

# Price Volatility in Vegetable Markets of Tamil Nadu: A Comprehensive Review

Elangovan P<sup>1</sup>, Aslam N. M.<sup>2</sup> and Paramasivan M<sup>1</sup>

<sup>1</sup>Regional Research station, Vridhachalam, TNAU

<sup>2</sup>Assistant Director of Agriculture, Kollengode

Corresponding Author: [paramasivan.m@tnau.ac.in](mailto:paramasivan.m@tnau.ac.in)

## Abstract

Price volatility in the vegetable markets of Tamil Nadu presents significant economic and social challenges. This review synthesizes key findings from empirical studies and institutional reports to understand the causes, patterns, and consequences of vegetable price fluctuations. The review highlights how factors such as erratic weather, limited storage infrastructure, inefficient market systems, and speculative practices contribute to the volatility. It also examines the impact of price instability on farmers' incomes and consumers' food security, and evaluates the effectiveness of current policy measures. Furthermore, the study identifies future directions for research and policy, including digital supply chains, early warning systems, and climate-resilient agricultural practices. The findings underscore the need for integrated interventions aimed at stabilizing prices and improving the resilience of vegetable markets in Tamil Nadu.

**Keywords:** Price Volatility, Vegetables, Tamil Nadu, Climate Change, Market Infrastructure, Policy Interventions

## Introduction

Tamil Nadu, a major producer and consumer of vegetables in South India, regularly faces the issue of price volatility in its vegetable markets (Selvaraj et. al., 2021). The state's climatic variability, coupled with the perishable nature of vegetables and weak supply chains, has led to frequent price fluctuations. This adversely affects both ends of the market: farmers receive low returns during gluts, while consumers face soaring prices during shortages. The review aims to examine the causes and patterns of price volatility, analyze its impacts, and evaluate policy responses while recommending future strategies to mitigate the issue (Dhotre et. al., 2025).

## Nature and Extent of Price Volatility

Vegetable price fluctuations in Tamil Nadu are typically measured using indicators such as the Cuddy-Della Instability Index, Coefficient of Variation, and GARCH models (Kumar et. al., 2023). Tomatoes, onions, and brinjal are among the most

price-volatile vegetables. While seasonal price trends are common—low during harvest peaks and high during lean periods—external shocks often override these patterns, leading to severe boom-and-bust cycles. Farmers may abandon their harvest during gluts, while consumers suffer high costs during scarcity (Joshi, 2015).

## Factors Influencing Price Volatility

### Supply-Side Factors

Weather anomalies, including erratic rainfall and extreme temperatures, disrupt production and transport. Tamil Nadu's reliance on monsoon rains makes it particularly vulnerable. Lack of cold storage, concentration of production in specific regions, pest outbreaks, and volatile input costs further exacerbate supply-side instability (Agarwal et. al., 2020).

### Demand-Side Factors

Population growth, rising incomes, and seasonal festivals increase demand unpredictably. Additionally, hoarding and speculative practices by middlemen can create artificial shortages (Desai & Lemley, 2023).

### Market System Inefficiencies

Multi-layered traditional supply chains, poor road infrastructure, lack of market information, and inadequate farmer-consumer linkages result in inefficient price transmission and post-harvest losses.

### Impact of Price Volatility

Volatility negatively affects farmers by creating income uncertainty and discouraging crop planning. Consumers, particularly those from lower-income households, face unstable food expenditures, increasing the risk of food insecurity. From a macroeconomic perspective, vegetable price swings significantly contribute to food inflation, complicating policy objectives (Wossen et. al., 2018).

### Policy Interventions and Mitigation Strategies

Efforts to control price volatility include the central government's Price Stabilization Fund (PSF), which supports buffer stocking and market interventions. Tamil Nadu's initiatives such as Fair Price Shops, Farm Fresh Outlets (Pannai Pasumai),

and mobile vegetable vans improve price access for consumers. Reforms in APMC laws and infrastructure investments in cold storage and transport are underway. Digital agri-tech startups are helping streamline logistics and pricing. Formation of FPOs is encouraged to improve market power and bargaining capacity of farmers (Sathiya et. al., 2019).

### Future Research and Policy Directions

Advanced early warning systems, climate-resilient crop varieties, and data-driven forecasting models (e.g., ARIMAX, LSTM) are needed. Strengthening FPOs and integrating supply chains through digital platforms can reduce inefficiencies. Additionally, rigorous evaluation of existing policies will ensure adaptive learning and refinement of interventions. Emphasis should also be placed on inclusive market access and decentralized decision-making. (Afzal et. al., 2025; Ghosh & Ghosh, 2023)

### Conclusion

Price volatility in Tamil Nadu's vegetable markets is a multi-dimensional challenge influenced by climate, infrastructure, and market inefficiencies. While various policy interventions exist, a comprehensive, technology-driven, and inclusive strategy is essential for price stabilization. Strengthening farmer collectives, investing in cold chains, and deploying real-time data systems will be critical to ensuring income security for farmers and food security for consumers.

### References

Afzal, M., Saeed, I. A., Sohail, M. N., Saad, M. H. M., & Sarker, M. R. (2025). IoT-Enabled Adaptive Watering System with ARIMA-Based Soil Moisture Prediction for Smart Agriculture. *IEEE Access*.

Aggarwal, P., Roy, J., Pathak, H., Kumar, S. N., Venkateswarlu, B., Ghosh, A., & Ghosh, D. (2020). Indian agriculture towards 2030. *Pathways for enhancing farmers' income, nutritional security and sustainable food systems*.

*Thematic Session: Climate Change And Risk Management Discussion Paper: Managing Climatic Risks in Agriculture*, 1-19.

- Desai, D. R., & Lemley, M. A. (2023). Scarcity, regulation, and the abundance society. *Frontiers in Research Metrics and Analytics*, 7, 1104460.
- Dhotre, M., Nithin, K. N., Kolluru, R., & Desai, S. (2025). Recurring Onion and Tomato Crises in India: A Critical Analysis and Future Perspectives. In *Emerging Trends in Food and Agribusiness Marketing* (pp. 123-160). IGI Global.
- Ghosh, A., & Ghosh, A. (2023). Farmer Producer Organizations (FPOs): An emerging way of Strengthening Agricultural Sector. *Indian Farmer*, 10(6).
- Joshi, P. K. (2015). Has Indian agriculture become crowded and risky? Status, implications and the way forward. *Indian Journal of Agricultural Economics*, 70(1).
- Kumar, K. S., Ilakiya, T., & Gowthaman, T. (2023). Price instability, seasonal index and modelling for major vegetables in India. *Journal of Applied Horticulture*, 25(2), 219-223.
- Sathiya, R., Banumathy, V., & Tamilselvi, G. (2019). Buying behaviour of consumers through cooperative vegetable store: A case study of Pannai Pasumai nugarvor kooturavu kadai (PPNKK) in Chennai city. *Indian Journal of Agricultural Marketing*, 33(1), 73-81.
- Selvaraj, K. N., Parimalarangan, R., & Karunakaran, K. R. (2021). Vegetables Supply Chain Challenges and Salvage during the Pandemic in Tamil Nadu, India.
- Wossen, T., Berger, T., Haile, M. G., & Troost, C. (2018). Impacts of climate variability and food price volatility on household income and food security of farm households in East and West Africa. *Agricultural systems*, 163, 7-15.

\*\*\*\*\*