



International Journal of Research in Finance and Management

P-ISSN: 2617-5754

E-ISSN: 2617-5762

IJRFRM 2025; 8(2): 55-64

www.allfinancejournal.com

Received: 26-04-2025

Accepted: 24-05-2025

Dr. Syeda Rukhsana Khalid
Amjad Ali Khan College of
Business Administration,
Hyderabad, Telangana, India

From Mandis to Markets: Institutional reforms and the challenge of inclusion in India's commodity futures ecosystem

Syeda Rukhsana Khalid

DOI: <https://www.doi.org/10.33545/26175754.2025.v8.i2a.530>

Abstract

This paper offers a historical and institutional study of the evolution of India's commodity futures markets, tracking their metamorphosis from traditional mandis to demutualized electronic exchanges. It examines three key phases: informal pre-Independence market systems, statist post-Independence regulation, and post-liberalization modernization. Drawing on archival policy sources and descriptive quantitative data covering 2003-2022, the study overlays institutional transitions with patterns in commodity trade volumes (peaking at ₹1.81 lakh crore in 2011-12), CPI food inflation trajectories, and rural income proxies. Its objectives are to (1) chronicle the sequence of institutional reforms, (2) assess the alignment between policy intentions and market outcomes, and (3) evaluate the inclusivity of these markets, particularly for smallholder farmers. The findings from the study highlight persistent tensions between liberalization and grassroots integration: while reforms have fostered formal market growth, deep structural and infrastructural barriers are continued to limit farmer participation. By combining diachronic institutional analysis with empirical overlays, the paper provides insights into regulatory fragility, market volatility, and the challenges of achieving inclusive transformation within India's commodity futures ecosystem.

Keyword: NCDEX, SEBI, India, commodity futures, institutional reforms, market liberalisation, financial inclusion, agricultural markets, farmer participation, regulatory architecture, price risk, agriculture finance.

1. Introduction

India's commodity trading landscape has undergone a profound transformation, shifting from localized, informal haats and caste-bound mandis to highly regulated, dematerialized futures exchanges. Historically rooted in seasonal arbitrage and socio-cultural practices, these traditional markets offered limited opportunities for formal price discovery or structured risk management. Colonial-era interventions, such as the Bombay Cotton Contracts Act (1925), and post-Independence measures like the Forward Contracts (Regulation) Act (1952), laid the initial legal foundation for state oversight, albeit largely serving centralized policy goals.

Despite these early regulatory frameworks, the effective integration of producers particularly smallholder farmers into formal commodity markets remained limited. The liberalization of India's economy in the 1990s catalysed a new modernization phase, culminating in the establishment of national-level exchanges like the Multi Commodity Exchange (MCX) and the National Commodity & Derivatives Exchange (NCDEX) in 2003. Regulated initially by the Forward Markets Commission (FMC), these platforms introduced algorithmic trading, screen-based contracts, and enhanced market surveillance. A major regulatory inflection point occurred in 2015 with the merger of the FMC into the Securities and Exchange Board of India (SEBI), consolidating commodity derivatives under a unified financial market framework. However, technological modernization and regulatory have not translated into broad-based farmer participation. Structural asymmetries, low digital and financial literacy, infrastructural gaps and political resistance particularly from entrenched mandi lobbies continue to limit grassroots inclusion. National initiatives like the electronic National Agriculture Market (e-NAM) have aimed to unify markets, but adoption remains uneven and institutionally fragmented.

Correspondence Author:

Dr. Syeda Rukhsana Khalid
Amjad Ali Khan College of
Business Administration,
Hyderabad, Telangana, India

This study addresses the disconnect between institutional reform and inclusive access to commodity futures markets through a historical-institutional lens.

The historical trajectory of India's commodity derivatives market has been shaped by alternating periods of liberalization, regulatory conservatism, and policy-driven revival. Khalid and Jessica (2017) ^[6] provide a detailed account of this evolution, documenting the long hiatus between mid-20th-century bans and the resurgence of national exchanges in the early 2000s. Their study traces how the Forward Contracts (Regulation) Act of 1952 and the establishment of the Forward Markets Commission (FMC) laid the regulatory foundation, which was subsequently expanded through reforms following the recommendations of the Kabra and Khusro Committees. This historical legacy highlights the top-down, state-led architecture of India's futures markets, which continue to reflect institutional priorities over spontaneous market forces.

It pursues three key objectives

- to chronicle the evolution of commodity futures market regulation in India from colonial times to the present;
- to evaluate the impact of major regulatory reforms using trade volume patterns, food inflation data, and rural income indicators; and
- To examine the structural and systemic barriers that continue to constrain farmer participation in futures markets.

Accordingly, the paper asks: To what extent have institutional reforms in India's commodity futures markets translated into inclusive market access, particularly for smallholder farmers? By combining diachronic policy analysis with descriptive empirical overlays, this study contributes to both historiographical and policy-focused scholarship. It offers a nuanced understanding of how reforms have shaped India's commodity market architecture, while often falling short of democratizing access or outcomes thereby highlighting persistent tensions between liberalization and inclusion.

2. Literature Review

The evolution of commodity futures markets in India has attracted substantial academic and policy attention, particularly across regulatory, infrastructural, and socio-economic dimensions. However, much of this literature remains concentrated on developments post-2000, with limited exploration of the historical and institutional continuities that underpin today's market structure. The absence of diachronic analysis restricts a holistic understanding of how legacy systems and reform cycles have shaped access, trust, and functionality in the contemporary derivatives landscape.

Foundational studies underscored deep inefficiencies in market functioning and the weak transmission of benefits to producers. Naik and Jain (2002) ^[18], Sahadevan (2008) ^[13], and Sen (2008) ^[14] demonstrated that despite the rapid expansion of trade volumes in commodity derivatives post-liberalization, tangible welfare gains for farmers particularly smallholders remained elusive. Basu and Rajeev (2013) ^[1] highlighted systemic infrastructural deficits, including

inadequate warehousing and cold storage networks, while Chatterjee *et al.* (2017) ^[2] noted that platforms like e-NAM often fail to overcome digital literacy and connectivity challenges in rural regions.

Srinivasan *et al.* (2022) ^[16] provided granular survey evidence showing that many farmers are aware of price risk but face a series of knowledge, trust, and access barriers to utilizing futures contracts effectively. These include a lack of embedded financial literacy, dependence on informal intermediaries, and minimal institutional handholding. Farmer exclusion is further amplified by the structural absence of aggregation mechanisms, high margin requirements, limited institutional credit, and procedural complexity all of which disproportionately disadvantage smallholders. Narayanan (2015) ^[12] and Gulati *et al.* (2021) ^[17] confirmed that market participation is often skewed in favour of large-scale traders and commercial players, reinforcing existing inequities within the agrarian marketing system.

These access barriers are compounded by policy volatility and the speculative orientation of the markets. Ghosh (2014) ^[4] underscored the institutional instability caused by abrupt commodity-specific bans, such as those affecting pulses (2007-08) and onions (2019), which weakened market confidence and discouraged both retail and institutional stakeholders. SEBI (2022) reported that fewer than 6% of commodity futures contracts result in physical delivery confirming earlier concerns raised by Sharma and Bose (2012) ^[15] suggesting that speculative trading continues to outweigh genuine hedging, particularly among those most vulnerable to price shocks.

Khalid and Jessica (2020) ^[8] conducted an empirical investigation using autoregressive distributed lag (ARDL) models and VAR-based Granger causality to explore the short- and long-run dynamics between NCDEX's AGRIDEX and the Wholesale Price Index (WPI) in India. The study found no evidence of a long-run co-integrating relationship between the two indices, but established a statistically significant short-run causality from agri-futures trading to inflation signals. These results indicate that while futures market activity may serve as a short-term indicator of inflationary movements, it does not exert structural or sustained influence on price levels. The study contributes to the ongoing debate on speculation and inflation by emphasizing the need for differentiated regulatory responses, rather than broad restrictions on commodity futures trading.

In contrast, comparative experiences illustrate the potential for more inclusive design. Gandhi and Jain (2016) ^[3] examined Brazil's futures ecosystem and found that the integration of warehousing, insurance, and rural credit significantly improved farmer participation. The FAO (2019) ^[19] likewise advocates for bundling price-risk mitigation tools with insurance and financing instruments, positioning such holistic models as vital for smallholder inclusion. Kurniawan *et al.* (2023) ^[9], studying Indonesia's chili value chain, echoed similar challenges of weak aggregation, limited contract enforceability, and poor market integration highlighting regional parallels to India's structural challenges.

In India's context, digital platforms like e-NAM have expanded significantly, reaching over 1260 APMCs and 5

million farmers by 2022. However, Gautam *et al.* (2023) ^[5] observed that participation remains uneven, shaped by factors such as distance from markets, device access, and a continued reliance on mandi agents. To address institutional mistrust and transaction opacity, Kumarathunga *et al.* (2020) ^[10] proposed a blockchain-enabled commodity trading framework that could strengthen collective marketing and transparency though such innovations are still in conceptual stages.

Historical and political economy perspectives remain underdeveloped. Few studies trace institutional transitions from colonial laws like the Bombay Cotton Contracts Act (1925) through post-Independence centralization (FCRA, 1952) to modern liberalization and the SEBI-FMC merger. Likewise, the role of local power structures mandi cartels, APMC resistance, and state-level political bargaining has received scant empirical attention, despite their critical influence on reform outcomes (Murali, 2020) ^[11].

There is also limited analysis of farmer-facing institutional strategies. Farmer Producer Organizations (FPOs) are widely touted in policy circles as a mechanism to aggregate produce and increase bargaining power, yet empirical evidence remains scarce. Srinivasan *et al.* (2022) ^[16] further found that even among informed farmers, procedural complexity and deep-seated mistrust of intermediaries limit meaningful market use. Addressing these issues requires an ecosystem approach involving literacy programs, simplified trading contracts, and accessible digital tools.

National institutions have increasingly recognized these challenges. NITI Aayog's "Doubling Farmers' Income" report (2017) called for the development of Gramin Agricultural Markets (GrAMs), enhanced warehousing, and seamless integration with digital platforms. The NITI Aayog Annual Report (2020-21) emphasized e-NAM expansion and cross-institutional partnerships to streamline commodity trade governance. Similarly, the Commission for Agricultural Costs and Prices (CACP) advocates for effective warehouse receipt systems, price forecasting tools, and a stronger linkage between MSP policies and market-based risk hedging.

More recent developments post-2020 have sought to further digitize and streamline agri-market infrastructure, partly in response to disruptions triggered by the COVID-19 pandemic. The Reserve Bank of India (RBI, 2022) highlighted the importance of integrating agricultural value chains into broader digital financial ecosystems, particularly through unified payment interfaces and rural fintech. SEBI's Commodity Derivatives Market Development Report (2023) ^[42] emphasized renewed efforts to simplify delivery-based contracts and reduce participation costs for smallholders. Simultaneously, the Ministry of Agriculture has proposed enhanced linkages between e-NAM and warehouse receipt systems to improve price discovery and liquidity. These initiatives mark an incremental shift from market access to market usability, though structural gaps in digital penetration and institutional trust remain salient. Thus, while the post-pandemic policy environment has accelerated platform upgrades, its impact on inclusivity and participation is still unfolding and requires further empirical scrutiny.

Collectively, the literature suggests that India's commodity derivatives markets have advanced in scale and

technological sophistication but remain institutionally and socially exclusionary. There is a growing consensus that policy must move beyond market formalization to market democratization emphasizing alignment of regulatory frameworks, financial inclusion strategies, and farmer-oriented infrastructure to fully realize the developmental potential of commodity futures. This study responds to that imperative by offering a longitudinal, institutionally embedded analysis that links reform phases with trade volumes, inflation dynamics, and farmer income trends.

3. Methodology

This study adopts a blended methodology combining a historical-institutional lens with descriptive quantitative analysis. The primary goal is to trace regulatory evolution while contextualizing it with trends in commodity trade volumes, food inflation, and rural incomes over time. This interpretive design emphasizes institutional sequencing and reform impact over econometric forecasting.

A mixed-method approach is employed, grounded in both archival and contemporary data sources. Historical legal and regulatory frameworks form the institutional baseline, including key statutes such as the Bombay Cotton Contracts Act (1925) and the Forward Contracts (Regulation) Act (1952), as well as expert committee reports, notably the Kabra Committee Report (1994) ^[23] and the Abhijit Sen Committee Report (2004) ^[20]. These sources are complemented by regulatory publications and policy documents issued by the Forward Markets Commission (FMC), the Securities and Exchange Board of India (SEBI), the Ministry of Agriculture and Farmers Welfare, and other relevant agencies.

The quantitative component underpins the empirical overlay and draws on multiple sources. Commodity trade volume figures for 2003-2022 are obtained from the Multi Commodity Exchange (MCX) and the National Commodity & Derivatives Exchange (NCDEX). Macroeconomic indicators, primarily the Consumer Price Index for Food (CPI-F) are sourced from the Reserve Bank of India (RBI) and the Ministry of Statistics and Programme Implementation (MOSPI). Rural income proxies are derived from the National Bank for Agriculture and Rural Development's (NABARD) All India Rural Financial Inclusion Survey and the National Sample Survey Office (NSSO) consumption and income rounds.

The methodological strategy integrates historical-institutional analysis with descriptive empirical overlays to examine the evolution and effectiveness of commodity futures reforms in India. It is primarily qualitative and interpretive, aiming to explore institutional performance rather than testing formal hypotheses.

The analysis proceeds in four key steps. First, a chronological mapping of major regulatory milestones such as the 2015 FMC-SEBI merger is developed to trace the institutional trajectory of reform. Second, commodity trade volume data are overlaid with these reform periods to identify inflection points in market activity and regulatory shifts. Third, a comparative assessment of macroeconomic indicators, specifically, trends in food inflation and rural incomes is conducted to evaluate reform effects over time. Finally, these reforms are interpreted as institutional signals that shape market confidence, participation patterns and

structural resilience.

Given the institutional and regulatory nature of the research problem, a descriptive overlay approach is employed instead of formal econometric modelling. This method enables greater interpretive depth, allowing reform events to be contextualized within their historical and policy environments without reducing them to abstract statistical constructs. It also offers analytical flexibility in tracing how state-led interventions have evolved across phases of liberalization, crisis, and consolidation.

Several methodological and data-related limitations should be noted. First, the availability of reliable pre-2003 data is limited, with many regulatory and market records either inconsistently digitized or unavailable in standardized formats. Consequently, the temporal scope of the analysis is anchored primarily in the post-liberalization period beginning in the early 2000s. Second, data granularity remains uneven across institutional sources, particularly concerning farmer-level participation metrics. While aggregate trade volumes and macroeconomic indicators are well documented, disaggregated data on smallholder engagement, regional contract usage, and delivery outcomes remain scarce or fragmented. Finally, while the descriptive and interpretive overlay approach supports historical continuity and contextual nuance, it may limit causal inference and broader generalizability across commodities or regions.

4. Empirical Findings & Analysis

India's commodity futures markets have experienced significant volatility and structural change over the past two decades. Following the launch of national-level electronic exchanges in 2003, trade volumes expanded dramatically from ₹1.3 lakh crore in 2003-04 to a pre-crisis peak of over ₹1,81,26,104 crore by 2011-12. This spectacular growth reflected strong investor confidence, supportive regulatory frameworks under the Forward Markets Commission (FMC), and the adoption of advanced trading technologies. However, the momentum was disrupted after 2012-13, triggered by the National Spot Exchange Limited (NSEL) crisis in 2013, which exposed systemic weaknesses and undermined trust. Subsequent policy uncertainty and a shift in regulatory oversight contributed to a contraction in trade volumes to about ₹17 lakh crore by 2014-15. The 2015 merger of the FMC with SEBI created a new unified regulatory regime, aiming to stabilize the sector and restore confidence.

From 2015-16 onward, trade volumes showed moderate recovery, reaching around ₹92 lakh crore by 2019-20. This rebound coincided with the rollout of the electronic National Agriculture Market (e-NAM), expanded SEBI oversight, and the introduction of a unified license for commodity brokers. The data also reveal the impact of COVID-19 disruptions in 2020, when temporary slowdowns and contract suspensions influenced trade patterns.

Table 1: Aggregate commodity futures trade volumes in India (₹ Crore)

Financial Year	Total Turnover (₹ Crore)
2002-03	66,530
2003-04	1,29,363
2004-05	5,71,759
2005-06	21,34,471
2006-07	17,00,000
2007-08	19,44,000
2008-09	49,00,000
2009-10	77,65,000
2010-11	1,19,49,000
2011-12	1,81,26,104
2012-13	1,70,46,840
2013-14	1,01,44,795
2014-15	17,00,000
2015-16	66,96,381
2016-17	64,99,637
2017-18	60,22,530
2018-19	73,77,945
2019-20	92,24,839

Source: FMC Annual Reports till 2015, SEBI Bulletin post-2015

Note: Post-2015 data sourced from SEBI. Sharp decline in 2014-16 reflects FMC-SEBI regulatory transition and restriction on food commodities.

Overall, these volume trends underscore the promise and fragility of India's commodity derivatives sector. Institutional reforms and technological modernization initially supported rapid market growth, yet recurrent shocks including governance failures and external crises have repeatedly interrupted momentum. Despite some recovery

under SEBI, the data suggest persistent challenges in achieving broad-based participation, particularly among smallholders. This cyclical pattern highlights the need for more resilient and inclusive institutional frameworks if the commodity futures ecosystem is to fulfil its risk-mitigation and price-discovery potential.

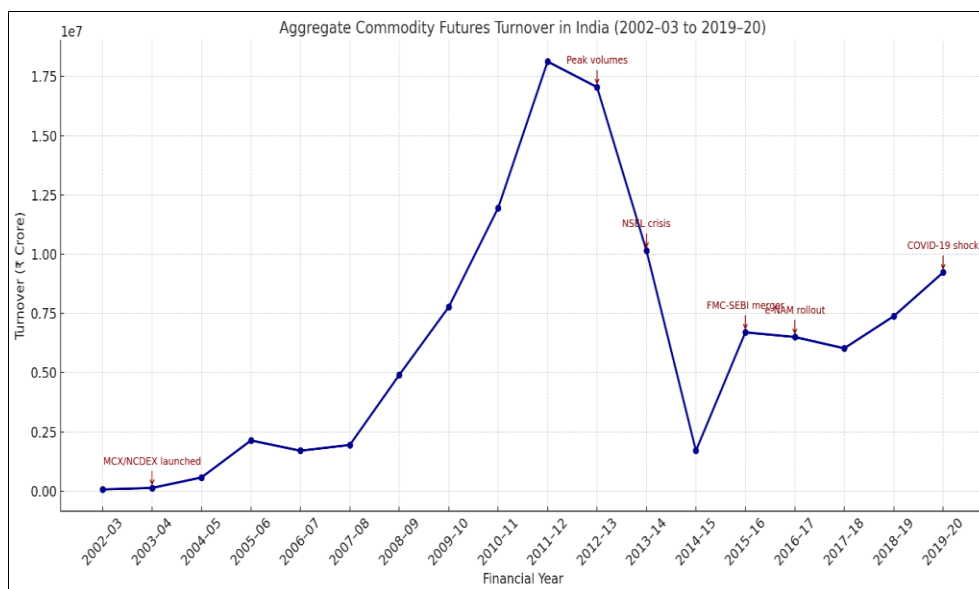


Fig 1: Commodity futures trade volumes in India (2003-2022)

Figure 1 illustrates the trajectory of India's commodity futures trade turnover from 2002-03 to 2019-20, highlighting key institutional reforms and market inflection points. The early 2000s marked the initial expansion of organized commodity trading, spurred by the launch of MCX and NCDEX in 2003-04 under a liberalized regulatory environment managed by the FMC. Trade volumes rose sharply from around ₹1.3 lakh crore to a peak of ₹1,81,26,104 crore by 2011-12, reflecting rising investor confidence, improved technological infrastructure, and supportive policy frameworks.

A sharp decline is visible between 2013-14 and 2015-16, coinciding with the fallout from the NSEL crisis, growing policy uncertainty, and the regulatory transition triggered by the FMC-SEBI merger. This contraction underscores the sector's vulnerability to governance failures and institutional instability.

The moderate recovery after 2015-16 corresponds with SEBI's strengthened oversight, the rollout of e-NAM in 2016, and expanded licensing for brokers, though volumes remained below the pre-crisis peak. In 2019-20, the chart shows another noticeable dip linked to the COVID-19 pandemic, which disrupted global commodity prices,

constrained supply chains, and reduced institutional participation.

Overall, the visual pattern underscores the cyclical, fragile nature of India's commodity futures ecosystem. Liberalization and platform growth initially catalysed impressive gains, but repeated institutional shocks and exogenous crises interrupted momentum. The gradual recovery after COVID-19 suggests a rebuilding of confidence within a maturing regulatory framework, but persistent challenges remain in integrating smallholder participation and achieving inclusive market access.

4.1 Inflation Overlay and Reform Impact

Price volatility, particularly in food commodities, often interacts with institutional decisions in futures markets. Periods of high CPI food inflation between 2008 and 2012 coincided with government-imposed bans on essential commodities such as pulses, alongside broader restrictions proposed during inflationary surges. These policy shifts though politically expedient contributed to uncertainty and dampened long-term confidence in futures markets.

Table 2: Annual Average CPI-Food Inflation, NCDEX Turnover, and Key Regulatory Events (2008-2022)

Year	CPI-Food Inflation (%)	NCDEX Turnover (₹ Crore)	Key Regulatory Events
2008	9.5	19,815	Pulse ban continues
2009	13.7	9,17,585	
2010	9.4	14,10,602	
2011	-0.48 (Feb-Dec avg)	18,10,210	
2012	11.0	15,98,426	High inflation; calls for restrictions
2013	—	11,46,328	
2014	6.53	9,04,063	
2015	5.8	10,19,588	SEBI-FMC merger
2016	4.9	5,96,852	Launch of e-NAM
2017	0.81	5,89,497	Unified licensing
2018	1.09	5,31,414	
2019	2.80	4,41,967	
2020	8.77	3,18,781	COVID-19 pandemic shock
2021	3.51	4,56,693	Ongoing SEBI commodity reforms
2022	6.44	2,04,932	

Source: Compiled from MOSPI, NCDEX Annual Reports, and SEBI/FMC bulletins.

Table 2 overlays annual CPI food inflation data with key regulatory events and NCDEX turnover figures for the period 2008-2022, providing a richer picture of how price trends, institutional reforms, and market participation have evolved in parallel. The data draws from MOSPI (2023), RBI Inflation Reports (2023), and NCDEX annual publications, highlighting the continued challenges of aligning market liberalization with price stability and inclusive access.

4.2 Rural Income and Inclusion Signals

Table 3 summarizes the trends in average monthly incomes of farmer households in India from 2002 to 2022, drawing on the National Sample Survey (NSS) Situation Assessment Surveys and NABARD's rural financial inclusion studies. The data indicate a steady but uneven rise in nominal

incomes over two decades. Between the 59th NSS round in 2002-03 and the 70th round in 2012-13, monthly incomes grew from approximately ₹2,115 to ₹6,426, reflecting both price increases and partial structural shifts. The 77th NSS round in 2018-19 further reported a rise to ₹10,218 per month, while NABARD's All-India Rural Financial Inclusion Survey (NAFIS) corroborated an intermediate figure of ₹8,931 in 2015-16. Projections for 2021-22, based on NABARD's Farm Incomes Report, suggest average monthly farm household incomes around ₹13,661, though these estimates require caution due to methodological differences and pandemic-related disruptions. Overall, while nominal incomes have improved, they continue to lag behind inflation-adjusted requirements for financial resilience, underlining persistent vulnerabilities in the farm sector despite liberalization and institutional reforms.

Table 3: Average monthly farmer household income

Survey Round	Year (Reference)	Average Monthly Income (₹)	Notes
59 th NSS	2002-03	₹2,115	First SAS on "farmer households"
70 th NSS	2012-13	₹6,426	Current report you uploaded
77 th NSS	2018-19	₹10,218	Latest official figure available
NABARD All-India Rural Financial Inclusion Survey (NAFIS)	2015-16	₹8,931	Cross-validated with NSS
—	2021-22 (Projected)	₹13,661 (all sources)	From NABARD/Farm Incomes Report

Source: NABARD All India Rural Financial Inclusion Survey (2017, 2020); NSSO 68th Round

Despite income gains, barriers such as lack of aggregation models, financial illiteracy, and high transaction costs continue to inhibit grassroots participation in formal risk-hedging mechanisms. A field-level comparative study by Khalid and Jessica (2020) ^[8] reinforces these structural constraints. Through primary data from three agricultural districts in Telangana, the study found that despite cultivating NCDEX-traded commodities like turmeric, cotton, and chilli, smallholders were unable to participate in futures markets due to constraints such as lack of storage infrastructure, limited aggregation capacity, and inadequate awareness of risk mitigation instruments. In contrast, the Rubber Producer Societies (RPS) model in Kerala allowed resource-poor rubber farmers to pool produce, access warehousing, and participate in commodity trading through cooperative structures. This contrast underscores that institutional architecture not just individual capability determines access. The findings suggest that aggregator-based models may offer a viable blueprint for democratizing

futures market participation in other regions.

4.3 Interpreting Institutional Inflection Points

The historical timeline of reforms shows a non-linear evolution marked by phases of regulatory conservatism, abrupt liberalization, and then recentralization. The establishment of MCX and NCDEX in 2003, followed by the SEBI-FMC merger in 2015, represent key institutional inflection points in India's commodity derivatives landscape. Each reform phase introduced technical and regulatory sophistication but did not automatically translate into broad-based market participation or trust among agricultural stakeholders.

Table 4 summarizes the critical milestones in commodity futures regulation between 1925 and 2018, based on official documents from SEBI (2021) ^[40], the Ministry of Agriculture (2019) ^[24], and archival legislation such as the Forward Contracts (Regulation) Act (1952).

Table 4: Chronology of key institutional reforms in India's commodity futures market (1925-2018)

Year	Reform Milestone
1925	Bombay Cotton Contracts Act
1952	Forward Contracts (Regulation) Act
2003	Launch of Multi Commodity Exchange (MCX) and National Commodity Derivatives Exchange (NCDEX)
2015	SEBI-FMC merger
2016	Launch of electronic National Agriculture Market (e-NAM) for APMC spot market reform
2018	SEBI introduces unified license for commodity and equity brokers

Source: FMC, SEBI, Ministry of Agriculture White Papers

These milestones signal growing state involvement in market architecture but highlight persistent tensions between market liberalization and regulatory control often influenced by electoral pressures and food security politics. This background sets the stage for a deeper analysis in Table 5, which overlays these institutional developments with key macroeconomic outcomes, including NCDEX

turnover, food price inflation, and farm household incomes, to assess their real-world effects. Table 5 summarizes how institutional reforms aligned with macroeconomic indicators such as trade volume, CPI-Food inflation, and average farmer income (SEBI, 2022; NABARD, 2020; MOSPI, 2021).

Table 5: Institutional Milestones, NCDEX Turnover, CPI-Food Inflation, and Farmer Income (2008-2022)

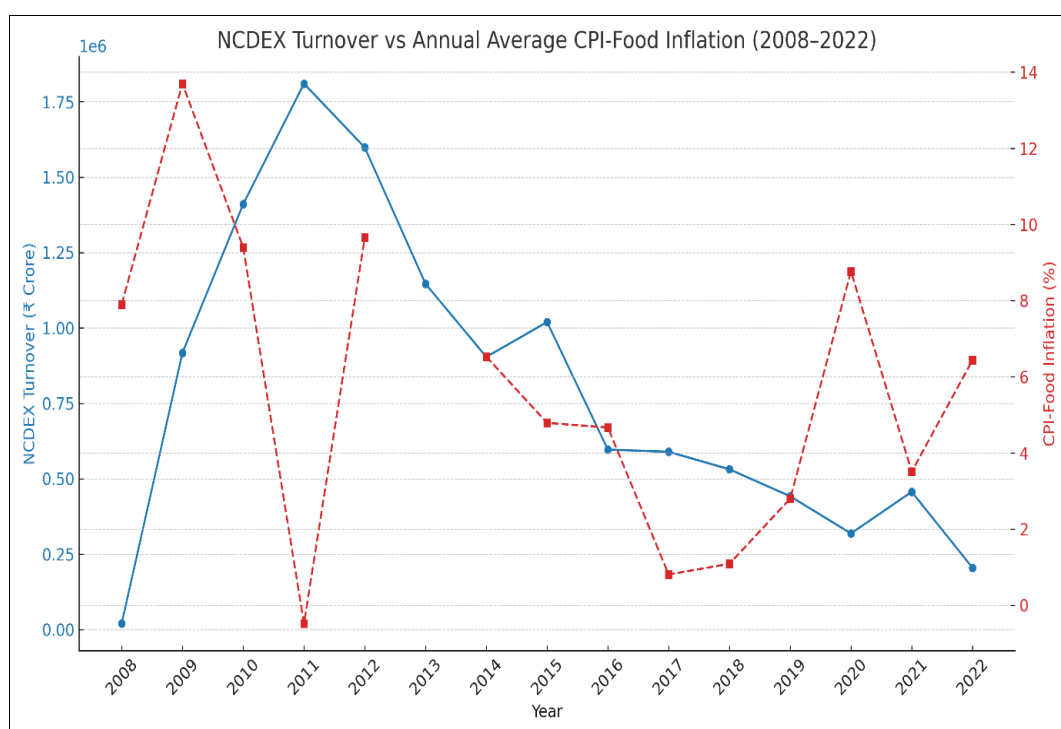
Period	Key Reform/Event	NCDEX Turnover (₹ crore)	CPI-Food Inflation (%)	Average Farmer Income (₹/month)
2008	Pulse futures ban continues	19,815	9.50	~6,426 (back-cast est.)
2012	High inflation, calls for bans	15,98,426	11.00	6,426 (70th NSS)
2015	FMC-SEBI merger	10,19,588	5.80	8,931 (NAFIS, 2015-16)
2020	E-NAM scaled up, COVID pandemic	3,18,781	8.77	10,218 (77th NSS, 2018-19)
2022	SEBI consolidation and reforms	2,04,932	6.44	~13,661 (projected, NABARD Farm Report)

Sources: NCDEX Annual Reports, MOSPI, NSSO, NABARD

Note: Farmer income for 2008 is a back-cast estimate based on 2012 NSS data and CPI-Food inflation trends. All values are nominal. Turnover figures are from NCDEX annual reports; inflation data from MOSPI; income figures from NSSO and NABARD.

These trends support three important conclusions. First, institutional reforms have clearly influenced trade volumes, though their effects on food price inflation and farmer incomes appear more diffuse and difficult to isolate. Second, the post-2015 period of regulatory stability marked by SEBI consolidation and the rollout of the electronic National Agriculture Market (e-NAM) seems to have

contributed to improved market integration and deeper financial participation. Third, despite these institutional gains, the benefits reaching farmers remain uneven, underscoring the continued need for complementary reforms in warehousing, digital access, and financial literacy in order to fully realize the developmental potential of commodity futures markets.



Source: Compiled from NCDEX annual reports and MOSPI data

Figure 2: NCDEX turnover and annual average CPI-Food Inflation, 2002-2023.

Figure 2 presents a dual-axis analysis of NCDEX commodity futures turnover (in ₹ crore) and CPI food inflation (%) over the period 2008 to 2022. The data series reveals three distinct phases in the evolution of India's agricultural commodity derivatives ecosystem, each corresponding to key institutional and regulatory transitions. Between 2008 and 2012, NCDEX trade volumes expanded rapidly, rising from around ₹20,000 crore in 2008 to nearly ₹16 lakh crore by 2012. This growth phase coincided with the liberal regulatory regime under the Forward Markets Commission (FMC) and the wider adoption of electronic trading platforms. Simultaneously, CPI food inflation displayed an upward trajectory, peaking above 13 percent in 2009 and remaining elevated through 2012. The parallel rise

in NCDEX turnover and food inflation suggests that heightened market activity did not necessarily translate into effective price risk mitigation for agricultural producers, particularly smallholders.

From 2013 to 2015, the NCDEX market experienced significant disruption. Turnover contracted from more than ₹11 lakh crore in 2013 to around ₹9 lakh crore in 2014-15, triggered by the National Spot Exchange Limited (NSEL) crisis, which revealed serious regulatory and governance gaps. This period also included uncertainty around the 2015 merger of FMC with the Securities and Exchange Board of India (SEBI). CPI food inflation during this interval moderated toward 4-6 percent, although the causal link between reduced trading volumes and declining inflation

remains uncertain. Nevertheless, the episode underscores the sensitivity of commodity market confidence to institutional credibility. The third phase, covering 2016 to 2022, reflects a period of modest recovery and regulatory consolidation. NCDEX turnover stabilized between ₹4 lakh crore and ₹7 lakh crore, while CPI food inflation fluctuated between 2 and 9 percent, influenced by shocks such as the COVID-19 pandemic. This period saw key reforms, including unified broker licensing, deeper SEBI oversight, and expansion of the National Agriculture Market (e-NAM). While these reforms strengthened governance and investor confidence, the lack of consistent correlation between NCDEX turnover and food inflation suggests that structural barriers such as limited farmer participation and weak aggregation mechanisms continue to limit the broader developmental role of agricultural futures markets.

In sum, the overlay of institutional transitions with NCDEX trade volumes and food inflation trends between 2008 and 2022 suggests that India's agricultural derivatives ecosystem has achieved greater maturity in regulatory and operational terms, yet its impact on price stability and inclusive access remains constrained. The data supports the broader thesis that market liberalization, without democratized participation, may lead to uneven and exclusionary outcomes.

4.4 Synthesis: Reform Outcomes vs. Inclusion Gaps

The empirical evidence demonstrates that while India's commodity futures markets have expanded in volume and technical sophistication, their benefits remain unevenly distributed. Reforms have enhanced transparency, surveillance, and platform integration, yet have not adequately addressed grassroots inclusion. Delivery ratios remain low, smallholder participation is negligible, and financial instruments are still too complex or inaccessible for the average farmer. The evolving policy architecture continues to prioritize market stability and institutional growth over equitable participation.

The enriched view offered by Table 5, combining turnover, CPI-Food inflation, and farm household incomes, further underscores these gaps. Despite higher trade volumes and regulatory consolidation after 2015, smallholder gains remain limited, suggesting that liberalization alone does not guarantee inclusive risk mitigation. Complementary reforms including stronger Farmer Producer Organizations (FPOs), bundled risk instruments, simplified contract designs, and targeted literacy programs must become central to the next generation of reforms if the promise of inclusive transformation is to be realized.

The historical evolution of India's commodity market institutions reveals a layered and contested process shaped by colonial legacies, post-independence regulations, and liberalization-era experimentation. The findings from both the institutional timeline (Table 4) and the quantitative overlays (Table 5) underscore how policy oscillations and regulatory uncertainty have repeatedly shaped market legitimacy and participation outcomes.

5. Result and Discussion

5.1 State-built markets and institutional design

India's commodity futures markets were not spontaneous products of free-market evolution but rather state-

engineered outcomes, where regulatory institutions like the Forward Markets Commission (FMC), and later SEBI, actively structured the contours of trade. From the colonial-era Bombay Cotton Contracts Act (1925) and the Forward Contracts (Regulation) Act (1952), to the post-2003 liberalization of national exchanges, the state has consistently balanced facilitation and constraint depending on its perception of risk, speculation, and broader public welfare. This institutional architecture enabled significant modernization, but its top-down nature has also shaped the uneven patterns of participation documented throughout this study.

5.2 Regulatory Volatility and Institutional Fragility

The sharp rise in NCDEX trade volumes from 2008 to 2012 reflects a liberal, expansionary phase that supported the growth of commodity futures markets. However, this momentum was disrupted following the 2013 NSEL crisis, intensifying regulatory scrutiny and leading to the SEBI-FMC merger in 2015. The empirical data in Table 5 show a clear contraction in NCDEX turnover during these years, highlighting institutional fragility and trader hesitancy in response to heightened oversight and perceived governance risks. While regulatory interventions were necessary, they also exposed the markets' vulnerability to shifts in policy confidence and signalled an incomplete maturation of the institutional framework.

5.3 Market Reforms and Price Stability

The overlay of NCDEX turnover and CPI food inflation offers an indirect perspective on the stabilizing potential of futures markets. The data indicate that high futures activity between 2008 and 2012 coincided with elevated food inflation, raising questions about the effectiveness of these markets in delivering consistent price signals or hedging tools for producers and consumers. Post-2016, the stabilization of inflation, along with a modest recovery in NCDEX turnover, may reflect improved institutional coherence following SEBI's regulatory consolidation and the rollout of platforms like e-NAM. However, no consistent inverse relationship emerges, suggesting that the ability of futures markets to manage food price volatility at the grassroots level remains limited.

5.4 Tensions between central regulation and local control

A recurring theme in India's commodity markets is the persistent tension between centralized regulation under national agencies (FMC, SEBI) and decentralized agri-market structures operating under state APMC Acts. Efforts to integrate and digitize trade through e-NAM often confront the entrenched power of local mandi networks and their socio-political alliances. This structural conflict underscores the importance of context-sensitive reforms that can adapt national frameworks to the diverse realities of state-level marketing systems, rather than imposing uniform solutions that risk alienating local actors.

5.5 Implications for smallholder inclusion

While futures markets are frequently promoted as instruments for risk management and price discovery, they remain largely inaccessible to small and marginal farmers.

The institutional focus has historically prioritized trader confidence and exchange development over direct farmer participation. Even well-intended reforms such as e-NAM still require substantial investment in financial literacy, capacity-building, and trust at the grassroots level to enable meaningful inclusion. The evidence suggests that liberalization and modernization have not been matched by adequate support systems for smallholders to engage effectively with these markets.

5.6 Structural Lessons and Policy Implications

This study has examined the historical evolution of India's commodity futures markets through an institutional lens, combining archival policy analysis with descriptive evidence on NCDEX turnover, CPI food inflation, and rural incomes. The results reveal a non-linear trajectory shaped by regulatory experimentation, modernization efforts, and shifting policy priorities. From the colonial regulation of cotton contracts to the SEBI-FMC merger and the digital rollout of e-NAM, the state has continually attempted to balance market efficiency with social protection.

However, these reforms while successful in enhancing transparency and technical integration have not achieved widespread grassroots participation or fully delivered on the promise of inclusive risk mitigation. The empirical overlays in this paper, including trade volume spikes during liberalization and subsequent contractions during regulatory tightening, point to the fragile foundations of market legitimacy and participation. The lack of a stable inverse relationship between trade volumes and food inflation further suggests that hedging benefits have not consistently filtered down to smallholder farmers.

In sum, India's commodity futures market story illustrates how liberalization without democratized participation can generate uneven and exclusionary outcomes. The next generation of reforms must therefore prioritize complementary measures in storage infrastructure, digital access, and farmer literacy to translate institutional progress into meaningful, inclusive transformation.

6. References

- Basu K, Rajeev M. Inadequacies in India's agricultural infrastructure: Policy and institutional barriers. *Econ Polit Wkly*. 2013;48(3):38-46.
- Chatterjee T, Jain R, Singh A. Digital platforms and rural access: A study of e-NAM. *Indian J Agric Mark*. 2017;31(2):20-32.
- Gandhi VP, Jain D. Agricultural risk management and futures markets: Lessons from Brazil. *Indian J Econ*. 2016;96(4):553-578.
- Ghosh J. Speculation on commodity futures and food security: Some policy issues. *J South Asian Dev*. 2014;9(1):23-38.
- Gautam M, Mishra S, Rao P. e-NAM and farmer participation: A critical assessment. *Agric Econ Res Rev*. 2023;36(1):45-60.
- Khalid SR, Jessica VM. Commodity futures market in India: An overview. *EPRA Int J Res Dev*. 2017;2(3):149-154.
- Khalid SR, Jessica VM. Agri commodity prices and inflationary dynamics: A causal study. *J Crit Rev*. 2020;7(8):2976-2985.
- Khalid SR, Jessica VM. Percolation of commodity futures market to the grass root level in a developing country like India: A comparative study on Telangana farmers and rubber growers. *Int J Adv Sci Technol*. 2020;29(12s):968-978.
- Kurniawan R, Wahyuni S, Gunawan B. Structural challenges in Indonesia's chili value chain. *J Agric Policy Dev*. 2023;11(1):59-76.
- Kumarathunga A, Ranjan R, Shetty A. Blockchain applications in agricultural trading: Conceptual design for India. *Int J Technol Manag Sustain Dev*. 2020;19(3):211-230.
- Murali K. Power and politics in mandi reform: Institutional dynamics and resistance. *J Polit Econ India*. 2020;7(2):88-103.
- Narayanan S. Farmer participation in markets: What the data tells us. *Econ Polit Wkly*. 2015;50(52):52-60.
- Sahadevan KG. Commodity derivatives and smallholders: Market participation and welfare effects. *Indian J Finance Econ*. 2008;2(1):101-125.
- Sen A. Market reforms and rural livelihoods: A study of Indian agriculture. *J Agrarian Change*. 2008;8(3):345-369.
- Sharma S, Bose S. Hedging effectiveness of agricultural commodity futures. *Indian J Finance*. 2012;6(6):33-44.
- Srinivasan R, Verma S, Joshi P. Barriers to farmer participation in India's futures markets: A survey-based analysis. *Indian J Agric Econ*. 2022;77(2):154-173.
- Gulati A, Terway P, Hussain S. Reimagining India's agricultural markets. New Delhi: Indian Council for Research on International Economic Relations (ICRIER), 2021. (ICRIER Working Paper).
- Naik G, Jain S. Efficiency and effectiveness of Indian commodity futures markets. Bangalore: Indian Institute of Management Bangalore, (IIM Bangalore Working Paper)., 2002
- Food and Agriculture Organization. Inclusive agricultural value chains: Guidelines for practitioners. Rome: Food and Agriculture Organization of the United Nations, 2019.
- Abhijit Sen Committee. Expert Committee Report on Futures Trading in Agricultural Commodities. New Delhi: Ministry of Consumer Affairs, Food and Public Distribution, 2004.
- Commission for Agricultural Costs and Prices (CACP). Price policy for Kharif crops: Marketing season 2021-22. New Delhi: Government of India, 2021.
- Forward Markets Commission (FMC). Annual reports 2003-2015. Mumbai: Ministry of Consumer Affairs, 2003-2015.
- Kabra Committee. Report of the Expert Committee on Futures Trading in India. New Delhi: Ministry of Finance; 1994.
- Ministry of Agriculture & Farmers Welfare. White paper on agricultural market reforms. New Delhi: Government of India, 2019.
- Ministry of Agriculture & Farmers Welfare. Policy framework for strengthening e-NAM and WDRA integration. New Delhi: Government of India, 2023.
- Ministry of Statistics and Programme Implementation (MOSPI). Consumer Price Index (CPI) reports. New

- Delhi: Government of India, 2022.
27. National Bank for Agriculture and Rural Development (NABARD). All India Rural Financial Inclusion Survey (NAFIS) 2016-17. Mumbai: NABARD, 2017.
 28. National Bank for Agriculture and Rural Development (NABARD). All India Rural Financial Inclusion Survey: Follow-up report. Mumbai: NABARD, 2020.
 29. National Commodity & Derivatives Exchange (NCDEX). Market participation report. Mumbai: NCDEX, 2020.
 30. NITI Aayog. Doubling farmers' income by 2022: Strategy document. New Delhi: Government of India, 2017.
 31. NITI Aayog. Annual report 2020-21. New Delhi: Government of India, 2021.
 32. National Sample Survey Organisation (NSSO). Household consumer expenditure survey, 59th round. New Delhi: Ministry of Statistics and Programme Implementation, 2005.
 33. National Sample Survey Office (NSSO). Key indicators of situation of agricultural households in India, 70th round. New Delhi: Ministry of Statistics and Programme Implementation, 2014.
 34. National Sample Survey Organisation (NSSO). Situation Assessment Survey of Farmers: Income, Expenditure and Productive Assets of Farmer Households in India (January-December 2003). New Delhi: Ministry of Statistics and Programme Implementation, 2005. Report No. 497.
<https://mospi.gov.in>
 35. National Sample Survey Office (NSSO). Key Indicators of Situation of Agricultural Households in India (NSS 70th Round, July 2012-June 2013). New Delhi: Ministry of Statistics and Programme Implementation, 2014.
http://mospi.nic.in/sites/default/files/publication_reports/KI_70_33_19dec14.pdf
 36. National Sample Survey Office (NSSO). Income, Expenditure, Productive Assets and Indebtedness of Agricultural Households in India. New Delhi: Ministry of Statistics and Programme Implementation, 2016. Report No 576.
https://mospi.gov.in/sites/default/files/publication_reports/nss_rep_576.pdf
 37. National Statistical Office (NSO). Situation Assessment of Agricultural Households and Land and Livestock Holdings of Households in Rural India, 2019. New Delhi: Ministry of Statistics and Programme Implementation, 2021. Report No. 587.
<https://mospi.gov.in/publication/report-situation-assessment-agricultural-households-and-land-and-livestock-holdings>
 38. National Bank for Agriculture and Rural Development (NABARD). NABARD All India Rural Financial Inclusion Survey (NAFIS) 2016-17. Mumbai: NABARD, 2018.
<https://www.nabard.org/auth/writereaddata/tender/1608180417NAFIS%202016-17%20Full%20Report.pdf>
 39. Reserve Bank of India. Digital financial services and rural inclusion: Challenges and opportunities. Mumbai: Reserve Bank of India, 2022. (RBI Working Paper No. 05/2022). <https://www.rbi.org.in>
 40. Securities and Exchange Board of India (SEBI). Handbook of statistics on the Indian securities market. Mumbai: SEBI, 2021.
 41. Securities and Exchange Board of India (SEBI). Commodity derivatives market development report. Mumbai: SEBI, 2022. <https://www.sebi.gov.in>
 42. Securities and Exchange Board of India (SEBI). Commodity derivatives market development report. Mumbai: SEBI, 2023.