RESEARCH ARTICLE

Minimum Support Prices in India: Distilling the Facts

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Abstract: In recent years in India, minimum support price (MSP) and government procurement, especially of paddy and wheat, have been discussed widely, but these discussions have often drawn on evidence that is dated and incomplete. Consequently, such discussions have clouded the facts, resulting in a large number of factoids. According to these popular misconceptions, very few farmers (6 per cent only) benefit from MSP and government procurement, only large farmers benefit, and only farmers of Punjab and Haryana (and, to some extent, western Uttar Pradesh) benefit. In this article, we examine these three factoids and draw on multiple data sources to distil the facts. We argue that the existing evidence suggests a more complex picture: (1) MSP impacts 13 per cent of paddy sellers and 16 per cent of wheat sellers; (2) the geographies of procurement have expanded to new States including, notably, Madhya Pradesh, Chhattisgarh, and Odisha; and (3) although at the national level there is a bias towards large farmers, this does not imply exclusion of small and marginal farmers. In fact, a majority of the beneficiaries are marginal and small farmers on both the extensive and the intensive margins. Further, we find substantial heterogeneity by States. Haryana, for instance, has a bias in favour of small and marginal farmers. We conclude that debates on MSP and procurement must therefore take into account the changed geography of procurement and the profile of sellers, and recognise the diversity of experiences relating to procurement across States.

Keywords: Price support, procurement, minimum support price, MSP, paddy, wheat, India.

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Introduction

After the passage of the three controversial farm laws in Parliament on September 20, 2020, the issue of minimum support price (MSP) has gained a lot of attention. MSP, which these three laws do not in fact address, is meant to set a floor below which prices do not fall, and is announced by the government for 23 commodities based on the recommendation of the Commission for Agricultural Costs and Prices (CACP). It is the price at which the government undertakes to buy food commodities from farmers if market prices fall below it. In fact, however, government procurement tends to be largely independent of price movements, and is heavily concentrated on wheat and rice with limited procurement of other crops.

A remunerative MSP for all crops has become a rallying cry for farmer organisations across the country. Among the demands of farmers protesting what they call the "Black Laws" are that MSP be declared a legal *entitlement*, and that it be set "at least 50 per cent over the weighted average cost of production" as per the recommendations of the M. S. Swaminathan-headed National Commission for Farmers (National Commission for Farmers 2006).

Both these issues, namely MSP and government procurement, have been discussed widely over the years, though often based on evidence that is dated and incomplete. Consequently, such discussions have clouded the facts and resulted in the circulation of a large number of factoids. In this article, we attempt to lay out some of these unproven assertions and draw on multiple data sources to refute them.

This article focuses on three main issues. These pertain to how many farmers have benefited from the MSP, the economic categories these farmers belong to, and the States where such benefits have been reaped. Popular misconception holds that very few farmers benefit from MSP, that of them only the large farmers reap the benefits, and that only farmers of Punjab and Haryana (and, to some extent, western Uttar Pradesh) benefit. The Shanta Kumar Committee report, for example, notes:

> The upshot of this entire evidence is that the direct benefits of procurement operations in wheat and rice, with which FCI [Food Corporation of India] is primarily entrusted, go to a miniscule of agricultural households in the country. Obviously then, much of the procurement that government agencies undertake comes from larger farmers, and in a few selected States (Punjab, Haryana, Andhra Pradesh, and lately from Madhya Pradesh and Chhattisgarh). (GoI 2015, p. 13)

Such statements form the crux of the arguments against MSP. We examine each of these issues in turn, and argue that the current debates need more detail and nuance.

The Reach of MSP and Procurement

Many commentators have pointed out that only a tiny fraction, an estimated six per cent of all farmers in the country, benefit from MSP and public procurement.

The Shanta Kumar Committee report uses this to argue against MSP and government procurement, noting that these are therefore irrelevant and dispensable (GoI 2015).

The estimate of six per cent comes from the National Sample Survey's Situation Assessment of Agricultural Households (NSS-SAS), conducted as part of its 70th Round. The survey involves two visits to sample households, the first visit covering the recall period June–December 2012 and the second, January–June 2013. A dedicated module, Block 13, in the survey captures data on awareness of MSP and sale under MSP through direct interviews with agricultural households.[1]

Based on these data, the proportion of agricultural households that record MSP sale of rice and wheat (in either season) is 6.03 per cent and 5.97 per cent, respectively. However, there are large variations among States. For example, for rice in Chhattisgarh, the proportion is as high as 38 per cent, and it is just one per cent in States like Bihar, Tamil Nadu, and West Bengal. For wheat, this proportion is nearly two-thirds (62 per cent) in Punjab, followed by Haryana (39 per cent), Madhya Pradesh (16 per cent), and Uttarakhand (10 per cent) (Appendix Tables 1a and 1b). These variations are conveniently masked, and only the national figure of six per cent has been cited prominently in all the commentaries as the full reach of MSP (Bhalla 2020; Gulati 2021).

There are compelling reasons to qualify this figure. First, it focuses only on direct benefits of MSP sales for rice and wheat. It neglects other MSP crops for which procurement, even if limited, is operational.[2] Damodaran (2020), for example, notes that government procurement is significant for several crops: it was 29.5 per cent to over 43 per cent of total production in 2019-20 for rice, and wheat and cotton; 18–19 per cent for *chana* (chickpea) and *arhar*/*tur* (pigeon pea), 10 per cent for milk, and 7–9 per cent for mustard and groundnut. He notes, too, that these figures would be higher if computed using actual sales by farmers, and concludes that the MSP/assured price system covered 25 million plus farmers across all crops including pulses and oilseeds in 2019-20, translating to anywhere between 15 per cent and 25 per cent of all farmers rather than just six per cent.[3]

Even if one were to focus exclusively on rice and wheat, and even though not all agricultural households cultivate rice or wheat, often because of agroclimatic conditions, there is a case to be made for determining what proportion of rice and wheat growers (rather than *all* growers) benefit from MSP. Further, given that rice and wheat are staple grains, many households grow these crops for

[1] Since interviews are done directly with households, any sale that happens indirectly, for instance, if farmers were to sell to millers and they in turn sell to an agency, will not be recorded in these data.

[2] National Agricultural Cooperative Marketing Federation of India (NAFED), for example, has been actively procuring oilseeds and pulses. Using the same module, we find that the proportion of farmers benefiting from MSP sales for all crops is 33 per cent higher than the stated figure – at 8 per cent rather than 6 per cent – even if not high in itself.

[3] The data he draws on includes http://nfpp.nic.in, a portal for information on government procurement.

Table 1 *Participation in paddy and wheat procurement in India: some facts, 2012-13* in per cent

	Paddy	Wheat
Farmers growing as percentage of all farmers	52	39
Farmers with marketable surplus as percentage of those who grew	45	37
Farmers selling to agencies as percentage of those who sold	13	16
Farmers selling to agencies as percentage of those who grew	6	6

Notes: Farmers refer to "agricultural households" as defined in NSS 70th Round. We have combined both rounds for the analysis.
A farmer is deemed to grow any crop, paddy or wheat, have marketable surplus, or sell to an agency under MSP if the farmer did so in at least one of the seasons.
Figures have been rounded off to the nearest whole number.
Source: National Sample Survey, 70th Round (2012-13).

self-consumption and have no surplus to sell in the market (Table 1). As per the survey, 45 per cent of paddy growers that year sold any paddy, and 37 per cent of wheat growers sold any wheat (Table 1). When one considers households that had any marketed surplus, i.e. had non-zero sales that year, the proportion of rice and wheat sellers who benefited from selling to the procurement system were 13 per cent and 16 per cent, respectively, considerably larger than the six per cent cited in the debates around MSP (Table 1). The rest of this article focuses on those paddy and wheat growers who had some marketed surplus.

In the debates on the reach of MSP, some argue that there is no sensible way to judge how many farmers should benefit before we consider the actual number of beneficiaries. Here we need to recognise that the MSP might indirectly benefit even those who do not sell to procurement agencies. On the one hand, there are the direct beneficiaries, i.e. those who sell at MSP under government procurement. On the other hand, there are those who do not sell to the government. There is some evidence that the MSP props up market prices even for them (Niti Aayog 2016; Chatterjee *et al.* 2020). Moreover, to the extent that procurement supports the public distribution system (PDS), farmers without a marketable surplus may benefit from it as PDS ration card holders. To understand the full extent of the benefits of MSP, evidence for which is currently lacking, we would need to take into account the impact of MSP on market prices as well. The claim that MSP is irrelevant to most farmers because only six per cent sell to agencies is one that conceals as much as it reveals, as it neglects the true reach of MSP. Further, making a case for replacing MSP on the basis of these numbers makes even less sense.

The Changing Geography of Procurement

A second claim is that procurement is relevant only for farmers in Punjab and Haryana, and, to some extent, western Uttar Pradesh. While the procurement system for rice and wheat was established following the Green Revolution mainly in Punjab and Haryana, it is no longer the case that procurement is restricted to these two States. This factoid

relies on older data, when Punjab and Haryana were virtually the sole providers of public stocks of rice and wheat.

As NSS-SAS is a cross-sectional data set pertaining to 2012, we use more recent State-level panel data on procurement of rice and wheat to assess more recent trends in the geography of procurement. Estimates from the NSS-SAS data and official data on procurement are bound to differ on account of a range of factors including but not restricted to the limited coverage of households and possible recall, as the survey is administered twice a year relying on recall data for past seasons.[4] Further, the data captured in NSS-SAS are not a complete account of all government agency sales.[5] By contrast, the official data are from procurement records reported by State and central procurement agencies.

These data suggest that several States that were not historically involved in public procurement have emerged as significant regions of procurement, notably Madhya Pradesh for wheat, and Odisha and Chhattisgarh for rice. Figure 1 plots the increase in total procurement of cereals since the mid-1980s until 2019-20, the most recent year for which data are available. An impressive increase in absolute levels of procurement – from 20 million tonnes to over 90 million tonnes – has been accompanied by a gradual rise in the ratio of procurement to production.[6] In 2013-14, nearly 30 per cent of the total output of rice and over a quarter of the wheat

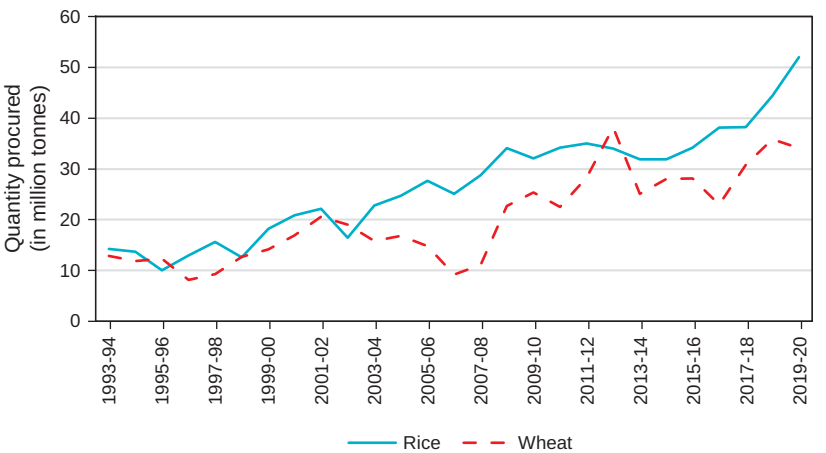
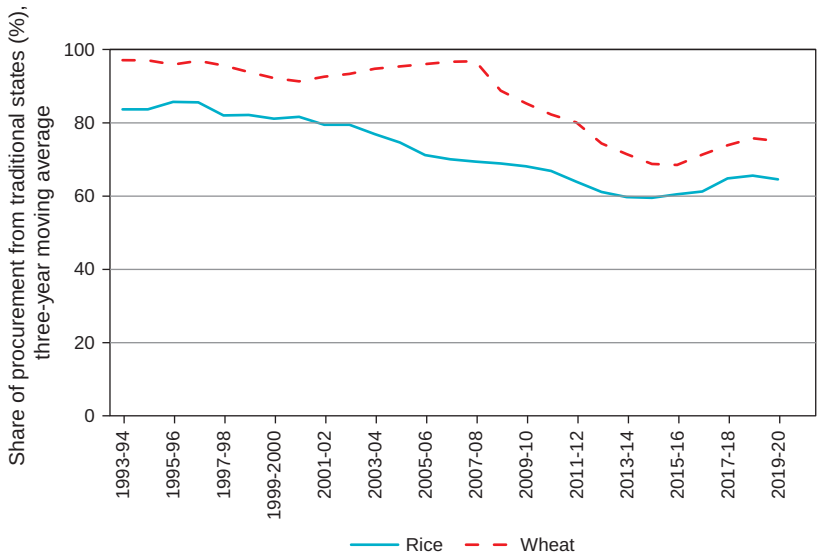


Figure 1 *Procurement of rice and wheat, all India, 1993-4 to 2019-20*
Source: Food Grain Bulletin, Government of India, various years.

[4] The survey covers agricultural households, defined as households having one member self-employed in agriculture in either principal status or subsidiary status during the last 365 days, and obtaining more than Rs 3000 from agricultural activities such as cultivation of field crops, horticultural crops, fodder crops, plantation crops, animal husbandry, poultry, fishery, piggery, bee-keeping, vermiculture, and sericulture.
[5] The relevant question is whether the farmer sells to "any of the agencies" that procure at MSP. While sales to these agencies are recorded even if for some reason it was not at MSP, in case of "multiple sales, the agency to whom maximum part of the crop was sold will be recorded" (NSSO, n.d., p. E40).
[6] The 2019-20 figures are from GoI (2021).



Traditional States include Punjab, Haryana, and Uttar Pradesh for both wheat and rice. Andhra Pradesh is also included for rice.

Figure 2 *Decreasing share of traditional States in total procurement of wheat and rice, 1993-4 to 2019-20*

Source: Computed by the authors using data from Food Grain Bulletin, Government of India, 1993-4 to 2019-20.

output were procured by the government; in 2019-20, procurement was over 40 per cent for rice and over 30 per cent for wheat.[7]

Figure 2 shows the share of procurement from what are called "traditional States." Until the early 2000s, the bulk of the procurement of wheat by the government at minimum support prices was from three north Indian States – Punjab, Haryana, and western Uttar Pradesh – and from Andhra Pradesh for paddy. These four States are referred to as traditional States in this article. The share of the four States in total procurement was more than 80 per cent through the 1990s. With more than 90 per cent of all procurement coming from three States through the 1990s, the degree of concentration was greater in the case of wheat (Figure 2). Figure 2 shows the decline in the share of traditional States in total procurement. The share of traditional States

[7] Saini and Kozicka (2014) note with concern that during this time more than 75 per cent of the marketable surplus was procured by the government, leaving very little grain to be traded in the open market. While recognising such concerns, this article does not focus on optimal stocks or the consequences of the current scale of stockholding. At the same time, we note that the early fears that the National Food Security Act 2013 would lead to a further increase in procurement are largely unfounded. For years now, procurement has outstripped National Food Security Act (NFSA) requirements. Food Corporation of India's (FCI's) open-ended procurement policy and better prices are likely the cause of increasing procurement.

came down to 60 per cent and 70 per cent in 2014–15, and stood at 64 per cent and 75 per cent in 2019-20, for paddy and wheat, respectively.[8]

A key driver of this change in geographies of procurement is the introduction of decentralised procurement. Yet, in the discussions so far, the experience of decentralised procurement in India has found scant mention. In 1997-98, precisely to address the flaws of a centralised system that was focused on just a few States, the government introduced a decentralised procurement (DCP) scheme.

Under the DCP scheme, State governments that opt to undertake direct purchase of paddy/rice and wheat, store and distribute these food grains under the National Food Security Act (NFSA) and other welfare schemes. The central government is responsible for the expenditure incurred by State governments on procurement operations, based on costs that have been approved. It was believed that the DCP scheme would enhance the efficiency of procurement and PDS, save on transportation costs, and ensure that MSP benefits reach farmers within the State. It also enables procurement of food grains more suited to local food preferences.

The central government introduced the DCP scheme in 1997-8, but it did not meet with much success in its initial years. Over time, however, starting with paddy procurement in Chhattisgarh, several States have shown an interest in DCP.[9] These include Odisha, and more recently Bihar and West Bengal, for paddy. The share of the traditional States in wheat remained higher than 80 per cent until 2008-9, when Madhya Pradesh began participating in the procurement of wheat. Decentralised procurement of wheat in Madhya Pradesh has taken off in a big way since then. The contribution of Madhya Pradesh to wheat procurement peaked in 2014-15, at 25 per cent, and it was 20 per cent in 2019-20. In 2020-21, wheat procurement from Madhya Pradesh even surpassed that from Punjab. In the case of paddy, Chhattisgarh and Odisha have been the star performers. These States today contribute about 10 per cent each to total paddy procurement in the country.

[8] This shift is reflected in the NSS data as well. According to the 70th Round, 48 per cent of farmers who sell to the government come from the DCP States. Further, the contribution of each State to the central pool broadly matches the figures reported in Ministry data.

[9] The 15 State Governments undertaking decentralised procurement as on July 2015 were West Bengal (paddy/rice), Madhya Pradesh (paddy/rice and wheat), Chhattisgarh (paddy/rice), Uttarakhand (paddy/rice and wheat), Andaman and Nicobar Islands (paddy/rice), Odisha (paddy/rice), Tamil Nadu (paddy/rice), Gujarat (wheat), Karnataka (paddy/rice), Kerala (paddy/rice), Andhra Pradesh (paddy/rice in six districts), Bihar (paddy/rice and wheat), Rajasthan (wheat in Alwar district only), Punjab (wheat for NFSA obligations only), and Telangana (paddy/rice in nine districts). In this article, we restrict our attention to those DCP States which contributed more than 10 per cent to the central pool at some point during the period under study. Madhya Pradesh is considered a DCP State for wheat, and Chhattisgarh and Odisha for paddy/rice. We focus on Punjab, Haryana, Uttar Pradesh, and undivided Andhra Pradesh as non-DCP States, although Telangana has increased its contribution to procurement in recent years under the DCP.

Decentralisation of procurement operations holds several advantages. It can expand the geographies of procurement and potentially include crops that are locally relevant and tied foremost to local needs for food-based schemes.

There are several examples of State-level procurement responding to local imperatives. For instance, Kerala's rice procurement was focused on reversing the dramatic decline in area under rice within the State (Thomas 2011; Government of Kerala 2020). Thus, although Kerala accounts for a very small share of procurement in the country, less than one per cent in recent years, the scale of procurement is not negligible in relation to production in the State, accounting for an average of about 65 per cent of rice production during the period 2010–11 to 2018-19. The comparative figure for Tamil Nadu is 17 per cent.

Decentralised procurement can also be more inclusive of smallholders, depending on how these are designed. Direct bank payments to farmers who supply to the procurement system, as has been done in Odisha, helps circumvent underpayment by intermediaries who manage the procurement operations. The involvement in procurement of local institutions, such as Primary Agricultural Credit Societies (PACS) in Bihar, Chhattisgarh, and Odisha; farmer organisations (via the Small Farmers' Agri-Business Consortium); *pani* panchayats (Odisha); and self-help groups (SHGs), on a commission basis, can revive and strengthen these institutions.[10] Despite these possibilities, the Indian experience of decentralised procurement has not been studied very much.[11]

The DCP scheme holds several challenges as well. Unlimited or open-ended procurement by the States beyond their requirement for food-based schemes, and States offering bonuses over and above MSP have posed problems of excess stocks and fiscal pressures. In response to these challenges, the Government of India set out to "reform" the programme. In 2014-15, bonuses over and above MSP that States were offering were curtailed, as was open-ended or unlimited procurement by States. The responsibility of disposing surplus grain, beyond what was required for distribution, was now deemed to be the responsibility of the States. Procurement caps imposed by the Centre delays in release of subsidy, and storage issues remain contentious issues.[12] In 2017, the Government of India notified that stocks procured

[10] Pani Panchayat (PP) is a local farmers' organisation, organised for the purpose of irrigation water management, recognised by Orissa Pani Panchayat Act 2002 and Orissa Pani Panchayat Rules 2003 and registered under Society registration Act, 1860.

[11] Anecdotal evidence from Odisha and Chhattisgarh suggests positive impacts (e.g., improved repayment rates of loans). This is based on one of the authors' field visits to both States in 2013. In Bihar, the PACs faced severe constraints (e.g., lack of cash to participate in procurement; Pandey 2021). The experiences of farmer producer organisations (FPOs) involved in procurement too have been quite varied.

[12] HT Correspondent (2021); Mohanty (2021); and John (2020). Chhattisgarh, for example, introduced under the Rajiv Gandhi Kisan Nyay Yojana, a direct transfer of Rs 10,000 per acre, in part because it was unable to pay the bonus it had announced on paddy procurement. The government had promised a sum of Rs 2,500 per quintal on DCP procurement, which was Rs 1,300 more than the central government's price.

by DCP States beyond their needs or at prices that entailed bonuses would not be accepted in the central pool (GoI 2017).

In recent times, many States have taken the initiative to establish public procurement, of millets in Odisha and Karnataka (Sarangi and Mishra 2021; Jena and Mishra 2021; Raju *et al.* 2018), horticultural crops in Kerala, etc. These deserve further study and highlight the possibility of a wide range of models that challenge a common view of procurement as a monolithic, centralised system focused on rice and wheat from Punjab.

The NSS-SAS of 2012-13 too, though dated, reflects the changing geography of procurement, both in terms of the shares in total procurement contributed by different States and farmer participation in MSP sales.[13] According to the NSS-SAS, 48 per cent of farmers who sell to the government come from the DCP States. As per the survey, in 2012-13, among agricultural households that made MSP sales of paddy under the procurement system, less than 10 per cent belonged to Punjab, about 30 per cent to Chhattisgarh, less than 7 per cent to Haryana, and 10.8 per cent to Odisha. For wheat, an overwhelming majority of agricultural households selling to the procurement agencies came from Madhya Pradesh – 33 per cent, as compared to 22 per cent from Punjab and 18.5 per cent from Haryana. The view that only Punjab and Haryana farmers have benefited from MSP, therefore, truly belongs to the past. Further, when one factors in States that account for a miniscule share of all procurement but nevertheless procure a significant share of what is produced within the State, it is apparent that current discussions neglect important aspects of the changing geographies of MSP procurement.

Who Benefits from MSP?

The third misconception pertains to the distributional consequences of the current procurement system. According to some commentators, only large farmers benefit from an operational MSP. Here the debate is bereft of nuance.[14] In so far as direct benefits from MSP are concerned, bias against small farmers should not be construed as exclusion of small farmers.

There are different ways of assessing the distributional implications of procurement operations in terms of whom they benefit. The first is in terms of the number of beneficiary farmers/agricultural households from each class-size, in absolute terms as well as relative to their representation among rice/wheat sellers (See Table 2 for a glossary of measures). The share of those who use the procurement system in the small and marginal farmer category provides us a sense of whether small and

[13] The contribution of each State to the central pool broadly matches the figures reported in ministry data. See Appendix Tables 1a and 1b.

[14] Bhalla (2020) writes, ". . . only about six per cent of the farmers in India sell through the APMCs to the government. These six per cent are *all* large farmers" (emphasis added).

Table 2 *A glossary of measures to assess the distributional aspects of procurement*

S. No.	Measure	Description	Computation
1	Procurement participation rate, by class	Proportion of small or marginal farmers who are selling to the procurement system.	Total number of farmers in each class who sell paddy/wheat to the procurement system in either season, divided by the total number of farmers who sell to the procurement system.
2	Market participation rate, by class	Proportion of small or marginal farmers who have any marketed surplus.	Total number of farmers in each class with a marketed surplus (i.e. any paddy/wheat sale) in either season, divided by the total number of farmers with any marketed surplus.
3	Procurement share	Contribution/share of small and marginal farmers to total procurement of/in rice/wheat.	Quantity of rice/wheat sold to government in each class in either season, divided by the total quantity of rice/wheat sold to government by all farmers.
4	Marketed surplus share	Contribution/share of small and marginal farmers to/in all rice/wheat sales (marketed surplus).	Quantity of rice/wheat sold in each class in either season, divided by the total quantity of rice/wheat sold by all farmers.
5	Percentage of marketed surplus of a farmer directed to the procurement systems	Share of all rice/wheat sales of the farmers that is sold to the procurement system (0 represents non-participant; 1 indicates that all crop that is sold is sold to the procurement system.	Quantity of rice/wheat sold to the procurement system for each farmer, divided by the marketed surplus of the farmer for rice/wheat.
6	Participation bias (extensive margin)	Summary measure of whether or not farmers in a land-size class are over-represented in procurement participation.	(1) divided by (2)
7	Procurement bias (intensive margin)	Summary measure of whether or not farmers in a land-size class supply disproportionately more to the procurement system than implied by their share in all marketed surplus.	(3) divided by (4)

(continued on next page)

Table 2 *(continued)* A glossary of measures to assess the distributional aspects of procurement

S. No.	Measure	Description	Computation
8	Reliance on MSP	At the individual farmer level, the proportion of all rice/wheat sales that are sold to the procurement centre.	Quantity of rice/wheat sold to government by an individual farmer divided by the individual farmer's marketed surplus, i.e. all rice/wheat sold.

Note: "Marketed surplus" refers to any sale of rice or wheat in either season by a farmer. Class refers to landholding size. Marginal farmers are those with less than 1 hectare; small farmers are those who hold between 1 and 2 hectares; semi-medium farmers hold 2–4 hectares; medium farmers hold 4–10 hectares; and large farmers hold more than 10 hectares.

marginal farmers are included or excluded from the system. The ratio of this share relative to the share of all rice/wheat sellers who are small and marginal farmers is a measure of whether smallholders benefit from the procurement system in proportion to their representation among rice/wheat sellers. This can be called "participation bias," and it indicates whether there is large (or small) farmer bias. Within any class, a ratio of greater than one implies that the procurement participation rate is larger than the market participation rate, and suggests participation bias in favour of farmers in that size-class. Both these measures – the procurement participation rate (by class) and the market participation rate (by class) – reflect the extensive margin of participation, i.e. whether or not farmers of a particular size-class participate.

The second is the share of procurement accounted for by different classes of farmers, in absolute terms as well as relative to contribution to all rice/wheat sales (Table 2). This measure assesses smallholder inclusion in the procurement system, not in terms of farmers but in terms of the quantities they contribute, thus representing the "intensive margin" of participation. Given that smallholders typically have smaller marketed surplus relative to large farmers, the share of all procurement accounted for by smallholders (the procurement share) will likely be lower than the share of smallholders amongst all farmers who use the procurement system (procurement participation by class). We then compare the share of total procurement volumes contributed by smallholders relative to their share in all rice/wheat sales, to assess if smallholder share in procurement is proportionate to their contribution to marketed surplus. This can be called "procurement bias."

These two approaches towards assessing participation on the extensive and intensive margins together provide insights into large farmer bias, while distinguishing this from smallholder exclusion.

A third, somewhat different aspect of the distributional implications of the procurement system is the extent to which MSP sales is an important component of an agricultural household's crop sales/income. How much do different landholding classes depend on the procurement system and in the key procurement States? This enables us to identify the key groups that are most likely to be affected by changes to MSP and procurement policy. This measure offers insights into current claims that removal of MSP is like "snatching away the milk bottle" from large farmers.[15]

For this section, we use the official classification of land-size that is typically used by the Government of India in its reports, censuses, and surveys, such as the Agricultural Census. Accordingly, marginal farmers are those with less than 1 hectare of land, and small farmers are those who hold between 1 and 2 hectares of land. Semi-medium (2–4 hectares), medium (4–10 hectares), and large farmers (more than 10 hectares) are the other land-size categories defined in the Agricultural Census. As per the Agricultural Census of 2015–16, 86 per cent of all operational holdings in India were either small or marginal.[16]

Farmer Participants in the Procurement System, All India

In terms of the proportion of farmer participants in the procurement system belonging to different landholding classes at the all-India level in 2012-13 (using the data that the Shanta Kumar Committee had access to, which is still the last version of these data that are available), among those who sold paddy to the government 10 per cent were medium and large farmers, with just one per cent owning over 10 hectares of land (Table 3). Small and marginal farmers with less than two hectares accounted for 70 per cent (Table 3). The rest (20 per cent) were semi-medium farmers (2–4 hectares). In the case of wheat, the share of large farmers was thrice as high as paddy: three per cent of all wheat-selling farmers were large farmers; more than half (55 per cent) were small and marginal farmers (Table 3). This suggests that smallholders are far from being excluded from the procurement system.

At the same time, these data confirm a bias towards large farmers (Table 4). Whereas the share of medium and large farmers who have any marketed surplus among all

[15] Seminar on "Farm Bills and Protests: Concerns and Way Forward," Ambedkar University Delhi, December 15, 2020, available at https://youtu.be/50V40mgeZgU?t=1030, viewed on June 24, 2021.

[16] In the discussion of distributional patterns based on class-size, one must bear in mind that the land-size holdings can vary based on region and the prevalence of irrigation. Further, some consider that even landholdings larger than two hectares are quite large, given that 86 per cent of holdings are smaller than that and the mean landholding size is just 1.06 hectares. At the same time, in so far as small holdings represent the economic status of farming families, even those with larger holdings are not necessarily prosperous. For example, in India's notification to the World Trade Organisation (WTO), the Government of India notes that "As per the Agricultural Census for year 2015–16, 99.43 per cent of farm holdings are of low-income or resource-poor farmers," counting those with operational holdings up to 10 hectares among low-income or resource-poor farmers (WTO 2019). Thus, as per the Government of India's submission, holdings less than 10 hectares, i.e. even those classified as medium or semi-medium, are low-income or resource-poor.

Table 3 *Distribution of farmers who sell to agencies, by land-size, as per cent of all participants in the State, NSS major States*

State	Paddy			Wheat		
	Marginal and small	Semi-medium	Medium and large	Marginal and small	Semi-medium	Medium and large
Chhattisgarh	78	17	5	0	—	—
Orissa	73	17	10	—	—	—
Punjab	38	31	31	42	27	31
Telangana	81	17	3	—	—	—
Uttar Pradesh	75	16	9	72	21	7
Haryana	58	28	14	68	21	11
Tamil Nadu	73	17	9	—	—	—
Madhya Pradesh	59	22	19	45	37	18
Bihar	75	16	9	85	9	6
West Bengal	95	5	0	—	—	—
Uttaranchal	84	14	3	88	10	3
Andhra Pradesh	21	74	4	—	—	—
India	**70**	**20**	**10**	**55**	**28**	**17**

Note: Row totals add up to 100.
Source: National Sample Survey, 70th Round (2012-13).

paddy and wheat sellers is 4 per cent and 8 per cent respectively, they participate disproportionately more in procurement – 10 per cent and 17 per cent of those who participate in procurement are large farmers. Small and marginal paddy and wheat farmers, on the other hand, have market participation rates of 84 and 74 per cent for paddy and wheat, respectively, but procurement participation rates of only 70 and 56 per cent respectively. On the extensive margin, therefore, procurement favours larger farmers. Yet it is not the case that they have crowded out small and marginal farmers from the procurement system.

The patterns are similar when one considers the quantity sold, or the procurement shares of small and marginal farmers relative to that of large farmers, i.e. the intensive margin (Table 4). As much as 35 per cent of paddy that is procured is sourced from small and marginal farmers, while the figure is 20 per cent for wheat, although they account for 54 per cent of the marketed surplus of paddy and 40 per cent for wheat. Large farmers have disproportionately higher shares when normalising by their share in marketed surplus. As with the extensive margin, large farmer bias has not crowded out small and marginal farmers.

Farmer Participation and Procurement Bias in Select States

The all-India figures reported in Table 4 hide large variations across States in the distributional patterns of participation in the procurement system, both in the extent

Table 4 *Participation and procurement bias in rice and wheat, all India*

	Marginal farmers (<1 ha)	Small farmers (1—2 ha)	Semi-medium farmers (2—4 ha)	Medium and large farmers (>4 ha)
Paddy				
Procurement participation rate (by class)	41	29	20	10
Market participation rate (by class)	61	23	11	4
Participation bias (extensive margin)	**0.67**	**1.25**	**1.76**	**2.46**
Procurement share	15	20	27	38
Marketed surplus share	29	25	22	24
Procurement bias (intensive margin)	**0.52**	**0.79**	**1.23**	**1.61**
Wheat				
Procurement participation rate (by class)	34	22	28	17
Market participation rate (by class)	49	25	17	8
Participation bias (extensive margin)	**0.69**	**0.87**	**1.61**	**1.98**
Procurement share	7	13	28	52
Marketed surplus share	20	20	26	34
Procurement bias (intensive margin)	**0.37**	**0.65**	**1.08**	**1.51**

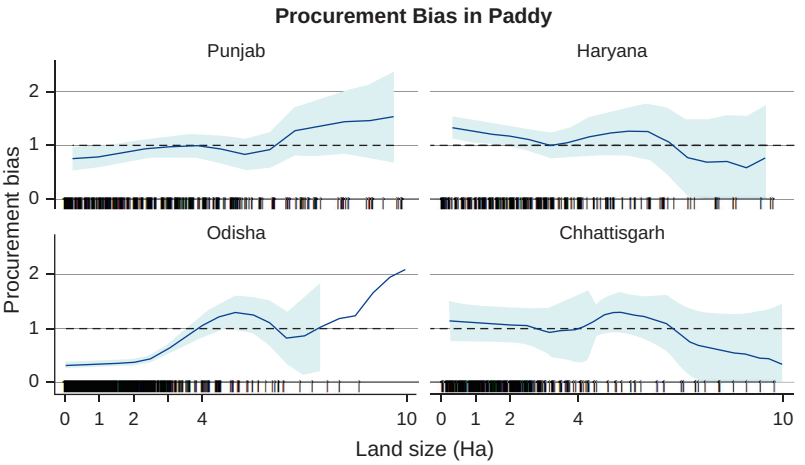
Notes: Computed by the authors from unit data, National Sample Survey, 70th Round (2012–13).
For definitions, see Table 2.
Figures of rates and shares are rounded off to the nearest whole number; rows may therefore not add up to 100.

of smallholder participation as well as in the patterns of bias in favour of large farmers. (See Appendix Tables 2a and 2b for State-specific and crop-specific results of Table 4.)

Figures 3 and 4 plot the procurement bias for paddy and wheat, respectively, for each of the major procurement States. In the figures we use unit-level data from the NSS-SAS, and plot the relationship between procurement bias and landholding size. We use non-parametric local polynomial regressions that reveal the underlying relationship between procurement bias and landholding size. A procurement bias value larger than 1 indicates that the bias is in favour of farmers with that landholding size.

Indeed, there is a significant difference even within the traditional States in both participation and procurement bias, with procurement in Punjab suggesting a pro-large farmer bias on the intensive margin, whereas the bias favours smaller land-size classes in Haryana.

In the non-traditional States that adopted the DCP scheme, the overwhelming majority of farmers who sell to government procurement agencies are small and marginal. In Chhattisgarh and Odisha, for example, small and marginal farmers comprise 70–80



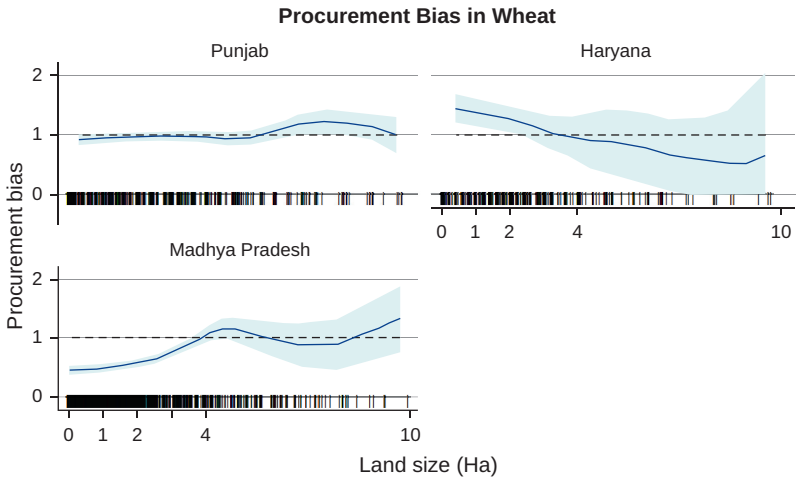
Procurement bias computed as ratio of procurement share to market share. A bandwidth of 1 Ha is used with a Epanechnikov kernel and sample weights. Rugplot (bars near the horizontal axis) denotes the distribution of sample according to land size. Truncated at 10 Ha

Figure 3 *Procurement bias in paddy, select States, 2012-13*

per cent of all sellers to government agencies.[17] Yet Figure 3 reveals a large farmer bias in Odisha, while the opposite is true in Chhattisgarh. While nearly half (45 per cent) of those who sell wheat to government agencies are small or marginal farmers in Madhya Pradesh, Figure 4 reveals a larger farmer bias in procurement. It is evident that there is significant variation both across the two crops and across States, making a case for desisting from any generalisation.

Overall, while the distributional implications do leave something to be desired, to suggest that the benefits of procurement are cornered either by Punjab/Haryana farmers alone or exclusively by large farmers would be false, even if one were to use two hectares as the cut-off to distinguish large farmers from small farmers. These distributional features are not an immutable fact of procurement and can be corrected by programme design. Various DCP models offer some lessons (Sinha and Patnaik 2016; Singh and Soni 2013). As noted earlier, in Chhattisgarh and Odisha, farmers are paid directly and they sell directly via local institutions such as PACs and SHGs, with procurement sites located in villages across the procurement areas.

[17] Our findings above, based on the NSS-SAS, largely conform to State-level data on paddy procurement, by farmer size. For example, data from Chhattisgarh show the impressive expansion of procurement. Both sale quantity and the number of farmers selling have shown a secular increase since 2008-9. The number of farmers who transacted had increased from 8 lakhs to about 10 lakhs in 2012-13, the year in which the NSS-SAS data were collected. The increase in procurement has been very impressive as well – from 37.6 million quintals to 71.5 million quintals, in the same period. The size of an average transaction has also increased – from 25 quintals to 38 quintals, in the same period. The average value of each transaction more than doubled – from Rs 22,452 to Rs 47,943 – reflecting the increase in quantity and the MSP, including bonuses, over the period. As per these data, the average landholding size of farmers who sell to the procurement system was just 0.784 hectare in Chhattisgarh.



Procurement bias computed as ratio of procurement share to market share. A bandwidth of 1 Ha is used with a Epanechnikov kernel and sample weights. Rugplot (bars near the horizontal axis) denotes the distribution of sample according to land size. Truncated at 10 Ha

Figure 4 *Procurement bias in wheat, select States, 2012-13*

A more careful study and assessment of alternate approaches to procurement and ways in which they foster smallholder participation would shed light on these issues.

Extent of Reliance on MSP for Agricultural Households

In this section, we examine the reliance of different classes of farmers on MSP. We compute the proportion of marketed surplus, i.e. the sale of all rice and wheat sold to the procurement system as a measure of dependence. This ranges from 0 for those who do not sell anything to the procurement system, to 100 per cent for those who channel their entire marketed surplus to public procurement.

Large and small farmers sell similar proportions of their grain to the government, 10–20 per cent. Semi-medium and medium farmers sell a much larger proportion to government, approximately a third.

In the case of wheat, the share of surplus sold to agencies in Punjab does not vary much across landholding size, at 60–77 per cent. In Haryana, small and marginal farmers sell a higher share of their marketed surplus to agencies than the others. In Madhya Pradesh, the share rises with class-size (see Table 5). For paddy, in Punjab, small and marginal farmers sell 30–40 per cent of their marketable surplus to agencies, and the rest sell 45–70 per cent to agencies. In Haryana, it is among marginal farmers that sales to agencies as a share of their marketed surplus are highest (65 per cent), with the other landholding sizes selling less than half of their marketable surplus to agencies. In Odisha, there is a monotonic increase in the share of all marketed surplus sold to agencies by landholding size – larger farmers sell 90 per cent to

Table 5 *Sale to agencies as share of total sales by size-class of farmers, select States, 2012-13*
in per cent

State	Marginal farmers (<1 ha)	Small farmers (1—2 ha)	Semi-medium farmers (2—4 ha)	Medium farmers (4—10 ha)	Large farmers (>10 ha)
Paddy					
Punjab	33	39	50	45	70
Haryana	65	41	41	37	46
Orissa	12	23	38	62	89
Chhattisgarh	48	48	50	60	0
Andhra Pradesh	1	1	10	2	5
Telangana	25	16	17	16	0
Wheat					
Punjab	60	63	69	71	77
Haryana	83	62	39	30	49
Madhya Pradesh	19	20	38	44	68

Source: National Sample Survey, 70th Round (2012-13).[18]

agencies and marginal farmers only 12 per cent. On the other hand, in Chhattisgarh it is (more or less) the opposite – marginal farmers sell the most to agencies relative to their marketed surplus. As with procurement and participation bias, here too there is substantial variation across both crops and States.

Concluding Remarks

Discussions on the three farm laws and on the farmers' protests have been converted into debates on the MSP, and these have become "unnecessarily ideological," forcing a binary between MSP and no-MSP (Murugkar 2020). The debates often rely on dated and incomplete data (e.g., for 2012-13) that have been interpreted without nuance or detail. Our article is an attempt to redress this, without necessarily weighing in on the merits and demerits of the policy and practice of MSP.

There are, of course, several issues regarding MSP that require greater scrutiny and discussion (Chatterjee and Krishnamurthy 2021; Singh 2016). We recognise the significant shortcomings of MSP as it is implemented currently. Nor are we unsympathetic to concerns regarding the scale of procurement, or the heavy concentration of wheat and rice in government procurement, or to how MSP works today. For example, the procurement of crops at MSP is often delinked from the movement of prices, in the sense that procurement does not necessarily respond to a fall in prices, nor is it the case that procurement stops if market prices stay above the MSP. Several operational hurdles persist in public procurement, even in states

[18] The top one per cent values in each State were dropped to remove any upward outlier bias. These would include observations which reported as selling more to agencies than in total (sale to agency share >100. In other words, they reported selling more to the agency than what they did in total).

such as Odisha (PTI, 2020 for example). Traders registering in the name of farmers is not unknown. Many have noted that MSP does not reach the farmers fully, especially where payments are routed via *arthiya*s (commission agents who mediate procurement) (Sehgal 2021). In other cases, there are substantial delays. This is true of sugarcane, for example, where farmers often have to wait indefinitely for the payment of arrears (PTI 2021; Arnimesh 2021).

Yet the debates – popular, academic, and political – on these issues must take into account the changed geography of procurement (with an increasing number of States putting procurement systems into place) and the profile of the seller. They must recognise, too, that procurement operations are no longer a monolithic system, and that a diversity of procurement models across States offers a richer and deeper understanding of both their potential and limitations.

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Appendix Tables

Appendix Table 1a *Participation of farmers: proportion of farmers selling paddy to agencies, NSS major States* in per cent

State	Sold to agency (of those who cultivated) (1)	Sold to agency (of those who sold) (2)	Sold (of those who grew (3)	Did not cultivate (4)	State's procurement share (5)
Chhattisgarh	38	52	73	4	33
Orissa	7	20	34	5	11
Punjab	44	46	96	58	9
Telangana	19	22	86	47	9
Uttar Pradesh	2	7	35	42	9
Haryana	34	45	72	65	7
Bihar	2	5	40	17	4
West Bengal	2	4	45	14	3
Andhra Pradesh*	3	4	76	60	2
India	**6**	**13**	**45**	**49**	**100**

Notes: * Farmers in Andhra Pradesh sell to millers who in turn sell to the government. Therefore, while the data in SAS indicate low shares for Andhra Pradesh (since this is based on responses from farmers), its actual share is substantive, as discussed in the main text of this article.
Column 1 computes the proportion of farmers who sold to agencies out of those who cultivated wheat. Column 2 computes the same proportion but out of only those farmers who sell to agencies or on the market, i.e. it excludes those who cultivate for self-consumption. Column 3 computes the proportion of farmers who sell to either agencies or on the market out of those who cultivated, i.e. the intersection of sets defined in columns 1 and 2. Column 4 computes the proportion of farmers who did not cultivate wheat. Column 5 computes the procurement share of the State in aggregate procurement.
Source: National Sample Survey, 70th Round (2012-13).

Appendix Table 1b *Participation of farmers: proportion of farmers selling wheat to agencies, NSS major States* in per cent

State	Sold to agency (of those who cultivated) (1)	Sold to agency (of those who sold) (2)	Sold (of those who grew) (3)	Did not cultivate (4)	State's procurement share (5)
Punjab	61	72	85	47	22
Uttar Pradesh	2	8	28	19	15
Haryana	39	55	71	37	18
Madhya Pradesh	16	28	58	28	34
Bihar	1	2	38	19	2
Uttaranchal	10	62	16	18	4
India	**6**	**16**	**37**	**62**	**100**

Notes: Column 1 computes the proportion of farmers who sold to agencies out of those who cultivated wheat. Column 2 computes the same proportion but out of only those farmers who sell to agencies or on the market, i.e. it excludes those who cultivate for self-consumption. Column 3 computes the proportion of farmers who sell to either agencies or on the market out of those who cultivated. Column 4 computes the proportion of farmers who did not cultivate wheat. Column 5 computes the procurement share of the State in aggregate procurement.
Source: National Sample Survey, 70th Round (2012-13).

Appendix Table 2a *Participation and procurement bias in MSP sales for paddy, select States, 2012-13*

Paddy		Procurement participation rate (by class)	Market participation rate (by class)	Participation bias (extensive margin)	Procurement share	Marketed surplus share	Procurement bias (intensive margin)
Punjab	Marginal	18	21	**0.86**	2	4	**0.57**
	Small	20	23	**0.86**	11	11	**0.96**
	Semi-medium	31	28	**1.12**	28	24	**1.15**
	Medium	27	26	**1.06**	42	49	**0.85**
	Large	4	2	**1.63**	17	11	**1.51**
Haryana	Marginal	25	18	**1.38**	14	7	**1.99**
	Small	33	37	**0.88**	23	23	**0.99**
	Semi-medium	28	26	**1.05**	27	22	**1.25**
	Medium	13	17	**0.78**	28	41	**0.7**
	Large	1	1	**1.01**	8	7	**1.03**
Chhattisgarh	Marginal	42	43	**0.98**	24	25	**0.98**
	Small	36	37	**0.97**	34	35	**0.99**
	Semi-medium	17	16	**1.07**	29	27	**1.1**
	Medium	5	4	**1.27**	12	14	**0.89**
	Large	0	0	**0**	0	0	**0**
Odisha	Marginal	42	65	**0.64**	7	26	**0.28**
	Small	31	24	**1.29**	13	23	**0.55**
	Semi-medium	17	8	**2.17**	18	16	**1.12**
	Medium	10	3	**3.21**	39	23	**1.64**
	Large	1	0	**4.26**	23	11	**2.11**

Note: For definitions of different terms, see Table 2.

Appendix Table 2b *Participation and procurement bias in MSP sales for wheat, select States, 2012-13*

Wheat		Procurement participation rate (by class)	Market participation rate (by class)	Participation bias (extensive margin)	Procurement share	Marketed surplus share	Procurement bias (intensive margin)
Punjab	Marginal	22	22	**0.96**	3	5	**0.69**
	Small	21	23	**0.92**	8	9	**0.85**
	Semi-medium	27	27	**1.01**	23	24	**0.93**
	Medium	27	25	**1.09**	50	47	**1.05**
	Large	3	3	**1.07**	16	14	**1.17**
Haryana	Marginal	37	25	**1.51**	10	6	**1.66**
	Small	31	27	**1.13**	25	18	**1.42**
	Semi-medium	21	29	**0.71**	29	30	**0.97**
	Medium	10	18	**0.57**	29	39	**0.76**
	Large	1	1	**0.89**	7	8	**0.87**
Madhya Pradesh	Marginal	27	37	**0.72**	7	16	**0.45**
	Small	18	26	**0.71**	11	21	**0.5**
	Semi-medium	37	27	**1.39**	31	32	**0.97**
	Medium	14	8	**1.65**	29	20	**1.46**
	Large	4	2	**2.41**	23	11	**2.01**

Note: For definitions of different terms, see Table 2.