Impact of Government Supply Intervention on Market Prices: A study of Export Ban and Open Market Sale of Wheat [1]

D. Suganthi, GV Nadhanael and Biswajeet Mohanty

Abstract

This study examines the impact of supply-side interventions on market prices at a commodity level for wheat. A novel dataset is constructed by matching retail prices, wholesale (*mandi*) prices, and government wheat sales through e-auctions at the district level. Using this dataset, the impact of two major interventions *viz.,* export restrictions in 2022 and the Open Market Sale Scheme–Domestic (OMSS-D) in 2023, on market prices are examined through event-study framework as well as difference-in-differences approach. The findings indicate that the imposition of export restrictions had no significant effect on world prices, consistent with India's relatively small share in global wheat exports. However, the export restrictions were negatively associated with *mandi* prices, suggesting that the measure aided in containing domestic price pressures. *Mandi*-level data revealed that the announcement of OMSS-D alone triggered a decline in prices, while actual offtakes further eased retail prices. Moreover, evidence suggested that market participants responded efficiently to OMSS-D, as reflected in increasing bid prices and higher offtakes in periods of elevated retail prices driven by robust demand.

JEL: Q18, Q17, Q11, E31

Keywords: Government intervention, OMSS, Export ban, Wheat market

[1]The authors are from the Department of Economic and Policy Research (DEPR), Reserve Bank of India (RBI). The authors are grateful to participants of MPD discussion forum for their valuable comments and suggestions. The views expressed in the article are those of the authors and do not represent the views of the RBI.

Introduction

Achieving food price stability is crucial for ensuring both macroeconomic stability, food security and poverty alleviation, especially in a country like India, where food items constitute a significant share of the consumption basket. Its contribution and its volatility are key determinants of the headline inflation trajectory (Patra and Kapur, 2010). Supply-side factors drove the heightened inflationary pressures seen in India since 2020. Primarily it came from black swan events of COVID-19 and the war in Ukraine, which came in quick succession. In addition, domestic factors arising from recurring adverse climate events kept food prices elevated and sticky. Although weather induced food price spikes are widely regarded as transient, these shocks have imparted volatility and persistence to food inflation. The average food inflation in India remained elevated at 6.7 per cent, 7 per cent and 6.7 per cent during 2022-23, 2023-24 and 2024-25, respectively.

In response, several supply-side measures were unleashed to ensure continuous availability of essential commodities, notably for wheat, pulses, onions and edible oils. These measures primarily took the form of lower import tariffs, robust imports, buffer stock management, strategic release of stocks into open market through traders, export restrictions and direct retail sale to consumers.[2] The goal was to reduce supply-side bottlenecks that were contributing to food price volatility. Concurrently, in early 2022, with heightened and persistent inflationary pressures, the monetary policy committee quickly reprioritised price stability *vis-à-vis* growth in April 2022 by retracting the pandemic-induced stimulus, actively regulating liquidity, and increasing the policy rate cumulatively by 250 basis points between May 2022 and February 2023.

In this context, the country's inflation management strategy stands out for its coordinated use of monetary and fiscal levers (Patra *et al.*, 2024). Together, these interventions exemplified a calibrated and responsive macroeconomic framework aiming at stabilising prices without unduly sacrificing growth. While the effectiveness of these coordinated policies in managing

[2] These measures included export restrictions on wheat, rice and sugar, duty free import of pulses (pigeon pea, black gram, and yellow pea), augmentation of pulse buffer stocks for market intervention, the release of key cereals (rice and wheat) from buffer stocks to market intermediaries, and the sale of pulses (split chickpeas) at discounted price to states and union territories. Additionally, the measures involved direct retail sale of key cereals (wheat flour and rice) and pulses (split chickpeas) under the *Bharat* brand, stock limits for wheat and pulses, mandated stock disclosures for rice, wheat, and pulses, a reduction in import duties on various edible oils, and additionally procurement and retail sales of tomatoes and onions at a discounted price.

aggregate inflation has been acknowledged, their impact at the level of individual commodities remains underexplored. This paper addresses that gap by focusing on wheat, a key staple in India's food economy, which underwent severe price pressures due to a unique confluence of domestic and international shocks.

Wheat supply in India was hit by a dual shock during 2021–22 and 2022–23. Severe heatwaves affected the standing wheat crop in 2022, resulting in significant fall in production. These heatwaves-induced production shortfall was compounded by global supply crunch on account of the war in Ukraine. The sharp reduction in wheat availability in the global market and the resultant escalation in global wheat prices made wheat imports uncompetitive for India. Driven by dual shocks on both the domestic and international fronts, wheat inflation exhibited heightened pressure, peaking at 25.4 per cent in February 2023. However, aided by astute supply management policies of the government, wheat price inflation moderated significantly over the course of 2023-24 to reach 2 per cent in February 2024. The key policy interventions include the imposition of restrictions on wheat export and the deployment of the Open Market Sale Scheme – Domestic (OMSS-D) [3], which form the core focus of this paper.

The export restriction on wheat was imposed to prioritise domestic availability and curb further price increases. This move attracted global attention and criticism, with arguments that India's actions, following the Russia-Ukraine conflict, exacerbated global food insecurity. However, the empirical impact of this exportvrestriction—particularly on global wheat prices—remains unscrutinised. This paper fills this gap by assessing whether India's export ban significantly influenced international wheat prices using an event study framework. Furthermore, it examines the effectiveness of the export restriction in containing domestic prices, using market-level data. Second, the government activated the Open Market Sale Scheme – Domestic (OMSS-D) to stabilise prices through the strategic release of buffer stocks into the open market. This intervention was designed not only to improve availability but also to anchor expectations around future price movements. Using a rich dataset of daily retail wheat prices from 434 centres across 34 states and union territories, this paper documents price trends following the OMSS-D announcement and during the conduct of weekly auctions. Specifically, the impact

[3] OMSS-D refers to offering of food grains (wheat and rice) in the open market at prices, fixed by the Ministry of Consumer Affairs, Food & Public Distribution through e-auction in order to control the price in the market by providing food grains at reduced prices with the aim to curb inflation. Under the Scheme, government through Food Corporation of India (FCI), offers wheat to processors/*atta chalki*/flour millers of wheat products only (traders/bulk buyers are not allowed) through e-auction. An eligible bidder can bid for a minimum quantity of 10 MT to maximum of 100 MT in case of wheat.

of the OMSS-D announcement on *mandi* prices is evaluated through an event study approach, while the effectiveness of weekly auctions in containing retail price increases is assessed using a difference-in-differences (DiD) framework.

The analysis revealed that the imposition of export restrictions on wheat did not significantly affect world prices, consistent with India's limited share in the global wheat export market. Nonetheless, export restrictions were associated with lower *mandi* prices, suggesting that the measure helped contain domestic price pressures. Assessment of *mandi*-level prices showed that the announcement of OMSS-D itself triggered a price decline, while the subsequent offtakes further moderated retail prices. Additionally, market participants appeared to respond efficiently to OMSS-D, as reflected in rising bid prices and higher offtakes during periods of elevated retail prices, driven by strong demand.

This study contributes to four key strands of the literature. First, it adds to the growing body of work on the effectiveness of coordinated monetary and fiscal policy in managing inflation in developing economies. Second, it enriches the empirical understanding of commodity-specific price responses to policy actions amidst global supply disruptions, highlighting the importance of timely market interventions and procurement strategies (Basu, 2010). Third, it offers a case study on the potential global spillovers of domestic trade policy actions—an issue of increasing relevance in the context of rising food nationalism and export bans (Sharma, 2011; Abbott, 2012; Valera *et al.,* 2024). Fourth, it contributes to the literature on the domestic impacts of trade and market interventions, including the role of subsidies and their withdrawal on price dynamics and the welfare of vulnerable consumers (Ramaswamy and Balakrishnan, 2002).

The rest of the paper is organised as follows. Section II provides the background of the study, focusing on the significance of wheat in the Indian economy and the key features of OMSS-D operations. Section III describes the data sources and presents the empirical findings. Finally, Section IV offers concluding observations.

II. Background and Facts

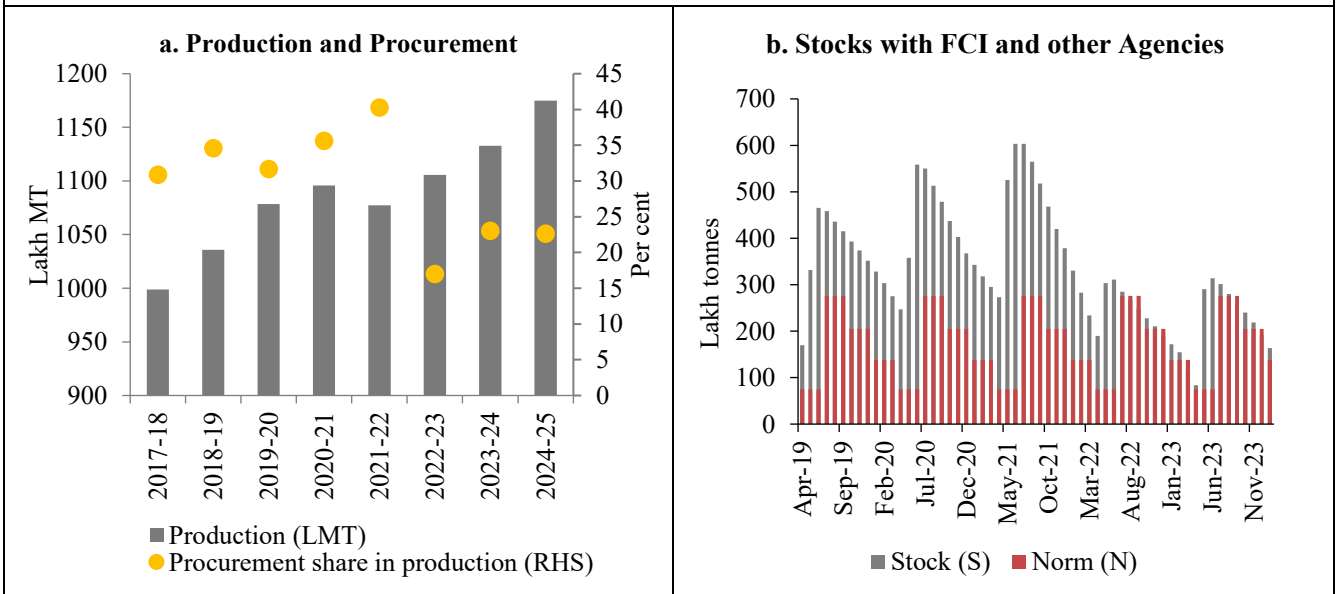
Wheat Inflation: Sticky and Elevated

Wheat supply experienced double shock—lower production in 2021-22 and Ukraine war led global price spike in 2022. Severe heatwaves during the critical grain-filling stage

significantly impaired yields in major wheat-producing states in North India. The damage was evident in the form of yellowing and shrivelling of grains, reduced grain weight, and early maturation, leading to an overall decline in output. Lower production on heatwave-induced shock in 2021-22 resulted in dwindling stocks. This production shortfall was compounded by global supply crunch on account of the war in Ukraine. The sharp reduction in wheat availability in the global market and the resultant escalation in global wheat prices made wheat imports uncompetitive for India, resulting in large increase in prices of wheat during 2021-22 and 2022-23.

Globally, India is the second-largest producer and consumer of wheat. Within India, wheat contributes roughly 35 per cent to total foodgrain production, while in consumption, wheat and products account for a significant share having a weight of 3.9 per cent in the CPI basket. Wheat production has been increasing over the years; however, volatility in production on the back of weather-induced shocks has also soared in recent times. Wheat production in 2021-22 stood at 1077.4 lakh tonnes, marking a 2 per cent decline from 2020-21 level, primarily due to persistent heatwaves during March and April 2022 in major wheat-growing states such as Uttar Pradesh, Punjab, Haryana and Madhya Pradesh (Chart 1a). This led to a year-on-year (y-o-y) decline of 56.6 per cent in wheat procurement during the *rabi* marketing season of 2022-23. Although buffer stocks remained just at par with the prescribed norms, they witnessed a significant decline over 2022–23 and 2023–24 (Chart 1b).

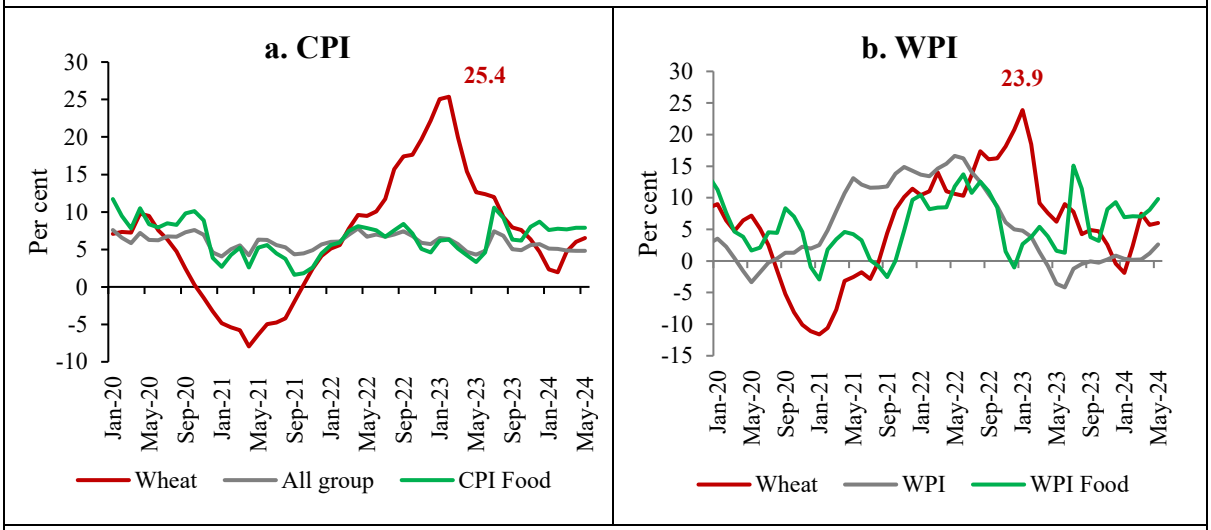
Chart 1: Wheat Production, Procurement and Stocks



Sources: Unified Portal for Agricultural Statistics (UPAg), Ministry of Agriculture & Farmers' Welfare (MoA&FW); and Authors' calculations.

India's wheat inflation took off starting from the end of Q1:2022-23 and remained elevated until February 2023. Wheat prices which had recorded a y-o-y deflation of nearly 5 per cent in June 2021, surged to a peak of 25.4 per cent inflation in February 2023. The impact was visible not only in wheat-specific inflation but also in overall inflation, given the importance of wheat in the consumption basket.[4] A similar trend was observed in wholesale inflation, reflecting the broad-based and persistent rise in wheat prices across both retail and wholesale markets (Charts 2a and 2b). This prompted the government to implement a series of supply-side measures to stabilise prices.

Chart 2: Wheat Inflation

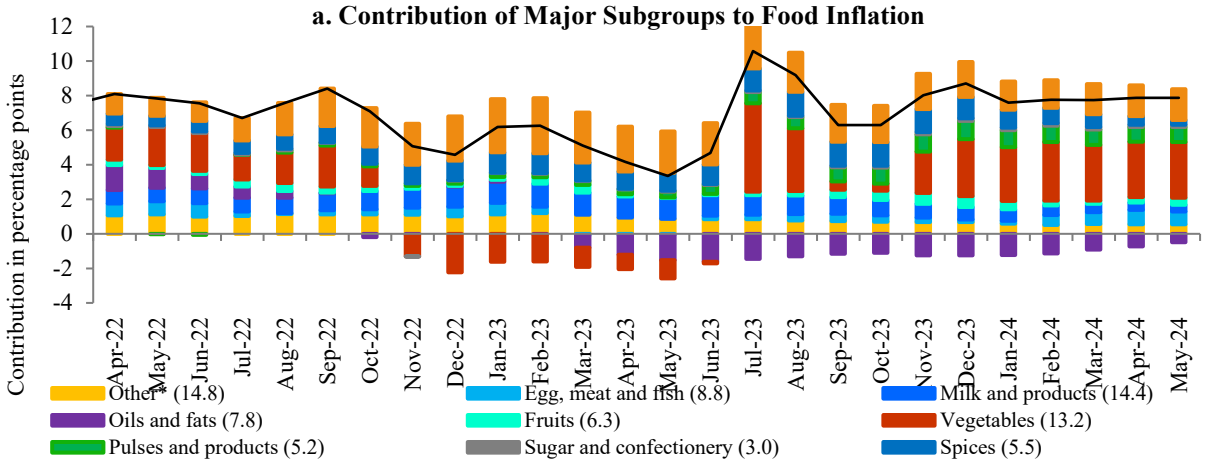


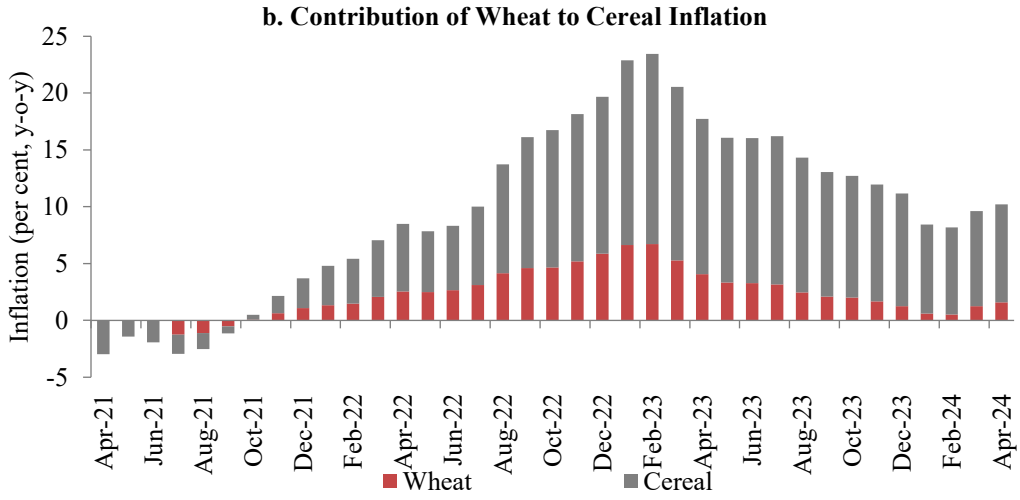
Sources: National Statistical Office (NSO); Office of Economic Advisor; and Authors' calculations.

The contribution of the cereals category to inflation peaked at 3.2 in February 2023 and gradually declined to 1.6 per cent in February 2024 (Chart 3a). Similarly, the contribution of wheat to cereals inflation peaked in February 2023 and steadily eased to 7.6 per cent in February 2024 (Chart 3b).

[4] Wheat and products have a weightage of 3.9 per cent in overall CPI. The food and beverage category of the Consumer Price Index (CPI) has a weightage of 45.9 per cent; within this category, cereals and products have a weightage of 21.1 per cent. Among the cereals, wheat and products have a weight of 40.2 per cent.

Chart 3: CPI Food and Wheat Inflation





Notes: 1. * includes prepared meals, snacks, sweets and non-alcoholic beverages.
2. Figures in parentheses indicate weights in CPI-Food.
Sources: National Statistical Office (NSO); Office of Economic Advisor; and Authors' calculations.

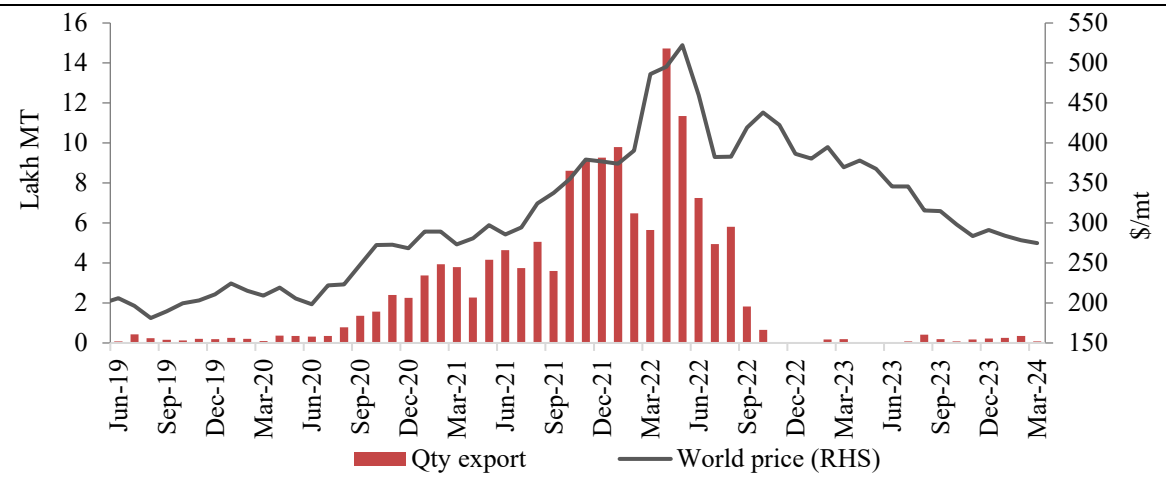
Policy Measures

a. India's wheat export ban

Given the fall in domestic production and buffer stocks in 2022, India imposed an export ban on wheat on May 13, 2022, citing concerns over domestic food security. In 2021-22, global wheat prices surged significantly, largely due to supply disruptions caused by pandemic and later by the Russia-Ukraine war. During this period, India ramped up wheat exports, attempting to bridge the supply gap in international markets. In 2021-22, India's wheat exports touched a record high of 72 lakh metric tons — a 250 per cent increase over the previous year (Chart 4). However, this export surge coincided with a decline in domestic wheat production, triggered by severe heatwaves. India's decision to impose export restriction on

wheat drew widespread international attention and criticism, raising questions about India's role and responsibility in supporting global food supplies during periods of crisis.[5]

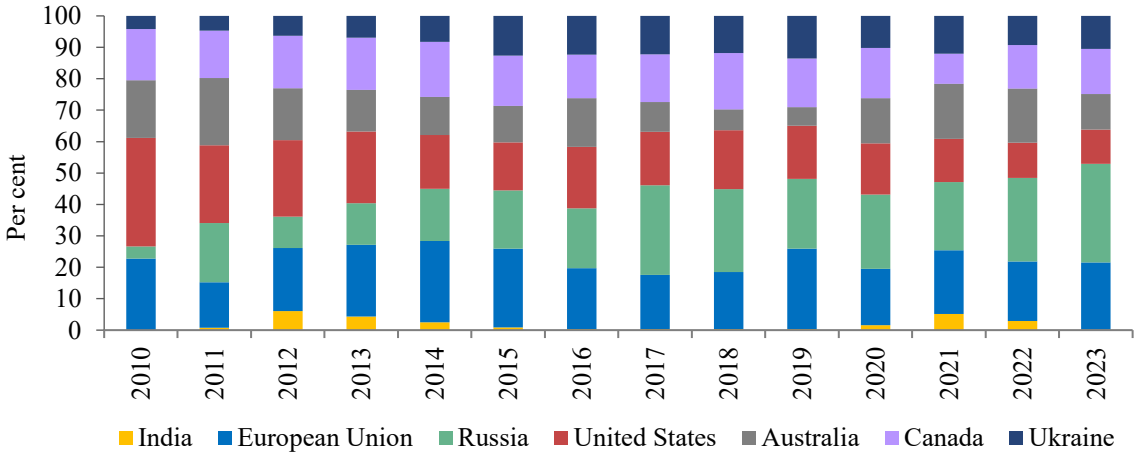
Chart 4: India's Wheat Exports



Sources: Agricultural and Processed Food Products Export Development Authority (APEDA); World Bank Pink sheet; and Authors' calculations.

Although India is among the world's largest wheat producers, its share in global wheat exports remained relatively modest compared to major exporters such as Russia, the United States, the European Union, and Canada (Chart 5). The Indian government cited this limited share to justify that the export ban would not significantly disrupt global markets.

Chart 5: India's Share in Wheat Exports



Sources: United States Department of Agriculture; and Authors' calculations.

[5] India wheat export ban: Why it matters to the world, https://www.bbc.com/news/world-asia-india-61590756

b. OMSS-D for wheat

The government through Food Corporation of India (FCI)[6] manages operational and strategic buffer stocks for augmenting supply during lean months for containing price volatility. This is done by increased procurement at during good production years at Minimum Support Price (MSP) and release of foodgrain stocks in the open market through the OMSS-D, acting as insurance mechanism for price stability. This is in addition to distribution of foodgrains to poor at reasonable prices through the Public Distribution System (PDS). Accordingly, the FCI, following government directives, periodically sells surplus foodgrains from stocks, particularly wheat and rice, in the open market to traders, bulk consumers, retail chains, state governments *etc*., at established prices. In the past, FCI released surplus grains through physical auctions to market participants and state governments. Since 2023-Febraury, OMSS-D is being conducted through e-auctions, where the empanelled bulks buyers or market participants can buy specified quantities.[7]

Some salient features of the revamped OMSS-D e-auctions include participation exclusively by empanelled bidders, differentiated reserve price for two qualities *viz.* Fair and Average Quality (FAQ) and Under Relaxed specification (URS), no restriction on bulk buyers regarding the usage of procured grains allowing them to make profit by selling the grains directly to end consumers. In 2023, the reserve price for FAQ was set at ₹ 2150 per quintal, a tad higher than the MSP of ₹ 2125, which was applicable for URS. Additionally, to ensure food security and deter wheat hoarding and speculative activities, a limit was placed on the bid quantity size and stock limits for traders/wholesalers, retailers, big chain retailers, and processors across all states and UTs, which was periodically revised.[8] All these features of the OMSS-D design mechanism helped in the successful implementation.

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[6] FCI is a statutory body set in 1965 by the government against the backdrop of shortage of foodgrains. It is responsible for executing food policies of the government to safeguard the interest of farmers and consumers.

[7] Registration of bulk buyers on the online portal with a registration fee of 1000 rupees plus 50 rupees for bank charges. Registration is based on PAN details, so one bidder is allowed to bid once in a region irrespective of the number of or branches or multiple GST under the pan but subject to the maximum quantity that the buyer can bid based on stock limits. auctions were conducted every Wednesday, and details of the auction were released by Friday.

[8] Furthermore, several revisions were implemented to progressively augment the supply of wheat under OMSS-D. These include expanding the quantity offered to individual bidders from 100 MT to 200 MT and increasing the per e-auction offload limit from 2 LMT to 3 LMT in October 2023, and further to 4 LMT in December 2023. Concurrently, for preventing the hoarding of stocks and guaranteeing that the successful bidder processes and releases the sold wheat into the open market, bidders with low tension electricity connections were permitted to possess only 50 MT of wheat, while those with high tension electricity connections was permitted to possess 250 MT.

These features of OMSS-D reflect the ideas espoused by Basu (2010), which argues that mere release of large volumes of grain during shortages may not be adequate to drive down prices. Instead, it is necessary to release small batches of pre-fixed volumes to several buyers at a pre-announced price, or even directly to consumers. This approach mirrors the procurement process *i.e.,* grain is offered at a pre-announced price, allowing buyers and traders to purchase exactly the amount they require. In other words, market competition inherently drives prices down benefiting consumers, when procured grains are released in small quantities to a large number of traders and millers while allowing them to make reasonable profits.

III. Empirical Analysis

Data

For the analysis of the impact of the wheat export ban on global and domestic prices, mandi prices and arrivals were sourced from Agmarknet, while international price movements were captured using wheat futures prices traded on the Chicago Board of Trade (CBOT) and the S&P Global Agricultural Index obtained from Bloomberg.

To analyse the impact of OMSS-D on prices, three key datasets were employed. First, weekly auction data were obtained from the Food Corporation of India (FCI), [9] providing bidder- and trader-level information on bid quantities and prices across 154 districts in 28 states and union territories, covering the period from June 28, 2023, to February 28, 2024. Second, retail price data were sourced from the Department of Consumer Affairs, comprising daily wheat prices collected from 434 centres across 34 states and union territories.[10] Third, mandi arrivals and wheat prices across mandis spanning multiple states were analysed. A unique dataset was constructed by matching district-level weekly auction prices with corresponding retail and mandi prices for 2022 and 2023. This dataset enabled an examination of the impact of weekly e-auctions on both retail and wholesale prices.

III.1 Impact of India's Export Ban – Event Study

What is the likely impact of export restrictions on global and *mandi* level wholesale prices of wheat? Given the context, India's export ban would be expected to have minimal impact on global prices as it is a price taker and occupies a small share in the world wheat trade. This is

[9] https://www.valuejunction.in/fci/

[10] The daily retail price data obtained from CEIC database was aggregated at a weekly frequency.

in line with the small-country hypothesis of trade literature, which posits that a small country cannot affect world market prices or its terms of trade through unilateral trade policy decisions. Within the domestic economy, however, export restriction is like a positive supply shock, which may augment supply in the domestic market thereby reducing prices. Alternatively, it is also plausible that farmers and traders, anticipating further price increases, might withhold the produce from sale, which could tighten supplies and exacerbate price pressures instead of easing them.

To assess the impact of the export ban on world wheat prices, an event study analysis was carried out.[11] The following model specification was employed:

$$\Delta P_t = \beta_0 + \beta_1 ExportBan_t + \beta_2 \Delta GSCI\_Agri_t + \alpha_w + \delta_t + \varepsilon_t \text{ ------ } (1)$$

where, ΔP_t represent the change in log-transformed price of wheat futures traded in CBOT.[12] $ExportBan_t$ is a dummy variable taking value 1 for days after the ban, and 0 otherwise. Since export restriction on wheat came into effect on May 13th, 2022, the period from April 1 to May 12, 2022 is considered the pre-announcement period and post policy announcement period is taken from May 13 to June 30, 2022. Δ GSCI_Agri represents change in Global S&P Commodity Agricultural Index, a proxy for capturing trends in broader agricultural commodity markets. α_w captures fixed effects for week-specific shocks while δ_t controls for day of the week fixed effect. ε_t represents the error term. The model was estimated with robust standard errors clustered at the week level to account for any potential serial correlation and heteroskedasticity within weeks.

Alongside, the impact of India's export restriction on *mandi* level wheat prices was also examined by the following equation

$$\Delta P_{it} = \beta_0 + \beta_1 ExportBan_t + \beta_2 \Delta Arrivals_{it-1} + \alpha_w + \delta_t + \gamma_i + \varepsilon_t \text{ ------ } (2)$$

where, ΔP_{it} represents change in log-transformed *mandi* price of wheat at time *t* in *mandi i*. $ExportBan_t$ is a dummy variable taking value 1 for days after the ban, and 0 otherwise. $\Delta Arrivals_{it-1}$ captures the change in log-transformed *mandi* arrivals of wheat at time *t* in *mandi i* to account for high supply after the announcement of the ban. α_w capture the fixed effects for week-specific shocks while δ_t controls for day of the week fixed effect. γ_i accounts for *mandi* fixed effects. ε_t is the error term.

[11] Employed Stata's *reghdfe.*

[12] Chicago Board of Trade (CBOT) wheat futures are widely regarded as the global benchmark for wheat prices.

The results offer a clear contrast between the global and domestic effects of India's wheat export restriction. In Model 1, which examines the impact on global wheat prices, the export restriction dummy was not statistically significant (Table 1). This suggests that the policy announcement had no measurable effect on international wheat prices, consistent with the 'small country hypothesis'. Despite the heightened political and media attention, on export ban, India's limited share in global wheat exports appears to have constrained its ability to affect international price dynamics.

In Model 2, which focuses on domestic outcomes, the export restriction was found to have a negative and statistically significant effect on *mandi* wheat prices—even after controlling for local supply conditions through *mandi* arrivals. This indicates that the policy was effective in tempering domestic price pressures, supporting the government's objective of stabilising the availability and affordability of wheat in the wake of production shortfalls.

In summary, while the global market remained largely unaffected, the export restriction had a tangible dampening effect on domestic wheat prices. These results suggest that although the policy drew international criticism, it functioned as a targeted domestic stabilisation measure without causing meaningful disruption to the global wheat market.

Table 1. Results of Event Study Analysis

	Model 1 **Global Price**	**Model 2** ***Mandi* Price**
Export Restriction (D)	-0.004 (0.003)	-0.165*** (0.007)
GSCI_Agri	1.506*** (0.117)	
Mandi Arrivals (Log)		-0.002*** (0.000)
Constant	0.003 (0.002)	0.085*** (0.004)
Week Fixed Effects	Yes	Yes
Day of the Week Fixed Effects	Yes	Yes
***Mandi* Fixed Effects**		Yes
No. of Observations	60	21345
R-squared	0.87	0.10

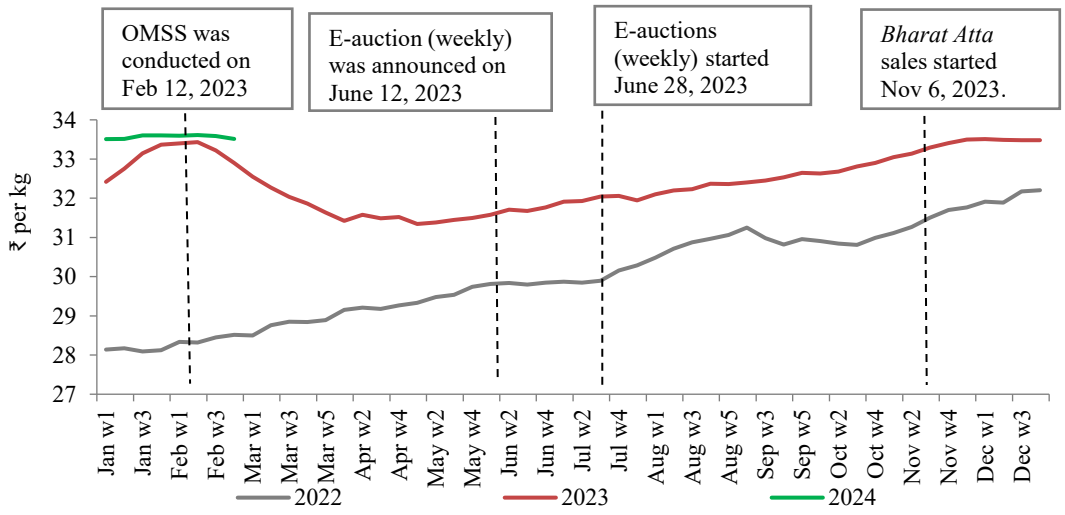
Notes: 1. Robust standard errors (clustered at week level) are reported in parentheses in Model 1.
2. Robust standard errors (clustered at mandi) are reported in parentheses in Model 2.
3. *, **, *** represents 10 per cent, 5 per cent and 1 per cent level of significance.
Source: Authors' estimates.

III.2 Impact of OMSS-D of Wheat on its wholesale and retail prices

Following the export restrictions on wheat and wheat products, on January 25, 2023, the government announced to sell 30 LMT of wheat from the central pool stock to market participants under the OMSS-D amidst its continuing price pressures. Furthermore, on February 21, 2023, the government announced offloading of an additional 20 LMT of wheat through OMSS-D. The government offloaded 34 LMT of wheat out of the allocated 50 LMT from the central pool stocks during February and March 2023. As a result, wheat prices corrected significantly until May 2023.

When the signs of price pressures in wheat re-emerged, the government, announced second phase of OMSS-D on June 12, 2023 to release 15 LMT of wheat, which was subsequently increased to 50 LMT in August 2023 and further to 101.5 LMT [including allocation (4 lakh tonnes) for Bharat atta to central agencies and e-auctions]. The weekly e-auctions commenced on June 28, 2023, augmenting wheat availability in the open market. OMSS-D efforts yielded tangible results, with retail prices stabilising as offtake under OMSS-D increased steadily (Chart 6).

Chart 6: Trends in Retail Price of Wheat

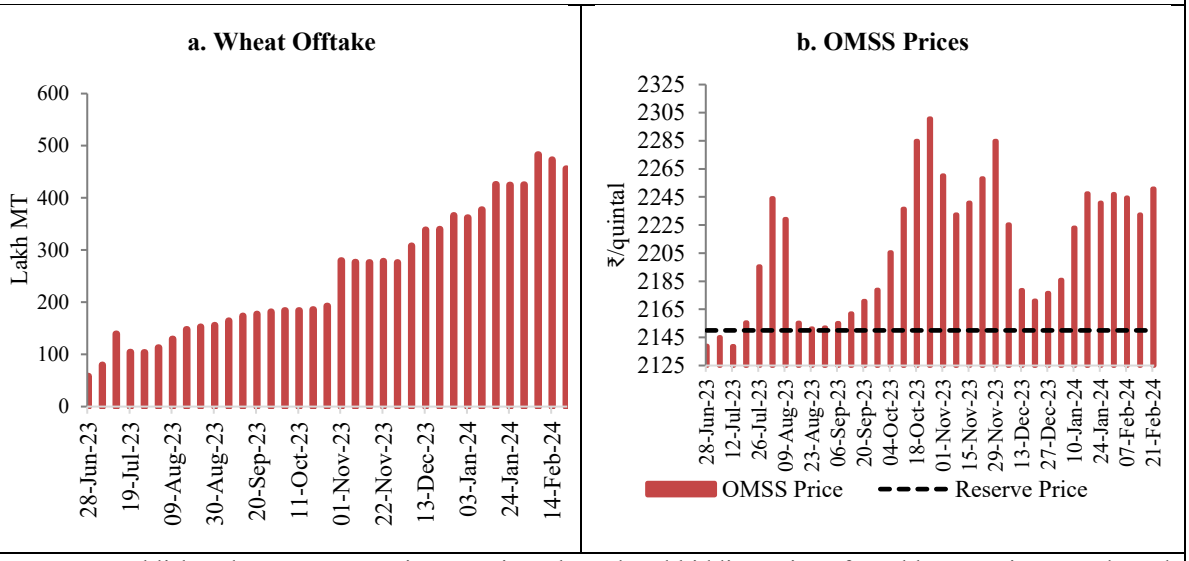


Note: DCA daily retail prices were converted to weekly price series.
Sources: CEIC; and Authors' calculations.

The offtake quantity increased progressively over the months. Since Nov 2023, there was a substantial jump in the offtake quantity. A total of 35 weekly auctions were conducted (Chart 7a). Out of 101.5 LMT wheat designated for offloading under OMSS-D, 95 LMT was sold as

on February 28, 2024.[13]. The OMSS bid price witnessed an intermittent rise, reflecting robust demand but eased thereafter with increased supply (Chart 7b).

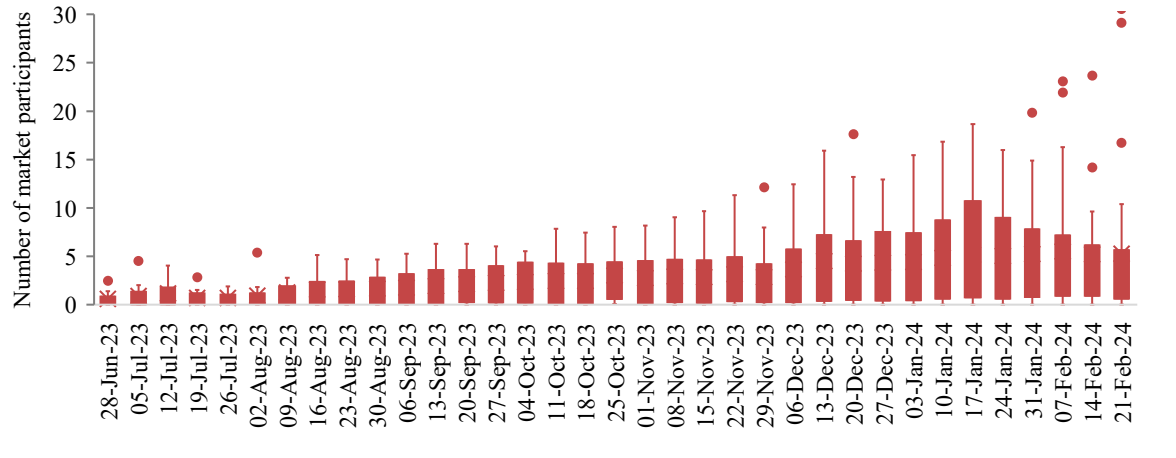
Chart 7: Trends in Weekly OMSS Offtake and Prices



Note: FCI publishes data on centre-wise quantity released and bidding price of weekly e-auctions conducted on Wednesdays by the Friday of the same week.
Sources: FCI; and Author's calculations.

The number of market participants increased gradually in the weeks leading up to November 2024. Since December, there was a significant increase in the number of market participants, reflected in the increased offtake quantity (Chart 8).

Chart 8: Trend in the Number of Market Participants



Sources: FCI; and Authors' calculations.

[13] Press Information Bureau (PIB), January 31, 2024

Impact of Announcement of OMSS for Wheat - Event Study

To study the impact of the announcement of OMSS on *mandi* prices, an event study framework was employed. For 2023-24, the OMSS e-auction was announced on 12th June 2023, and actual e-auctions were held from 28th June 2023. For the analysis, the pre-announcement period is considered from May 1 to June 11 and post announcement period is taken from June 12 to June 27, 2023, respectively. The model specification is given in Eq.3, where mandi prices aggregated at district level were regressed on OMSS dummy variable.

$$P_{id} = \alpha_i + \beta_{1d} * OMSS_d + \varepsilon_{id} \quad \text{-------(3)}$$

where, P_{id} is the log-transformed *mandi* prices[14] (*i.e.* wholesale price) of wheat recorded in district i at time d (daily); α_i is the state-district-specific fixed effect, $OMSS_d$ is a dummy variable which takes the value 1 for each of the days after the announcement of the OMSS operations and 0 otherwise and ε_{id} is the error term. Results show that at the aggregate level, the announcement of OMSS operations for wheat itself had a statistically significant and negative effect on wheat *mandi* prices. This implies announcement of OMSS-D had a moderating effect on *mandi* prices (Table 2).

Table 2. Results of Event Study Analysis

	Mandi Price of Wheat (modal)	*Mandi* Price of Wheat (maximum)
OMSS for Wheat	-0.119** (0.004)	-0.122*** (0.004)
Constant	7.760*** (0.001)	7.812*** (0.001)
Fixed Effects	State-District, *Mandi*, week of the year, day of the week	State-District, *Mandi*, week of the year, day of the week
No. of Observations	25780	25747
R-squared	0.62	0.715

Notes: 1. Robust standard errors (clustered at district level) are reported in parentheses.
2. *, **, *** represents 10 per cent, 5 per cent and 1 per cent level of significance.
3. Period before and after policy announcement is taken from May 1 to June 11, 2023 and June 12 to June 27, 2023, respectively.
Source: Authors' estimates.

[14] It is the modal and maximum prices reported by the *mandis* on the Agmarknet portal.

Impact of OMSS through Weekly e-Auctions: Difference-in-Difference (DID) Approach

OMSS-D for wheat was suspended intermittently in 2022 due to low stocks with FCI. OMSS-D e-auctions made available the continuous supply of wheat in the open market to cater to the demand of traders and bulk buyers. It is expected that with increase in supply of wheat would result in fall in domestic wheat wholesale and retail prices .

To study the sale impact of OMSS-D, we rely on Difference-in-Differences (DiD) approach. Using district-level panel data on daily wheat retail prices for 2022 and 2023 covering several districts from 34 states, the following equation is estimated:

$$P_{idy} = \alpha_i + \beta_1 OMSS_{id} \ \beta_2 Treatment\ Year_{iy} + \beta_3 (OMSS * Treatment\ Year)_{idy} + \beta_4 Bharat\ Atta_{id} + \varepsilon_{iyd} \text{ ----------(4)}$$

Where, P_{idy} is the log transformed retail prices of wheat recorded in district *i on d* (daily) in year *y*; $OMSS_{id}$ is a dummy variable which takes the value *0* for each of the days before and *1* after the announcement of the OMSS-W operations for each district *i*; $Treatment\ Year_{iy}$ is a dummy variable which takes the value *1* for the year 2023 (for OMSS-D operation) and *0*, otherwise for each district *i*; α_i is the state-district-specific fixed effect and ε_{iyd} is the error term.

This DiD design compares the price change before and after the OMSS-D began on June 12 in 2023 (treatment period) with the change in retail price of 2022 (control period). Our variable of interest (OMSS for Wheat × Treatment Year) which captures the impact of OMSS-D controlling for other factors has a negative and significant coefficient indicating that retail prices came down on account of the Government's policy of releasing wheat through OMSS (Table 3). This finding underscores the effectiveness of OMSS-D as a supply-side measure, wherein the offtake of additional stocks into the open market helped ease demand-supply imbalances and exerted downward pressure on prices.

Table 3: Results of Difference-in-Difference Analysis

	Retail Price of Wheat (2023 against average of 2021-2022)
OMSS for Wheat × Treatment Year	-0.007*** (0.003)
OMSS effect: Date FE[$]	0.005** (0.003)
Treatment effect: Year FE	0.011*** (0.003)

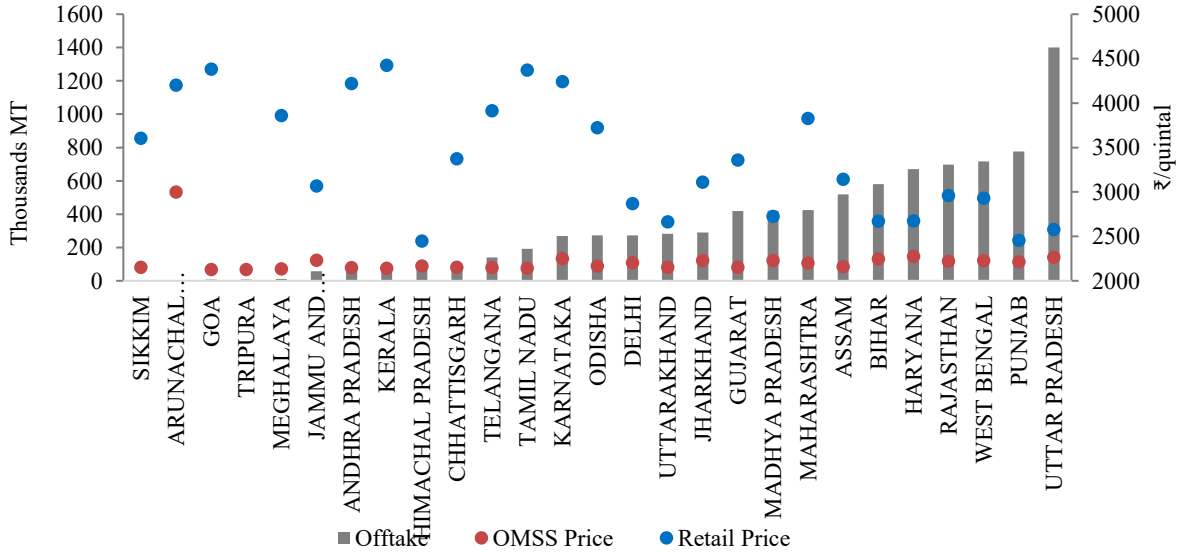
No. of observations	167966
R-squared	0.91
Fixed effects	State × District, week of the Year, Day of the week Bharat Atta[#]

Notes: 1. Robust Standard errors (clustered at district level) are reported in parentheses.
2. *, **, *** represents 10 per cent, 5 per cent and 1 per cent level of significance.
3. The period before and after the policy announcement is taken from March 1 to June 11, 2023, and June 12 to February 29, 2024, respectively.
4. $: Fixed effects.
5. # $Bharat\ Atta_{id}$ is a dummy variable taking value *1* for days after November 6, 2023, and *0* otherwise for each district *i*.
Source: Authors' estimates

Relationship between OMSS Price/Offtake and Retail Price of Wheat

An important question is how agents responded to OMSS-D? In other words, what is the relationship between OMSS offtake/bid price *vs* retail price responds in producing and consuming states. The wheat growing states include Madhya Pradesh, Uttar Pradesh, Haryana, Punjab, Rajasthan and Bihar, which contribute to nearly 92 per cent of India's wheat production. First, the correlation between OMSS bidding prices and offtake with retail prices was examined across all states where OMSS releases were made. It was observed that the state-level average weekly retail price during June 2023–February 2024 remained higher than the OMSS bidding price in all states. (Chart 13a). In particular, consuming states witnessed higher retail prices compared to producing states (Chart 13b).

Chart 9: Statelevel Offtake, OMSS and Retail Prices



Sources: FCI; and Authors' calculations.

To test this hypothesis, the relationship between OMSS offtake and bidding prices with that of the retail price of wheat using district-level weekly data from 34 states was examined. The following equation is estimated to study the relationship between offtake and bidding price of wheat under OMSS on retail price for wheat across districts:

$$Retail\ Price_{id} = \beta_{1d} * (Y)_{id} + \beta_{2d}\, C_s + \beta_{3d}\, C_s * (Y)_{id} + \alpha_i + w_d + s_d + \varepsilon_{it}$$

where, Y_{id} is the log-transformed first differenced bidding prices or offtake under OMSS of wheat recorded in district i at time d (weekly); $Retail\ Price_{id}$ is the log-transformed first differenced retail prices across districts at time d; C_s is a dummy variable which takes the value '*1*' for wheat consuming states and '*0*' otherwise. α_i is the state-district-specific fixed effect, w_d is the week fixed effect, s_d is the state-week fixed effect and ε_{id} is the error term.

Table 4: Relationship between Retail and OMSS Bid Prices

	OMSS Price	**OMSS Offtake**
Consuming States	0.1344*** (0.082)	0.014 (0.452)
Retail Price	0.081*** (0.033)	3.816*** (0.757)
Constant	-0.045*** (0.020)	-1.090*** (0.022)
State-District (Dummy)	Yes	Yes
Week (Dummy)	Yes	Yes
State-Week (Dummy)	Yes	Yes
No. of Observations	3576	3576
R-squared	0.46	0.42

Notes: 1. Robust Standard errors (clustered at district level) are reported in parentheses.
2. *, **, *** represents 10 per cent, 5 per cent and 1 per cent level of significance.
3. The period of analysis is from June 28, 2023, to February 23, 2024.
Source: Authors' estimates

The results indicate that in consuming states, agents responded to OMSS-D in an efficient manner as evident from increasing bid prices and higher offtake with higher retail prices due to robust demand. This indicates that market participants were willing to pay more in anticipation of favourable margins, which was further supported by the prevailing higher retail prices. The strong offtake demonstrates not only the efficiency with which agents engaged in the auctions but also the robustness of consumer demand in the open market. Together, these trends suggest that

V. Conclusion

The Open Market Sales Scheme – Domestic (OMSS-D) for wheat has emerged as an effective policy instrument for stabilising wheat prices amid supply-side disruptions driven by climate extremes and geopolitical uncertainties. By systematically releasing wheat from buffer stocks through weekly e-auctions, the government enhanced market availability, leading to a notable reduction in both mandi and retail prices.

The event study and Difference-in-Difference (DiD) analyses demonstrate that the announcement of OMSS-D alone triggered a decline in mandi prices, while actual auction offtake further eased retail prices. Furthermore, OMSS-D operations effectively aligned with market signals, ensuring smooth participation, competitive bidding, and distribution of stocks to meet the growing demand in consuming states. The success of OMSS-D in curbing wheat inflation provides key insights for future policy interventions aimed at stabilising food prices, particularly during climate-induced supply constraints and global market fluctuations. A well-calibrated supply-side measures strengthen market confidence, enhances transparency in distribution, and complements long-term agricultural policies aimed at sustainable production and equitable access to food.

References

Anand, R., Kumar, N., & Tulin, M. V. (2016). *Understanding India's food inflation: The role of demand and supply factors.* Washington, DC: International Monetary Fund.

Bal, S. K., Prasad, J. V. N. S., & Singh, V. K. (2022). Heat wave impacts on agriculture during 2022. In *Heat wave 2022: Causes, impacts, and way forward for Indian agriculture* (Technical Bulletin No. ICAR/CRIDA/TB/01/2022). Hyderabad: ICAR–Central Research Institute for Dryland Agriculture.

Basu, K. (2010). *The economics of foodgrain management in India* (Working Paper No. 2/2010). New Delhi: Ministry of Finance, Government of India.

Bathla, S., & Hussain, S. (2022). Structural reforms and governance issues in Indian agriculture. In *Indian agriculture towards 2030* (pp. 251–296). New Delhi: Springer.

Baumann, R. (2001). *Brazil in the 1990s: An economy in transition.* New York: Palgrave Macmillan.

Card, D. (1990). The impact of the Mariel boatlift on the Miami labor market. *ILR Review, 43*(2), 245–257.

Eliazer Nelson, A. R. L., Ravichandran, K., & Antony, U. (2019). The impact of the Green Revolution on indigenous crops of India. *Journal of Ethnic Foods, 6*(8), 1–7. https://doi.org/10.1186/s42779-019-0009-4

Fischer, S., & Easterly, W. (1990). The economics of the government budget constraint. *The World Bank Research Observer, 5*(2), 127–142.

Food Corporation of India. (n.d.). Objective. Retrieved from https://fci.gov.in/headquarter/view/Objective-633

Galiani, S., Gertler, P., & Schargrodsky, E. (2005). Water for life: The impact of the privatization of water services on child mortality. *Journal of Political Economy, 113*(1), 83–120.

Gulati, A., & Saini, S. (2017). *Price distortions in Indian agriculture.* New Delhi: Indian Council for Research on International Economic Relations.

Gupta, S. C., & Sethi, J. D. (1967). Food policy: Objectives and instruments. *Economic and Political Weekly, 2*(19), 683–693.

Leeper, E. M. (1991). Equilibria under "active" and "passive" monetary and fiscal policies. *Journal of Monetary Economics, 27*(1), 129–147.

Lesk, C., Rowhani, P., & Ramankutty, N. (2016). Influence of extreme weather disasters on global crop production. *Nature, 529*(7584), 84–87.

Panda, M. (2024). Evolution of India's policy response to hunger, nutrition, and food security since independence. In S. M. Dev, A. Ganesh-Kumar, & V. L. Pandey (Eds.), *Achieving zero hunger in India.* Singapore: Springer.

Patra, M. D., Bhattacharyya, I & John, J. (2025). Pushing Back Post-pandemic Price Pressures: A Monetary-Fiscal Symphony. *Economic and Political Weekly*, 59(21): 33-39.

Patra, M. D., & Kapur, M. (2010). *A monetary policy model without money for India* (IMF Working Paper No. 10/183). Washington, DC: International Monetary Fund. https://doi.org/10.5089/9781455202180.001

Saini, S., & Gulati, A. (2016). India's food security policies in the wake of global food price volatility. In *Food price volatility and its implications for food security and policy* (pp. 331–352). Rome: FAO.

Sargent, T. J., & Wallace, N. (1981). Some unpleasant monetarist arithmetic. *Federal Reserve Bank of Minneapolis Quarterly Review, 5*(3), 1–17.

Smith, N. W. (2016). Food policy. In *Reference module in food science.* Amsterdam: Elsevier.

Thornton, P. K., Ericksen, P. J., Herrero, M., & Challinor, A. J. (2014). Climate variability and vulnerability to climate change: A review. *Global Change Biology, 20*(11), 3313–3328. https://doi.org/10.1111/gcb.12581