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From Regulation to Liberalization: Impact of Deregulating Horticultural Markets

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Agricultural markets play a crucial role in food system transformation. By establishing connections among producers, traders, commission agents, processors and consumers, they facilitate physical movement of goods and exchange of information and financial resources. This process based on demand and supply of commodities determines their prices, which in turn influence farmers' decisions on crop selection and resource allocation. Well-functioning markets ensure a more equitable distribution of value along the supply chain, narrowing the price spread and thereby creating incentives for farmers to diversify their crop portfolio and adoption of innovative farming practices. Moreover, a competitive market structure encourages private investment in market infrastructure, including storage, processing and logistics, which further contribute to rural transformation.

Nonetheless, agricultural marketing systems in India remain fragmented and underdeveloped due to inadequate infrastructure, high transportation costs, limited access to market information, and the presence of intermediaries[1]. These factors hinder the efficient flow of produce, negatively impact farm incomes, and inflate consumer prices, highlighting the need for reforms in agricultural markets.

Agricultural market regulation and reforms in India

Agricultural marketing in India is regulated by the Agricultural Produce Marketing Regulation (APMR) Act, which was enacted by various states during the 1960s and 1970s, coinciding with the onset of the Green Revolution. This Act aims to ensure fair price discovery, protect farmers from exploitation by traders, and support them by developing market infrastructure and a regulatory system for marketing functionaries. The Agricultural Produce Market Committees (APMCs) are responsible for implementing the provisions of the Act. Under the Act, farm produce must be sold in designated APMC regulated markets through licensed traders and commission agents.

Over time, the APMR Act has facilitated the development of an organized agricultural marketing system in the country. However, structural rigidities have also cropped up, leading to malpractices that disadvantage farmers. These issues include the presence of multiple intermediaries colluding with each other[2], as well as high commission rates and market fees[3], all of which contribute to a lack of transparency in price discovery and reduced prices for farmers.

Recognizing these distortions, the Government of India over the past two decades has undertaken a series of reforms to foster a more competitive market environment. These reforms sought to dismantle restrictive policies and regulatory bottlenecks that previously hindered efficient price discovery and participation of agribusinesses in agricultural markets. Reforms also focused on enhancing the efficiency of agricultural markets through the modernization of market infrastructure, improving market information systems, and facilitating direct linkages between producers and buyers. These include:

- The Model APMC Act, introduced in 2003 by the Government of India, was meant to facilitate the establishment of private markets, foster public-private partnerships in agricultural markets, implement a single-point levy of market fees, allow contract farming and direct marketing, and enable e-trading. However, the implementation of these

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[1] GoI. (2013). *Final Report of Committee of State Ministers, in-charge of agricultural marketing to promote reforms.* Ministry of Agriculture, Government of India.

[2] Meenakshi, J. V., and Banerji, A. (2005). The unsupportable support price: An analysis of collusion and government intervention in paddy auction markets in North India. *Journal of Development Economics*, 76: 377–403.

[3] Nuthalapati, C.S., Sutradhar, R., Reardon, T., and Qaim, M. (2020). Supermarket procurement and farmgate prices in India. *World Development*, 134: 105034.

provisions by states has been inconsistent, with some states only partially amending their APMR Act by selectively adopting certain provisions.

- In 2016, the Government of India introduced e-NAM (electronic National Agricultural Market) to enable electronic trading of agricultural produce. This initiative aimed to create a unified digital trading platform that connects APMC markets, thereby enhancing price discovery and promoting national market integration. By June 2025, a total of 1,522 regulated markets across 23 states and 4 Union Territories had been linked to e-NAM.
- The Government of India introduced the Model Agricultural Produce and Livestock Marketing (Promotion and Facilitation) Act in 2017, and the Model Agricultural Produce and Livestock Contract Farming and Services (Promotion and Facilitation) Act in 2018 to further liberalize agricultural markets by broadening the scope of reforms to encompass livestock and livestock products and allow contract farming beyond the jurisdiction of APMCs.
- In 2020, the Government of India enacted three farm laws to facilitate the sale of agricultural produce outside Agricultural Produce Market Committees (APMCs), thereby promoting private sector participation in agricultural markets. However, these laws were repealed in November 2021 due to widespread opposition from farmers, who expressed concerns regarding potential corporate dominance and the erosion of price assurance.
- Running parallel to the agricultural marketing reforms, the deregulation of fruits and vegetables (F&V) from the Agricultural Produce Market Committee (APMC) was a significant policy shift aimed at enhancing market efficiency and farmer incomes. By removing these commodities from the restrictive APMC framework, the Government sought to dismantle traditional market monopolies and intermediaries that limited farmers' access to competitive pricing and diverse buyers. This deregulation aimed at promoting alternative marketing channels such as direct sales, contract farming, and private marketplaces, thereby providing producers with greater flexibility to negotiate terms and improve their income prospects.

Deregulation of horticultural crops from APMCs

Driven by increasing demand, horticulture has emerged as a driver of agricultural growth, potentially offering greater benefits to smallholders who are more engaged in it. However, their poor access to finance and markets restricts them to fully capitalize the potential benefits[4]. To address these, the Government of India launched the National Horticulture Mission (NHM) in 2005–06 to promote horticulture by providing financial assistance for quality inputs such as seeds, planting materials, and micro-irrigation systems. The Mission also encouraged post-harvest management by offering financial support to states for developing cold storage facilities, refrigerated transportation, collection centers, and grading and packaging units. While the mission successfully boosted horticultural production, marketing challenges—such as fragmented supply chains, limited market access, and inadequate price discovery mechanisms—continued to hinder farmers from securing better prices.

To alleviate marketing constraints for farmers, it is imperative to enhance market competitions. In line with this, the financial assistance provided to states under the NHM for market infrastructure was, in 2010, made contingent upon the delisting of fruits and vegetables from APMCs. This initiative imposed two conditions: (i) allowing direct marketing between farmers and buyers, including processors, retailers, exporters, and cooperatives, and (ii) eliminating market fees on fruits and vegetables. Between 2012 and 2016, 14 states denotified fruits and vegetables, starting with Madhya Pradesh in January 2012, followed by Chhattisgarh, Rajasthan, Nagaland, Assam, Meghalaya, Karnataka, Himachal Pradesh, Haryana, Delhi, West Bengal, Odisha, Gujarat, and Maharashtra. However, there is no conclusive evidence regarding the potential impact of this reform. It is hypothesized that this reform could improve farmers' market access and realize higher prices for their produce.

Impact of deregulation

The impact of the deregulation on prices was assessed using monthly AGMARKNET data (2009–2019) for seven key crops; three fruits, namely, apple, banana, and papaya, and four vegetables, namely, tomato, onion, potato, and brinjal, across 12 deregulated and 8 non-deregulated states. Pre- and post-deregulation differentials in market prices were estimated. The analysis is confined up to December 2019 due to a break in the data series caused by restrictions on the movement of goods and services during the COVID-19 pandemic, and policy changes.

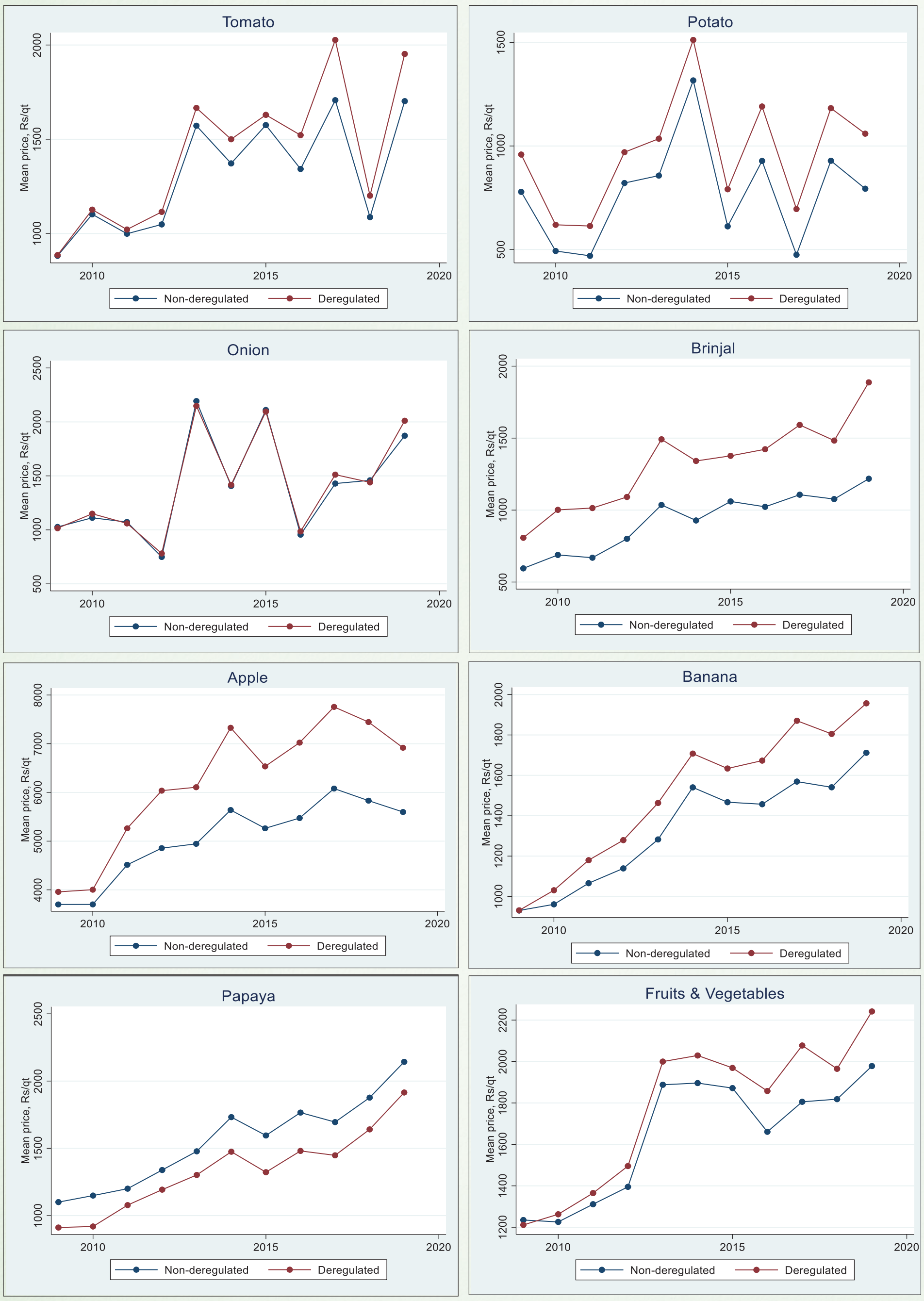
A straightforward comparison of the trends in the arrival-weighted average market prices of selected crops, between states that deregulated horticultural

[4] Dev, S. M. (2012). Small farmers in India: Challenges and opportunities. Working Paper 2012-014, Indira Gandhi Institute of Development Research, Mumbai.

crops from the APMCs and those that did not, is shown in Figure 1. Comparative trends indicate that, except for papaya, the market prices for all crops are consistently higher in deregulated states. Notably, the increasing price divergence between the two groups reflects improvement in market competition following deregulation. However, these price differentials should be interpreted with caution. Average prices can mask inter-market price variations both within and among states. Furthermore, price differentials may not be solely due to deregulation. Various state-specific factors, such as climate conditions, production costs, transportation infrastructure, produce quality, and consumer preferences, could also play significant roles in differentiating price levels between the two categories of states.

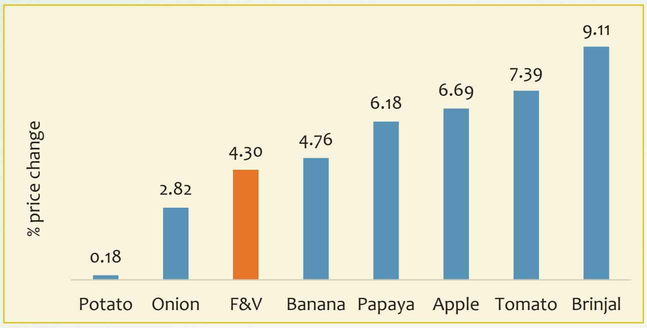
To derive robust estimates on impact of deregulation, a fixed-effects regression model is employed, including reform dummy, price lags, and market arrivals (proxy for supply fluctuations) as independent variables, and effectively controlling for state characteristics (e.g., geography, cost structure, cropping patterns, infrastructure), common temporal trends (e.g., inflation, macroeconomic changes). The findings presented in Figure 2 reveal that in states where fruits and vegetables have been delisted from the APMCs, farmers receive prices that are 4.3% higher than those in regulated states. The effect is more pronounced for high perishable vegetables such as tomatoes and brinjals. For potatoes, the impact of deregulation is positive but not statistically significant, possibly due to its semi-perishable nature and the presence of an established cold chain. Among fruits, its effects are more pronounced in the case of apples and papayas.

Figure 1. Price trends in horticultural crops in deregulated and non-deregulated states



These findings compellingly demonstrate that integrating financial assistance with market reforms can serve as a powerful catalyst for transforming the agricultural marketing landscape. This strategic linkage not only propels private agribusinesses into active participation but also enhances market competition, ultimately empowering farmers to secure higher prices. Currently, Farmer Producer Organizations (FPOs), with over 4,600 registered at e-NAM and 5,000 at open network for digital commerce (ONDC), facilitate direct connections between farmers and consumers, thereby eliminating intermediaries.

Figure 2. Estimated price difference between deregulated and non-deregulated states



Policy Implications

The liberalization of horticultural markets has several policy lessons for the advancement of reforms in agricultural marketing.

- The liberalization of agricultural markets enables producers to respond more effectively to consumer demand, thereby fostering the diversification of crop portfolios and the development of value chains which reduce both production and market risks for farmers. Furthermore, it attracts private investment in areas such as cold storage, grading, packaging, and logistics, where public investment has been insufficient, which is crucial for export-oriented commodities to tap their international markets.

- While market reforms may encourage private participation, public investments are necessary to achieve inclusive growth. Infrastructure like rural roads, logistics, cold storage, and market information systems should be strengthened to ensure that smallholders benefit from market liberalization. It is also expected that with market reforms, agricultural supply chains will begin an alignment with international standards in quality and food safety, opening new avenues for export and value addition. Certification, branding, and traceability systems need to be emphasized.

- It is highly likely that the liberalization of markets, which permits private trade outside APMC-designated markets and eliminates market fees, could affect their financial sustainability, which is crucial for offering essential services such as sanitation, security, storage facilities, and basic amenities. To address this challenge, APMCs are to be restructured as service provider charging user-fee for the services provided, ensuring a consistent revenue stream for APMCs.

- While market reforms may increase efficiency and market access, there are concerns about the potential exploitation of farmers by agribusiness players, especially in the absence of robust institutional safeguards. Without clearly defined contracting frameworks, farmers may face ambiguous terms that favor buyers, leading to unfair pricing and delayed payments. Implementing transparent price benchmarking mechanisms is essential to ensure farmers receive remunerative prices aligned with market realities, thereby preventing arbitrary price setting. Additionally, accessible legal recourse and efficient dispute resolution systems must be established to protect farmers' rights and provide timely remedies in cases of contract breaches or unfair practices.

- Finally, while a progressive market facilitates greater participation of private players and reduces market distortions, yet without adequate institutional readiness, benefits may be unevenly distributed, potentially exacerbating inequities among smallholder farmers. To ensure equitable outcomes, it is critical to implement complementary reforms that empower marginalized groups and strengthen the overall market ecosystem. Key among these reforms is capacity building for Farmer Producer Organizations (FPOs) and smallholder farmers, which equips them with the negotiation skills and organizational strength necessary to engage effectively with private buyers and secure better terms. Additionally, investing in post-harvest management infrastructure—especially in regions producing highly perishable crops—can reduce losses and improve product quality, thereby enhancing market competitiveness. The development of data-driven market intelligence systems is also vital, as real-time information on prices, demand patterns, and logistics enables stakeholders to make informed decisions and respond swiftly to market fluctuations. Finally, integrating agri-tech startups introduces innovative solutions such as precision logistics, automated grading and assaying, and digital payment platforms, which collectively streamline operations and increase transparency across the supply chain.

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