Minimum Support Prices in Indian Agriculture: Supporting Whom and at What Price?*

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Abstract

Distortions introduced by price-controls may be underestimated if controls are captured for uses beyond fixing market failures. We study India's minimum support prices (MSP) for food grains, and find that when a district with a larger area under cultivation for a crop is slated to go for elections, the central government announces a higher MSP for that crop. Since the government's procurement price is the same across states, this blunt instrument is used more when other policy instruments are unavailable, i.e., when the incumbent state government is unaligned with the center. Higher MSP directly reduces welfare by increasing consumer prices.

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1 Introduction

Price controls, while distortionary, are widely used to fix market failures. Since economic theory cannot provide guidance on the level at which to set price floors or ceilings, these are often determined arbitrarily. This makes them susceptible to regulatory capture by the price-setter, potentially further magnifying their deadweight loss. Moreover, while the welfare foregone under a well-designed price-control system is a cost that the social planner may be willing to bear in order to accomplish equity goals, the welfare costs of self-serving price-setting by the regulator are unlikely to be part of the desired efficiency-equity trade-off. There is an extensive empirical literature on the efficiency costs of price controls going back to at least the 1970*s*,[1] yet, to our knowledge, the issue of whether and how these controls may be manipulated by the regulator has not been researched.

We study this issue in the context of minimum support prices (MSP), wherein the federal government of India sets price floors for 23 different agricultural commodities, although the focus of this paper is only on the MSP for rice and wheat, the main staples. These prices are set annually for each crop, just before the summer planting season - "*Kharif*" - for rice (and other summer crops), and just before the winter planting season - "*Rabi*" - for wheat (and other winter crops).[2] The MSP is a unique price-control policy in that it is not the mandated price for purchases by private entities or individuals, but it legally obligates the central and all state governments, as well as their agencies, to procure at this price (or the market price, whichever is higher). In that sense, it can be thought of as the public procurement price.[3] Procurement by public actors forms a significant proportion of

[1] See Arnott (1995) for a review.

[2] The 23 commodities for which MSP is announced are Rice; Maize; Bajra, Jowar, and Ragi (millets); Arhar, Moong, and Urad(pulses); Groundnut, Sunflower, Soybean, Sesame, and Nigerseed, (oilseeds); and Cotton for the *Kharif* season and Wheat; Barley; Gram and Masur (pulses); Mustard and Safflower (oilseeds); Copra; Jute; and Sugarcane for the *Rabi* season.

[3] Public procurement of wheat and rice has been an essential pillar of India's food security strategy since the 1960*s*. The government procures food grains to ensure a remunerative price to the producers, in turn accumulating enough foodgrain stock for social assistance programs as well as to serve as buffer stock during times of crises.

grain sales by farmers.[4] According to data provided by the Department of Food and Public Distribution in the parliament, public procurement accounted for 43% and 36% of the annual rice and wheat production respectively in $2019-2020$,[5] so the public procurement price very likely spills over to market prices. Finally, while the MSP is announced for 23 crops, public procurement is concentrated on rice and wheat.[6]

We use the staggered schedule of state elections to study political cycles in the MSP in India. We show that in the year just preceding state elections, the MSP for a crop is higher if it is cultivated intensively in the districts of that state. Specifically, we find that the announced MSP is higher by 0.7% (or about INR 87 per ton) if the proportion of area under cultivation of that crop in a district slated for elections in the following year is 1, i.e., the MSP of a crop is higher by INR 8.7 for every 10% increase in the area under cultivation of that crop. This is an economically non-trivial magnitude: during 2001-2021, the period that we study, the Government of India procured 32 million tons of rice and 24 million tons of wheat per year on average. For this amount of procurement, an INR 87 per ton increase in MSP is equivalent to a fiscal cost of INR 4.9 billion or about $70 million per year using the exchange rate in 2021. In the average district, where 37% of the area under cultivation is devoted to rice and 16% to wheat, this translates into an increased outlay of $37 million per year on account of 1 district going to election.

This finding is in line with the evidence provided in papers on political cycles in public provision, such as Banful (2011); Cole et al. (2012) and Baskaran et al. (2015) on manipulation in the provision of fertilizer subsidies, disaster relief, and electricity respectively. This literature documents three distinct geneses for political cycles - to manipulate voting behavior *ex -ante* (Cole 2009; Alok and Ayyagari 2019), for rewarding electoral support *ex-post* (Mahadevan 2019), and to raise funds for electoral campaigns, also *ex-ante* (Sukhtankar

[4]Government agencies are obligated to procure as much grain as is brought to them during the time procurement operations are ongoing, a $2-3$ months long period that begins shortly after harvest.

[5]See proceedings for September 15, 2020 at this link here

[6]Technically, the MSP is announced for paddy, which refers to rice grains with the surrounding husk, although procurement occurs for rice or de-husked paddy. For the remainder of this paper, we use the words rice and paddy interchangeably.

2012). We show that our evidence is consistent with the first kind of manipulation.

Existing work on electoral cycles in public provision has provided evidence that manipulation is targeted towards the relevant electorate, such as residents of the election-going state. In fact, the existing evidence is supportive of even sharper targeting, in that these efforts have been shown to concentrate specifically on electoral subgroups with greater marginal value, such as voters in closely contested races within a larger electoral populace (for example, see Cole 2009). Against this backdrop, the manipulation of MSP is a somewhat curious phenomenon due to its 'blunt' nature: once the MSP for a crop is announced, the same price must be used to procure that crop everywhere in the country. Our second finding sheds light on the kinds of scenarios under which this blunt (and therefore, expensive) tool is used.

We find that the federal government is more likely to use the MSP for manipulating state elections when its state unit has no other tools at its disposal, i.e., when the incumbent state government is not part of the same political party or the same governing alliance as the party in power at the center. The backdrop here is that India has a federal governance structure with a constitutionally mandated division of policy "subjects" between the state governments and the center.[7] As a result, when the incumbent state government is not aligned with the central government, any policies that fall under the ambit of the state government, such as bank credit, local infrastructure development, or health and education programs cannot be favorably manipulated by the central government's state unit. We find that it is in these cases, i.e., when states with an unaligned incumbent government go up for election, that the center announces a significantly higher MSP.

Beyond the added fiscal burden, what are the real economic effects of a higher MSP? We use a panel of consumer prices to measure how consumer prices are impacted when the government conducts its procurement activities at a higher price. Using state elections in the rice/wheat-cultivating districts as an instrument for the announced MSP, we show that for every 1% increase in the MSP, consumer prices of rice and wheat in non-election districts

[7]See Schedule VII of the Constitution of India, which makes 97 subjects the exclusive purview of the central government, 66 of the state governments, and puts 47 on a "concurrent" list under joint domain.

are about 0.3% higher, i.e., there is a 30% spillover from the government's procurement price to retail prices.

Our paper makes four broad contributions. First, we contribute to the existing literature on the efficiency costs of price controls. Previous studies have focused largely on the deadweight loss resulting from rationing and trade protection (Olsen 1988; Gyourko and Linneman 1989; Glaeser and Luttmer 2003; Autor et al. 2014; Diamond et al. 2019), although some have also identified additional losses due to extensive margin misallocation of quotas in rental markets (Glaeser and Luttmer 2003) and export licenses (Khandelwal et al. 2013). We complement these prior findings by identifying a new source of misallocation - political gains. Moreover, by analyzing the MSP, we present evidence on the efficiency costs of price controls in agricultural markets in developing nations.

Second, we provide evidence on the strategic use of public policy in line with electoral cycles. A robust literature on the electoral manipulation of a range of public goods and service delivery exists in developing countries (Khemani 2004; Burgess et al. 2015; Cole 2009; Khwaja and Mian 2005) along with a parallel but related literature showing that there is greater fund divergence towards politically aligned units (Arulampalam et al. 2009; Brollo and Nannicini 2012; Solé-Ollé and Sorribas-Navarro 2008; Johansson 2003). Our paper connects these two strands by showing that policy tools are strategically timed to favor political allies. Our findings thus, enrich the literature on electoral cycles in developing countries by shedding light on the nuances of policy implementation.

Third, we contribute to an exceedingly sparse literature on MSP in India. Despite structural transformation in recent years, agriculture still forms nearly 20% of the GDP and employs more than 90 million households. Agricultural support policies in general, and the MSP specifically, directly impact these individuals by changing market incentives. Yet, despite its outsized impact, we know of only few studies about it (Banerji and Meenakshi 2004; Garg and Saxena 2023; Krishnaswamy 2019), and none about how it is determined.

Finally, methodologically, our result showing that the MSP is manipulated for electoral

gains also provides an instrument through which the impact of a higher MSP on other economic outcomes can be studied.

2 Background

2.1 Minimum Support Price and Procurement

The Minimum Support Price was introduced in 1965 as part of a multi-pronged strategy for the growth of the agricultural sector in India. It is the "minimum" price at which the government agrees to buy agricultural produce from farmers during harvest. Combined with a larger policy framework to tackle the ongoing food crisis in the country at the time, the price support was seen as serving the dual objectives of incentivizing farmers to grow certain crops as well as protecting them against sudden price drops due to a supply glut at harvest.

The Commission for Agricultural Costs and Prices (CACP), an office attached to the federal Ministry of Agriculture and Farmers' Welfare, determines the MSP every year. In theory, it considers a range of micro and macro factors to establish the appropriate price floor for certain crops, although in practice, it is unclear how a final recommendation is reached. As an example, consider the following quote on the determination of the MSP from the CACP Kharif Report 2022 - *The Commission has considered the cost of production, overall demand-supply situation and price trends in domestic and world markets, inter-crop price parity, terms of trade between agriculture and non-agriculture sector, a minimum of 50 percent as margin over the cost of production, likely effect of price policy on rest of the economy and optimal utilization of land, water and other production resources.* While the CACP recommendation on where to set the MSP, can in principle, be overturned, it is usually announced as recommended.[8] The MSP, once announced by the federal government, is enforced evenly across the entire country.[9] We present a tabulation of the annual MSP

[8]In Figure A1 we show that the recommended and announced MSP tend to exactly match in most years, and are fairly closely aligned in others.

[9]Refer to Aditya et al. (2017); Gupta et al. (2021); Raghavan (2004) for a more detailed discussion on MSP

for wheat and rice in Table A1, which demonstrates a secular increasing trend throughout the analysis period of 2001 to 2021.

Since one of the stated goals of the MSP is to incentivize production, it is typically announced just before the time of sowing for each season, i.e. in June and October for the Kharif (summer) and Rabi (winter) crops respectively.

As the MSP is not a general price floor for all transactions, but only for government agencies, it is effective only if it is backed by government procurement. The grains thus procured are used for the Public Distribution System (PDS), which provides monthly rations to poor households and other welfare schemes which involve the disbursement of food or cooked meals, such as the Integrated Child Development Services (ICDS) and the mid-day meal program, as well as for prison kitchens etc. The country also maintains its strategic reserve of "buffer" grains via these procurement operations. The nodal agency of the government of India - Food Corporation of India (FCI), in collaboration with state-level agencies, runs procurement operations through dedicated purchase centers or at local *mandis* (agricultural markets) in a short time window after each harvest season. Typically, procurement operations run from October to December for rice, and from March to May for wheat.[10]

It appears then, that procurement itself may provide an independent strategic lever via the ability to manipulate the location and duration of procurement operations across as well as within states and districts. Our sense from numerous conversations with actors in the procurement chain is that manipulation on the extensive margin is harder as procurement operations have infrastructure and manpower requirements that are difficult for districts to create from scratch or leave idle without justification. However, intensive margin changes may be possible by extending or shortening the number of days procurement operations are run. In any case, there is limited information available in the public domain to test these hypotheses, and our impression is that little is available by way of procurement data even

implementation.

[10] Figure 1 documents the timeline of announcement, sowing, harvest, and procurement for rice, and wheat in a year.

with government agencies, other than aggregate procurement numbers. We run some tests using these numbers and find that procurement activities are stepped up in the same fashion as the MSP, suggesting that the bluntness of the announced MSP may be partially honed by a sharper placement of procurement operations. However, the larger point remains that wherever procurement activities take place, they do so at this higher price.

2.2 Political and Federal Structure

India has a parliamentary system with legislative, executive, and administrative powers split between the federal and state governments. The central and all state governments have five-year terms after which elections must be held, although the timing of the state elections is not synchronized with one another or with the general election. A multi-party system exists at the center as well as at the state level, and the political party that wins the most seats in a 'first-past-the-post' system forms the government; it may do so either on its own (i.e., if it wins more than 50% of the seats) or as part of a coalition with other political parties. Currently, the Election Commission of India recognizes 6 political parties as being "national" parties, which have a significant presence at the center as well as in multiple states. In addition, there are several state and regional parties, that are important players in state politics. They may also hold sway at the center from time to time by being a part of the ruling alliance at the center or by being a part of a state-level ruling alliance that also includes the state wing of the party in power at the center.

3 Data

We now turn to describing our data sources in detail.

We calculate the district-level area under cultivation, using the Agricultural Census, conducted by the Ministry of Agriculture every 5 years. It is calculated as the ratio of the area under cultivation for a crop in a district to the total area under cultivation for all crops

in that district. Since the area under cultivation as well as the total cultivated area may be endogenously determined by the MSP, we use the 2001 value of this variable. Wheat and rice constituted 16% and 37% respectively of the total area under cultivation in the average district in 2001.

The CACP publishes crop-wise MSP every year in its annual reports. We hand-collected this information for the period $2001 - 2021$. The CACP reports also provide state-wise annual procurement data. During $2001 - 2017$, wheat and rice account for 45% and 53% respectively of the total procurement by all government agencies.[11] Thus, we restrict our analysis to these two crops.

Data on elections comes from the Election Commission of India (ECI). Detailed constituency-level information for all assembly elections held between $2001 - 2021$ is available on the ECI website. These data include the constituency, party affiliation, and share of votes received at the candidate level. Thus, we can identify election years for each state and the party affiliations of state and federal governments.

An important aspect of our analysis is the alignment between the state government and the federal government. To get at this, we hand-collected detailed information on party composition as well as the alliance of state legislatures with the central ruling party during the study period. Using a data extraction tool called 'Factiva', we searched all articles in leading national dailies for all elections and pre- and post-poll alliances during the sample period. For each state, we classified the incumbent state government as 'not aligned' with the center if the ruling party in the state was not the same as that at the center. If the state or federal government (or both) is led, not by a single party, but by an alliance, then we check for the alignment of each party in the alliance.

Finally, we collected information on the retail prices of rice and wheat available at the website of the Department of Consumer Affairs (DCA). These prices are collected by the

[11] Figure A2 shows that rice and wheat almost fully account for the total procurement by government agencies during this period. Unfortunately, we do not have procurement data for crops other than wheat and rice from $2017 - 2021$ and thus, we have restricted ourselves to the period $2001 - 2017$ for this figure.

'price monitoring division' of DCA for 22 essential commodities from 550 market centers spread across the country. Field staff from the price monitoring staff update these prices daily using an app. For each commodity-center combination, the website reports the daily price as well as the monthly average. We scraped this data at the monthly level. This data is available only starting in 2009, so we show the impact of MSP on consumer prices for the period $2009 - 2021$.[12] We restrict the retail price analysis to rice and wheat, which are the focus of our study.

4 Empirical Strategy and Results

Our empirical strategy exploits the staggered schedule of state legislative assembly elections to identify the role of political influence in MSP determination. There is a large number of papers that utilize this variation in state elections; for example, see work by Pande (2003), Khemani (2004), Cole (2009) and Min and Golden (2014) amongst others.

The main hypothesis that we test is that the central government announces a higher MSP for crops grown in districts that are due for state assembly elections in the following year. We consider the MSP in the year preceding the election because the main channel through which a higher MSP is attractive to the electorate is procurement, in that the average farmer will likely reward the state unit of the federal government for the higher MSP after they have benefitted from higher sales revenue. Since for the *Kharif* MSP announced in Year t, procurement operations are still ongoing till December of Year t, and for the *Rabi* MSP announced in Year t, procurement operations are done entirely in the following year, our analysis considers t as the relevant year for MSP announcement and $t+1$ for state elections. Thus, we study the effect of state elections in year $t+1$ on the announced MSP in t using the following specification:

[12] An alternative, a more widely used data source for prices with greater coverage of the sample period is that on *mandi* prices by agmarknet. The reason we do not use this data is that procurement operations are usually run at the *mandis*, and therefore, the observed prices will mechanically be higher, even without any spillover from the MSP. Moreover, *mandis* are where wholesale transactions take place and we are largely interested in how consumer welfare may be hurt due to higher *retail* prices.

$$MSP_{ct} = \alpha + \alpha_1 E_{st+1} + \alpha_2 E_{st+1} \times A_{cds,2001} + \alpha_3 A_{cds,2001} + \alpha_4 R_{dst} + \gamma_d + \gamma_c + \gamma_t + \epsilon_{ct}, \quad (1)$$

where MSP_{ct} is the announced MSP for crop c in year t. E_{st+1} is a dummy indicating if state s has an upcoming election in year $t+1$. $A_{cds,2001}$ denotes the historical area under cultivation for crop c in district d in state s. We exploit the variation in the historical area under cultivation for a crop across districts within a state, combined with the annual variation in state-level elections. The within-state research design helps capture the important variation across districts that differ in importance from a procurement perspective. The panel nature of our data allows us to control for time-invariant crop characteristics, year-specific, and district time-invariant unobservables using crop (γ_c), year (γ_t), and district fixed effects (γ_d) respectively. To account for agro-climatic variations that may drive year-to-year differences in MSP announcement our regressions throughout control for the rainfall in district d in year t (R_{dst}).[13] Our main coefficient of interest is α_2, which we interpret as the effect on the announced MSP for a crop when a district with a greater historical area under cultivation for a crop undergoes a state-level election. We cluster standard errors at the district level.

We report our results on the MSP in Table 2. In Column 1, we report results for all years, while in Columns 2 and 3, we split the sample by whether the federal government is early to late in its tenure, where 'early tenure' is defined as the period that is 2 years or less since the national election. The remaining 3 years of the federal government's tenure are defined as 'late tenure'. We do so because we posit that the federal government may behave differently if it has re-election concerns of its own or if its state unit has less to gain from highlighting its alignment with the central government when the general election is imminent.

We start by analyzing the results in Column 1. We observe that the interaction term between the following year being a state-election year and the cultivation intensity of the

[13] High resolution gridded rainfall data obtained from the CHIRPS website and then aggregated at the district level for the years $2001 - 2021$.

crop in the district is positive and significant coefficient, and shows that when a district has an election coming up and if 100% of its cultivated area is under wheat and rice, the MSP announced is higher by INR 87 per ton, or an increase of 0.7% on the mean MSP of about INR 12,000 per ton during this period. As shown in Table 1, about 16% of the area cultivated in the average district is under wheat and 37% under rice. Thus, an average district going to election increases the procurement cost by INR 14 per ton for wheat and INR 32 per ton for rice. The implications for additional fiscal outlay are significant as public agencies procured 32 million tons of rice and 24 million tons of wheat per year during the sample period. In Table A2, we check for the same phenomenon by aggregating the entire area under cultivation of wheat or rice at the country-level, and regressing the MSP for the year on that proportion of the area for that crop which is slated to go for state elections in the following year. The effects are directionally similar and borderline significant even in this under-powered specification with only 42 observations.

In Columns 2 and 3 of Table 2, we split the sample by the tenure stage of the federal government, and find that the effects are slightly larger during early tenure, although results are broadly similar irrespective of the tenure length.

We next explore the role of political alliances in the fixing of MSP. For this analysis, we restrict our sample to only those state-year combinations S_t where state S has an election in year *t+1*. We do this because we want to isolate the additional effect of political alignment on the electoral cycle in MSP that we have already established in Table 2. We modify the empirical equation in equation 1 to test if the MSP is fixed differentially between states where the incumbent state government is aligned with the center and those where the incumbent is unaligned. We use the following specification:

$$MSP_{ct} = \beta + \beta_1 I_{st+1} + \beta_2 I_{st+1} \times A_{cds,2001} + \beta_3 A_{cds,2001} + \beta_4 R_{dst} + \gamma_d + \gamma_c + \gamma_t + \epsilon_{ct}, \quad (2)$$

where the outcome variable MSP_{ct} is the announced MSP for crop c in year t. The equation above is similar to the equation 1 with I_{st+1} which is a dummy to indicate if the incumbent political party in state s is not aligned with the ruling party at the center at the time of upcoming state-level elections in year $t+1$. The coefficient of interest is β_2 which measures, holding fixed the proportion of area under the crop, the difference in announced MSP across state-election years when states with the incumbent party not aligned with the federal government face upcoming elections versus states with the incumbent party aligned with the federal government. In this manner, we can tease out the effect of political alignment between state and federal government on the use of MSP as a political tool.

Table 3 reports estimation coefficients from equation 2 and provides insights into the differential use of MSP during the year running up to an election depending on the state-center alignment. In Column 1, we estimate results for the entire sample of elections, while in Columns 2 and 3, as earlier, we show results when the federal government is in its early and late tenure respectively.

We start with analyzing Column 1. The coefficient of interest is the interaction term that captures, for any proportion of area under a crop, the change in its MSP in the year prior to the state election, when the state government is not politically aligned with the center versus when they are aligned. We find that if the incumbent state government is unaligned with the center, the announced MSP is higher by a highly significant INR 166 per ton when the proportion of area cultivated goes from 0 to 1. These results suggest that the central government is strategic in its use of MSP and does not deploy it indiscriminately as a means of political capture. Political alliance with the state government affords the central government access to a portfolio of public goods and services that are perhaps more suited to manipulation in election years. In this manner, the central government acknowledges the blunt nature of the MSP as a tool for political capture at the state level.

Next, like in Table 2, we turn to understanding how the center's behavior in terms of helping the state unit may also be different by tenure stage. We show these results in

Columns 2 and 3. Unlike in the case of Table 2, here we find that differential fixing to help the state unit is about three times larger in the early years of the center's tenure - the interaction effects is a highly significant INR 317 per ton in the early tenure years and INR 113 per ton (significant only at 10%) in the later years. This suggests that when the central government's tenure is nearly over, voters provide little benefit to its state unit for their alignment with the national government. Therefore, it is not used as a strategic tool late in the central government's tenure. In Table A3, we do a similar check by aggregating area under cultivation at the country-level for non-aligned states going for election in the following year. Here too, we find that coefficients are qualitatively similar, and now statistically significant.

Next, we investigate the real impact of this policy capture beyond the fiscal burden on the exchequer. Specifically, we consider the effect of higher announced MSP on retail prices paid by the end consumers. To do this, we first implement the following reduced form specification:

$$log(retail_{cdmy}) = \delta + \delta_1 log(MSP_{ct}) + \gamma_d + \gamma_c + \gamma_t + \gamma_m + \epsilon_{cdmy}, \tag{3}$$

The outcome variable $log(retail_{cdmy})$ is the log of the retail price of crop c reported in district d in calendar month m of year y[14]. The independent variable, $log(MSP_{ct})$, is the log of the announced MSP in the calendar year t. We include district, crop, month, and year fixed effects. Standard errors are clustered at the district level. The results are reported in the column 1 of the Table 4. We find that on an average, the retail prices of rice and wheat are significantly higher by about 0.22% when the MSP rises by 1%.

To address concerns around omitted variable bias, like the influence of a higher cost of cultivation on both retail prices and MSP, we next implement an instrumental variables design for this analysis. We utilize our earlier findings that elections in intensely cultivated

[14]We define the year y as from June in year t to May in year $t+1$ for rice and from October in year t to September in year $t+1$ for wheat, i.e., the period starting at the harvest for which MSP_t is valid and ending at the next harvest. This captures both the announcement and procurement effect of higher announced MSP on the retail prices of the crops.

districts lead to a higher *national* MSP for this examination. However, there may be other concurrent factors that may impact retail prices in states that are slated for elections, due to which, the exclusion restriction may be violated in these states. To get around this issue, we only look at prices in non-election states as the MSP is the same across all states. We treat equation Equation (1) as our first stage and use the predicted values of MSP in our second-stage regression specification as follows:

$$log(retail_{cdmy}) = \eta + \eta_1 log(\widehat{MSP}_{ct}) + \gamma_d + \gamma_c + \gamma_t + \gamma_m + \epsilon_{cdmy} \tag{4}$$

The independent variable, $log(\widehat{MSP}_{ct})$, is the log of the predicted MSP from the first stage. The other variables are the same as Equation (3). Standard errors are bootstrapped and clustered at the district level. The results are reported in the column 2 of Table 4.

The IV estimates are similar in magnitude to the reduced form specification, but more precisely estimated. We find that the retail prices of rice and wheat are significantly higher by about 0.28% when the MSP goes up by 1% i.e. a significant 28% spillover effect. This represents a discernible loss in consumer welfare resulting from higher announced MSP for political interests instead of genuine equity considerations.

Finally, we consider the question of whether the government sharpens the MSP tool by ramping its procurement efforts up or down in election-going regions. For this, we use state-level data as procurement information is not available by district. In Table A4, we show that procurement is no higher in states which have an election coming up. However, within states that have elections, procurement efforts are intensified when the incumbent state government is unaligned with the center. We also test this same hypothesis with another dataset - a one-time farmer survey that was conducted in the year 2013, 'the situation assessment survey of farmers', which asked farmers about their sales. Results are presented in Table A5. Here, we find that during election years, individual farmers are more likely to have sold to the government (Column 1) and also to have sold more. As with the MSP itself, these effects are bigger when the state and central government are unaligned. These results suggest that

procurement provides an avenue to sharpen this tool of regulatory capture, by procuring more in electoral states.

5 Discussion and Conclusion

In this paper, we investigate political cycles in MSP, the public procurement price for staple grains in India, and at which more than a third of all the wheat and nearly half of all the rice produced in the country is sold. We find that when a district is slated to go for elections, the central government announces a higher price for the staple grains that form a higher proportion of the area under cultivation in that district. Relative to the many other political cycles in public goods that have been documented in the literature, what makes this one unique is that MSP is a uniform nation-wide price and therefore, causes procurement costs to rise even in the non-election states, and must therefore, add to the fiscal burden without providing any benefits in areas where there are no elections. We show that this blunt tool is used in cases where no other tools are available to the state wing of the party in power at the center, i.e., when the state government and the central government are not politically aligned.

Our findings, therefore, open up questions about a new source of distortion that gets introduced in regulated markets, i.e., these regulations themselves may be self-serving. Future research should focus on ways to quantify this as well as design mechanisms to minimize this kind of regulatory capture.

Furthermore, we find that this political capture of MSP is not just fiscally expensive, but directly impacts welfare by causing retail prices to rise. Thus, we are able to advance the literature on MSP by documenting at least a part of the welfare costs imposed by this gargantuan policy instrument. To the extent that the MSP is not the legally mandated price floor but only applies to a part of the market (public procurement), our findings also shed light on the price impacts of these kinds of partial price controls, for example, a scenario

where only a part of the housing market may be rent-controlled.

Finally, we note that the costs that we measure are only a small share of the welfare costs imposed by the MSP. It is well-known that the MSP has at least partly been responsible for the gradual shift of cultivation patterns in favor of rice and wheat, and away from traditional crops like millets which are known to be hardier and less water-intensive (Chatterjee et al. 2018). Moreover, recent research also finds that the MSP disproportionately benefits wealthier farmers (Garg and Saxena 2023). Thus, by announcing a higher MSP, the federal government may not only be distorting cultivation patterns and food grain markets, but may also be worsening socio-economic inequality.

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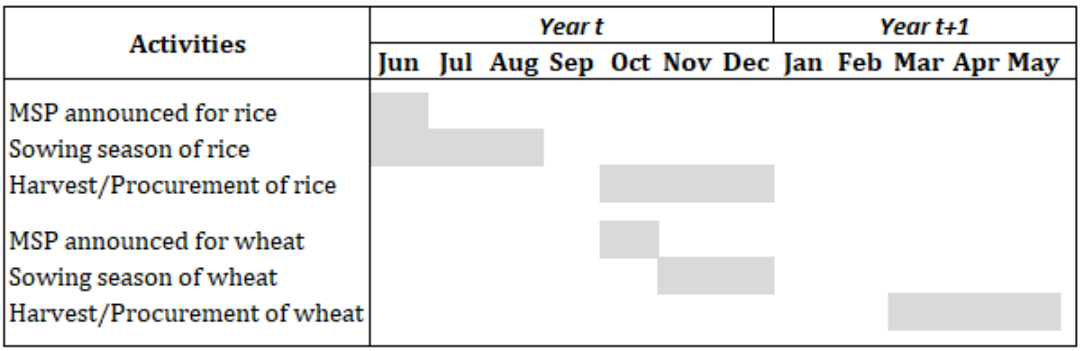
Figures

Figure 1: Crop Timeline: MSP Announcement, Sowing, Harvest, Procurement Months



Notes: The figure above shows the timeline of events for rice and wheat in a year

Tables

Table 1: Summary Statistics

	Mean
Number of states with election in a year	5
Number of districts with election in a year	118
Share of elections where state incumbent is not aligned	0.55
Share of area under wheat in a district	0.16
Share of area under rice in a district	0.37

Table 2: Impact of Elections on Minimum Support Prices

	MSP (INR/ton)		
		Early tenure	Late tenure
	(1)	(2)	(3)
Election Year = 1 (α)	-19.25	-34.53	-14.53
	(4.95)	(10.17)	(6.42)
Proportion of area cultivated	-16.68	-18.53	-24.88
	(3.39)	(4.70)	(7.34)
Election Year = 1 x Proportion of area cultivated (β)	87.45	126.52	95.23
	(17.66)	(31.69)	(26.75)
Sample Mean	12081.07	12441.54	11495.31
Sample SD	4719.58	4919.5	4311.73
p-value: $\alpha + \beta = 0$	< 0.001	< 0.001	< 0.001
Observations	22281	13793	8488

Notes: This table reports results for our estimating equation 1 for all districts in our sample period. The dependent variable is the MSP(INR/ton) of wheat and rice announced in a given year i.e. in levels. In columns 2 & 3, we subset the data to look at the elections where the govt is in its early and late tenure respectively. The variable $ElectionYear = 1$ takes the value 1 if the state goes for an election in the next year. Our coefficient of interest is the interacted term between $ElectionYear = 1$ and the proportion of area under cultivation for rice and wheat in a district. Controls include total annual rainfall, crop and district-fixed effects. Standard errors clustered at the district level are reported in parentheses.

Table 3: Political Alliance Impact on MSP

	MSP (INR/ton)		
		Early tenure	Late tenure
	(1)	(2)	(3)
Incumbent not aligned with center = 1 (α)	-22.47	-64.71	-12.45
	(9.33)	(13.15)	(13.99)
Proportion of area cultivated	128.00	176.66	63.38
	(22.79)	(30.89)	(57.83)
Incumbent not aligned with center = 1 x Proportion of area cultivated (β)	166.83	317.11	112.91
	(32.62)	(39.83)	(61.65)
Control Mean	11762.9	11859.77	11648.7
Control SD	4641.57	4979.39	4207.02
p-value: $\alpha + \beta = 0$	< 0.001	< 0.001	.04
Observations	4410	2407	2002

Notes: This table reports results for our estimating equation 2 for all districts during elections in our sample period. The dependent variable is the MSP(INR/ton) of wheat and rice announced in a given year i.e. in levels in all the columns. In columns 2 & 3, we subset the data to look at the elections where the govt is in its early and late tenure respectively. The variable *Incum not aligned center* = 1 takes the value 1 if any of the incumbent state parties were not a part of the central ruling front or were not aligned with any of the parties in the central ruling front. Our coefficient of interest is the interacted term between *Incum not aligned center* = 1 and the proportion of area under cultivation for rice and wheat in a district. All regressions include controls for the total annual rain in year, crop, and district fixed effects. Standard errors clustered at the district level are reported in parentheses.

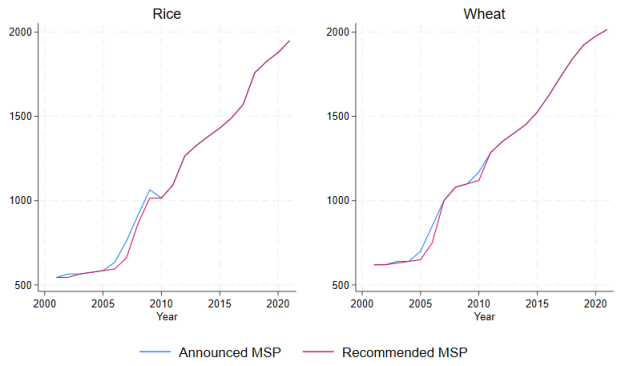
Table 4: Effect of MSP on retail prices

	Log(Retail Prices (INR/kg))	
	OLS	IV
	(1)	(2)
Log(MSP)	0.22	0.28
	(0.10)	(0.07)
Sample Mean	3.23	3.23
Sample SD	.3	.29
Observations	16672	12438

Notes: In column 1 of this table, we report results from our reduced form regression equation 3 during the sample period 2009-2021 for all states in the country. In column 2, we present results from our second stage estimating equation 4 of our IV design for the non-election states when another state growing that crop goes for election in the subsequent year during 2009-2021. The dependent variable is the log of the retail prices(INR/Kg) in both the columns. All regressions include controls for the district, year, crop, and month- fixed effects. Standard errors are clustered at the district level, and are reported in parentheses. We bootstrapped the standard errors in column 2 of the table.

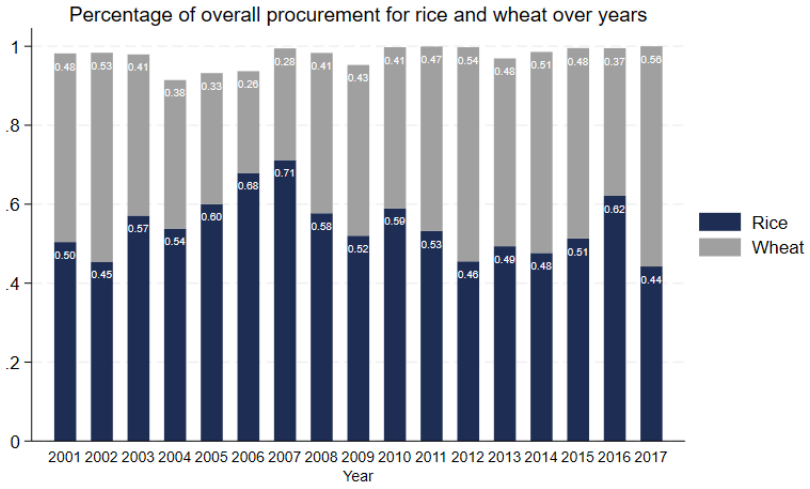
Appendix

Figure A1: Divergence between Recommended and Announced MSP



Notes: The recommended MSP refers to the support price recommended by the CACP. The announced MSP is the price floor set by the Government of India based on the recommendations of the CACP plus any additional bonuses.

Figure A2: Procurement by the Government



Notes: The figure above shows the proportion of rice and wheat in the overall procurement of all grains by the government during the period 2001 to 2017

Table A1: MSP (INR/ton) by year

Year	Rice	Wheat
2001	5450	6200
2002	5650	6200
2003	5650	6400
2004	5750	6400
2005	5850	7000
2006	6350	8500
2007	7600	10000
2008	9150	10800
2009	10650	11000
2010	10150	11700
2011	10950	12850
2012	12650	13500
2013	13275	14000
2014	13800	14500
2015	14300	15250
2016	14900	16250
2017	15700	17350
2018	17600	18400
2019	18250	19250
2020	18780	19750
2021	19500	20150

Notes: This table reports the raw MSP (INR/ton) for rice and wheat every year in our sample period.

Table A2: Effect of elections on MSP at the country level

	MSP (INR/ton)
	(1)
Prop area under cultivation with election in the country	22.97
	(15.78)
Sample Mean	12081.07
Sample SD	4776.68
Observations	42

Notes: This table reports the aggregated results at the country level on the dependent variable - MSP(INR/ton) during the period from 2001-2021. Our variable of interest i.e. 'Prop area under cultivation in the country' is defined is the proportion of area under cultivation of wheat or rice in a state at the country level that goes for election next year. Controls include crop and year fixed effects. Robust standard errors are reported in parentheses. * p < 0.10 , ** $p < 0.05$, *** $p < 0.01$

Table A3: Political Alliance Impact on MSP at the country level

	MSP (INR/ton)
	(1)
Prop area under cultivation with election in the non-incumbent state	45.90
	(23.17)
Sample Mean	12059.34
Sample SD	4554.36
Observations	38

Notes: This table reports the aggregated results at the country level on the dependent variable - MSP(INR/ton) during the period from $2001 - 2021$. All state elections in the year 2001 and in 2019 had the state incumbent aligned with the center and hence, the above results are based on 19 years instead of 21. Our variable of interest i.e. 'Prop area under cultivation in the non-incumbent state' is defined is the proportion of area under cultivation of wheat or rice in a state at the country level that goes for election next year and in which the incumbent state government is not aligned with the center. Controls include crop and year fixed effects. Robust standard errors are reported in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A4: Effect of elections and political alliance on the state level procurement of wheat and rice

	Quantity Procured (million tonnes)	
	(1)	(2)
Election Year=1	0.066	
	(0.141)	
Proportion of area cultivated(state)	3.600	2.283
	(1.393)	(1.285)
Election Year=1 × Proportion of area cultivated(state)	-0.481	
	(0.404)	
Incumbent not aligned with center=1		-0.649
		(0.345)
Incumbent not aligned with center=1 × Proportion of area cultivated(state)		1.922
		(1.055)
Sample mean	1.79	1.73
Sample SD	3.31	2.82
Observations	714	139

Notes: This table reports results on the state level procurement quantities (in million tonnes) of rice and wheat for all states during the sample period. In columns 1 and 2, we run our estimating equations 1 and 2 respectively at the state level on the procured quantities of rice and wheat during 2001-2021. The variable $ElectionYear = 1$ takes the value 1 if the state goes for an election in the next year and the variable $Incum\ not\ aligned\ center = 1$ takes the value 1 if any of the incumbent state parties were not a part of the central ruling front or were not aligned with any of the parties in the central ruling front. Our coefficient of interest is the interacted term between $ElectionYear = 1$ and proportion of area under cultivation for rice and wheat in a state in column 1. In column 2, our coefficient of interest is the interacted term between $Incum\ not\ aligned\ center = 1$ and the proportion of area under cultivation for rice and wheat in a state. Controls include total annual rainfall in a state, crop, year and state fixed effects. Standard errors clustered at the state level are reported in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A5: Situation Assessment Survey

	Extensive margin (1)	Quantity procured(ton) (2)
Panel A: Elections		
Election Year = 1 (α)	-0.02	-1.05
	(0.06)	(0.64)
Proportion of area cultivated	0.06	0.00
	(0.05)	(0.40)
Election Year = 1 x Prop area under cultivation (β)	0.53	4.24
	(0.09)	(1.30)
Control Mean	.26	2.05
Control SD	.44	8.4
p-value: $\alpha + \beta = 0$	< 0.001	< 0.001
Observations	9203	9203
Panel B: Political Alliance		
Incumbent not aligned with center = 1 (γ)	-0.52	-11.38
	(0.21)	(7.86)
Proportion of area cultivated	-0.03	-8.47
	(0.39)	(12.14)
Incumbent not aligned with center = 1 x Prop area under cultivation (δ)	0.95	16.08
	(0.39)	(12.02)
Control Mean	.39	2.19
Control SD	.49	6.65
p-value: $\gamma + \delta = 0$	.092	.286
Observations	1961	1961

Notes: This table reports results on the household level procurement indicators of rice and wheat for all states during the sample period. We use the Situation Assessment Survey data from the 70th round of the National Sample Survey (NSS) data conducted in 2013. During the survey, each household was visited twice once after the Kharif season in 2012 and then again after the Rabi season in 2013. The variable $ElectionYear = 1$ takes the value 1 if the state goes for an election in 2013 for rice and if the state goes for an election between June 2013 to May 2014 for wheat. We modified our definition of an election year differently for wheat and rice due to their distinct procurement timelines. While rice procurement aligns with its announcement in the same year, wheat procurement operations begin in the subsequent year. In panels A and B, we run our estimating equations 1 and 2 respectively. Our coefficient of interest is the interacted term between $ElectionYear = 1$ and proportion of area under cultivation for rice and wheat in a district in panel A. In panel B, our coefficient of interest is the interacted term between $Incum\ not\ aligned\ center = 1$ and the proportion of area under cultivation for rice and wheat in a district. In column 1, our dependent variable is the extensive margin of procurement in the year before election i.e. it takes the value 1 if the household sold its produced to any of the government agencies and 0 otherwise. In column 2, we examine the unconditional quantity(in tonnes) of rice or wheat procured by the government from the households in the districts going for election next year. Controls include religion, social group, type of dwelling unit, type of house structure, type of water sources, land owned by the household, whether the household participates in MNREGA, household visit number, crop and district fixed effects. Standard errors clustered at the district level are reported in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$