

Climate Shocks, Food Supply, and Prices

Do We Need to Rethink Macroeconomic Policies?

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India's recent experience with food inflation reveals a complex and deepening interaction between climate shocks and macroeconomic vulnerabilities. From 2022 to 2024, the country has faced the most intense climate disruptions in recent history—marked by consecutive years of record-breaking heatwaves, erratic monsoons, and sustained rainfall deficits in key agricultural regions. These climate anomalies not only depressed cereal yields, particularly of wheat and rice, but also disrupted public procurement, depleted foodgrain stocks, and sustained food price pressures for nearly five years. The convergence of these shocks created a unique and protracted inflationary episode, posing difficult questions about the adequacy of existing agricultural, trade, and macroeconomic policy frameworks. The paper brings these strands together with a detailed empirical narration in a comparative framework.

It documents the simultaneous disruption of India's wheat and rice production cycles in multiple seasons, with shortfalls exceeding those seen during earlier episodes such as 2009–2010 and 2015–2016. For the first time, all three staple cereal crops (kharif rice, rabi rice, and rabi wheat) underperformed against official targets in two successive years. Procurement shortfalls were most striking in Madhya Pradesh (MP), revealing mismatches between official output estimates and actual market behaviour, possibly exacerbated by data weaknesses (for example, outdated crop-cutting techniques) and policy missteps. Against the successive harvest failures, particularly for wheat, the steep declines in public stocks raised food security concerns.

In response, the government implemented a wide range of supply-side controls, including outright export bans, stockholding limits, elevated import duties, and intensified open market operations. These measures helped moderate price spikes. However, they also generated substantial inefficiencies, for example, discouraging private market participation and blunting the initial policy objective. International trade restrictions, especially on rice exports, strained global markets and attracted criticism. Notably, trade instruments were deployed far more frequently and stringently than in any prior crisis, underscoring the increased need and/or diminished effectiveness in checking prices, including in the absence of imports.



Food inflation dynamics reveal critical differences from historical norms. Since 2021, food price increases have contributed over 70 per cent to headline Consumer Price Index (CPI) inflation in some quarters. Volatility has risen. The traditional mean-reversion of food price spikes within a few months has diverged in this episode, with a marked increase in the price level indicating an indexed process. These changing patterns suggest that the conventional transitory view of food price shocks may not necessarily hold. The persistence of supply shocks amplified the growth–inflation trade-offs for monetary policy, compelling a delay in monetary easing even as core inflation pressures abated.

Comparing these dimensions over time, specifically with similar episodes in 2009–2011 and 2015–2016, the paper identifies changes that may be more fundamental than cyclical. For example, unlike past events, the clustering of heat and rainfall shocks over multiple seasons, the growing correlation between temperature and drought, and the inability of domestic buffers to absorb repeated shocks suggest a shift in the climate–food–economy relationship. This could deepen in the future as climate models project a higher frequency of extreme weather events and deeper yield losses, particularly in the Indo-Gangetic Plain (IGP).

From a policy standpoint, the implications are multi-fold. Agricultural policy must move beyond traditional self-sufficiency goals—towards internal liberalisation and dynamic risk-sharing mechanisms, including calibrated trade integration and targeted adaptation strategies. Trade policy requires greater transparency, rule-based triggers, and flexibility to enable countercyclical responses. Supply-side management must be modernised through real-time data systems and technological yield assessments. Monetary policy may need to augment headline inflation targeting, for example, with climate-adjusted core measures or conditional bands, to limit credibility risks while adapting to longer periods of disinflation. Finally, fiscal policy will need to accommodate growing welfare costs, rural income support, and investment in climate-resilient agriculture—without crowding out public investment or impairing debt sustainability.

Furthermore, the Indian experience from 2021 to 2024 offers a compelling case for rethinking macroeconomic policy through the lens of rising climate risks. The persistence, simultaneity, and structural nature of recent shocks point to the need to recalibrate policy frameworks and design for sustainability. Without such adaptation, India risks entering a new equilibrium defined by chronic food inflation, rising inequality, and diminished policy effectiveness.

About the author



Renu Kohli is an economist with research and practitioner experience on macroeconomic policies and issues. She has previously worked with the RBI, the IMF and thinktanks including ICRIER and the Institute of Economic Growth. Her work has focused on financial sector liberalization, capital flows and exchange rate management in emerging markets with special India focus, international macroeconomic coordination, and recently, the macroeconomic impact of decarbonization in India. She has been published in refereed journals such as the *Review of Development Economics*, *Journal of Development Studies*, *Journal of Asian Economics*, Oxford University Press, IMF Working Papers, RBI Staff papers, and contributed to edited volumes. She has exposure to multilateral surveillance including Article IV missions; as short-term expert with IMF Institute, her training missions include courses on financial programming & policies and macroeconomic diagnostics. Dr. Kohli has wider engagement with the private financial sector and investors through talks, presentations and consultation on Indian macroeconomic policies. She also serves as an independent director on the board of NCML Ltd and NFIN.

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