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Minimum Support, Limited Protection: The Impacts and Efficacy of India's Agricultural Price Support Policy

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ABSTRACT

This study evaluates the effectiveness of India's Minimum Support Price (MSP) policy at alleviating rural farmer poverty within the nation. This is done by investigating farmer and agriculture related economic data in India over time, examining for evidence of improvement in farmer standards of living, and whether any such improvement is related to the MSP. To this end, the study presents a breakdown of the MSP as a policy, followed by analysis of statistics such as farmer debt to evaluate standards of living. The relevance of the MSP in improving farmer livelihood is empirically measured through a two-way fixed effects panel regression across India's states for the years 2013 and 2019 using national Sample Survey Office (NSSO) data, isolating the impact of state-wise procurement volumes under MSP on monthly income levels for agricultural households. This regression reveals no statistically significant association between these two variables within the available state-level data, suggesting that procurement under MSP does not explain variation in farmer incomes. In addition, a cross-sectional OLS heterogeneity analysis demonstrates geographic market coverage (as measured by area per regulated market) has little correlation with farmer income. However, there is a statistically significant negative correlation between market congestion (as measured by agricultural households per regulated market) and agricultural household income. Overall the findings suggest the policy's impact may be diminished as a result of concentration of benefits in both select states and for select crops (wheat, paddy), price levels that fail to meet necessary standards, and exposure of farmers to exploitation within regulated markets.

INTRODUCTION

India has recently surpassed China to become the world's most populous country, with about 1.46 billion citizens, and with an estimated 63% of those citizens living in rural areas. It also has one of the world's largest agricultural sectors, with 44% of all employed individuals in the nation working in agriculture according to the most recent World Bank estimates. However, unlike many other economies with a massive agricultural industry, India exports precious little of its produce, with only $54 billion out of its total $742 billion worth of exports coming from agriculture (*Growth Lab at Harvard University, 2025*). This is primarily a function of its massive population meaning that India has far more mouths to feed than other nations. As such, despite a large proportion of the population working in agriculture, food security

remains an area of significant concern within the country, with it ranking only 68th overall out of 113 countries in *The Economist's* Global Food Security Index.

At the same time, living conditions and quality of life for farmers in India remain poor. Indeed, since the 1970s farmers have been one of India's most vulnerable groups to self-harm and suicide in the country, with approximately 400,000 farmers committing suicide between 1995 and 2024 (*Meshram 2024*), primarily due to financial difficulties often stemming from unpayable loans/debts. As such the Indian government has long been pursuing two seemingly contradictory goals, those being cheap and accessible crops to reduce food insecurity, and higher income levels for rural farmers to improve their quality of life. In their bid to simultaneously accomplish these two aims, the Indian government has implemented a policy named 'The Minimum Support Price,' or MSP, a unique intervention intended to serve as an alternative to a classic price floor policy, first implemented for wheat in 1966. This study asks one primary question: Does the MSP policy have a significant positive impact on farmer wellbeing? The exploration of this question is broken down by three supporting questions:

1. As the main mechanisms of support for farmers, is there evidence for higher government procurement and access to regulated markets being correlated with improved wellbeing as measured by income?
2. Are the benefits of the MSP policy equitably distributed across farmers growing different crops and in different parts of the country?
3. Have the socio-economic issues faced by farmers such as high debt levels and suicide rates been addressed?

LITERATURE REVIEW

The Minimum Support Price (MSP) policy is a price support intervention instituted by the government of India. The main objective of the MSP is to provide a minimum price to farmers, so as to guarantee a minimum return, and thus reduce both fluctuations in farmer income and price volatility for important crops. MSPs are recommended by the CACP annually just before sowing season, for a designated set of crops, and are ultimately set by the Indian government based on those recommendations. The government then offers to procure those crops from farmers at the designated MSP levels, to the extent that they are willing and able. Through this policy, the Indian government hopes to keep food prices low, enhance the nation's food security, and protect farmer livelihoods. The MSP has been the subject of intense debate amongst researchers over its sustainability, equity in distribution of its benefits, and its overall impact on the economy as a whole.

The positive impact of the MSP on agricultural production, price, and food security, has been debated amongst researchers. Certain experts have argued that the MSP can encourage farmers to invest in their farms to increase production, while also helping stabilize prices for agricultural produce. Aditya et al.

(2017) uses data from the NSSO's 70th round to analyse farmer's awareness of MSP and found evidence that MSP announcements had a positive impact on agricultural productivity. The paper concludes that the MSP has an overall positive impact on farmers in India, though it could benefit from more effective procurement and awareness building programs. Other papers, such as Chand (2003) conclude that the MSP has played a significant role in achieving food security in India. The National Committee of Farmers (2006), also known as the Swaminathan Committee, advocates that farm price guarantees are crucial to ensure livable farmer incomes and mitigate rural economic vulnerability.

However, there are also significant weaknesses in the MSP policy's implementation, which have been identified and discussed in literature. Firstly, there are massive disparities in the degree to which different commodities are supported by the policy. There is also variation in the extent to which farmers in different states are able to take advantage of the minimum prices. This will be further discussed in later sections of this paper. Chand (2003) highlights how the benefits derived from procurement under MSP are vastly different across states, and how this leaves most farmers vulnerable to selling in the private market. This of course means that they cannot take advantage of the MSP prices, diminishing the policy's effectiveness at stabilizing farmer incomes. He also discusses how the effectiveness of MSPs rely on their enforcement through procurement, rather than relying on the market effects of announcing them. He thereby frames the issue of MSP effectiveness as an implementation problem. These concepts are of particular relevance to this study, as I consider procurement the main vector for the MSP policy to impact farmers. The concentration of procurement outlined in later sections supports Chand's concerns around inequitable distribution of MSP benefits. Himanshu (2019) offers important context, as it examines changes in income, consumption, and wealth inequality in India. While not directly related to MSP policy, this paper argues that persistent structural weaknesses in agricultural markets lead to widening inequalities between farmers of different regions. It also highlights how inequality has a multitude of underlying drivers, an important factor to consider for this study's regression analysis, as variations in farmer income levels between states cannot simply be attributed to MSP policy and/or procurement, hence the need for state fixed effects.

Research concerning the MSP has also extended beyond direct economic impacts, as some papers have also considered the ecological and social implications of current agricultural policy in India. Soni (2025) highlights the rise in farmer protests and other such political mobilization resulting from discontentment around inequitable procurement. Additionally, the concentration of procurement in water-intensive crops such as paddy and wheat has encouraged economically unsustainable agricultural practices within the nation (Chand, 2003), conflicting with the MSPs goal of ensuring food security. Existing literature also emphasizes that price support alone is insufficient to address the multi-faceted problems facing rural households in India. Merriott (2016) for example, does not directly evaluate the MSP, but considers the wider sources of discontent and/or distress among the agricultural population of India. The paper, considers how indebtedness is a key factor contributing to farmer suicides, and liberalisation of trade barriers introduces further price competition for farmers to contend with. The paper is important to consider the limitations of farmer income as a measure of wellbeing, as farmer vulnerability has other structural causes separate from low income levels.

Existing literature has thoroughly explored and examined the statutory framework of the MSP and APMC system. There has also been significant qualitative research conducted into these policies. This study contributes to existing research by evaluating whether modern MSP procurement levels and market infrastructure access and quality are statistically correlated with farmer income level. The intention of this is to examine whether empirical data suggests MSP policy significantly affects farmer wellbeing. Historical statistics such as farmer income and debt will be used for evaluation, alongside a two-way fixed effects panel regression across India's states. This is further supplemented by a cross-sectional OLS analysis using mandi density data to evaluate whether state-level procurement volumes and accessibility to MSP support directly impact the average incomes of agricultural households. This use of a more statistical and data-driven approach supplements debates around MSP effectiveness as it examines whether proof of positive or negative impacts of the MSP is reflected in a measurable, quantifiable form. This study, particularly its regression analysis, does not attempt to estimate the causal effect of introducing the MSP as the policy predates the period across which data for regression is available, and said data does not provide a counterfactual. Rather, it attempts to draw an association/correlation between the MSP policy and farmer income combining this with relevant historical evidence to assess whether there are statistical and/or qualitative indicators that the policy's current implementation is achieving its intended goals.

The findings of this study support many of the concerns highlighted by Chand(2003), using more recent data to demonstrate that the inequitable distribution of MSP benefits has continued into the present, though with greater emphasis on inequity between producers of rice and wheat vs other crops, rather than inequities between farmers in different states. The results of the panel regression do not demonstrate a significant association between procurement levels and farmer incomes. This complicates discussion of strong procurement leading to improved farmer income (as is claimed by Chand and others), as pure statistical analysis of the available data does not provide evidence supporting such a claim. However, the benefits of procurement results are likely obscured in data by lack of procurement access and other factors, and as such the regression cannot be considered to disprove these claims. Findings in this study's section on farmer debt are consistent with discussion of farmer debt in Merriot(2016), demonstrating that indicators of financial vulnerability remain high among Indian farmers, though the extent to which this can be attributed to a lack of efficacy of MSP policy is difficult to ascertain.

METHODOLOGY

Data Sources

This investigation has been conducted based on a comprehensive collection of secondary data, sourced primarily from Indian governmental agencies and reports including but not limited to: The Press Information Bureau (PIB), The Agriculture Report of the Agricultural and Processed Foods Export

Development Authority (APEDA), and sansad.in (official website portal of the Parliament of India). It also includes data and analysis from international organizations such as The World Bank and International Monetary Fund. Finally, information and data also has been collected from research papers sourced mainly from a variety of journals, and various websites and news articles from agencies including but not limited to: The Economist, The Hindustan Times, and The Indian Express.

Economic theory and analysis will primarily be based on IBDP Economics course material, but certain ideas and analyses may be inspired by specific research papers, which are cited where relevant. The study includes a general explanation and examination of price floor interventions and the nature of the primary/agricultural sector, but will mostly focus on contextualized investigation into the MSP and Indian market specifically, in order to ensure that the unique circumstances and nuances of the MSP are taken into account and included in analysis. Primary field research will not be included in this essay, however surveys, interviews, and the like conducted by organizations have been used to capture and measure farmer welfare.

Panel Regression Methodology

In order to assess the associations of the MSP policy with farmer income in a more rigorous quantitative and empirical manner, I conducted two complementary analyses using Python: a panel regression with fixed effects and a cross-sectional heterogeneity analysis. In these regressions, I used farmer income as a proxy for farmer wellbeing, as this is the main aspect of wellbeing that a price support policy like the MSP would aim to impact. Similarly, I use primarily government procurement volumes to represent access to and scale of MSP benefits for farmers, as the policy mainly impacts farmers when they have the opportunity to sell produce to the government. This is not wholly comprehensive, as the government's offered procurement price would also cause a distortion in the free market as other buyers must compete with this price to a degree, but is nevertheless a suitable approximation.

For the panel regression, I used state-level data for India across the years 2013 and 2019 sourced primarily from the NSSO Situation Assessment Survey that took place in these two years. As there is no comprehensive yearly report of agricultural statistics (particularly farmer household income) from the Indian government, these two years were the only ones with sufficient information to conduct an analysis across. The dependent variable for this regression is the average farmer income in different states (expressed in rupees), while the independent variables are the MSP level for rice and wheat (expressed in rupees per quintal), aggregate procurement volume of rice and wheat per state in each of the two years (expressed in thousands of metric tonnes), and average debt of agricultural households (expressed in rupees). Procurement of rice and wheat were specifically chosen as these two crops dominate government procurement as will be discussed later in this paper. The challenge in trying to estimate the impact of the MSP policy on farmer income through such a method is that there are significant differences between states, including but not limited to soil quality, irrigation infrastructure, patterns of land ownership and average size of farms. Furthermore, in the period between 2013-2019, India's economy grew significantly,

and there were other nationwide changes to economic conditions that affected all states. Such factors would have a significant impact on farmer income data, while not having any relevant connection to the MSP. To account for this, I added two-way fixed effects to my model, with state-fixed effects to account for differences between states, and year fixed effects to account for differences in economic conditions between 2013 and 2019. This allowed the model to more effectively isolate how the prices MSP were set at and the government procurement volumes affected farmer income.

Three models were created for analysis:

- Model 1: the primary model, includes state and year fixed effects, with total procurement and farmer debt as the regressors. Estimating the MSP variable in this model is functionally impossible, as the MSPs are the same across states, only differing across years, and changes in them are therefore entirely neutralized by the year fixed effects.
- Model 2: takes away the year fixed effects, therefore allowing MSP levels across the two years to also be used as a regressor. This also means that the results will be impacted by the changes in India's economy between the two years, making them less indicative of MSP effectiveness.
- Model 3: includes both fixed effects but breaks procurement volume down into rice and wheat separately, thereby testing whether procurement of either crop has a greater or lesser impact on farmer income/wellbeing.

Standard errors are computed using a heteroskedasticity-robust correction (HC1), which guards against the possibility that the degree of variation in the residuals differs systematically across states.

Heterogeneity Analysis Methodology

I also constructed a separate heterogeneity analysis to analyse whether structure and availability of regulated market access predicts differences in farmer income. This was estimated using a cross-sectional ordinary least squares (OLS) regression using 2019 data, covering the 20 states for which mandi density is available. In order to measure market access, I selected two measures broken down by the state to regress against average farmer income, the geographic area per regulated market (in km^2) and the number of agricultural households per regulated market. These two measures can both be used to approximate strain on mandi infrastructure within states. Since these measures are expressed in incomparable units (km^2 and number of households), I ran both unstandardised regressions to compare coefficients in natural units and standardised regressions where variables were converted to z-scores, enabling more functional comparison of coefficients to evaluate the relative significance of each variable.

Once again, three models were constructed for both standardised and unstandardised variables:

- Model 1: a bivariate regression with only geographic area per regulated market
- Model 2: a bivariate regression with only households per regulated market
- Model 3: a comprehensive multivariate regression encompassing both independent variables

The code used for regression, as well as the data tables, can be found in Appendix A.

DETAILS AND FUNCTIONING OF THE MSP

The following table contains the MSPs for 2024-2025, and 2025-2026, sourced from the Press Information Bureau (PIB):

No.	**Crops**		**MSP 2025-26**	Cost* KMS 2025-26	Margin over cost (%)	MSP 2024-2025
	Cereals					
1.	Paddy	Common	**2369**	1579	50	2300
		Grade A^	**2389**	-	-	2320
2.	Jowar	Hybrid	**3699**	2466	50	3371
		Maldandi^	**3749**	-	-	3421
3.	Bajra		**2775**	1703	63	2625
4.	Ragi		**4886**	3257	50	4290
5.	Maize		**2400**	1508	59	2225
	Pulses					
6.	Tur /Arhar		**8000**	5038	59	7550

7.	Moong		**8768**	5845	50	8682
8.	Urad		**7800**	5114	53	7400
	Oilseeds					
9.	Groundnut		**7263**	4842	50	6783
10.	Sunflower Seed		**7721**	5147	50	7280
11.	Soybean (Yellow)		**5328**	3552	50	4892
12.	Sesamum		**9846**	6564	50	9267
13.	Nigerseed		**9537**	6358	50	8717
	Commercial					
14.	Cotton	(Medium Staple)	**7710**	5140	50	7121
		(Long Staple)	**8110**	-	-	7521

(Table 1) Table showing 2024-2025 and 2025-2026 MSPs for a variety of crops, sourced from the PIB. All prices are in rupees per quintal (a quintal is equal to 100 kilograms).

As discussed in the Literature Review, the MSP is a price support intervention. Currently there are MSPs set on 23 separate crops under four categories, those being cereals, such as paddy, wheat, and maize,

pulses (known in India mainly as daal, including lentils, chickpeas, and multiple varieties of legumes), oilseeds (including peanuts, soybeans, and sesame), and commercial crops (such as sugarcane, cotton, and jute).

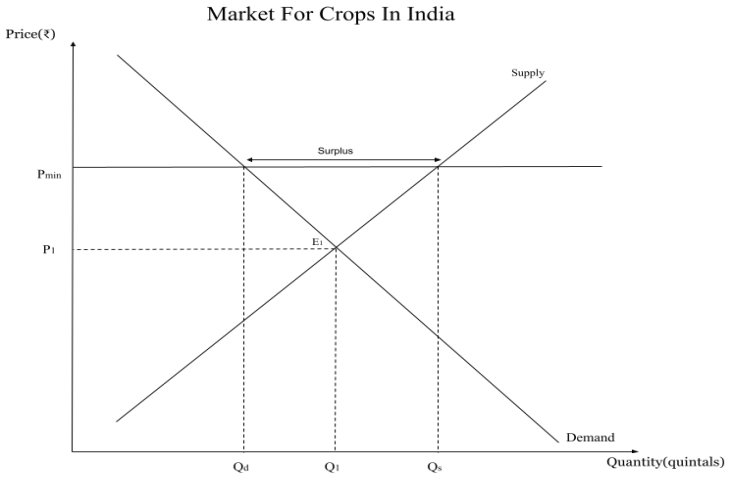
There is an important distinction to be made between standard price floors and the MSP. A standard price floor is a legally binding price that forces the free market to set prices at or above a certain amount. MSPs on the other hand do not technically directly affect the free market. The MSP is a price that is not available on the private market, but rather serves as an alternative path through which farmers can sell their goods directly to the government, who guarantee to buy them at the MSP. However, prices for any crops sold through the private market, not to the government, are still subject to the market forces of demand and supply.

APMC and Mandis

India has a unique system, instituted by the Agricultural Produce Market Committee, to manage the market for crops in the nation. Under the APMC Act, the sale, purchase, and marketing of agricultural products is limited to certain designated physical locations (*lexibal.in, 2025*), known colloquially as 'mandis.' These mandis are then regulated by the APMC, with regulations differing somewhat from state to state. Ensuring farmers only sell within these designated areas is intended to enhance the government's ability to protect farmers from exploitation (*Gangwar 2024*). Traders have to obtain licenses in order to buy or sell in mandis, and a commission fee (usually about 1-2%) is levied on purchases. In some states, commission agents known as 'arthiyas' act as middlemen between farmers and prospective buyers, while other states have abolished them. In most states, there are restrictions on selling produce outside of mandis, which make it illegal for businesses and wholesalers (who may otherwise be able to exploit farmers) to acquire produce outside of mandis (*lexibal.in, 2025*), at least without special licenses. As such, farmers rarely sell directly to the retailers or processors that actually end up using their produce, adding an extra link in the supply chain that is not present in most nations, in addition to imposing the cost of a license on those that operate within a mandi. Understanding this system is crucial to comprehending the landscape of India's agricultural sector, and the impact of the MSP.

Intended Impacts of the MSP

A traditional price floor could be analysed using the diagram below:



(Fig. 1) Demand and supply diagram for a theoretical minimum price intervention on the Market for crops in India.

As can be seen in the diagram, the price floor naturally forces an increase in prices for crops from P_1 to P_{min}. It also causes a distortion of market signals, as supply and demand no longer determine price, and the equilibrium point is now impossible to achieve. Accordingly, a surplus is created of quantity $Q_s - Q_d$. This diagram clearly illustrates how a typical price floor would not help the Indian government work toward its aims, as it not only forces consumers to pay an increased price for crops, but it also creates a surplus meaning that farmers are not able to sell a significant quantity of their produce. Considering that crops are perishables, and as such difficult to store, this means that much of the produce could essentially go to waste instead of bringing farmers income. Furthermore, when looking at the market for crops as a whole, it is likely that demand will be relatively inelastic, as they are a vital part of any person's diet, which cannot truly be substituted. However, individual farmers in India will typically only produce a small selection of crops, meaning there will be many alternative crops to serve as substitutes for their produce. For example, wheat and sesame could be directly substituted for rice and sunflower by a consumer. This would lead to individual farmers having significantly more elastic demand, which in turn means that the increase in price due to the introduction of the price floor would create a larger surplus, creating a situation wherein a farmer may spend money and resources to grow a larger quantity of crops just for those crops to never yield any return. In this way, a price floor could fail to address the Indian government's aims.

The MSP policy on the other hand circumvents some of these pitfalls. Firstly, there is no direct intervention in the free market meaning market signals are not distorted, and preventing the creation of a surplus. At the same time, farmers can enjoy increased prices by selling to the government in lieu of

selling in the private market. This grain then goes to government storehouses, from where it is redistributed by the government through India's Public Distribution System (PDS), meaning that there is less worry about increased food prices, and consumers can actually get the goods comparatively cheaper as the government lacks a profit motive (*Salbari College, 2022*). As such, at least in theory, the MSP should successfully bolster farmer incomes as they sell their goods at higher prices. Meanwhile, as a result of those prices, farmers would be encouraged to upscale production, so as to make more total profit, which would help address food security. Additionally, the crops being bought by the government would be allocated through central planning via the PDS, meaning it can be ensured that the grain goes for cheap or free to the places in India that need it most, further improving food security.

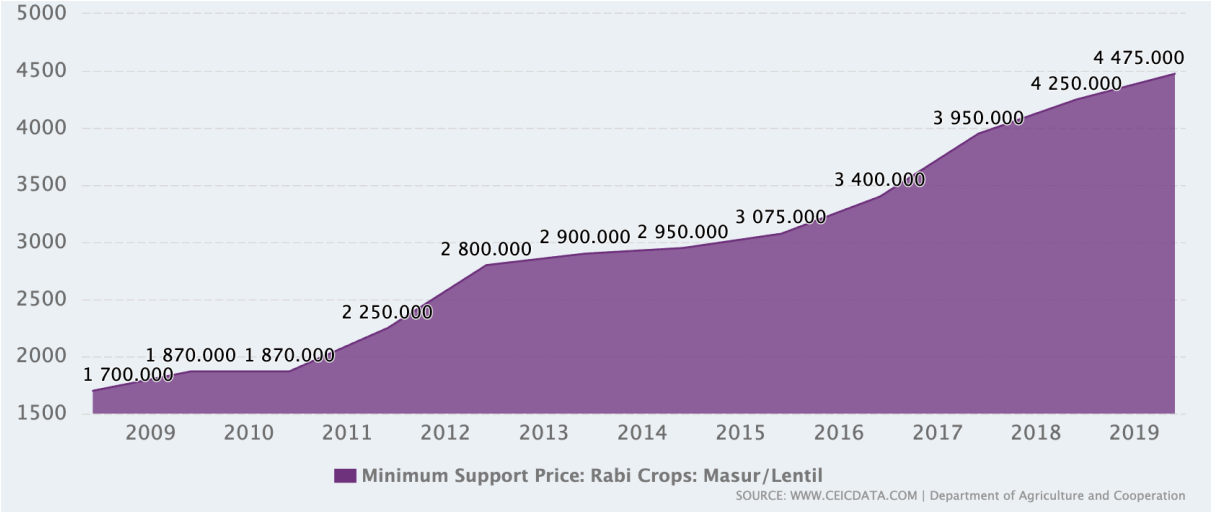
However, it is important to note that these theoretical benefits of the MSP do not necessarily translate to its real-world impact on the Indian agricultural market. Despite not imposing a legally binding price floor, the government procurement price can still function as an implicit price floor leading to localized market distortions. This is particularly relevant to India's food security as it leads to overproduction of preferentially procured crops relative to crops with lower procurement volumes, as will be discussed in later sections. Overall, examination of the way in which MSP policy impacts farmers can be distilled to three key aspects: First, the government announces the prices they are willing to procure crops at, which should have a margin over production costs. Second, farmers must be able to access channels through which they can sell their crops to the government in order to obtain this price, for a significant proportion of their produce. Finally, the impact of the MSP should be sufficient for there to be an observable association between the differences in MSP policy and differences in farmer income across states and/or years, which would support, though not outright confirm, the idea that the MSP policy is successfully protecting farmers. If any stage of this chain is weak, this could suggest that the MSP is less impactful.

ACTUAL IMPACTS AND EFFICACY OF THE MSP

Using data surrounding farmer income, MSP price levels, cost of living, and others, we can estimate the real impact that the MSP has had on farmer livelihoods and agricultural production in India.

Are MSPs sufficient to significantly boost farmer profits and income?

To begin, let's examine how the price levels set by the government have changed over time. To do so, we can take lentils, one of the most important and popular crops in Indian households as a case study. The following graph shows the increase in the MSP set for lentils between 2009 and 2019.



(Fig. 2) Minimum Support Price for Masur/Lentil from 2009-2019, source: CEICDATA.com

Clearly there has been a steady increase in the MSP offered by the government from 1700 Rs to 4475 Rs over this 10-year span. Calculating the CAGR using the following formula:

$$\left(\frac{new\ price}{old\ price}\right)^{1\ \div\ number\ of\ years\ passed} - 1$$

yields an average increase of 10.2% annually. Graphs for other crops under the MSP policy from CEIC Data display similar trends. In this same period of time, cost of living in India has increased significantly less.

Year	**Inflation Rate**
2019	3.73%
2018	3.94%
2017	3.33%
2016	4.95%
2015	4.91%
2014	6.67%
2013	10.02%
2012	9.48%
2011	8.91%

2010	11.99%
2009	10.88%

(Table 2) Table displaying inflation rate, calculated using Consumer Price Index, (macrotrends.net, 2025)

The average increase in CPI (Consumer Price Index) between 2009 and 2019 in India was 7.9%, confirming that at the very least, MSP has outpaced the rate of increase in cost of living in the country.

This then begs the question, are the levels that the MSP is set at adequate in the first place to grow incomes and ensure a decent standard of living for Indian farmers? To answer this, we must dive deeper into how MSPs are determined. The CACP's recommended MSP prices every year are primarily based on the production costs of each crop. The CACP takes into account three measurements of production cost: Firstly, the A2, which comprises only the direct costs incurred by farmers, such as raw materials like seeds and fertilizers, as well as the cost of labour. Secondly, the A2 + FL, where FL stands for family labour, which ordinarily goes unpaid in rural India, but the cost of which is taken into account in this measurement, and finally the C2, which includes A2 + FL, but adds the costs of rentals, and interest on assets (*NEXT IAS, 2024*).

The MSP is then set at a margin above the cost base calculated using these three measures. The Swaminathan Committee (also known as the NCF or National Commission on Farmers), a state agency formed with the goal of addressing the growing issue of farmer suicides, recommends that MSPs be set at 150% of C2 costs for all farmers (*Kindarle, 2025*). However, research shows that the government has consistently fallen short of this recommendation over the last decade. Recent data from 2023-2024 can be seen in the below table:

Crop	**C2 Cost (Rs./quintal)**	**MSP (Rs./quintal)**	**C2 + 50% (Rs./quintal)**	**Gap Percentage (%)**
Paddy	1911	2183	2866.5	-31.31%
Jowar	2833	3180	4249.5	-33.63%
Bajra	1811	2500	2716.5	-8.66%
Ragi	3328	3846	4992	-29.80%
Maize	1797	2090	2695.5	-28.97%
Tur (Arhar)	5993	7000	8989.5	-28.42%
Moong	7218	8555	10827	-26.51%

Urad	6239	6950	9358.5	-34.65%
Groundnut	5350	6377	8025	-25.84%
Sunflower Seed	5960	6760	8940	-32.25%
Soyabean (yellow)	4019	4600	6028.5	-31.05%
Sesamum	7864	8635	11796	-36.61%
Nigerseed	6793	7734	10189.5	-31.75%
Cotton	5786	6620	8679	-31.10%

(Table 3) Table displaying C2 cost, Swaminathan Committee Recommended MSP, actual MSP, and percentage difference between them for the 2023-2024 calendar year (*Kindarle, 2025*)

Using the figures in this table, one can clearly conclude that the level that MSPs are currently being set at is significantly lower than the level needed by subsistence farmers to truly improve their livelihoods, and improve their standard of living. Every crop in the above table has an MSP between 25.5% and 36.6% lower than Swaminathan Committee recommendations. Accordingly, despite the MSPs more than keeping up with inflation in India, they fail to be significantly above the costs that farmers face, and as such are insufficient to protect farmers.

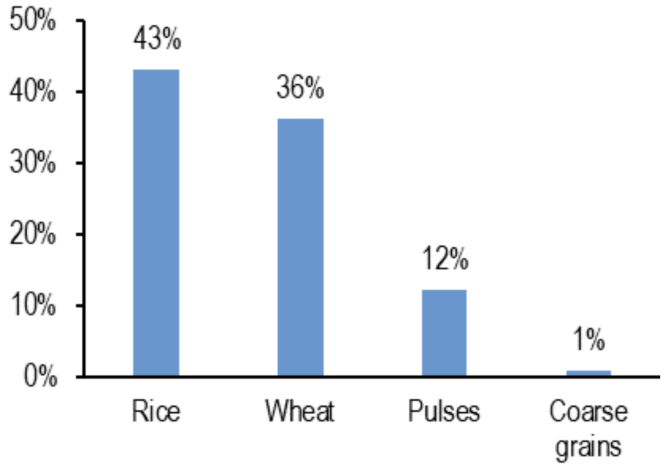
However, the Swaminathan Committee's C2 + 50% benchmark must also be critically evaluated in accordance with India's macroeconomic constraints. Economists note that mandating MSP strictly at C2 + 50% across all 23 commodities could escalate food inflation for low-income consumers and would impose unsustainable fiscal burdens on the national budget (Gulati & Saini, 2018). Overall, the opportunity cost of meeting this benchmark is likely too high to consider it.

Limited Accessibility and Coverage of MSPs

Furthermore, since the MSP is not a traditional minimum price, but rather a procurement price offered by the Indian government, it does not fully protect farmers by guaranteeing that they receive a higher price for their produce than the free markets equilibrium price. Rather, farmers merely get a chance to sell their produce to the government, to the extent that the government is willing to purchase from them. The government only has a certain quota of grain that it will be willing and able to purchase in any given year, as they have limited storage space, and limited budget to allocate towards farmer protection. As such, it is possible for MSPs to be entirely inaccessible to some farmers because the government's quota for produce is reached before they have the chance to sell. Accordingly, a necessary consideration in order to

determine the efficacy of the MSP at protecting farmers, is to ascertain the proportion of produce the government is purchasing, the proportion of farmers with access to MSPs and how negatively impacted farmers who have to sell to private buyers in open markets are compared to those that sell to the government.

According to the PIB, the government is restricted to procuring only 25% of total production of any crop under the MSP in the nation, save for wheat, paddy (rice), and commercial crops (cotton, jute). However, this is only the hard ceiling. Does the government truly procure 25% of produce in the nation?



(Fig. 3) Graph showing percentage of foodgrains procured by the government in the 2019-2020 period(*Tiwari, 2020*)

The data published by the Lok Sabha (the lower parliamentary house of India) clearly suggests otherwise. Save for rice and wheat, only 1% of other cereals are procured by the central government, and pulses are acquired at only a 12% rate. This means that accessibility to the MSP is greatly monopolized by farmers growing either paddy or wheat, while farmers growing other crops have much less opportunity to take advantage of it. It is also undesirable for India's food production as it leads to an overproduction of these two crops, while others are underproduced (*The India Forum, 2021*). Wheat and paddy are also among the most water intensive crops to grow, with wheat requiring roughly 100 litres a kilogram, while paddy can require up to twice that (*Food and Agriculture Organization, n.d.*). As such, the overprocurement of wheat and paddy is disadvantageous for the sustainability of the agricultural sector, as it depletes a crucial common pool resource in water, in addition to disproportionately benefiting producers of those two crops while disadvantaging other farmers. Overall, the percentage of farmers benefitting from the MSPs for wheat and paddy, amounted to only 6% of farmers in the nation in 2015 (*Press Information Bureau, 2015*), showing that not only are MSP levels often too low to significantly improve farmer incomes and livelihoods, only a fraction of farmers even have access to the benefits of MSPs in the first place.

According to the September 2025 Agriculture Report of the Agricultural and Processed Foods Export Development Authority (APEDA), 9 of 15 key commodities were priced lower in mandis than their MSPs, meaning that farmers without access to the MSP are highly likely to have lower incomes.

Overall, the evidence from the previous two sections offers an explanation for why consistently rising MSP levels, outpacing increase in cost of living by a margin of 2.3%, still do not directly translate to increased incomes for rural agricultural households. Though their real value is rising, MSP prices still have not reached levels sufficiently above costs of production. Furthermore, these limited benefits are mostly only available to paddy and wheat producers who hold a monopoly over procurement. As such, there is a clear divide between announced MSP prices, and the actual prices most farmers have to settle for. Even if we assume that the proportion of agricultural households with access to MSP policy has risen from the 6% figure of 2015, the lack of access to procurement still limits the positive impact of MSP policy on farmer income levels.

Panel Regression Results and Analysis

Overall, the results of the panel regression indicate that the MSP procurement volumes and price levels have not been a significant predictor of farmer incomes. Taking farmer income as a measure of economic wellbeing, this lack of association would support the idea that the MSP policy may not have significantly contributed to improving wellbeing of farmers within India, as farmers benefitting from higher government procurement (which is the primary mechanism within the policy to aid farmers) do not necessarily have higher incomes. In the primary model, Model 1, which has both year and state fixed effects the coefficient of total procurement is -0.0996 (SE = 0.4715, p = 0.8327) and the coefficient of farmer debt is 0.0103 (SE = 0.0198, p = 0.6020). Neither is statistically significant, as demonstrated by the large p-values. The coefficients also make little sense, as they imply an increase in total procurement would decrease farmer income, while an increase in debt would increase it, whereas one would logically expect the opposite. Furthermore, the R^2 value of the model is only 0.0074, a very low result that essentially implies that a negligible percentage of the variation in farmer income across states is explainable by the variation in procurement and debt levels. The regression equation comes out to:

$$Income_{it} = -0.0996 * Procurement + 0.0103 * Debt_{it} + \alpha_i + \beta_t$$

where α_i and β_t are state and year fixed effects respectively.

Because of the low R^2 and p-values, the negative procurement coefficient should not be considered evidence that procurement under MSP is somehow harmful to farmer incomes, but rather another indication of the output functions impreciseness. The low R^2 is also not necessarily evidence that MSP policy has no impact on farmer income but rather that differences in MSP policy implementation across states do not predict differences in income between said states.

Model 3, which separates procurement into rice and wheat, only reinforces this idea. The coefficient for rice procurement is -0.3095 (SE = 1.9533, p = 0.8741) while the coefficient for wheat procurement is 0.0387 (SE = 1.0589, p = 0.9709), with a R^2 value of 0.0082. Once again, there is no statistically significant impact of either variable on income, and a low R^2, and as such breaking down procurement adds little explanatory power.

In Model 2, where year fixed effects are dropped so that MSP price level can be a regressor, the model yields a coefficient for the same of 18.5696 (SE = 2.8925, $p < 0.001$, $R^2 = 0.7971$). On the surface level this appears to be a statistically significant result, and the R^2 suggests a significant positive correlation between the independent and dependent variables. However, due to the fact that MSP is consistent across all states in any given year, it is essentially just a year indicator variable, and the model is merely capturing the overall increase in income level due to economic growth in India, which is accounted for in the other models by year fixed effects. As such, this model also does not prove that there is a correlation between MSP policy and improved farmer wellbeing.

Ultimately, the results of the panel regression fail to provide evidence of a statistically significant association between MSP procurement volumes and farmer income cross states. However the lack of a true counterfactual, and limited data points spanning only two distinct years mean that these findings are far from definitive proof that the MSP policy has failed in protecting farmers. Nevertheless, the fact that differences in procurement volumes do not explain variations in farmer income can be interpreted to imply that the MSP has a relatively low impact on farmers, as the farmers with greater access to its benefits do not seem to have particularly improved wellbeing.

Heterogeneity Results and Analysis

The heterogeneity analysis also yields results that are mostly statistically insignificant. In Model 1, the geographic area per regulated market has a coefficient of -5.7496 (SE = 6.0889, p = 0.3450, $R^2 = 0.076$). This is an intuitive result as the greater the area per market, the further on average APMC infrastructure would be, making large buyers such as corporations and wholesalers overall less accessible to farmers. Hence one would expect farmer income to decrease as this variable increases, as is predicted by this model with the negative coefficient. However, given the high p-value, this result is not statistically significant and is less an indicator of market infrastructure's relevance to wellbeing and more a coincidental result of noise.

On the other hand, in Model 2, which has the number of households per regulated market as the regressor, the independent variable's coefficient is -0.5334 (SE = 0.2737, p = 0.0513). Once again, the negative coefficient makes sense, as a higher number of households per market would suggest high market congestion, crowding and overall stress on market infrastructure. This result is also marginally statistically significant at the ten percent level with p = 0.0513. The R^2 value for this regression is 0.291, which for economics/social sciences standards could be considered moderate as many factors affect a

statistic like income. Both the p-value and R^2 are quite modest, and neither can conclusively determine a causal relationship between the regressor and farmer income, but nonetheless the result is sufficient to imply that there truly is evidence of association between the dependent and independent variables. Market congestion as measured by households per market is therefore suggested to have a small but relevant impact on farmer income. In theory, this model shows that each additional household per regulated market is associated with a reduction in household income by just above 0.53 rupees.

In Model 3, which includes both independent variables, the coefficient for area per mandi becomes -1.4244, while remaining statistically insignificant (SE = 4.8126, p = 0.7672). The coefficient for households per market reduces slightly in absolute value, becoming -0.5059, with the p-value now significant at the standard five percent level (SE = 0.2514, p = 0.0442). The R^2 value is functionally unchanged from that of Model 2, at 0.2949. This confirms that area per mandi contributes relatively little explanatory power, while households per market seems to have a more consistent association with farmer income, with variation in the former explaining near 30% of variation in the latter. The overall regression equation comes out to:

$$Income_i = -1.4244 * Area_i - 0.5059 * Households_i + 18728.9496$$

The standardised estimates make the relative magnitudes directly comparable. A one standard deviation increase in area per market is associated with only a 0.07 standard deviation decrease in farmer income (p = 0.07672), while the same increase in households per market yields a 0.51 standard deviation decrease in farmer income (p = 0.0442). The congestion variable's effect is more than seven times as large, and it is also the only variable with a level of statistical significance. The standardised regression equation is as follows:

$$Income_i = -0.0685 * Area_i - 0.5116 * Households_i$$

The results of heterogeneity analysis would indicate that within India's current economic policy, expanding access to mandi infrastructure and reducing market congestion by setting up more mandis in areas with high agricultural household headcount may have the highest positive impact on farmer income. Expanding geographic coverage of mandis would likely be less consequential. However, considering the low sample size of this regression (a total of 20 data points), and modest indicators of statistical significance and correlation, these results are not definitive and should be treated as indicative.

High Levels of Farmer Debt

The leading cause of the farmer suicide epidemic within India is indebtedness. Indeed, over one-fifth (20.6%) (*Jain, 2017*) of farmer suicides are thought to be caused by the inability to pay outstanding debts (*Merriott, 2016*), and in 2015, 55% of them were reported as such (*ICFA, n.d.*). Accordingly, when discussing the extent to which a policy has been successful in improving conditions for farmers, debt is a

key factor to consider. So, under the MSP, do farmers have enough income security to reduce their levels of indebtedness?

Quite clearly, the answer is no. Debt levels for agricultural households remain extremely high, and farmers continue to take their own lives year upon year as a result. In 2019, the incidence of indebtedness was about 35% for rural Indian households. However, if we limit ourselves to only cultivator households (households living off the land), this proportion climbs to 40.3% (*Press Information Bureau, 2021*). In the same year, the average amount of debt for rural households was Rs. 59,748, but for specifically cultivator households it rose to Rs. 74,460 (*Press Information Bureau 2021*). The following tables show average income and average level of outstanding debt for agricultural households in the July 2018 - June 2019 agricultural year, demonstrating that indebtedness among farmers has persisted, and their financial vulnerability has not been eliminated by MSP policy.

State	**Monthly Income (Rs.)**	**Yearly Income (Rs.)**
Andhra Pradesh	10,480	125760
Arunachal Pradesh	19,225	230700
Assam	10,675	128100
Bihar	7,542	90504
Chhattisgarh	9,677	116124
Gujarat	12,631	151572
Haryana	22,841	274092
Himachal Pradesh	12,153	145836
Jammu & Kashmir	18,918	227016
Jharkhand	4,895	58740
Karnataka	13,441	161292
Kerala	17,915	214980
Madhya Pradesh	8,339	100068
Maharashtra	11,492	137904
Manipur	11,227	134724
Meghalaya	29,348	352176

Mizoram	17,964	215568
Nagaland	9,877	118524
Odisha	5,112	61344
Punjab	26,701	320412
Rajasthan	12,520	150240
Sikkim	12,447	149364
Tamil Nadu	11,924	143088
Telangana	9,403	112836
Tripura	9,918	119016
Uttarakhand	13,552	162624
Uttar Pradesh	8,061	96732
West Bengal	6,762	81144
All India	10,218	122616

(Table 4) Table showing statewise average monthly and yearly incomes for agricultural households from July 2018 to June 2019. Source: sansad.in

State	**Average Amount (Rs.) of Outstanding Loan per Agricultural Household**	**Percentage of Indebted Agricultural Households (%)**	**Outstanding Loans as percentage of yearly income**
Andhra Pradesh	245,554	93.2	195.26
Arunachal Pradesh	3,581	12.5	1.55
Assam	16,407	31	12.81
Bihar	23,534	39.7	26.00
Chhattisgarh	21,443	31.2	18.47
Gujarat	56,568	42.5	37.32
Haryana	182,922	47.5	66.74
Himachal Pradesh	85,825	29.2	58.85

Jammu & Kashmir	30,435	31.9	13.41
Jharkhand	8,415	25.3	14.33
Karnataka	126,240	67.6	78.27
Kerala	242,482	69.9	112.79
Madhya Pradesh	74,420	48.4	74.37
Maharashtra	82,085	54	59.52
Manipur	5,551	20.6	4.12
Meghalaya	2,237	9.1	0.64
Mizoram	23,485	8	10.89
Nagaland	1,750	6	1.48
Odisha	32,721	61.2	53.34
Punjab	203,249	54.4	63.43
Rajasthan	113,865	60.3	75.79
Sikkim	32,185	10.6	21.55
Tamil Nadu	106,553	65.1	74.47
Telangana	152,113	91.7	134.81
Tripura	23,944	47.7	20.12
Uttarakhand	48,338	46.6	29.72
Uttar Pradesh	51,107	41.9	52.83
West Bengal	26,452	50.8	32.60
All India	74,121	50.2	60.45

(Table 5) Table showing statewide average outstanding loans and percent of households indebted for agricultural households from July 2018 to June 2019. Source: sansad.in

On average, 50.2% of agricultural households across India had some level of debt, and the amount of debt averaged out to over 60% of household annual income. Naturally this level of debt is unhealthy and unsustainable. Paying 60% of income every year in loan repayments would leave families with little to live on, and therefore debt levels are a key factor contributing to farmer suicides across the nation.

Clearly, data indicates that farmer debt and economic distress are still unresolved issues, even with the

MSP policy in place.

OPTIONS FOR IMPROVING THE MSP

Rather than finding issues with the core philosophy of the MSP policy, this study primarily highlights issues with its current implementation. Chief among these is the lack of access to government procurement and its inequitable distribution, something highlighted by earlier papers such as Chand (2003). Based on this, a clear starting point for improving on the current implementation of the MSP would be expanding procurement access for farmers. This would entail scaling up procurement across crops, with an emphasis on crops other than wheat and paddy. Prior research (Chand 2003) has provided evidence that the MSP does have significant impacts on those few farmers who can take advantage of it. Lack of access can also explain why the regression analysis performed in this study found little correlation between MSP procurement and farmer income level, as an insufficient number of farmers would have had access to the benefits of the MSP to meaningfully move average income statistics. A larger scale, more widespread and aggressive procurement strategy could feasibly raise income levels and standards of living for farmers across India.

Changing the policy in such a way would however have a significant associated opportunity cost. The Indian government's budget is limited, and as previously discussed in the paper, studies have already shown that changes like achieving the Swaminatan Committee's C2 + 50% price level recommendations would put too great a strain on said budget to be feasible. Given such constraints, the government could only scale up its current procurement scheme to a certain degree, which could likely still be insufficient to affect the majority of farmers in India. In 2015, only about 6% of farmers could take advantage of the MSP policy.

Another alternative which may be more budget friendly could be increasing access to APMC mandi infrastructure. As highlighted by the heterogeneity analysis, having less farmers/agricultural households per mandi demonstrates a statistically significant association with higher farmer incomes. As such reducing mandi congestion could be the most effective method for the Indian government to improve farmer wellbeing. This could look like expanding current mandis and/or improving the quality of their infrastructure, or increasing the number of mandis in the parts of the nation with the highest concentrations of agricultural households. While the necessary spending to develop such infrastructure may present a greater initial cost to the government in the short term, it could plausibly be more sustainable in the long run than the continual, repeated cost of greatly expanded procurement. In this way, focusing on reducing mandi congestion could present a substantial improvement to the Indian government's current policy, while keeping long term costs within budget constraints.

Lastly, a more ambitious and fundamental change to improve the MSP could be to make it a legally binding price floor, rather than a government procurement price impacting the market for produce in

mandis. This is a measure that farmers have begun pushing for in recent times through protests and demonstrations (*Yadav 2025*). By enforcing the MSP price levels as a minimum price that private consumers must adhere to, the government would ensure that farmers cannot be exploited by retailers and large wholesale buyers. It could also make the MSP accessible to all farmers, removing the massive advantage of wheat and paddy farmers over others. No matter what crop a farmer would be selling and to whom, they would be guaranteed to receive at least the MSP price level for their sales. Overall, this measure could increase their incomes significantly. Of course, implementing this policy would come with all the pitfalls of a classic minimum price that the Indian government wanted to avoid, mainly increasing cost of living for the average consumer as staple foods now cost more, and the creation of structural surpluses within the market. It could be argued that this change is justifiable despite this, considering that 44% of the Indian population is employed in agriculture, protecting farmers should be a significant priority. Furthermore, many low-income consumers are rural farmers that sell the surplus they produce beyond subsistence levels, and so might be less impacted by price increase. The creation of surpluses could also have a lower impact on India than many other countries as the government already procures a significant amount of crops at MSP, meaning there would be a lower increase in expenditure to buy up the surplus. However, even considering this, evidence suggests that the opportunity cost of buying up the surplus would still be very high, due to the scale of crop production in the nation. Considering that even the increase in expenditure of raising MSP prices to C2 + 50% would put too great a strain on the government budget, such an intervention is likely beyond the current means of the Indian government.

Optimally, any of the above interventions would be combined with an increase in the MSP levels for most crops. While the Swaminathan Committee recommended level of C2 + 50% might put too much strain on the government budget, C2 + 30% would be around a 10% increase for most MSPs, and be more manageable. While increasing MSPs like this would undoubtedly have a high opportunity cost for the government buying the surplus, this opportunity cost can be justified by the sheer number of Indians dependent on agriculture, as this means there are few ways of allocating the budget that would benefit more people. Additionally, the crops procured in this way would go into the Public Distribution System as they do now, serving as crucial aid for the needy and impoverished in the country.

LIMITATIONS

There are several relevant limitations that affect this paper and are important to consider when interpreting its results. Firstly, no primary data was collected for this paper, meaning it relies entirely on secondary data. Consequently, the research fails to take into account the lived experiences and personal perspectives of Indian agricultural households, an undoubtedly important factor for evaluating wellbeing.

There are also limitations within the sources of data, which could call into question the reliability of more quantitatively derived conclusions. The paper largely relies on data published by Indian governmental agencies, such as PIB and CACP. While these sources are widely cited, the possibility of institutional bias

in favor of the prevailing policies cannot be ruled out. I was unable to confirm within my research whether data published by these bodies were audited by third parties.

Additionally, the use of aggregate national and state-level data to evaluate effectiveness of MSP presents a limitation, as many factors such as crop choice, farm size, climate conditions, irrigation access, fertilizer quality, and market infrastructure vary significantly across areas/regions of India. National/State averages may conceal important factors affecting both effectiveness of MSP and wellbeing of farmers.

Furthermore, this investigation primarily evaluates farmer welfare through the indicators of income level and indebtedness. While these are useful measures, poverty is a multidimensional issue that also encompasses factors such as access to educational and healthcare infrastructure, asset ownership, and vulnerability to economic shocks and volatility. As a result, the analysis may not truly measure the broader elements of farmer wellbeing.

Finally, the investigation is limited in that it cannot definitively establish causation behind changes in farmer wellbeing and/or income levels. For example, the conclusion that MSP policy seems to have had a very limited impact on farmer income due to lack of correlation between income and procurement volumes may be inaccurate as other factors such as weather conditions and broader economic conditions affect agricultural economic data. This issue is exacerbated by the low quantity of data points, and the fact that relevant data is only available in NSSO SAS years (2013 and 2019) rather than consistent annual data across a longer range of years, which would minimize the impact of the unique economic conditions of any one year. Taking year FE in the panel regression only reduces the impact of this when comparing across 2013 and 2019 in the regression, and does not remove the impact of underlying conditions on the actual statistics of either year. For these reasons, it is difficult to isolate the impact or lack thereof of MSP policy specifically on the relevant statistics within this paper.

CONCLUSION

In conclusion, data suggests India's Minimum Support Price policy to be an overambitious attempt at killing two birds with one stone. In trying to avoid the drawbacks of regular minimum price framework, the Indian government may have lost the aspect of these interventions that grants them their efficacy: the simple guarantee of fairer and higher income for the producer. Instead, they have implemented a policy that appears to have a limited observable association with farmer income when statistically evaluated and is only accessible by a fraction of the farmer population it actually aims to help. Furthermore, the second goal of the MSP, to ensure food security in the nation is also not fully achieved as wheat and paddy are significantly overproduced while other crops are neglected. Moreover, the persistence of rural indebtedness and farmer suicides are proof that farmer poverty remains a largely unresolved issue, which the MSP policy alone may be insufficient to address. Ultimately, evidence from statistical analysis implies the extent to which greater MSP support leads to increased income is limited. As such, this study raises

important concerns surrounding the efficacy of current MSP policy and its enactment. For the MSP to fulfill its intended goals, it likely has to evolve beyond its current implementation, whether that means significantly scaling up procurement, improving mandi infrastructure, or even becoming a legally enforced minimum price. In combination with other policies that reduce debt and improve farmer credit, among others, the MSP in a new form has the potential to be the safety net that all the people who break their backs bringing food to the people of India, not just a subset of them, need.

APPENDIX A

A.1. Panel Regression Results Table

Variable	Model1_StateYrFE_coeff	Model1_StateYrFE_se	Model1_StateYrFE_pval	Model1_StateYrFE_sig	Model2_StateFEonly_coeff	Model2_StateFEonly_se	Model2_StateFEonly_pval	Model2_StateFEonly_sig	Model3_RiceWheat_coeff	Model3_RiceWheat_se	Model3_RiceWheat_pval	Model3_RiceWheat_sig
MSP (₹/quintal)	[Year FE absorbs]				18.5696	2.8925	0.0	***	[Year FE absorbs]			
Procurement total (rice+wheat)	-0.0996	0.4715	0.8327		-0.0996	0.4715	0.8327		—			
Procurement rice only	—				—				-0.3095	1.9533	0.8741	
Procurement wheat only	—				—				0.0387	1.0589	0.9709	
Farmer debt (INR/HH)	0.0103	0.0198	0.602		0.0103	0.0198	0.602		0.0114	0.022	0.6058	
R^2 (within)	0.0074				0.7971				0.0082			

A.2. Heterogeneity Analysis Results Table

Variable	M1 Bivariate (Area)_coeff	M1 Bivariate (Area)_se	M1 Bivariate (Area)_pval	M1 Bivariate (Area)_sig	M2 Bivariate (HH)_coeff	M2 Bivariate (HH)_se	M2 Bivariate (HH)_pval	M2 Bivariate (HH)_sig	M3 Full model_coeff	M3 Full model_se	M3 Full model_pval	M3 Full model_sig
— UNSTANDARDISED — raw												

units ——												
Intercept	14438.3839	4027.8802	0.0003	***	18359.5406	4000.0963	0.0	***	18728.9496	4615.0076	0.0	***
Area per regulated market (km²)	-5.7496	6.0889	0.345		—	—	—	—	-1.4244	4.8126	0.7672	
Households per regulated market	—	—	—	—	-0.5334	0.2737	0.0513	*	-0.5059	0.2514	0.0442	**
R²	0.0764				0.291				0.2949			
Observations	20				20				20			
Degrees of freedom	18				18				17			
—— STANDARDISED — beta weights (z-scored variables) ——												
Intercept	0.0	0.2208	1.0		0.0	0.1934	1.0		0.0	0.1985	1.0	
Area per regulated market (km²)	-0.2765	0.2928	0.345		—	—	—	—	-0.0685	0.2314	0.7672	
Households per regulated market	—	—	—	—	-0.5395	0.2768	0.0513	*	-0.5116	0.2543	0.0442	**
R²	0.0764				0.291				0.2949			
Observations	20				20				20			
Degrees of freedom	18				18				17			

A.3. Regression Data and Tables

The below link redirects to the excel sheet used for organizing the data for both the panel regression and heterogeneity analysis. This data was primarily sourced from the 2013 and 2019 NSSO Situation Assessment Surveys, the 2025 report 'Agricultural Statistics At A Glance 2024-2025' , Kumari (2023), and Report No. 62, Standing Committee on Agriculture, 'Agriculture Marketing and Role of Weekly Gramin Haats' from the Lok Sabha.

https://1drv.ms/x/c/74b3fbf10b0a385f/IQBJ48EaF-CMT5wBQBb4gO7HARIHQxDpbRVeuY2WQtT9Rac?e=0dLyrZ

A.4. Full Code For Panel Regression And Heterogeneity Analysis

Due to the length of the code used, it was deemed more suitable to display the code in the github repository linked below, rather than have it included with the text of the paper itself. Please find the full code used for both statistical analyses here.

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