Indian Journal of Agricultural Economics 80: 3 (2025): 723-741
DOI:10.63040/25827510.2025.03.012

Understanding Distress Sales in Indian Wheat Markets: An Empirical Analysis of Sub-MSP Transactions and Rural Welfare Implications

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ABSTRACT

This study investigates the extent, determinants, and implications of distress sales, defined as wheat sold below the Minimum Support Price (MSP)-in rural India during 2012–13 and 2018–19. Using unit-level data from the National Sample Survey, the analysis reveals a significant increase in distress sales over time, particularly among marginal and small-scale farmers. The weakening presence of regulated markets (APMCs) and increasing reliance on private and local traders highlight systemic inefficiencies in the procurement framework. Socio-economically disadvantaged groups-Scheduled Castes, Scheduled Tribes, and less-educated farmers—are disproportionately represented among distress sellers, indicating structural exclusion from formal marketing channels. Economically, distress sales are associated with significantly lower household income, higher poverty incidence, and greater income inequality. States such as West Bengal and Jharkhand exhibit acute vulnerability, while even traditionally better-performing states like Punjab show signs of distress persistence. The findings underscore the urgent need for region-specific interventions, including decentralised procurement, improved market access, and enhanced institutional credit and storage infrastructure. Distress sales are not just a symptom of market failure but a reflection of deeper agrarian distress, with profound implications for rural welfare and inclusive development. Addressing these challenges is critical to ensuring equitable price realisation and securing the livelihoods of India's wheat-producing farmers.

Keywords: Distress sales, Minimum Support Price, wheat markets, rural poverty and inequality, agricultural marketing reforms

JEL Codes: D31, I32, O13, Q13, Q18

I
INTRODUCTION

Agriculture remains a cornerstone of India's economy, ensuring food security and supporting the livelihoods of nearly half of the population. Among the major food crops, wheat occupies a central role as the second most important staple after rice. India stands as a significant player in global wheat production, ranking second only to China, and contributes more than 12 per cent to the global wheat basket (FAO, 2024). Wheat cultivation accounts for nearly 13 per cent of the country's cropped area and plays a vital role in India's food security and agricultural economy (Ministry of Agriculture & Farmers Welfare, 2023). It is also one of the primary crops covered under the Minimum Support Price (MSP) regime since the inception of the MSP policy, making it particularly relevant for analysing market behaviour, procurement outcomes, and policy effectiveness. This study focuses exclusively on the wheat crop and, more specifically, on surplus-producing wheat cultivators, who sell a portion of their harvest in the market. Several critical considerations drive this focus. First, wheat is a dominant Rabi crop, and its production and marketing follow a well-defined seasonal pattern, which provides clarity and consistency in analysing

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variables such as MSP awareness, procurement access, and distress sale behaviour. Restricting the analysis to the Rabi season helps in avoiding confounding seasonal variability associated with other crop cycles, thereby enhancing the precision and relevance of findings concerning price realisation, policy targeting, and market participation. Second, surplus-producing farmers are the ones who actively participate in the market, making them most susceptible to price fluctuations and institutional bottlenecks. By concentrating on this group, the study can more accurately assess distress sales, defined as transactions occurring below the MSP. The MSP for wheat is thus used as a benchmark to classify agricultural households into two categories: those selling below MSP (indicative of distress sales) and those selling at or above MSP. The study aims to investigate the prevalence of sub-MSP sales, identify the typical characteristics of sub-MSP sellers, and examine the socioeconomic, institutional, and market-related factors that influence this phenomenon. This targeted approach strengthens the analytical rigour and policy relevance of the research.

Despite India's position as a wheat powerhouse, Indian farmers, particularly small and marginal holders, continue to struggle with low price realisation, limited procurement reach, and frequent occurrences of distress sales (Thakur, 2023). A distress sale refers to the compulsion of farmers to sell their produce at prices significantly lower than MSP or prevailing market rates. This situation typically arises due to urgent cash needs, lack of on-farm storage infrastructure, poor access to regulated markets, weak bargaining power, and dependence on local intermediaries (Fafchamps & Hill, 2005; Bora et al., 2018; Dey & Singh, 2023). In the context of wheat, such sales reflect deeper structural inefficiencies in India's agricultural marketing system and the limited efficacy of procurement mechanisms (Roy, 2023).

Although the Food Corporation of India (FCI) and State Procurement Agencies (SPAs) operate with the mandate to ensure price support to wheat growers, their effectiveness is constrained by geographic concentration, procedural delays, and infrastructural gaps (Ali et al., 2012; Basantaray, 2023; Gulati et al., 2021). As a result, only a small proportion of wheat farmers-mainly in a few northern states-benefit from institutional procurement. Others, particularly in underserved regions, are compelled to sell below MSP due to the absence of accessible and competitive markets, exacerbating their economic vulnerability.

The present study examines the extent and severity of distress sales in India, with a specific focus on wheat. It investigates the incidence and depth of distress sales, the monetary losses incurred by affected farmers, and the factors driving distress sales. The analysis also explores agency-wise and regional disparities, profiles the key characteristics of distress sellers, and evaluates the linkages between distress sales and broader welfare indicators, such as income, poverty, and inequality among wheat-producing households. This paper is structured into four major sections. Following this introduction, Section II: Data Sources and Methodology

describes the datasets used, the construction of key variables, and the statistical and econometric techniques applied. Section III: Findings and Discussion presents empirical evidence on the paradox of rising MSPs alongside expanding sub-MSP sales, evolving procurement patterns, spatial and agency-level disparities, characteristics and determinants of distress sellers, and the associated impacts on income, poverty, and inequality among rural wheat farmers. Finally, Section IV: Conclusion synthesises the findings and offers policy suggestions.

II

DATA SOURCES AND METHODOLOGY

The present study is primarily based on unit-level data from the National Sample Survey Office's (NSSO) 70th Round (2012–13) and 77th Round (2018–19) of the Situation Assessment Survey (SAS) of Agricultural Households. These nationally representative datasets provide detailed information on various aspects of agricultural households, including crop production and sales, MSP awareness, access to markets, procurement outcomes, and socioeconomic characteristics. To complement this, Minimum Support Price (MSP) data for wheat are obtained from the Commission for Agricultural Costs and Prices (CACP). Together, these data sources enable a comprehensive assessment of wheat cultivators' market participation and their experience with distress sales under the MSP framework.

Since wheat is predominantly a Rabi crop, its production and marketing follow a season-specific pattern. To ensure contextual precision and eliminate variability arising from other crop cycles, the analysis is restricted exclusively to the Rabi season. This approach enhances the reliability of insights related to policy targeting, price realisation, procurement access, and market behaviour.

In this study, distress sales are identified using the MSP for wheat as a benchmark. Agricultural households are categorised into two groups: those selling wheat below the MSP, and those selling at or above the MSP. By comparing these two groups, the study explores the prevalence of sub-MSP sales, identifies the characteristics of households engaging in such transactions, and investigates the key socioeconomic, institutional, and market-related factors influencing distress sale behaviour. This classification forms the basis for further empirical analysis on price realisation, procurement disparities, and the implications of distress sales for rural incomes and welfare.

To assess the magnitude and prevalence of distress selling, the following measures are employed:

1. **Head-Count Ratio:** The proportion of wheat cultivators selling below MSP.

$$Head\ Count\ Ratio\ = \frac{N_{Below\ MSP}}{N_{Total}}$$

Where $N_{Below\ MSP}$ = Number of households selling below MSP; and N_{Total} = Total wheat cultivators with marketed surplus.

2. **Extent of Distress Selling:** This measure calculates the average shortfall between the MSP and the selling price, expressed as a percentage of the MSP. It is calculated only for households selling below MSP. Here, N denotes the total number of wheat cultivators with a marketed surplus.

$$Extent\ of\ Distress\ Selling: = \frac{1}{N}\sum \frac{(MSP - Selling\ Price)}{MSP}$$

3. **Severity of Distress Selling:** It is calculated by assigning a higher weight to households selling at prices well below the MSP.

$$Severity: \frac{1}{N}\Sigma\left\{\frac{MSP-Selling\ Price}{MSP}\right\}^2$$

4. **Average Loss:** It computes the monetary loss due to selling below MSP. It is calculated as the difference between the potential earnings at MSP and the actual earnings at the price below MSP, averaged across all distress sellers.

$$Average\ Loss = \frac{1}{N}[\Sigma\{(MSP\ \times\ Q_i) - (Selling\ Price\ \times Q_i)\}]$$

Where, Q_i = Quantity of wheat sold by the i^{th} household, and N is the same as before.

A binary logit model is employed to analyse factors influencing whether households sell below the MSP (distress sale) or at/above the MSP, with the intention of finding key drivers of distress selling and price realisation in the output markets. The dependent variable is defined as:

$Y_i = 0$: Selling below MSP (base category)

$Y_i = 1$: Selling at or above MSP

The econometric specification of the binary logit model is as follows:

$$P\left(Y_i = 1/X_i\right) = \frac{1}{1 + e^{-(\beta_0 + \beta_1 X_{1k} + \beta_2 X_{2k} + \ldots + \beta_n X_{nk})}}$$

Where:

$P\left(Y_i = 1/X_i\right)$: Probability that the k^{th} household sells at or above MSP.

β_0: Intercept term.

$\beta_1, \beta_2, \ldots, \beta_n$: Coefficients of the independent variables.

$X_{1k}, X_{2k}, \ldots, X_{nk}$: A vector of independent variables describing the characteristics of the k^{th} household.

III

FINDINGS AND DISCUSSION

3.1 Rising MSPs and Expanding Sub-MSP Sales: A Growing Paradox

This section begins by outlining key macro trends in wheat cultivation in India. The total number of agricultural households was 90.2 million in 2012–13 and increased to 93.09 million in 2018–19. Of these, households engaged in wheat cultivation accounted for 39.12 per cent in 2012–13 and 40.97 per cent in 2018–19. However, as shown in Table 1, the proportion of wheat cultivators with a marketed surplus remained limited, at 35.75 per cent in 2012–13 and 50.8 per cent in 2018–19, indicating that a relatively small segment of wheat farmers actually participated in the market. The data in Table 1 provide a critical view of the functioning of the MSP regime within India's wheat economy, particularly in the context of small and marginal farmers. Although wheat has long been covered under the MSP system, a substantial proportion of wheat cultivators continued to sell below MSP. Specifically, 54.16 per cent of wheat-growing households reported selling below the MSP in 2012–13, which alarmingly increased to 78.97 per cent by 2018–19. These findings underscore the magnitude of distress sales in the wheat sector and reflect the deepening agrarian distress in India. While the MSP for wheat increased from ₹1350 in 2012–13 to ₹1840 in 2018–19, the average market prices realised by farmers remained below the MSP in both years. More concerning is the widening gap between the MSP and the actual selling price—from ₹34 in 2012–13 to ₹113 in 2018–19. This persistent deviation points toward oligopsonistic tendencies in local grain markets and weak price transmission mechanisms. From a microeconomic perspective, farmers' supply behaviour is shaped by price expectations and incentive structures. Repeated failure to realise MSP may compel farmers to reduce their marketable surplus, diversify into non-farm employment, or shift to alternative crops. The market system's inability to offer price assurance despite MSP declarations weakens farmers' confidence in commercial agriculture.

3.2 Price Realisation, Market Participation, and Income Effects

Data from 2018–19 reveal that farmers selling their produce above MSP achieved a markedly higher marketed surplus ratio (79.86%) than those selling below MSP (70.75%). Moreover, they earned significantly higher gross returns per hectare-₹65,968 compared to ₹55,810. These patterns reflect the incentive role of price in shaping market participation decisions, consistent with the economic theory of agricultural commercialisation, which posits that higher and assured prices motivate producers to allocate more output to the market rather than to self-consumption. Interestingly, both groups of farmers had similar productivity levels (approximately 3450 kg/ha in 2012–13 and 3350 kg/ha in 2018–19); yet, those selling above the MSP consistently earned higher per-hectare incomes. The income differential of ₹ 10,158 in 2018–19 and ₹9,137 in 2012–13 highlights that productivity alone does not

determine farm income. Instead, income outcomes are strongly mediated by price realisation. Therefore, marketed surplus and farm income are contingent not only on yield but also on the broader economic and institutional environment that governs price signals and access to remunerative markets.

TABLE 1. KEY STATISTICS ON WHEAT PRODUCTION IN INDIA DURING AGRICULTURAL YEARS 2012–13 AND 2018–19

Particulars	Below MSP		Above MSP		All Farmers	
	2012-13	2018-19	2012-13	2018-19	2012-13	2018-19
Percentage of Households	54.89	78.97	45.91	21.03	35.7	50.8
% of Marketed surplus in Quantity terms	58.16	70.75	74.76	79.86	67.41	73.34
% Marketed surplus in Value terms	58.25	71.03	74.47	79.78	67.9	73.75
Productivity (kg/ha)	3462	3365	3425	3345	3445	3361
Productivity (Harvested value/ha) in Rs	46519	55810	55656	65968	50641	57946
MSP (₹/Quintal)	1350	1840	1350	1840	1350	1840
Selling Price (₹/Quintal)	1199	1653	1459	2008	1316	1727
Difference between selling Price and MSP	-151	-187	109	168	-34	-113

Note: kg is kilogram, Qt is quintal, ha is hectare, and Rs is rupees
Source: Authors' calculation using NSSO SAS 70th and 77th rounds.

3.3 Shifting Procurement Patterns and the Rise of Private Trade

Significant shifts in the composition of agencies involved in wheat surplus marketing between 2012–13 and 2018–19 are presented in Table 2, reflecting evolving farmer preferences and changes in the broader procurement landscape. Most notably, local private traders emerged as the dominant procurement channel, with their share rising sharply from 29.38 per cent to 65.54 per cent. This trend is particularly pronounced among households selling below MSP, where the share of private traders increased from 44.10 per cent to 71.40 per cent. This points to a deepening pattern of distress sales, wherein small and marginal farmers are often compelled to sell at sub-Minimum Support Price (MSP) prices due to limited access to institutional buyers, inadequate procurement infrastructure, and a lack of on-farm storage facilities. These local markets typically operate in informal and unregulated environments, marked by weak price discovery mechanisms and buyer monopolies that restrict farmers' bargaining power. While the proportion of private traders offering prices above MSP also rose significantly—from 20.33 per cent to 52.43 per cent-this should not be interpreted as a uniform improvement in market functioning. It is likely driven by a subset of larger farmers in high-performing states who possess

the ability to delay sales until market conditions are favourable, coupled with better access to networks and stronger bargaining leverage. Hence, the growing footprint of private trade appears to reflect a dual process-one segment driven by distress and another by market advantage-resulting in bifurcated outcomes within the same category.

In contrast, the share of procurement through APMC markets, which are designed to ensure transparent price discovery and better price realisation, declined drastically from 42.96 per cent to 12.49 per cent. This decline suggests either a shrinking institutional outreach, growing inefficiencies in mandi operations, or an erosion of farmer confidence in APMCs. Equally concerning is the sharp rise in the share of cooperative and government agencies in distress sales-from 1.20 per cent in 2012–13 to 11.87 per cent in 2018–19. Given that these agencies are mandated to procure at or above the MSP, this tenfold increase signals institutional malfunction, possibly arising from logistical inefficiencies, delayed payments, or limited procurement centres that deter timely access for farmers.

The role of input dealers in procurement declined markedly across all categories, particularly among those selling below MSP (from 12.20% to 1.00%). This decline may reflect tighter regulatory oversight or a shift in farmer preferences away from informal credit-tied transactions. Interestingly, despite continued policy emphasis, Farmer Producer Organisations (FPOs) and contract farming arrangements have failed to gain meaningful traction, indicating structural limitations, a lack of scale, or operational challenges that hinder their effective implementation.

TABLE 2. AGENCY-WISE SHARE IN TOTAL MARKETED SURPLUS OF WHEAT (IN QUANTITY): 2012–13 AND 2018–19

Agencies	Below MSP		Above MSP		All Farmers	
	2012-13	2018-19	2012-13	2018-19	2012-13	2018-19
Local private	44.10	71.40	20.33	52.43	29.38	65.54
APMC Market / Mandi	41.42	11.25	43.91	15.26	42.96	12.49
Input dealers	12.20	1.00	4.72	1.45	7.57	1.14
Cooperative & govt. agency	1.20	11.87	29.93	26.73	18.99	16.46
Private Processors	0.07	0.01	0.22	0.00	0.16	0.01
FPO's	NA	1.49	NA	1.67	NA	1.55
Contracting Farming	NA	0.05	NA	0.03	NA	0.04
Others	1.02	2.94	0.89	2.44	0.94	2.78

Note: - NA: Not Available
Source: Authors' calculation using NSSO SAS 70th and 77th rounds.

3.4 Distress in Rural Wheat Procurement: Trends and Channel-Wise Patterns

The data presented in Table 3 highlight a deepening crisis in India's rural wheat procurement system, where distress sales have intensified over time despite the existence of a Minimum Support Price (MSP) mechanism in place for over six decades. The overall scenario for wheat sellers reveals some alarming developments. Between 2012–13 and 2018–19, the headcount ratio—the proportion of farmers engaged in distress sales—increased markedly from 0.54 to 0.79, indicating that nearly four out of five wheat farmers sold their produce below the MSP in the latter year. Additionally, the extent of distress, measured as the average shortfall from the MSP, rose from 0.06 to 0.08, and the severity, which captures the intensity of distress among affected farmers, remained persistently high at 0.013 across both years. These figures indicate a problem that is not only widespread but also deeply ingrained. Most notably, the average income loss per hectare due to distress sales increased from ₹ 2,880 in 2012-13 to ₹ 3,493 in 2018-19, signalling an expanding economic burden on wheat cultivators. Local private traders, who are often the most accessible marketing agents in rural India, continue to dominate distress sales. In 2012-13, 69 per cent of farmers transacting with local traders received prices below MSP; by 2018-19, this figure had increased sharply to 83 per cent. These traders, operating primarily outside regulatory oversight, often possess significant bargaining power over small and marginal farmers. Consequently, farmers transacting with them experienced disproportionately higher losses, rising from ₹3155 to ₹3658 per hectare—well above the national average. More troubling, however, is the rise in distress sales through regulated market channels. APMC markets and cooperative or government agencies, which are mandated to offer price assurance and transparency, also reported significant increases in distress transactions. The share of farmers receiving sub-MSP prices through APMCs rose from 39 per cent in 2012–13 to 56 per cent in 2018–19, while the corresponding share for cooperative and government agencies grew tenfold—from 0.04 per cent to 0.45 per cent. These trends raise serious concerns regarding the operational efficiency, accessibility, and responsiveness of institutional procurement mechanisms. Procedural bottlenecks, delayed payments, and inadequate procurement coverage may be deterring farmers from fully benefiting from MSP.

Input dealers, despite a modest decline in the extent and severity of distress, continue to be a significant source of concern. The headcount ratio among farmers selling to input dealers rose from 0.66 to 0.72 over the period, with the average loss per hectare still high at ₹3125. This suggests that informal input-linked sales continue to be a distress-driven pathway for many farmers. Emerging marketing avenues, such as private processors, Farmer Producer Organisations (FPOs), and contract farming arrangements, which are often considered potential solutions to improve market access and price realisation, have not yielded substantial relief. Across these actors, either the headcount or the extent of distress has increased, reflecting structural bottlenecks, lack of scale, or ineffective implementation.

Finally, the 'Others' category, which likely includes a range of informal and unregulated actors, continues to exhibit persistently high-income losses, further highlighting the fragmented and inefficient nature of India's procurement ecosystem. The aggregate trends in headcount, extent, and severity of distress sales at the national level present a sobering picture of rural market failures. However, to obtain a more nuanced understanding of the phenomenon, it is essential to explore state-level variations. Differences in agrarian structure, market access, and the degree of MSP enforcement across states significantly shape the pattern and intensity of distress sales, necessitating a spatially disaggregated analysis.

TABLE 3. AGENCY-WISE INCIDENCE, INTENSITY, AND SEVERITY OF DISTRESS WHEAT SALES IN RURAL INDIA, AND AVERAGE FARMER LOSS PER HECTARE: 2012–13 AND 2018–19

Agencies	Head Count		Extent		Severity		Average Loss/hectare (₹)	
	2012-13	2018-19	2012-13	2018-19	2012-13	2018-19	2012-13	2018-19
Local private	0.69	0.83	0.08	0.09	0.013	0.015	3155	3658
APMC Market / Mandi	0.39	0.56	0.03	0.03	0.003	0.004	1932	2703
Input dealers	0.66	0.72	0.10	0.06	0.021	0.007	3396	3125
Cooperative & Govt. Agency	0.04	0.45	0.003	0.01	0.000	0.001	1488	1123
Private Processors	0.19	1.00	0.01	0.11	0.003	0.017	2819	1069
FPO's	NA	0.75	NA	0.07	NA	0.012	NA	2785
Contracting Farming	NA	0.85	NA	0.04	NA	0.005	NA	1771
Others	0.74	0.75	0.10	0.09	0.021	0.017	2602	3245
Total	0.54	0.79	0.06	0.08	0.009	0.013	2880	3493

Note: - Implies Not available
Source: Authors' calculation using NSSO SAS 70th and 77th rounds

3.5 Spatial Disparities in Distress Sales: State-Level Patterns and Trends

A state-wise analysis of distress sales, as presented in Table 4, reveals significant spatial disparities in terms of headcount, extent, severity, and the resulting economic losses per hectare. At the national level, the headcount ratio—the proportion of farmers selling below the MSP—increased from 0.55 in 2012–13 to 0.79 in 2018–19, indicating a sharp rise in the incidence of distress sales. Similarly, the extent of distress (the average price shortfall) increased from 0.06 to 0.08. At the same time, severity (which captures the intensity of losses among affected farmers) nearly doubled from 0.008 to 0.014, indicating a worsening scenario, particularly for the most vulnerable farming households.

States such as West Bengal and Bihar consistently recorded high levels of distress in both years. West Bengal, in particular, witnessed a dramatic increase in average income loss per hectare, from ₹3764 in 2012–13 to ₹11,467 in 2018-19, among the highest in the country. Uttarakhand also experienced a steep rise in losses, from ₹721 to ₹5836 per hectare, despite only a moderate increase in headcount, suggesting an intensification of distress among affected households.

States traditionally considered surplus producers or relatively stable, such as Punjab, Jharkhand, and Maharashtra, also saw a notable escalation in economic losses, reflecting widening vulnerabilities in their procurement systems. Meanwhile, the persistence or growth of distress in agriculturally dominant states like Uttar Pradesh and Himachal Pradesh indicates systemic issues such as inefficient procurement logistics, poor MSP enforcement, or limited institutional reach.

TABLE 4. STATE-WISE INCIDENCE AND INTENSITY OF DISTRESS PADDY SALES IN RURAL INDIA, AND AVERAGE FARMER LOSS PER HECTARE: 2012–13 AND 2018–19

State	Head Count		Extent		Severity		Average Loss/hectare (₹)	
	2012-13	2018-19	2012-13	2018-19	2012-13	2018-19	2012-13	2018-19
Jammu & Kashmir	0.37	0.99	0.02	0.13	0.002	0.030	863	2495
Himachal Pradesh	0.77	0.68	0.07	0.08	0.010	0.013	2249	3336
Punjab	0.21	0.60	0.01	0.03	0.000	0.005	1404	3299
Uttarakhand	0.33	0.85	0.02	0.08	0.002	0.011	721	5836
Haryana	0.11	0.54	0.01	0.02	0.0004	0.001	2197	1654
Rajasthan	0.25	0.71	0.02	0.05	0.001	0.006	1796	3062
Uttar Pradesh	0.77	0.90	0.09	0.09	0.014	0.012	2540	3082
Bihar	0.88	0.92	0.11	0.13	0.021	0.027	4550	4847
West Bengal	0.92	0.85	0.15	0.15	0.030	0.029	3764	11467
Jharkhand	0.04	0.87	0.01	0.13	0.001	0.028	819	2280
Chhattisgarh	0.61	0.36	0.10	0.04	0.021	0.006	1220	1945
Madhya Pradesh	0.33	0.74	0.03	0.06	0.003	0.011	1194	2287
Gujarat	0.14	0.61	0.01	0.06	0.002	0.009	1519	4436
Maharashtra	0.25	0.26	0.02	0.02	0.002	0.002	2015	2522
All India	0.55	0.79	0.06	0.08	0.010	0.013	2880	3493

Source: Authors' calculation using NSSO SAS 70th and 77th rounds.

These interstate disparities underscore the inadequacy of a one-size-fits-all policy approach. The data point to the urgent need for state-specific interventions, particularly in regions where both the prevalence and intensity of distress sales have

worsened over time. Addressing these disparities requires strengthening localised procurement systems, improving market infrastructure, and ensuring more effective MSP enforcement mechanisms tailored to the unique constraints of each state.

3.6 Profile and Determinants of Distress Wheat Sellers in India

Table 5 presents the socio-economic characteristics of households selling wheat either below or above the Minimum Support Price (MSP) for the years 2012–13 and 2018–19. The data reveal a consistent and concerning pattern: marginal and small farmers are disproportionately represented among those who sell below the MSP. In 2018–19, 85.31 per cent of below-MSP sellers were marginal farmers, whereas they accounted for only 14.69 per cent of above-MSP sellers. Conversely, medium and large farmers comprised a significantly higher share—36.99 per cent—among those who sold above MSP, suggesting that larger landholders benefit from better access to institutional procurement channels, storage facilities, and market networks. The distribution by social group further reinforces this exclusionary pattern. Households from Scheduled Castes (SCs) and Scheduled Tribes (STs) were overrepresented among sellers selling below the Minimum Support Price (MSP). In contrast, households from the 'Others' category (typically socio-economically better-off groups) were more prominent among above-MSP sellers. For example, in 2018–19, only 5.38 per cent of above-MSP households were from ST communities, compared to 8.12 per cent among those selling below MSP. These figures underscore the persistent social marginalisation that limits access to remunerative markets for disadvantaged groups. Educational attainment of the household head also appears to play a critical role. In 2018–19, 34.38 per cent of below-MSP households were headed by illiterate individuals, compared to 27.99 per cent in the above-MSP group. In contrast, a greater share of above-MSP households had completed senior secondary education or higher. This suggests that education enhances market literacy, awareness of support mechanisms, and the ability to navigate formal procurement systems.

Households selling below MSP also exhibit greater signs of economic vulnerability. A larger proportion reported crop losses (28.74%), ownership of MGNREGS job cards (indicating dependence on public wage employment), and low awareness of MSP-only 33.88% in 2018–19. These indicators reflect both income insecurity and limited institutional support. One particularly concerning trend is the declining access to formal credit among distress sellers. The proportion of below-MSP households borrowing from formal financial institutions fell sharply from 60.65 per cent in 2012–13 to 30.94 per cent in 2018–19. In contrast, the share remained relatively higher for above-MSP sellers (41.02%), pointing toward a growing credit exclusion among vulnerable farmers. In summary, households engaged in distress wheat sales tend to be land-poor, socially marginalised, less educated, and face systemic barriers such as limited access to credit, formal procurement infrastructure, and price awareness. These findings highlight the existence of deep-rooted structural

inequalities within the agricultural marketing system. Addressing these disparities is crucial for making the MSP regime more inclusive and for ensuring equitable access to remunerative prices across different segments of the farming population.

TABLE 5. KEY CHARACTERISTICS OF HOUSEHOLDS SELLING AGRICULTURAL PRODUCE BELOW VS. ABOVE MSP: 2012–13 AND 2018–19

Particulars		Below MSP		Above MSP	
		2012-13	2018-19	2012-13	2018-19
Land categories (Row-wise percentage)	Marginal	63.72	85.31	36.28	14.69
	Small	52.78	76.29	47.22	23.71
	Medium & Large	39.78	63.01	60.22	36.99
	Total	54.89	78.97	45.11	21.03
Land categories (Column-wise percentage)	Marginal	57.34	62.04	39.73	40.1
	Small	24.28	22.92	26.43	26.75
	Medium & Large	18.37	15.04	33.84	33.15
Social group (percentage)	ST	6.65	8.12	9.36	5.38
	SC	12.01	14.7	10.15	8.98
	OBC	56.93	51.91	46.64	52.08
	Others	24.41	25.27	33.85	33.55
Education level of head (percentage)	Illiterate	43.43	34.38	33.51	27.99
	Up to Primary	20.45	20.73	25.19	23.36
	Up to Senior Secondary	28.53	37.9	35.4	41.73
	Higher Education	7.59	6.99	5.9	6.92
Mean age of household's head (years)		49.86	49.58	47.87	50.26
Average household size (in numbers)		5.57	5.38	5.58	5.25
MGNREG job card possession (percentage)		25.29	25.22	31.73	27.52
Experienced crop loss (percentage)		26.51	28.74	17.24	26.52
MSP awareness (percentage)		32.22	33.88	44.14	48.67
Households with borrowing from formal financial institutions (percentage)		60.65	30.94	63.78	41.02

Note: Marginal, small, and large households have operated land 0.001-1 hectare, 1-2 hectares, and more than 2 hectares, respectively.
Source: Authors' calculation using NSSO SAS 70th and 77th rounds.

The results of the logit regression estimating the determinants of wheat farmers' ability to realise prices at or above the Minimum Support Price (MSP) are

presented in Table 6. The dependent variable is binary, coded as one (1) if the household sold wheat at or above the MSP, and zero (0) otherwise. A key determinant of price realisation is farm size. Compared to marginal farmers, small farmers are two percentage points more likely to receive MSP ($p<0.10$), while medium and large farmers are four percentage points more likely ($p<0.01$). This strong positive association likely reflects the advantages of larger holdings, including economies of scale, superior access to storage and transport, better market information, and stronger bargaining power. Larger farms also tend to generate higher marketable surpluses, which facilitates participation in formal procurement channels that often require bulk transactions.

The procurement channel also plays a significant role. Households selling to private, non-regulated buyers are seven percentage points more likely to receive MSP compared to those selling in local informal markets ($p<0.01$). This may be due to contract-based arrangements or bulk purchases from traders willing to offer competitive prices in exchange for securing a reliable supply. The effect is even stronger for government-regulated procurement channels, where the likelihood of MSP realisation increases by 15 percentage points ($p < 0.01$). This underscores the role of institutional mechanisms-such as procurement centres and fair price shops—which provide assured pricing and active support during the harvest season.

While awareness of MSP shows a positive coefficient, the effect is not statistically significant, suggesting that knowledge alone is insufficient unless it is coupled with actual access to formal markets. However, structural indicators such as the state-wise share of organised procurement (calculated as the share of marketed surplus procured through regulated markets at the state level) and the number of regulated markets per state significantly increase the odds of MSP realisation ($p < 0.01$). These findings confirm that broader market infrastructure plays a crucial enabling role in ensuring fair price outcomes.

The interaction between indebtedness and loan source provides additional insight. Farmers who are indebted and reliant on non-institutional credit sources, such as moneylenders, are 2.6 percentage points less likely to sell at or above the MSP ($p < 0.05$). This likely reflects exploitative repayment terms and urgent liquidity needs that compel farmers to accept prices below the MSP. In some cases, moneylenders themselves may act as buyers, thereby further suppressing prices. Holding an MGNREGA job card is associated with a 2-percentage point higher probability of receiving MSP ($p < 0.10$), possibly due to increased income security that allows households to avoid immediate crop sales, thereby enabling them to wait for better prices or access formal procurement.

Social identity also emerges as an important determinant. Scheduled Caste (SC) households are significantly less likely (by three percentage points, $p<0.01$) to realise MSP, indicating structural disadvantages in terms of market access, mobility,

and network linkages. In contrast, households from Other Backward Classes (OBC) are two percentage points more likely to receive MSP ($p < 0.10$), potentially reflecting a relatively greater level of social capital and market participation.

TABLE 6. LOGIT REGRESSION ESTIMATES OF DETERMINANTS OF MSP PRICE REALIZATION AMONG WHEAT GROWERS

Outcome Variable – Selling at or above MSP=1; Selling below MSP=0

Explanatory Variables	Coefficient	Standard Error	Marginal Effect	Standard Error
Farm category (base: Marginal)				
Small	0.13*	0.07	0.02*	0.01
Medium & Large	0.26***	0.07	0.04***	0.01
Procurement agency (base: Local market)				
Private non-regulated	0.48***	0.10	0.07***	0.02
Government & regulated	0.90***	0.08	0.15***	0.01
MSP awareness (Yes=1; No=0)	0.06	0.06	0.01	0.01
State-wise share of the organised market	0.03***	0.002	0.005***	0.0002
Number of regulated markets	0.001***	0.0001	0.0002***	0.00002
Interaction between indebtedness and the source of the loan				
Not indebted	(base)			
Indebted # Formal source	(base)			
Indebted # Informal source	-0.19**	0.08	-0.0256**	0.0105
Member of registered farmers' organisation (Yes=1; No=0)	0.17	0.15	0.0248	0.0219
Education (Literate=1; Illiterate=0)	0.04	0.06	0.0061	0.0087
Having MGNREGA job card (Yes=1; No=0)	0.13*	0.07	0.02*	0.01
Social group (base: General)				
ST	-0.13	0.13	-0.02	0.02
SC	-0.24**	0.10	-0.03**	0.01
OBC	0.13*	0.07	0.02*	0.01
Constant	-3.040	0.113		
Model Fit Statistics	Value			
Number of observations	8776			
LR Chi 2(14)	1021.8			
Log likelihood	-3798.7			
Pseudo R2	0.118***			

Note: ***, **, * indicates significant at 1%, 5% and 10% level of significance.
Source: Authors' calculation using 77th rounds of NSSO.

The coefficient for Scheduled Tribe (ST) households is not statistically significant, suggesting heterogeneity within this group or insufficient reach of procurement mechanisms in tribal regions. Other variables, such as educational

attainment and membership in Farmer Producer Organisations (FPOs), do not exhibit significant effects in the current model. This may be due to weak institutional integration of FPOs or the fact that education alone does not guarantee market access in the absence of supportive infrastructure and procurement systems.

In summary, the regression results highlight that larger farm size, regulated procurement channels, and robust market infrastructure are key facilitators of price realisation at or above MSP. Conversely, informal credit dependence and social disadvantage act as significant barriers. These findings underscore the need for both institutional reforms—such as expanding procurement infrastructure and improving financial inclusion—and targeted market-based interventions to ensure that small and marginalised farmers can fully benefit from MSP policies.

3.7 Association between Distress Sales and Income, Poverty, and Inequality among Wheat Sellers in Rural India

An examination of annual income trends among wheat cultivators in rural India during 2012–13 and 2018–19 reveals a notable increase in average farm household earnings over time. However, this aggregate growth conceals sharp disparities tied to price realisation. At the national level, the average income of wheat farmers rose from ₹1,15,531 in 2012–13 to ₹1,63,615 in 2018–19. Yet, a disaggregated view based on whether farmers sold their produce above or below the Minimum Support Price (MSP) exposes a growing income divide. In 2012–13, households that sold wheat below MSP reported an average annual income of ₹88,034, compared to ₹1,48,992 for those selling above MSP—a gap exceeding ₹60,000. This income disparity widened significantly by 2018–19: sellers earning below the Minimum Support Price (MSP) earned ₹1,44,400 annually, while those earning above the MSP earned ₹2,35,765. These figures underscore the long-term economic disadvantage associated with distress sales, which not only reduce immediate income but also impede the overall financial resilience and upward mobility of affected households.

A closer look at income composition highlights the central role of price realisation in determining household earning potential. In 2018–19, net income from crop production was ₹1,42,348 for farmers selling above MSP, nearly twice the ₹72,997 earned by those selling below MSP. This difference clearly demonstrates that the inability to secure fair prices erodes the core source of agricultural income. Income from animal farming also increased across both groups, though gains were more pronounced among above-MSP sellers. Their earnings from animal farming rose from ₹22,163 in 2012–13 to ₹41,278 in 2018–19, while below-MSP sellers earned ₹28,156 in 2018–19. Supplementary income sources—such as wages and salaries, non-farm business income, pensions, and rent—further reflect this divide. For example, wage income in 2018–19 was ₹34,949 for households above the Minimum Support Price (MSP) and ₹31,665 for those below the MSP. Notably, only

above-MSP households reported meaningful earnings from pensions and remittances (₹7,211) and rent (₹2,369), indicating better diversification and possibly superior socio-economic positioning.

TABLE 7. AVERAGE ANNUAL INCOME OF WHEAT CULTIVATORS BY SOURCE IN RURAL INDIA: 2012–13 AND 2018–19 (IN ₹)

Sources of Income	Below MSP		Above MSP		All Farmers	
	2012-13	2018-19	2012-13	2018-19	2012-13	2018-19
Income from wages & salary	15616	31665	15848	34949	15721	32356
Income from pension & remittances	NA	5060	NA	7211	NA	5513
Income from the rent of leased-out land	NA	1799	NA	2369	NA	1919
Net income from crop production	62616	72997	104311	142348	81424	87582
Net income from animal farming	7482	28156	22163	41278	14104	30916
Net non-farm receipts	2319	4722	6670	7611	4282	5330
Total Income	88034	144400	148992	235765	115531	163615

Note: The income represents the overall earnings of the agricultural year; NA-Not Available
Source: Authors' calculation using NSSO SAS 70th and 77th rounds.

Taken together, these patterns reveal that distress sales constrain not only farm incomes but also limit opportunities for income diversification—an important buffer against agricultural risks. The inability to secure remunerative prices, therefore, contributes to a cycle of economic vulnerability, particularly among small and marginal farmers. Further evidence of this economic divide is presented in Table 8, which shows a strong association between price realisation and household poverty. In 2018–19, 38.47 per cent of households selling wheat below MSP were classified as poor, compared to just 22.99 per cent of those selling above MSP. Although poverty rates declined for both groups over time, the persistent gap illustrates the continued welfare losses linked to distress sales.

Income inequality indicators paint a similar picture. The Gini coefficient for cultivation income remained higher among below-MSP sellers, at 0.608 in 2012-13 and 0.579 in 2018–19, than among those selling above MSP. Even for total income, households below the Minimum Support Price (MSP) exhibited greater inequality, although the disparity declined slightly over the years. At the aggregate level, the Gini coefficient for all wheat-growing households decreased from 0.556 to 0.536, indicating a modest reduction in overall income inequality; however, this masks persistent inequities driven by unequal access to fair pricing.

In sum, the findings reinforce the conclusion that distress sales are not merely market anomalies but symptoms of deeper structural constraints in rural agricultural

markets. Farmers unable to access MSP mechanisms face significantly higher poverty rates and deeper income inequality. Addressing these challenges requires targeted interventions to expand MSP outreach, strengthen procurement infrastructure, and ensure more equitable market access, particularly for smallholders and socially disadvantaged groups. Enhancing price realisation is thus critical not only for boosting farm incomes, but also for promoting inclusive rural development and poverty alleviation.

TABLE 8. INCIDENCE OF POVERTY AND INCOME INEQUALITY AMONG AGRICULTURAL HOUSEHOLDS IN RURAL INDIA: 2012–13 AND 2018–19

Variables	Below MSP		Above MSP		All Farmers	
	2012-13	2018-19	2012-13	2018-19	2012-13	2018-19
Percentage of Poor Households*	47.73	38.47	26.86	22.99	38.32	35.21
	Gini Coefficient					
Income from Cultivation	0.608	0.579	0.56	0.595	0.596	0.599
Total Income	0.563	0.527	0.523	0.521	0.556	0.536

Note: * is based on the Tendulkar state-specific poverty line for 2011-12 (mixed reference period). Poverty line for 2012-13 is the same as the state-specific poverty line for 2011-12. For 2018-19, the poverty line is calculated to account for inflation using the CPI (rural) index.
Source: Authors' calculation using NSSO SAS 70th and 77th rounds.

IV

CONCLUSION

The evidence presented underscores a deepening agrarian crisis in rural India, marked by the persistence and intensification of distress sales among wheat cultivators between 2012-13 and 2018-19. The rise in the all-India headcount ratio from 0.55 to 0.79, along with the increase in average income losses per hectare, suggests a growing number of farmers are being compelled to sell their produce below the MSP, often due to urgent liquidity constraints and limited bargaining power. This is accompanied by a significant shift in the marketing structure, with the share of regulated markets (APMCs) declining to just 12.49 per cent, while private and local traders now account for over 65 per cent of transactions—an indication of market fragmentation and institutional erosion. The economic consequences are stark. Farmers unable to realise MSP face significantly lower incomes, reduced income diversification, higher poverty rates, and greater income inequality. States such as West Bengal, Jharkhand, and Uttarakhand have witnessed a sharp deterioration in farmer welfare, while even traditionally better-performing states like Punjab and Uttar Pradesh are not immune to distress sales, reflecting systemic weaknesses in procurement outreach, timeliness, and infrastructure.

The findings call for urgent, multi-pronged policy interventions tailored to the regional dynamics of agricultural markets. Strengthening decentralised procurement through local-level centres and community institutions such as FPOs and panchayats is essential to enhance coverage and accessibility. Where physical procurement remains weak, price deficiency payment schemes can offer a viable alternative to safeguard farm incomes. Parallel investment in rural market infrastructure, including storage, weighing, and digital trading systems such as e-NAM, is crucial to mitigating post-harvest distress. Moreover, improving access to short-term credit and warehousing can reduce the compulsion to sell immediately at unfavourable prices.

Crucially, the persistence of distress sales is not merely a market failure but a structural barrier to rural equity and economic justice. Ensuring fair price realisation must be treated as a central pillar of agrarian policy—not only to boost incomes, but also to enable sustainable, dignified, and inclusive rural development.

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