic Advisory Council, 2011). With a 60-40 split between rice and wheat, the peak storage demand does not exceed 41

million tonnes even in the high requirement scenario of 74 million tonnes. To this figure, we can add the emergency/ strategic reserves of 5 million tonnes that the government wishes to keep. The total peak storage would therefore be around 46 million tonnes[2].

Gap between required and existing storage capacity

The Food Corporation of India (FCI) - the central government agency responsible for procurement and storage of grain for the Public Distribution System (PDS) - has a storage capacity of 32 million tonnes, of which about half is hired. Hence, assuming that the FCI has hired all the capacity that is possible then the gap between FCI's existing capacity (32 million tonnes) and the required capacity (46 million tonnes) is about 14 million tonnes. Incidentally, in the 11th Five Year Plan, the FCI identified a gap of 16 million tonnes of capacity that needed to be created.

But the government buys far in excess of what it distributes

However, going by the recent experience of peak stocks exceeding 80 million tonnes, additional capacity required is nearly 50 million tonnes. So why are our calculations off the mark? That́s because our computations are based on government́s commitments to the PDS. However, what the government buys from farmers (procurement) does not match the PDS requirements. This can be seen from Figure 1 which plots the annual figures for procurement and PDS sales. Since the early 1990s, procurement has consistently exceeded PDS sales. This is why there have been recurrent crises of excess stocks and consequently, of storage capacity. An earlier manifestation was in the early 2000s. In August 2001, the government stashed away 65 million tonnes in warehouses, school buildings or simply under tarpaulins in open fields.

Figure 1: Procurement and PDS Sales
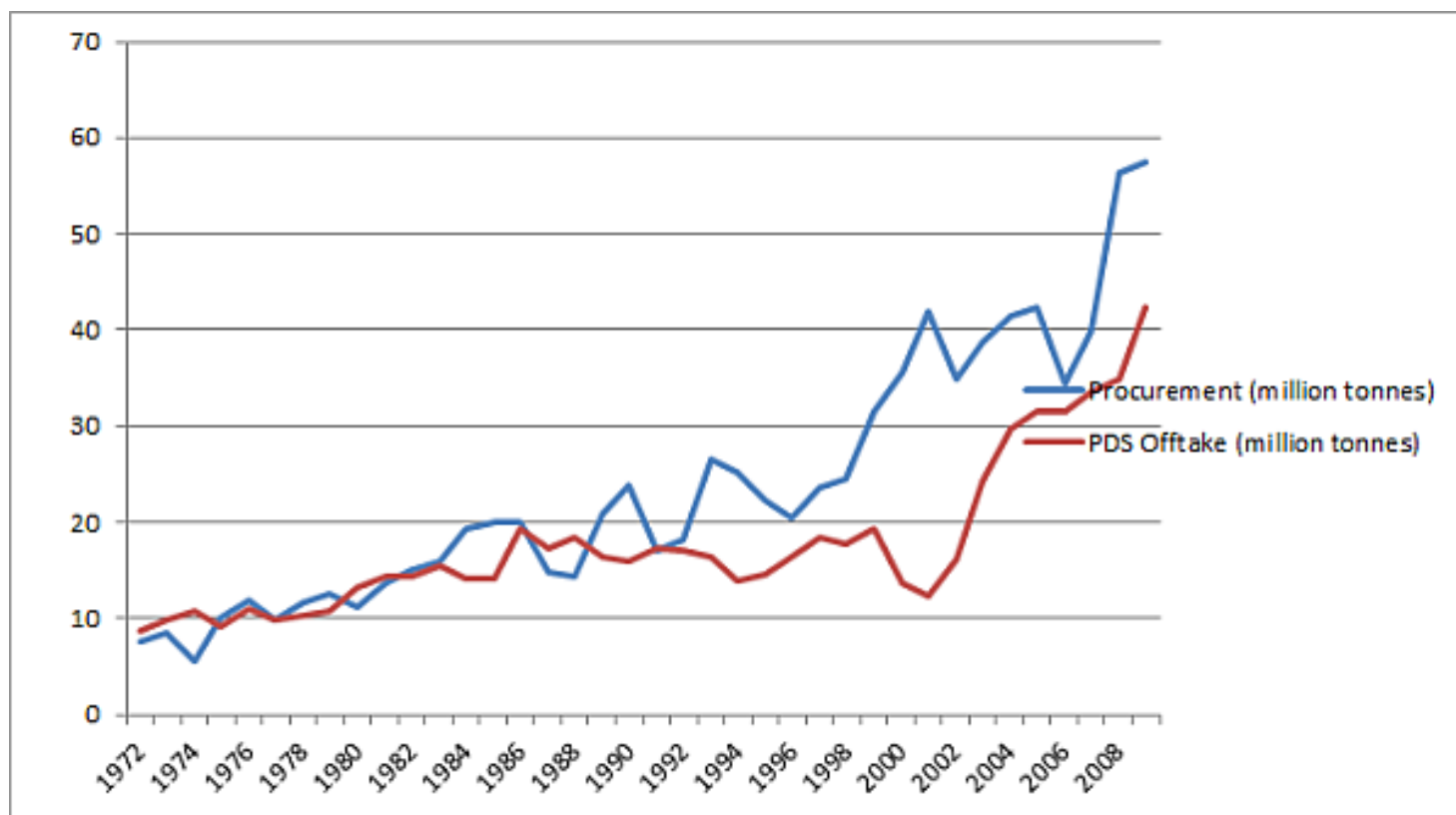
Source: From government documents, Economic Survey and website of Food Corporation of India.

From the figure, it is clear that the difference between procurement and distribution is too large to be explained by the need for emergency reserves. Nor can excess procurement be explained by an intent to stabilise consumption and prices. If that was the case, distribution ought to exceed procurement in years of low availability. Stabilisation re-orders supplies over time but does not alter the total supplies over a long enough period of time. One implication is that the averaged difference between procurement and subsidised distribution ought to be zero. Indeed, this is what obtained in the period prior to 1989-1990 (Ramaswami 2002). This has clearly not happened in the last two decades.

The pressure to hoard

The explanation lies in the procurement process and the fixation of the procurement price. While the politics around the procurement price is a proximate reason, an even more fundamental reason is the unwillingness to tolerate even small possibilities of under-supply to the PDS. At the higher levels

of the government, there is immense paranoia about food shortages affecting the PDS. Politicians and bureaucrats perceive the costs of insufficient supplies but nobody is held accountable for excessive stocks and high prices. Predictably, the errors are in one direction. High procurement prices and large government stocks displace private trade and therefore, bumper procurement and stocks continue until the momentum is broken by an exceptional event such as a drought or by *ad-hoc* dumping of grain in the domestic (open market sales) or international market (exports).

India does not have an announced protocol for stock depletion by way of sales to the domestic or to the international market because of the bureaucratic and political caution that lead to excessive stocks in the first place. In addition, high procurement prices typically mean that stocks have to be sold at a loss. As this would show up immediately as an increase in food subsidy, the finance ministry is typically unenthusiastic. Even when the government ultimately sees reason, the financial implications mean that the chain of decision-making is long and subject to frequent review. Speedy response to excess stocks is not part of the government DNA.

The implication is that as long as the key structure of the procurement system is unreformed, there will always be a tendency to accumulate excess stocks. Indeed, it is likely, that an expanded PDS (consistent with the National Food Security Bill) will reinforce this tendency. With a Food Security Act, the government has an explicit legal obligation to meet the requirements of the PDS. A failure, here, would not only be politically costly but could also result in legal sanctions for the officials concerned. For this reason, a food security act will amplify the tendency to "play it safe".

Reforming the procurement process: Closed-ended procurement

One way out is to have a systematic policy of open market sales. Kaushik Basu proposed a mechanism of selling grain in small batches to many traders and consumers to maximise the impact of open market sales on prices (Basu 2011). His proposal was made in the context of market stabilising interventions wherein procurement varies according to available supplies. But as we have seen, the foodgrain intervention has been systematically biased towards excess procurement. Hence, the socially beneficial, first best policy here would be to

reduce procurement rather than to have open market sales.

The ideal reform would be to move procurement from being open-ended to being closed-ended so that it meshes better with the PDS. Currently, the procurement system is open-ended in the sense that the government is committed to buy whatever farmers wish to sell. A closed-ended procurement process would be one where the government buys only that much grain as to meet its distribution requirement.

Such reform of the procurement process will be hard. States that gain from open-ended procurement will oppose such a move. While a closed-ended procurement process would meet political difficulties, incremental reform may be possible. First, if the expanded obligations under the Food Security Act are met by a mix of transfers in-kind and in cash, it will restrain the pressures on procurement. Of course, the problem vanishes in a world where cash transfers completely replace the transfers in-kind.

Second, it is important to unbundle the procurement for PDS from the procurement for buffer stocks. This can be done by creating a new agency called, say, the "Risk Management Agency" (RMA). The FCI's liability will remain limited to the grain purchased for distribution requirements. The stocks in excess of this requirement should be transferred to the books of the RMA. Such an arrangement will make excess stocks visible in financial accounts and therefore garner attention from economic and political observers. This might therefore force the government to take excess stocks into account when deciding procurement prices.

Notes:

1. For more details about the method and calculations, see Ramaswami and Murugkar (2013)

2. These calculations assume that rice procurement happens only in the last quarter of the calendar year when in fact it happens in the first quarter of the calendar year as well. As a result, the calculations assume more seasonality in procurement and storage than what is actually the case. Hence the peak storage requirement calculated above is an upper bound.

Further Reading

Basu, Kaushik (2011) "India's Foodgrain Policy: An Economic Theory Perspective", Economic and Political Weekly, vol. 46 (29): 37-45.

Economic Advisory Council (2011): "Report of the Expert Committee on National Food Security Bill", Government of India, New Delhi. http://eac.gov.in/reports/rep_NFSB.pdf

Ramaswami, Bharat (2002), "Efficiency and Equity of Food Market Interventions", Special Article, Economic and Political Weekly, 37 (12): 1129-1135.

Ramaswami, Bharat and Milind Murugkar (2013), "Food Policy Reforms: A Rapid Tour of Possibilities", forthcoming in the South Asia Working Paper Series, Asian Development Bank, Manila.