Research

CRISIL
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Normal rains, little gains

Falling profitability continues to distress farmers

October 2017

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Executive summary

Monsoon was bountiful in 2017, allaying initial fears of an El Nino effect coming into play. While the Indian Meteorological Department (IMD) had forecast 2% deficiency (or rains at 98% of the long period average) for the southwest monsoon (July to September 2017) at an all-India level, the actual deficiency was 5%, compared with 3% in 2016 – but still normal.

However, distribution has been uneven with excess rains in some parts and severe shortage in others.

At an aggregate level, three agriculturally important states – Tamil Nadu, Gujarat and Andhra Pradesh – recorded excess rains causing floods or flood-like situations. The deficient zones in Maharashtra and Karnataka received rains by August, but pockets of stress remained. And as the season draws to a close, Uttar Pradesh, Haryana, Punjab and Madhya Pradesh are showing high deficiency at 19% or more.

To understand the impact of such uneven rains on agricultural output and incomes, we looked at the regional rainfall and crop production dynamics; profitability trends across crops to assess farm distress; and, possible implications of loan waivers announced to alleviate the distress.

There were three key takeaways:

First, despite, pockets of stress, kharif production is expected to be healthy (on its long term trend). Regions that witnessed weak rains either enjoy a strong irrigation cover or are those that contribute less to kharif production. Compared with last year, sowing as of September 29, 2017, was lower for foodgrains and oilseeds. The government's first advance estimates suggest kharif production could be 2.8% lower on-year for foodgrains and as much as 7.7% lower for oilseeds.

But the decline is also because last year had seen a sharp increase in both, the sowing area and production of most crops. Compared with the normal or typical average for the period, sowing is higher and production as per trend this year.

Second, the flipside to good monsoon and bumper crop of last year is that prices for most foodgrains have fallen and consequently reduced farmer profits. For pulses and oilseeds, prices fell even below their minimum support prices (MSPs) and cost of cultivation, resulting in a loss on the margins. For several crops, prices and profit margins have continued to decline in recent months.

Many states are trying to assuage distressed farmers by announcing loan waivers. However, this would increase the pressure on the already-stretched fiscal deficits of these states. Farm loan waivers are, therefore, a paradox in a year of normal monsoon.

We estimate that if other states also announce loan waiver schemes the way Uttar Pradesh, Maharashtra, Karnataka, and Punjab did, the collective cost to the exchequer would be ~Rs 2.5 lakh crore – or 0.5% of GDP – per year, assuming the waiver gets equally staggered over three years. The cost could be significantly high for Tamil Nadu, which has the highest outstanding agricultural loans among states. Kerala, Madhya Pradesh and Rajasthan, too, could feel some pressure.

Farm incomes remain stressed, given the volatility in prices and declining realisations. Another recent study by CRISIL titled *Pulses & Rhythms,* which focusses on pulses price cycles, discussed the importance of price smoothening or stabilising techniques as an option to reduce shocks, which eventually erode the profitability of growers.

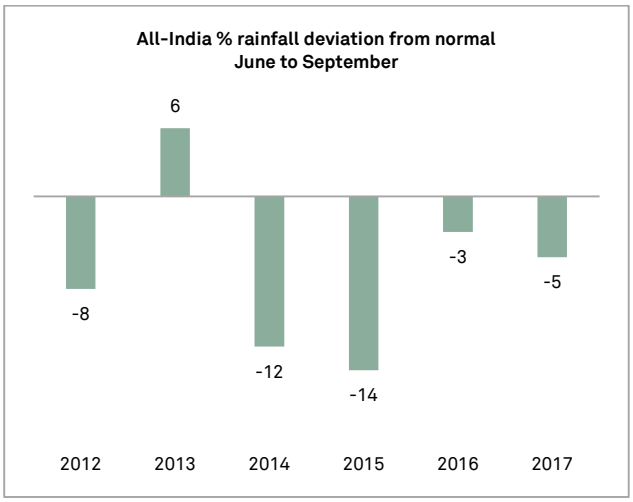
Stabilisation measures should be a mix of government intervention and market-based mechanisms to protect against price risks.

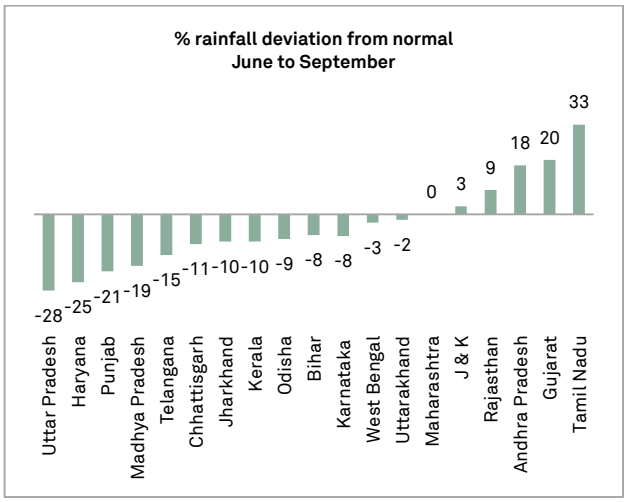
To sum up, the pain points for farmers are all too visible. Unless alleviation measures are planned and implemented carefully, and soon, there could be a gaping hole in the exchequer as well.

Rain god smiles for the second straight year

Monsoon 2017 is set to qualify as near-normal, with a deficiency of 5% of the long period average at an all-India level. However, some pockets are showing signs of stress either because of flooding or deficiency that's several-fold more than at the national level.

Uneven-ness only splotch on an otherwise good story





Source: Indian Meteorological Department (IMD), CRISIL

Six states experienced floods or flood-like situation because of heavy rains. Of these, the agriculturally important Gujarat and Tamil Nadu saw 20% and 33% more rains, respectively, than is normal for the full season. Close on the heels was Andhra Pradesh, which saw 18% above-normal rainfall. At the sub-state level, parts of Tamil Nadu and Pondicherry, Rajasthan, Saurashtra and Kutch and Gujarat and experienced rains that were about 20-46% above normal.

Excess rains could have caused some damage to crops in these regions, but data to ascertain this is not available so far.

At the other end, quite a few states were left rainfall deficient. While such parts in Maharashtra and Karnataka had received rains by August, pockets of stress remained.

In Madhya Pradesh, rains have been severely deficient throughout the season. The other states that saw similar deficiency – Uttar Pradesh, Haryana and Punjab – are well-irrigated and hence crops there might not suffer a serious blow.

Where rains caught up and where they didn't

States	Rainfall deficiency (% deviation from normal)						Key kharif crops grown in regions with deficient rains this year
	June 1 2017 to --					June to Sep 2016	
	Sub-divisions	28 June	26 Jul	30 Aug	27 Sep		
Maharashtra	Madhya Maharashtra	28	25	15	18	14	Sugarcane, paddy
	Marathwada	37	-11	-3	-4	22	Arhar (tur), Soybean, cotton
	Vidarbha	-11	-11	-23	-23	8	Arhar (tur), Jowar, bajra, rice, cotton
Karnataka	Coastal Karnataka	-3	-14	-18	-17	-21	Tur and gram
	North Interior Karnataka	32	-7	-12	-1	6	
	South Interior Karnataka	-21	-32	-19	-1	-19	
Madhya Pradesh	East Madhya Pradesh	-26	3	-23	-24	18	Masur, urad
	West Madhya Pradesh	14	2	-16	-15	19	
Uttar Pradesh	East Uttar Pradesh	-54	1	-19	-27	-12	Sugarcane, paddy
	West Uttar Pradesh	-16	-15	-37	-30	-16	
Punjab		93	-4	-19	-21	-21	Paddy
Haryana		94	-2	-32	-25	-25	Paddy

Source: IMD, Ministry of Agriculture, CRISIL

Among the crop-producing states, the worst deficiency was in Uttar Pradesh (28% below normal), followed by Haryana (25% below normal). Both these states enjoy reasonably good irrigation cover of close to 80% of the cropped area. Similarly, Punjab with 21% rainfall deficiency, has an irrigation cover of 99%.

The worst-affected are states with low irrigation buffer such as Madhya Pradesh (19% below normal rains), and select parts of Karnataka and Maharashtra, where rains have just not caught up and the deficiency ranges between 17-23%. These states also have a low irrigation cover of 37%, 34% and 19%, respectively. **But data shows these regions together contribute less than 10% of overall kharif production. Hence, there is unlikely to be a notable adverse impact on overall kharif production.**

Sowing and production estimate lower on-year, but on track as per trend

Sowing is progressing at a healthy pace. To be sure, sowing for foodgrains was higher last year, albeit because of a sharp increase in the area under coverage for most crops. But compared with the normal, or the average for the period, sowing so far has been higher and production is expected to be as per trend. Sowing of oilseeds, however, has dropped below trend.

As of September 29, overall kharif sowing was 0.7% lower on-year, but about 2.3% higher than the long-term average (normal). As for foodgrains, sowing area is reported as lower in rice (-0.9% on-year), coarse cereals (-1.9%) and pulses (-3.7%), while in oilseeds, the average is down due to groundnut (-8.9%) and soybean (-7.7%).

The decline in the area under pulses is mainly due to arhar (tur), where sowing is down 18%. Weak

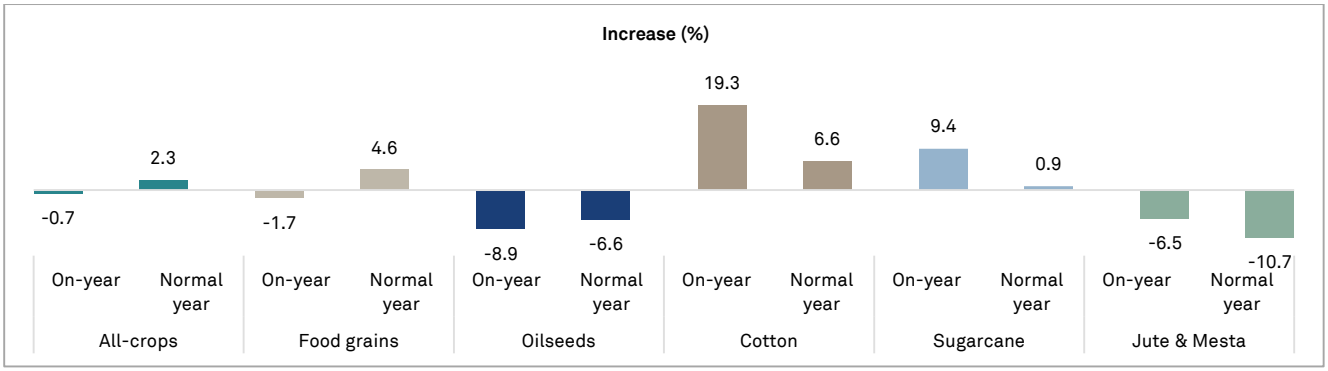
rains in parts of Karnataka and Vidarbha in Maharashtra – large producers of the crop – curbed sowing. However, compared with a normal period, pulses sowing was significantly higher.

Similarly, lower rice sowing suggests that despite good irrigation cover in key rice producing states such as Uttar Pradesh and Punjab, weak rains could have created some stress because the cost of irrigation goes up in rain-deficit years.

Besides, two consecutive years of deficient rains could have weakened the efficiency of irrigation systems in these states.

Cotton, produced mainly in Gujarat and Maharashtra, have reported higher sowing aided by good rains. Similarly, the sugarcane crop benefited from rains catching up in Maharashtra and good irrigation cover in Uttar Pradesh.

Sowing down, but healthy for most crops compared with the long-term average (normal)

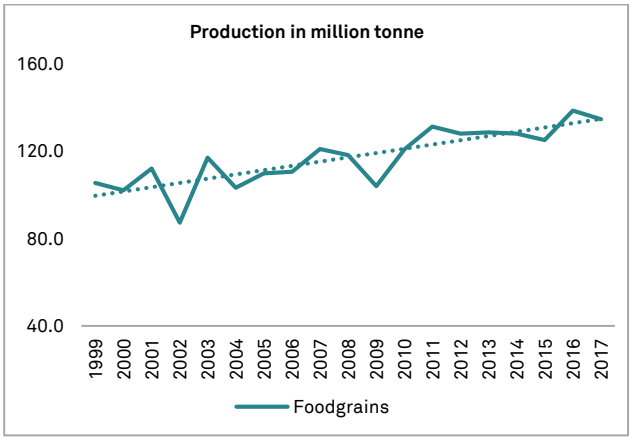


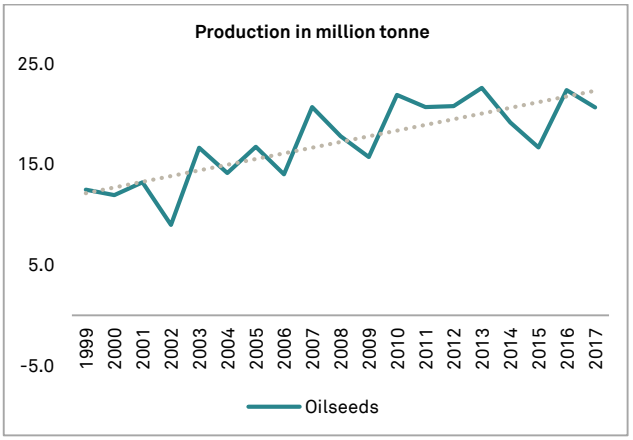
Note: Data is as of September 29, 2017

Source: Ministry of Agriculture, CEIC, CRISIL

The government's first advance estimates suggest kharif production in 2017 could be 2.8% lower overall, and 7.7% lower for oilseeds. But, here again, last year's record high production creates a high base. Long-term trends on production suggest kharif production for foodgrains is likely to be in line with trend, but for oilseeds it has dipped below trend.

Food grain production estimates in line with past trend; oilseeds see a dip





Note: dotted line represents trend

Source: Ministry of Agriculture, CEIC, CRISIL

Reservoirs present a mixed picture

Reservoir levels are important for the rabi season, which starts in October. Water storage at 91 major reservoirs in the country looks reasonably healthy at 87% of normal. But in some states, reservoirs have less than normal storage. These include Karnataka and Madhya Pradesh, where rains have been deficient. Surprisingly, the list also includes reservoirs in Andhra Pradesh, Gujarat and Tamil Nadu, where rainfall was in excess.

The list of reservoir-deficient states include Odisha, Rajasthan and Kerala, where rains were inadequate.

Deficient reservoirs raise some concerns for the rabi crop, because these 8 states together contribute about 40% of rabi production of foodgrains and oilseeds.

Deficient reservoirs raise some concerns for the rabi crop

	Reservoir storage levels % departure from normal (2017)			
States	**29-Jun**	**27-Jul**	**31-Aug**	**28-Sep**
India	**91**	**100**	**84**	**87**
West Bengal	14	75	42	18
Punjab	15	66	11	9
Uttar Pradesh	66	65	32	26
Maharashtra	-20	19	3	7
Rajasthan	-2	10	2	-2
Kerala	-42	-47	-29	-7
Gujarat	28	10	-7	-15
Karnataka	-47	-13	-22	-18
Odisha	-18	25	-6	-6
Madhya Pradesh	104	12	-20	-20
Tamil Nadu	-83	-79	-60	-10
Andhra Pradesh	-63	-59	-45	-41

Source: Central Water Commission, CRISIL

DRIP shows a few pressure points

We corroborate the information on rainfall and sowing with CRISIL's Deficient Rainfall Impact Parameter, or DRIP, which measures the impact of deficient rains on states and crops. The higher the DRIP score, the greater the impact of rainfall deficiency, and vice versa.

As things stand, among states, Madhya Pradesh has the highest DRIP score. That means on an inter-state basis, Madhya Pradesh is the stressed area. Compared with an average for the last five years, scores for Uttar Pradesh, Kerala and Odisha are relatively high reflecting the severe impact of deficient rains (in Uttar Pradesh), and low irrigation cover (in Kerala and Odisha).

Similarly, the crop-wise DRIP shows low scores for groundnut and cotton. For soybean, the scores in 2017 are higher than the average of the last five years, suggesting high stress.

For other coarse cereals, rice, sugarcane and tur, the scores are slightly higher than in 2016, indicating some stress this year, too. But on the whole, scores are below the average for the last five years, and specifically the difficult years of 2014 and 2015.

DRIP highlights pressure points

State-wise DRIP	2016	2017	Average 2012-2016
Andhra Pradesh	0.0	0.0	2.6
Bihar	1.5	3.1	7.4
Gujarat	11.3	0.0	8.7
Haryana	3.3	3.1	4.4
Karnataka	9.1	5.1	6.9
Kerala	33.4	10.0	10.3
Madhya Pradesh	0.0	17.9	5.9
Maharashtra	0.0	0.0	10.5
Odisha	7.3	6.0	3.2
Punjab	0.3	0.2	0.3
Rajasthan	0.0	0.0	0.0
Tamil Nadu	7.1	0.0	3.8
Uttar Pradesh	3.9	7.9	7.1
West Bengal	0.0	1.5	3.2

Crop aggregated DRIP	2016	2017	Average 2012-2016
Rice	2.8	3.3	3.7
Jowar	5.1	4.3	9.0
Bajra	5.8	7.2	8.8
Soybean	0.3	10.4	7.7
Sugarcane	0.5	0.9	1.0
Tur	5.6	7.2	11.1
Groundnut	9.2	1.8	8.3
Maize	4.5	4.2	6.8
Cotton	3.0	0.8	6.1
All crops	1.5	1.9	2.6

Source: IMD, Ministry of Agriculture, CRISIL

Measuring the granular impact of rains

The temporal and spatial distribution of rainfall is crucial for determining its impact on food production. A weak and slow monsoon affects sowing, and uneven distribution, the output. We analyse these dimensions by computing the DRIP index at the state and district levels, and the progress on sowing.

Developed in 2002, the DRIP index, computed as a product of the percentage deviation in rainfall and in unirrigated area, captures both the magnitude of the shock (deficiency of rainfall) and the vulnerability of a region (percentage of unirrigated area). So the impact of deficient rainfall will be more pronounced for unirrigated crops and regions. For each crop, the index is computed for every state and then aggregated, weighting each state by its share in the all-India production of that crop. The value of the index falls between 0 and 100.

The DRIP index can also be calculated state-wise to assess granular impact. DRIP scores of a state are arrived at by aggregating crop-wise scores, where the weight of each crop is its sown area as a share of total sown area for all crops

$$\text{DRIP CROP}_j = \sum_i W_i \frac{\%\,\text{UNIRRIGATED}_{ij} * \%\,\text{RAINFALL DEF}_i}{100}$$

Where, % UNIRRIGATED_{ij} is the proportion of unirrigated area under crop j in state i

- %RAINFALL DEF_i is the % deviation of rainfall from normal in state i.
- If there is excess rainfall, rainfall deficiency is considered to be 0.
- W_i is share of state i in overall production of crop j in a normal monsoon year

Farm distress amplifies with profit under pressure

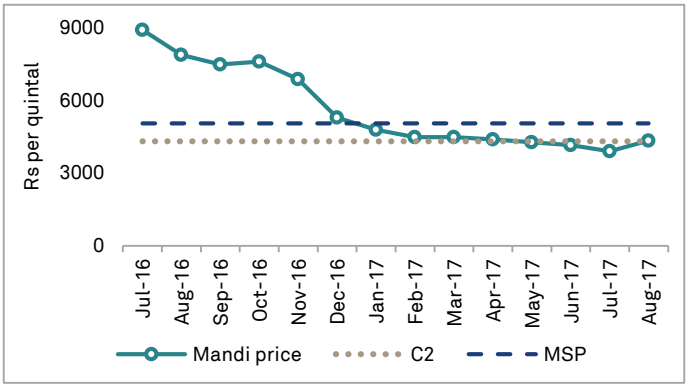
A good monsoon in agriculture year (AY) 2017 (July to June) had blessed India with a bumper crop, with most of the foodgrains seeing record production. While that helped tame food inflation, falling prices have caused a decline in profitability of many crops. For pulses and oilseeds, prices fell even below their minimum support price (MSP)[1] and cost of cultivation, resulting in a loss on the margins. For many crops, prices and profit margins have continued to decline in recent months. It is imperative, therefore, for the government to take the right policy measures to protect farmers from any further decline in profitability. In this section, we analyse the recent trends in profitability (as measured by profit margin per quintal[2]) of key agricultural crops, and give possible reasons behind the trends.

1. Pulses

After suffering from two monsoon shocks in agriculture year (AY) 2015[3] and 2016, pulses production bounced back to a record 22.95 million tonne in AY2017, 40.4% higher on-year. This was a result of good monsoons as well as record area sown by farmers. However, prices of all pulses except gram fell sharply, leading to lower profit margins.

a. Arhar (tur)

- Prices of arhar (tur) have been falling since July 2016.
- During the peak arrival period between January and April in AY2017, the mandi price for tur was 45.4% lower on-year and also 10.2% lower than the MSP. That led to a 94.5% on-year fall in profit margins.
- Profits went negative in May-July 2017 as prices slid below the cost of cultivation. On average, the mandi prices in this period were 4.8% lower than the cost of cultivation.
- Prices recovered mildly in August. While the profit margin has turned positive, it is still 99.5% lower on-year.



Note: MSP is minimum support price fixed by the government and C2 the cost of cultivation estimated by CACP for kharif marketing season 2016-17.

Source: Agmarknet, CACP, CRISIL

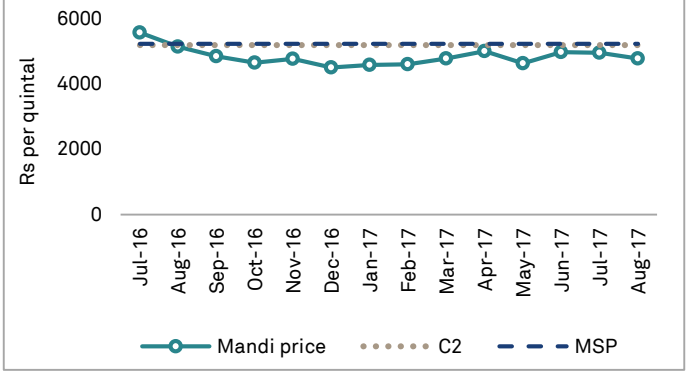
[1] To protect farmers from any sharp fall in output prices, the government intervenes in the market by buying surplus produce at a pre-decided price – known as minimum support price or MSP.

[2] Given by mandi price per quintal – 'C2' cost per quintal

[3] July 2014-June 2015

b. Moong

- Since August 2016, mandi prices of moong have remained below the MSP and also below its cost of cultivation. On average, in AY2017, mandi prices were 32% lower on-year, 7.4% below MSP, and 6.8% below the cost of cultivation.
- Moong prices have declined further in recent months. In August, mandi prices were 7% lower on-year. Prices were also 8% lower than the cost of cultivation, aggravating the marginal loss.

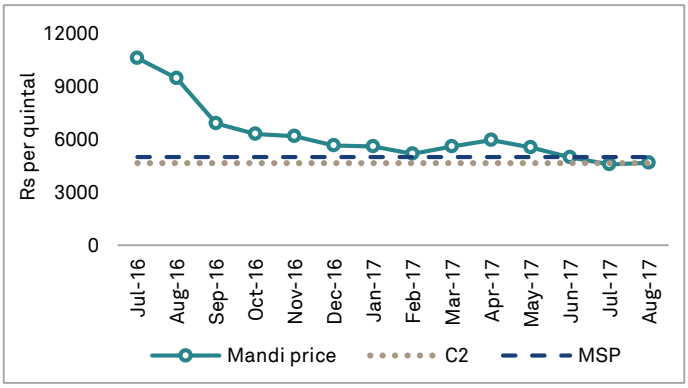


Note: MSP is minimum support price fixed by the government and C2 the cost of cultivation estimated by CACP for kharif marketing season 2016-17.

Source: Agmarknet, CACP, CRISIL

c. Urad

- Prices have been on a downtrend since June 2016. Profit margin fell an average 62.2% on-year in AY2017.
- Since June 2017, urad prices have fallen below the MSP. In August, the average mandi price of urad was 6.5% lower than the MSP. Profit margin, though positive, is 99.7% lower on-year.

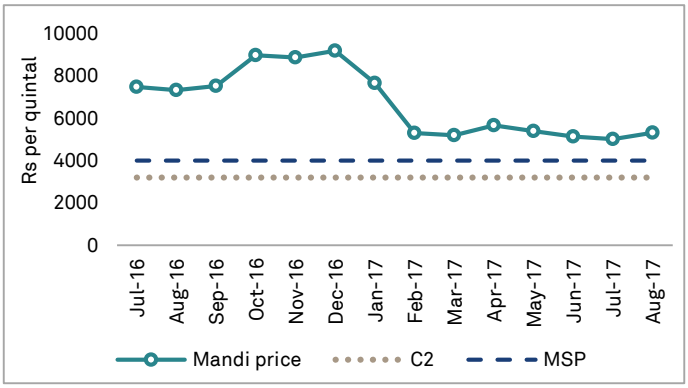


Note: MSP is minimum support price fixed by the government and C2 the cost of cultivation estimated by CACP for kharif marketing season 2016-17.

Source: Agmarknet, CACP, CRISIL

d. Gram

- Gram was the only pulse to record a rise in profitability in AY2017. Profit margins more than doubled in AY2017 from AY2016, as prices rose 43.6% on-year. Even during peak arrival months (February-May 2017) profit margin rose 25.7% on-year as mandi prices rose 11%.
- However, gram prices have fallen in subsequent months. Mandi price in August declined 27.4% on-year, leading to a 48.5% fall in profit margin.



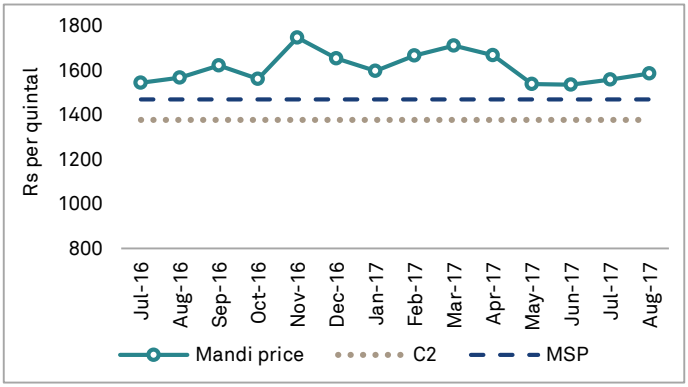
Note: MSP is minimum support price fixed by the government and C2 the cost of cultivation estimated by CACP for rabi marketing season 2017-18.

Source: Agmarknet, CACP, CRISIL

2. Cereals

a. Paddy

- While paddy production also hit a record 110 million tonne in AY2017 (5.5% higher on-year), prices were broadly above the MSP. Average profit margin increased 95.3% on-year in AY2017.
- Even during peak arrival period (October 2016-January 2017), the profit margin was 33.4% higher on-year.
- However, according to CACP, prices were trading below MSP in some centres in Assam, West Bengal, Chhattisgarh, Tamil Nadu, eastern Uttar Pradesh, Gujarat, Karnataka, Madhya Pradesh and Tripura during October-December 2016, due to low procurement.
- While recent months saw some dip in prices, they were still trading above MSPs. Average profit margin in August 2017 was 10% higher on-year.

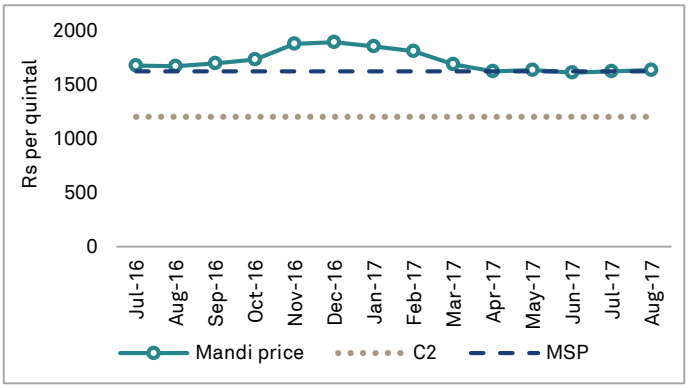


Note: MSP is minimum support price fixed by the government and C2 the cost of cultivation estimated by CACP for kharif marketing season 2016-17.

Source: Agmarknet, CACP, CRISIL

b. Wheat

- Wheat prices remained flat as production increased 6.6% on-year to a record 98.4 million tonne in AY2017.
- During the peak arrival period (March-June 2017) mandi prices grew a mere 0.6% on-year on average. Due to faster growth in input costs[4], profit margin during this period declined 6.6% on-year.
- Prices fell below the MSP in April and June 2017.
- Prices remained subdued in the following months, with the average mandi price in August being 2.2% lower on-year.



Note: MSP is minimum support price fixed by the government and C2 the cost of cultivation estimated by CACP for rabi marketing season 2017-18.

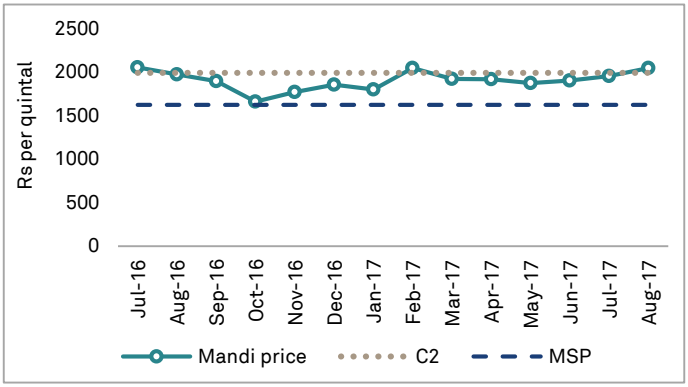
Source: Agmarknet, CACP, CRISIL

[4] Input costs (C2 measure of cost of cultivation) are estimated to have increased 3.4% on-year in AY2017.

3. Coarse cereals

Jowar

- The MSP for Jowar was fixed at Rs 1,625 per quintal in AY2017, 18.4% below the cost of production.
- While the prices of jowar were above MSP in AY2017, they remained below the cost of cultivation in most months. Average mandi price in AY2017 was 5.2% below the cost of cultivation. They were also 5.9% lower on-year.
- According to CACP, mandi prices were below MSPs in seven centres located in Rajasthan, Maharashtra and Uttar Pradesh during October-December 2016.
- Prices have started picking up in recent months. As of August, mandi prices were 3.7% higher on-year, and 2.7% higher than the cost of cultivation[5].



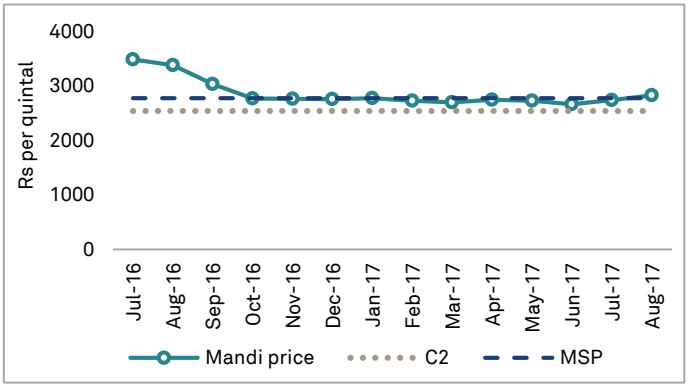
Note: MSP is minimum support price fixed by the government and C2 the cost of cultivation estimated by CACP for kharif marketing season 2016-17.

Source: Agmarknet, CACP, CRISIL

4. Oilseeds

a. Soybean

- Profit margins of soybean fell an average 67.8% on-year in AY2017, as mandi prices fell 16.9%.
- Prices were below the MSP from October 2016-July 2017.
- While mandi prices moved above the MSP in August 2017, they are still 16.2% lower on-year. Thus, profit margin was 65.4% lower on-year.



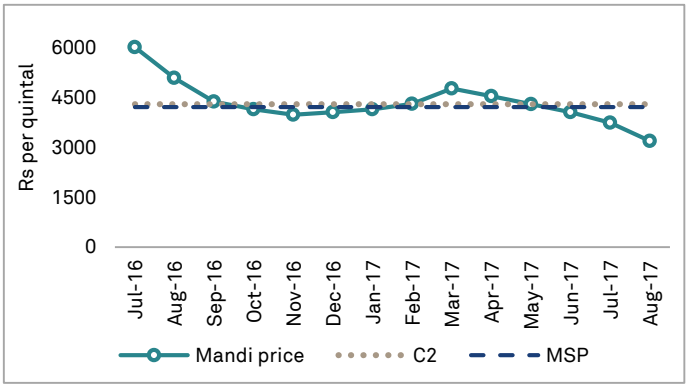
Note: MSP is minimum support price fixed by the government and C2 the cost of cultivation estimated by CACP for kharif marketing season 2016-17.

Source: Agmarknet, CACP, CRISIL

[5] 2016-17 C2 estimate

b. Groundnut

- Profit margin declined 68.6% on-year in AY2017, as prices fell 6.3%.
- During the peak arrival period (October-December 2016), prices fell below the MSP and also the cost of cultivation. It must be noted that MSP of groundnut has been kept below the cost of cultivation.
- Prices have slipped and losses have expanded even further in recent months. Since June 2017, prices have been below MSP and the cost of cultivation. As of August, prices were 37.4% lower on-year, and 25.7% lower than the cost of cultivation.



Note: MSP is minimum support price fixed by the government and C2 the cost of cultivation estimated by CACP for kharif marketing season 2016-17.

Source: Agmarknet, CACP, CRISIL

What led to the fall in prices?

Growth in agricultural output prices remains subdued due to a number of factors, including modest increases in MSP, benign global prices, and imports. In pulses, government procurement has not been enough to arrest the fall in prices following bumper production. The dent in demand and disruption in the supply chain due to demonetisation may have further contributed to the decline in output prices.

Low MSP hikes, insufficient procurement to blame

MSP serves as a floor price in wholesale agricultural markets. Low increases in MSP help in controlling food inflation, but can crimp farmer margins.

After witnessing double-digit growth over AYs 2009-2013, the hikes in MSPs for various agricultural products have moderated in recent years. While the average annual growth between AYs 2009 and 2013 was 19.3%, it was only 3.6% between 2014 and 2017. AY 2018 has seen a slight uptick, with average MSP hike for kharif crops at 6.3%, compared with 4.9% in 2017. But overall, limited support from the floor price has further depressed market prices.

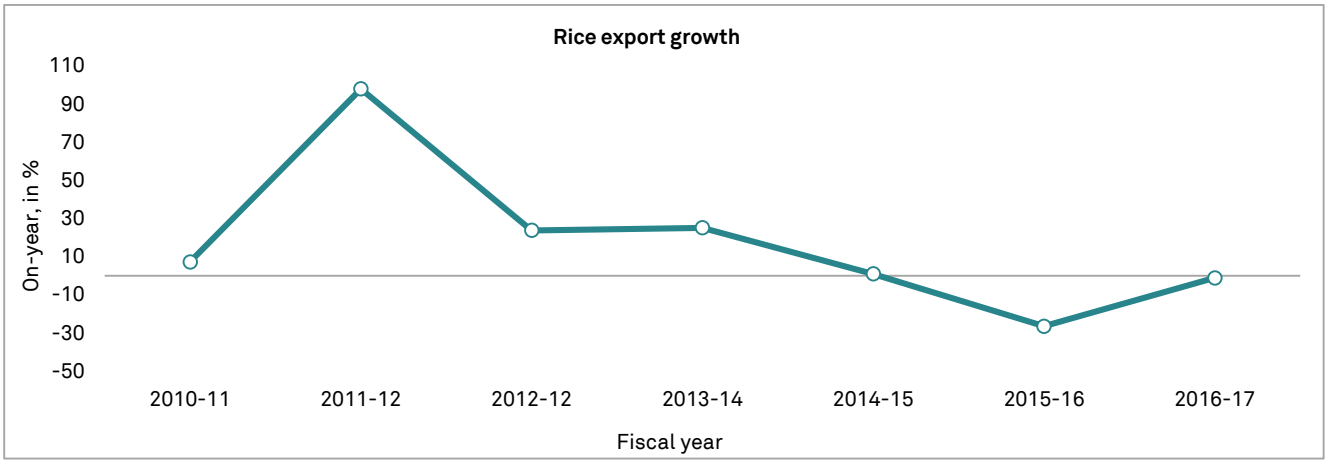
However, the rise in MSP is not enough to support the farm sector. The procurement of produce at MSP is limited to a few crops and a few regions. There is a paucity of food procurement centres, especially in eastern and north-eastern regions. Moreover, even though MSPs are announced for 22 crops, government procurement is mostly concentrated to rice and wheat, and has recently included pulses.

Lately, prices of many crops have fallen below their respective MSPs due to bumper crop production. The fall has been the most drastic for pulses since November 2016. Even though government procurement of pulses increased to 11 lakh tonne in AY2017, compared with 46,000 tonne the previous year, it was insufficient to arrest the fall in market prices given the stock holding limits and export restrictions on pulses.

Global trade and prices of agri-commodities remain tepid

Agriculture-related exports have also been on a downward trend, given a global supply glut. Exports of rice, India's largest agricultural export by value, fell 1.2% on-year in fiscal 2017 – the second straight year of negative growth.

Rice exports declined for the second consecutive year in fiscal 2017



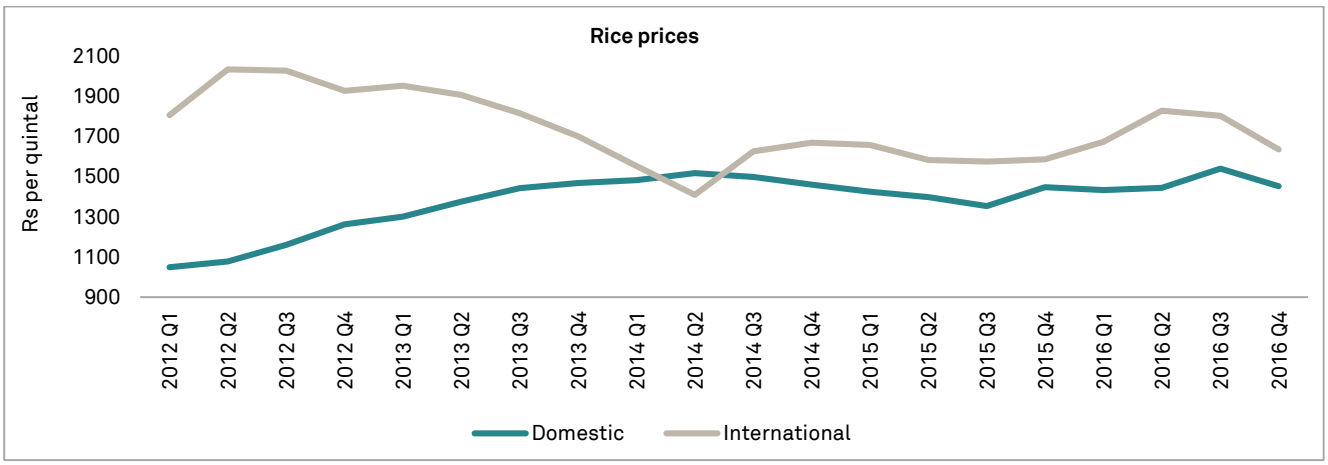
Source: Ministry of Commerce, FAO, CRISIL

Export earnings have been affected by weak international prices. According to the Food and Agriculture Organisation's (FAO) Rice Price Index, rice prices were 8.1% lower in calendar 2016.

Moreover, with greater integration of Indian agriculture with the international market, there has been a stronger relationship between domestic agricultural prices and global commodity prices in the past few years. Thus, weakness in global prices is getting transmitted to domestic markets to a greater extent. This has especially been observed in rice, whose prices in the domestic market have followed in international prices for the past two years. Weak global prices tend to encourage Indian agricultural producers to sell in the domestic market, bringing down prices.

The FAO expects the prices to remain subdued for most of the crops this year. For rice, production is expected to increase further, albeit to a lesser extent than previous year. While global wheat production is likely to fall below last year's record, large carryover stocks will ensure that supply remains adequate this year. Prices of oil crops are also expected to stabilise around currently low levels due to sluggish demand relative to supply.

Domestic and global rice prices have shown similar trends in the past two years



Source: CACP, CRISIL

Unfavourable trade policies

Trade restrictions on pulses set by the government were a key factor behind the fall in prices. While exports of all pulses, except gram, were restricted to a maximum 50,000 tonne per annum, there were no restrictions on imports. Despite record production, there were imports of 6.6 million tonne of pulses last fiscal, or 14% higher on-year, induced by lower international prices. On the other side, exports fell 0.5% to 0.14 million tonne. This added to excess supply and led to a fall in prices.

It is interesting to note that gram, which has no export restrictions, was the only crop to witness a rise in prices and profitability. Profit margins of gram more than doubled on-year in AY2017 as selling price grew 43.6%.

In addition, there were restrictions on holding stocks of pulses by various private players. In October 2015, the Centre brought pulses under the Essential Commodities Act, 1955, to prevent hoarding. The Act empowered states to impose stock limits on pulses sourced from importers, held by exporters, licensed food processors, and large departmental retailers. These limits continued in 2016-17, which further reduced avenues for absorption of excess supply. Although the central government directed states to remove stock-holding limits in May 2017, this came too late, after the peak arrival period was over.

Demonetisation accentuated the fall

The decline in agriculture prices was further accentuated by the demonetisation in November 2016. Agriculture is a highly cash-intensive economy and withdrawal of 86% of the currency without timely replacement disrupted the supply chains in the sector.

In addition, the shortage of cash adversely affected private consumption demand, especially in the fourth quarter of fiscal 2017. This came at a time when the sector saw record production of foodgrains.

Farm loan waivers, a paradox given two consecutive normal monsoon years

With declining agricultural profitability, the ghosts of Indian agricultural credit have returned as farmers across the country are demanding loan waivers. Unlike the loan waiver schemes announced in the past, the present clamour comes in the wake of two straight years of adequate monsoon coupled with record high production in AY2016-17. The positive supply shock, which sent prices crashing, hurt the profitability of the farmers, and increased their distress.

So far, four states – Uttar Pradesh, Maharashtra, Punjab and Karnataka – have declared loan waivers totalling Rs 88,524 crore this fiscal. The waiver amount is expected to be staggered over a 3-4 year period. With fiscal restraint as a key objective of the central government, the state governments have been asked to step forward to decide and shoulder the burden of the crop loan waiver as they see fit. The waivers followed widespread protests by farmers in a number of states as farm incomes and profitability came under duress thanks to already high indebtedness, rising input costs and a sharp fall in output prices over the last year. The loan waivers announced so far amount to 0.2% of fiscal 2018's estimated GDP[6], assuming the pay outs are spread equally over three years.

However, the waiver size could blow up if more states were to accede to demands for similar relief packages. To understand the implication of a similar loan waiver scheme applied across all states for marginal and small (M&S) farmers[7], we computed the weighted average of the ratio of loan waiver to total outstanding agricultural loan for Uttar Pradesh, Maharashtra, Punjab and Karnataka.

Applying this weighted average to the outstanding loan amount as on March 2015 (as available in RBI's Handbook on Statistics of Indian States 2015-16) of each remaining state, CRISIL estimates that such a loan waiver scheme could easily cost the exchequer about Rs 2.5 lakh crore, or 1.5% of fiscal 2018's GDP estimate (0.5% of the GDP per year, assuming the waiver gets equally distributed over a 3-year period).

Estimates by the Reserve Bank of India (RBI) studies[8] show this amount at Rs 2.2-4.3 lakh crore depending on the waiver conditions. The RBI study has arrived at this number by assuming entire outstanding amount as on March 2016 in loan account up to Rs 1 lakh is waived off and for the accounts with an outstanding amount above Rs 1 lakh outstanding, an amount of Rs 1 lakh being waived.

[6] As per the budget estimate provided in India Budget 2017-18

[7] Marginal farmers – those having operational holdings between 0 to 1 hectare; Small farmers those having operational holdings between 1 and 2 hectares

[8] R Raghumanda, R Shankar and S Singh (2017), *Agriculture Loan Bank Accounts – A Waiver Scenario Analysis*. Mint Street Memo No. 4, RBI – The findings of the study are entirely of the authors and are not necessarily the official views of the RBI

Estimated loan waiver amount – RBI study and CRISIL estimates

Eligibility	RBI study estimates*				CRISIL estimates**
	All agri loans	All crop loans	M&S agri loans	M&S crop loans	
Waiver amount (Rs lakh crore) considering actual estimates for Uttar Pradesh, Maharashtra, Punjab and Karnataka	4.3	3.3	2.6	2.2	~2.5
% of GDP for FY18*	2.6%	2.0%	1.5%	1.3%	0.5% (staggered over three years)

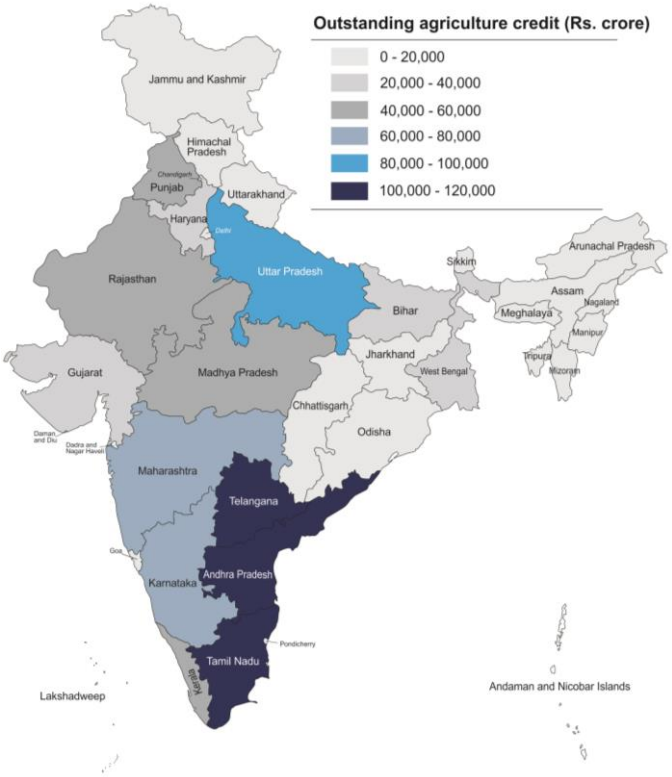
*Note: *Based on outstanding loan data for March 2016, ** Based on outstanding loan data for March 2015 as available in the RBI's* Handbook on Statistics of Indian States 2016-17

Source: RBI Mint Street Memo No. 4: Agriculture Loan Bank Accounts – A Waiver Scenario Analysis, RBI's Handbook on Statistics of Indian States 2016-17, CRISIL

The big worry is that state governments are already burdened by the bump in their fiscal deficits caused by the power sector bonds raised under the Ujjwal Discom Assurance Yojana, or UDAY, and the impending payments on account of implementation of Pay Commission revisions at the state level. Rising social infrastructure expenditure and shortfall in tax collection targets also weigh heavy on the states' fiscal position. In such a scenario, pressure from farm loan waivers could further deteriorate their fiscal positions.

As seen in the heat map alongside, if all states were to give a loan waiver, the cost to exchequer is likely to be significantly higher for Tamil Nadu, which has the highest outstanding agricultural loans among states. Kerala, Madhya Pradesh and Rajasthan could feel some pressure, too. As farmer unrest continues to escalate in Madhya Pradesh and Rajasthan and the 2018 state assembly elections draw closer, the two state governments are deliberating on a suitable loan waiver scheme.

Agricultural loans outstanding *March 31, 2015*



Source: RBI's Handbook of Statistics on Indian States 2016-17, CRISIL

For the past few years, Kerala, Madhya Pradesh and Rajasthan have been overshooting their fiscal deficit target of 3% of GSDP as set by the Fiscal Responsibility and Budget Management (FRBM) Act, while Tamil Nadu has been cutting it close to the target.

Of the states that have already declared a loan waiver, Andhra Pradesh[9] has the highest outstanding loan, followed by Uttar Pradesh, Karnataka, Maharashtra and Punjab.

Uttar Pradesh has been running fiscal deficits higher than the FRBM target, while Maharashtra and Karnataka have stayed within bounds. Andhra Pradesh's and Punjab's fiscal deficits are just around the FRBM target.

If the debt waiver is staggered appropriately across 3-4 years (the 2008 loan waiver was spread over 4 years), states may be able to successfully finance the scheme without taking a major hit to their kitty. To this end, a possible turnaround in tax collections due to implementation of GST, or a cyclical pick-up in growth leading to better tax buoyancy, holds out hope. Overall, the implementation of the crop debt waiver scheme raises caution for the states' fiscal health. While the gains accruing from the implementation of GST may help reduce the losses to the exchequer due to the debt waiver in the short run (or at least in fiscal 2018), it is not a sustainable answer to the farm sector profit woes. Over time, raising profitability by encouraging farm investment and productivity will have to be the key focus to ensure the fiscal well-being of the states.

[9] Includes data for Andhra Pradesh and Telangana as provided in the RBI's Handbook of Statistics on Indian States

What do the loan waivers tell us?

Since April 2017, four more states have announced loan waivers – Uttar Pradesh, Maharashtra, Karnataka and Punjab. These are predominantly targeted at marginal and small farmers, with the amount varying from Rs 50,000 to Rs 2 lakh per farmer. The waivers apply only to institutional loans (formal source of credit) and are staggered over years depending on the distribution mechanism adopted by the states.

Similar loan waiver incidents have occurred in the past as well. During the Agricultural Debt Waiver and Debt Relief (ADWDR) Scheme of 2008, a large number of farmer suicides over indebtedness had coaxed the then United Progressive Alliance (UPA)-led central government to provide a crop loan waiver of Rs 52,516 crore[10] between fiscals 2009 and 2012. Some states then followed suit in subsequent years to announce loan waiver programs of their own.

However, the ADWDR Scheme of 2008 shows that farm loan waivers are not necessarily effective in resolving farmer distress. In fact, the nature of past farm loan waivers highlights the possible loopholes in their design and implementation, which reduces efficacy. In addition, several negative externalities could arise out of such a scheme.

Studies undertaken on the ADWDR Scheme of 2008 and the proposed loan waiver of 2017 flag the following concerns with respect to the loan waivers:

- *Exclusion error:*
  - *Source of credit:* Farmer households that borrow predominantly from the informal sector are excluded from the loan waiver scheme. Since a significant proportion of marginal and small farmers tend to source credit from informal sources, the woes of the distressed farmers continues despite the loan waiver.
  - *Size of land holdings:* Since the loan waiver schemes focus on catering to the needs of farmers with smaller land holdings, concentration of land holdings in certain states results in exclusion of the distressed farmers who have concentrated land holdings. As observed by a study[11], analysing the distribution of benefits from the ADWDR scheme in states where the concentration of land holdings was low as a result of land reform, the benefits of the loan waiver were better spread among small landholders than in other states.
- *Moral hazard:* According to a World Bank study[12], political interference in the debt resolution process generates moral hazard costs that are far larger than the fiscal cost of the bailout. Such tendencies of moral hazard make banks averse to lending to the agricultural sector. Another study[13], analysing the causal effect of debt relief on loan performance, indicates that waiver beneficiaries tend to default more than non-beneficiaries. However, it is observed that a debt waiver granted to all borrowers wastes scarce fiscal resources and increases loan defaults. On the contrary, a debt relief target at distressed beneficiaries is likely to improve loan performance. Therefore, targeted loan waivers would prove to be more efficient in dealing with issues related to moral hazard.
- *Cost to the exchequer:* Higher fiscal burden on states can push their borrowing costs over time or cause them to channel spending away from investments.
- *Long-term inflationary impact: A*n RBI study[14] concludes that If the combined fiscal deficit for fiscal 2018 goes up by 40 basis points (bps) on account of farm loan waivers (both actual and intended), with the budgeted combined fiscal deficit at around 5.9% for fiscal 2018 and inflationary momentum remaining benign, ceteris paribus, this may lead to around 20 bps permanent increase in inflation, starting fiscal 2018.

[10] Report of the Comptroller and Auditor General of India on implementation of the agricultural debt waiver and debt relief scheme of 2008

[11] R Ramakumar, (2017) Lessons from Agricultural Debt Waiver and Debt Relief Scheme of 2008, Tata Institute of Social Science;

[12] X Giné, and M Kanz (2016), The Economic Effects of a Borrower Bailout: Evidence from an Emerging Market, The World Bank;

[13] S Mukherjee, K Subramanian and P Tantri (2015), Borrower Distress and Debt Relief: Evidence from a Natural Experiment, NYU Stern and Indian School of Business

[14] P Mitra, I Bhattacharyya, J John, I Manna and A George (2017), *Farm loan waivers, fiscal deficit and inflation*, Mint Street Memo No. 5, RBI

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