Sattva Knowledge Institute SKI perspective

FPO PARTICIPATION IN FUTURES TRADING: MANAGING PRICE VOLATILITY IN AGRI-MARKETS

February 2023

Acknowledgements

Authors

This perspective has been written by **Aparna Bhaumik**. The technical review was done by **Debaranjan Pujahari**.

Contributors

We would like to thank the following experts for contributing their valuable insights and advise for this perspective:

Aleen Mukherjee (COO - *NICR*, Head - *FPO Strategy, NCDEX*)
Dushyant K. Tyagi (CEO at *Farmgate Technologies Pvt. Ltd.*)
Manish Tripathi (Head - Customer Service Group and MktYard Private Limited, *NCML*)
Pankaj Bhatt (AVP FPO Business, *NCDEX*)
Rohan Dhande (Deputy Manager - FPO Team, *NCDEX*)
Shubhendu Dash (VP - Farm Sector, *ACCESS Development Services*)

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Design: **Usha Sondhi Kundu**; *cognitive.designs@gmail.com*

CONTENTS

Executive Summary

86% of Indian farmers belong to the small and marginal category, and as such, lack access to market and efficient price discovery mechanisms. Farmer producer organisations have been aiming to fill this gap by building cohesion between small and marginal farmers and enabling their access to markets. However, spot markets or APMC (Agricultural Produce Market Committee) market yards have their own challenges and face price volatility during the post-harvest season. This usually happens when there is an excess of supply in the market.

Futures markets or commodity exchange platforms like NCDEX and MCX offer a unique opportunity for FPOs to manage price risk while gaining access to a transparent and efficient price discovery system. FPOs can track prices of commodities on these digital platforms and when the prices look profitable, they can enter into a contract with a buyer and lock in the prices. FPOs can enter into contracts at any time during the production stage, including pre-harvest. However, due to a multitude of reasons, only a handful of FPOs trade on commodity exchange platforms; on a three-year average, only 45 FPOs have traded on NCDEX. Lack of awareness and capacity, limited access to finance, including credit and working capital, and inefficient post-harvest management practices have compounded this problem.

This perspective explores the roadblocks to the scaling up of futures trading for FPOs and provides a solution roadmap that can be orchestrated by facilitating collaboration between multiple stakeholders working in the ecosystem. It also explores and draws lessons from historical cases where such collaborations have worked well.

The proposed orchestrated solution requires nonprofit organisations, social enterprises including non-banking financial companies (NBFCs), and storage solution providers to come together to enable mature FPOs to address the key challenges that prevent them from effectively exploring futures trading. The perspective recommends that **nonprofits build the awareness and leadership of FPOs, NBFCs contribute to building business acumen and financial awareness, while also providing low-cost credit, and storage solution providers support FPOs with logistics and technical support to meet quality standards.**

It is only with a collaborative effort across multiple organisations that FPOs can grow their business, and actively access futures markets to ensure efficient price discovery and price risk management, and thereby lead to increased income for farmers.

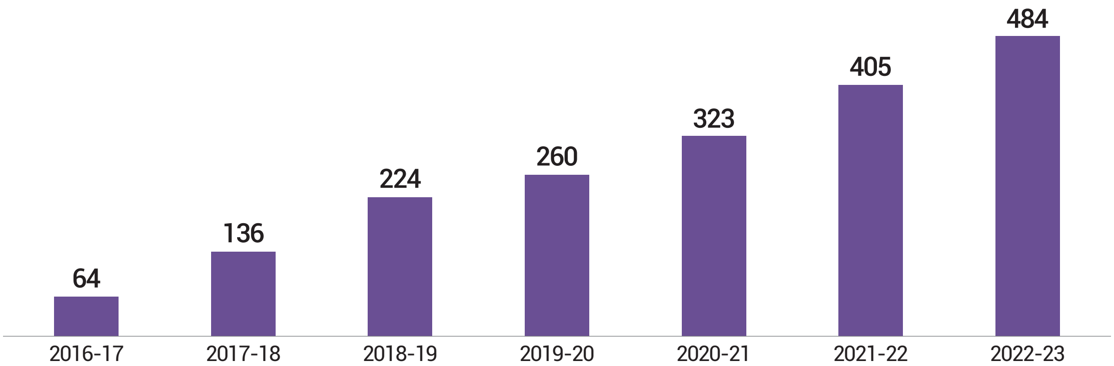
Introduction

Good weather and a bumper harvest for farmers, despite sounding positive on the outside, often lead to price crashes in agriculture markets, which in turn negatively impacts farmer incomes. This phenomenon occurs during the post-harvest season when most small and marginal farmers in India rush to the markets to sell their produce causing a supply glut. In 2014, however, a farmer producer organisation (FPO) in Madhya Pradesh discovered a way in which they could insulate themselves from such price crashes (Chatterjee et al. 2019).

Ram Rahim Pragati Producer Company hedged their soybean produce on the leading agri-commodity exchange platform National Commodity & Derivatives Exchange (NCDEX) before they had even harvested it. Once harvest took place, and the prices in the spot markets crashed, the FPO and its shareholders were able to protect themselves from incurring massive losses by fulfilling the futures contract and getting the price they had locked in during pre-harvest hedging.

Futures markets are used to hedge commodity price risks. In agriculture, futures markets have proven to be an efficient price discovery tool that offers transparency, and, if leveraged correctly, an excellent risk management system for farmers during an excess of supply in the market. Multiple FPOs have hedged their produce before harvesting and earned more revenue compared to trading in *mandis* (wholesale markets) when prices have crashed. Essentially, hedging "integrates risk avoidance with profit maximization" (NCDEX n.d.).

Figure 1: Year-wise number of FPOs registered on NCDEX



(Source: NCDEX)

In spite of multiple success stories, futures trading in agri commodities has been regarded with cynicism, with many often considering it akin to gambling due to the inability to understand the functionality of preharvest hedging in a systematic manner. This apprehension and lack of awareness have led to the low engagement of farmers and FPOs on futures trading platforms. Since 2014, only 484 FPOs have registered with NCDEX. Given that there are over 16,811 FPOs in India, this remains a meagre number (Joshi 2022).

However, if we look at the trend, registration of FPOs on the NCDEX platform has grown almost eight times from 64 in 2016-17 to 484 in 2022-23. This points towards the immense potential of futures trading in agri commodities and makes the uptake of futures markets among FPOs a challenge worth addressing. Not only do they have the potential to increase farmer incomes by engaging FPOs, but can also improve overall participation of FPOs in agricultural markets by providing the incentive of price risk management.

Futures Trading for FPOs; Situation, Complication and the Key Solution

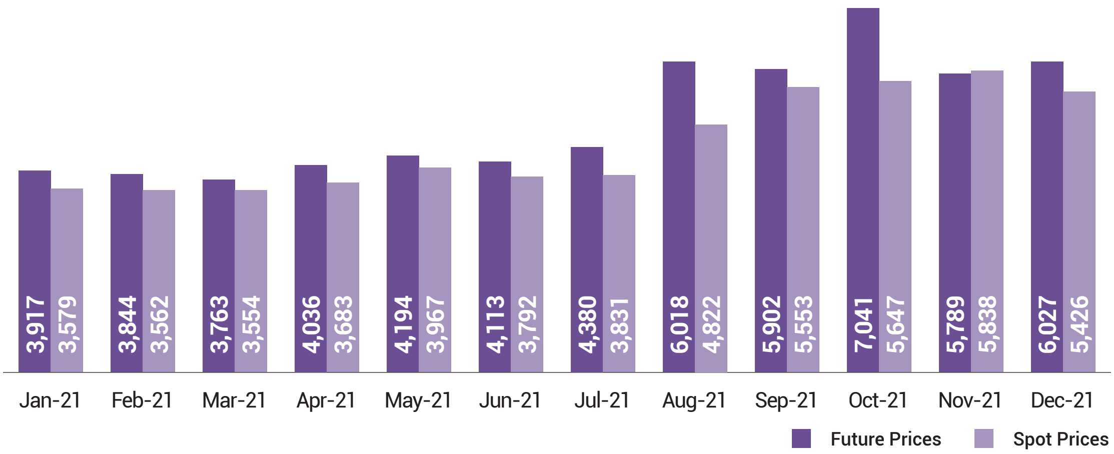
Linking farmers to markets has been a consistent challenge for Indian policymakers and experts in the agriculture domain. India's farmer population, made up of 86% small and marginal farmers, (DAC&FW 2020) prefer their network of village-level traders who can buy their produce from them at the farmgate. This enables them to forgo worrying about quality, transportation and storage, albeit at the price of lower remuneration. Farmer producer organisations (FPOs) offer a solution to this by orchestrating economies of scale through the cohesion of farmers and aggregation of produce. FPOs can allow member farmers to directly engage with agricultural markets and get remunerative prices for their aggregated produce.

After crossing the initial hurdle of linking farmers to markets, the small and marginal Indian farmers have to deal with challenges in the *mandis*, Agricultural Produce Market Committee (APMC) market yards or spot markets. While spot markets have come a long way in India with the electronic-National Agriculture Market (e-NAM) now having over 1,260 *mandis* registered on the platform (PIB 2022), price volatility has remained an insurmountable challenge.

Futures market provides an alternative way to manage risk

Farmer producer organisations have the opportunity to mitigate the risk of facing price volatility during supply gluts by trading in agri futures. During the off-season, FPOs can track futures prices on major commodity exchange platforms like NCDEX and lock in their desired prices through pre-harvest hedging via a contract. In case there is a price crash in the market, the locked-in prices keep them insulated against volatility. The FPOs can deliver their produce on the agreed-upon date to their nearest delivery centre at the price they locked in, provided quality and quantity specifications are adhered to.

Figure 2: Spot Prices of Guar seed in Rajasthan and Futures Prices on NCDEX (in INR per lot)



(Source: Agmarket and NCDEX)

Case in Point: Guar Seed

Guar seed is cultivated across 3.1 million hectares in India, with Rajasthan producing most of it. The total production is estimated to be around 1.5 million tons. It is interesting to note that 0.5% of guar seed production makes it onto NCDEX. Additionally, throughout the year futures prices remain high compared to spot prices across agriculture markets in Rajasthan.

Consider this; an FPO can track the futures prices for Guar Seed through NCDEX's SMS-based service, and when it sees that the futures prices have reached a high point in the month it wants to sell, then it can lock in these prices by paying the margin and entering into the futures contract on that date. In November and December, when harvest concludes and the produce comes to the market, prices generally start falling. FPOs with futures contracts, however, will be able to get the higher price they had locked before harvest and deliver their produce on the agreed-upon date in the contract, thereby earning higher revenue than farmers selling in spot markets.

How futures trading helped an FPO gain higher returns

Aranyak Agri Producer Private Limited (AAPCL), a farmer producer company promoted by JEEViKA in Bihar, had been supported by global non-profit TechnoServe since 2014. TechnoServe enabled a collaboration with NCDEX, which gave the FPC the opportunity to store produce in exchange-accredited warehouses, and utilise both the commodity exchange and the futures platform for trading.

In 2015-16, the group traded maize on NCDEX in 2015. With technical support and handholding from TechnoServe and NCDEX, over 800 female farmers were able to achieve almost 20% higher returns for their produce.

Apart from ensuring that FPOs are protected against price risk and have access to efficient price discovery in the market, more transactions by farmers can add to the liquidity of the markets and further deepen them. Futures prices often act as indicators, enabling FPOs to have better negotiating power and allowing them to make informed decisions in the market, while also adding to the transparency of the price discovery process (Chatterjee et al. 2017).

Challenges that deter FPOs from futures trading

In 2021, the average futures price of eight major agri-commodities out of the thirteen crops listed, remained high on NCDEX compared to the spot prices of the same commodities in major producing states. **However, on a 3-year average, only 45 FPOs have traded on NCDEX (NCDEX 2022).** This is 9% of the total FPOs registered on the platform, where 87% of the agri commodity trade in futures takes place.

Figure 3: Experts have studied the reasons for FPOs being unable to participate in futures trading and highlighted four major constraints holding them back

(Source: Chaterjee et al. 2019)

FPOs lack both awareness about the futures market, and the capacity to engage in futures trading. Futures trading requires decision-making skills and a business sense that a lot of FPOs lack. These skills will enable FPO leaders to manage risk well and hedge their produce at the right time. The success stories of Ram Rahim Pragati FPC and AAPCL were all accomplished with technical support from nonprofits, NCDEX, and other resource institutions like JEEViKA as well.

FPOs need access to working capital and immediate cash that can be returned to farmers or stakeholders of the FPO, once procurement has been completed. While spot markets allow cash rotation to take place seamlessly, futures markets require the ability to hold the produce for a certain amount of time. This means that FPOs cannot immediately make payments to farmers from whom they procure. Moreover, FPOs have generally faced the challenge of accessing institutional credit due to "low capital base, absence of credit history and non-availability of collateral" (Kasabe & Das 2022).

FPOs lack access to warehouses and the facilities provided by them. Futures contracts have specific quality standard requirements, without meeting which the FPOs' produce may run the risk of rejection. Hence, it becomes important to have access to warehouses for not only storing but also for quality testing. FPOs are traditionally located close to shareholders' villages and are hardly better placed than the member farmers in terms of access to easy and affordable post-harvest storage and facilities (Raj et al. 2020).

A major constraint for FPOs is the commodity itself getting abruptly banned or suspected by the regulatory board whenever there is a spike in prices in commodities that are relevant to food security of the country. The futures market in India is regulated by the Securities and Exchange Board of India (SEBI), and as of 2022, a total of seven major agri commodities have been banned from trading (Iyengar 2022). Frequent interventions by SEBI are definitely a factor that needs to be considered carefully by FPOs looking to engage in futures trading. However, trading in low-risk commodities that are not related to food security, like cotton, spices and oilseeds, should be the ideal way forward in order to mitigate this (Chatterjee et al. 2017). This has been explored further in the following sections of this perspective.

Collaboration Necessary to Unlock Futures Market for FPOs

With support from the ecosystem of civil society, resource institutions and social enterprises, we envisage that FPOs will be adequately equipped to trade in futures markets and explore efficient and diverse risk management practices.

To scale up futures trading in agri commodities by FPOs, multiple stakeholders in the agriculture ecosystem will be required to come together to orchestrate this solution. Nonprofits working to build technical capabilities of FPOs, social enterprises working to provide financial and logistics support, and finally, adept management at FPOs themselves need to collaborate in order to scale up futures trading for agriculture.

Figure 4: The key actors that need to collaborate to scale up futures trading

All of the above-mentioned institutions need to play a key role in facilitating the FPO's entry, and their business sustainability while trading in the futures markets.

1. Grassroot organisations and nonprofits: The value that nonprofits have brought to the FPO ecosystem has been undeniable. Their role has been multifaceted in bringing about leadership and management skills to FPOs and in mobilising community will to enhance participation in FPO activities (Babu et al. 2021).

Additionally, the leadership of FPOs and management skills are also required to make informed decisions when it comes to agricultural marketing and futures trading. Reputable nonprofits who have worked with farmers and FPOs in building their awareness and capacity would be the ideal stakeholder to fulfil this role.

2. Finance institutions: FPOs can only raise capital from their shareholding farmer members, and given this constraint, their ability to raise capital is low (NAFPO 2014). Especially when going into futures trading, FPOs will need access to high working capital. Financial institutions in the ecosystem have the capacity to address this need by providing not only loans for specific requirements, but also offering advisory services on financial awareness.

3. Storage or warehouse providers: FPOs need access to warehouses in order to store the produce safely after aggregating. Further, they need post-harvest management facilities at the farmgate of warehouses to ensure the sorting and grading of their produce. A futures contract requires quality standards to be met during the time of delivery. Failing to do so may lead to rejection of the produce, rendering the foray into the futures market completely futile. The fear of rejection has often discouraged farmers from participating altogether.

FPOs will require support in not only storage but also in establishing post-harvest practices that can assure adherence to quality standards. Warehouse service providers who have worked in scaling up FPOs' market linkage in the past would be the ideal players to facilitate both access to warehouses and to facilities or machinery at the farmgate that can aid in drying, cleaning, sorting and grading.

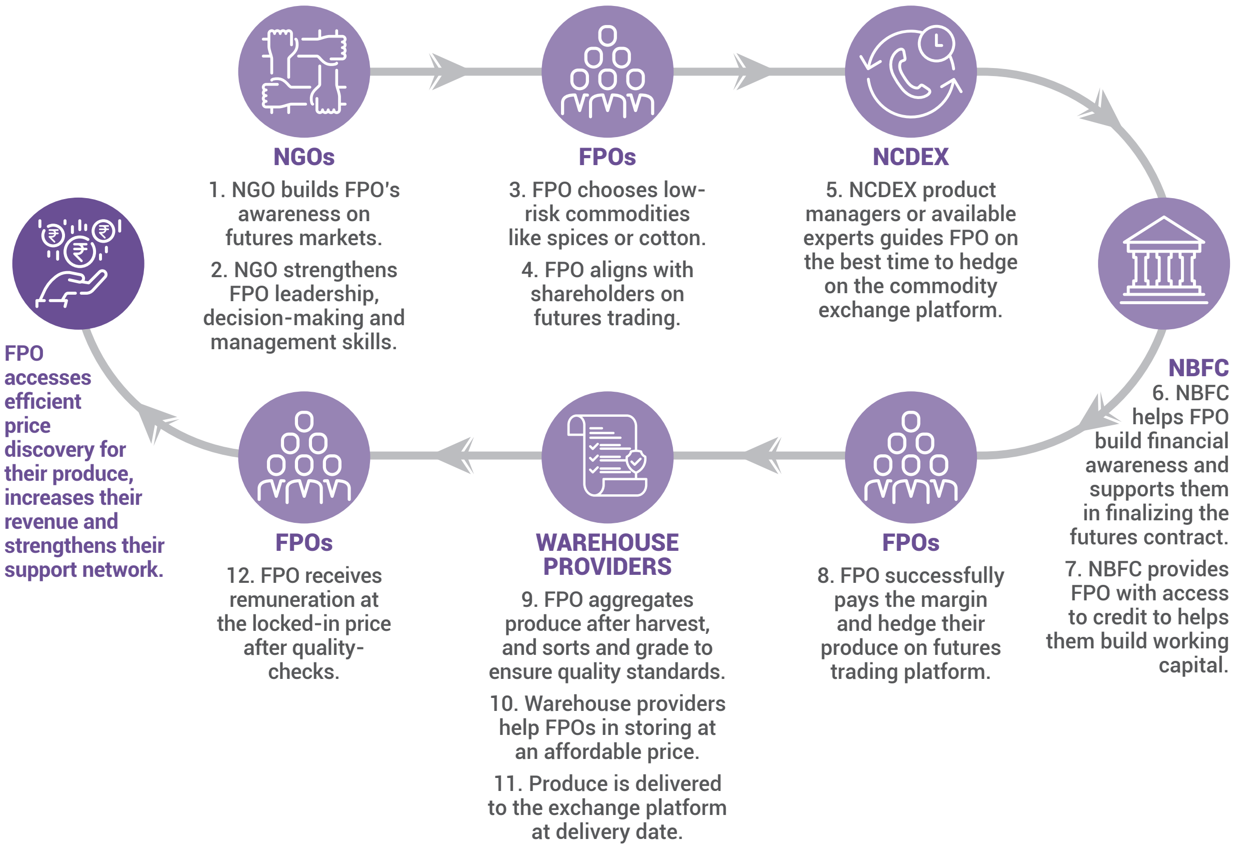
Further, both finance institutions and logistics providers can help build FPOs' business acumen. Social enterprises like Samunnati and Arya.ag, who work both in storage and non-banking finance, can train FPOs on business management skills. They run businesses with social objectives and possess skills that can be passed on to FPOs to a certain extent. More importantly, FPOs stand to gain a lot from advisory mechanisms set up by such social enterprises.

4. Mature FPOs: This perspective does not recommend that FPOs who are in their nascent or early stages enter into futures trading. Instead, FPOs that have had the experience of selling produce in agricultural markets and understand the fundamentals of marketing are better placed to learn how to trade in futures, so as to maximise profit and make informed choices when it comes to hedging.

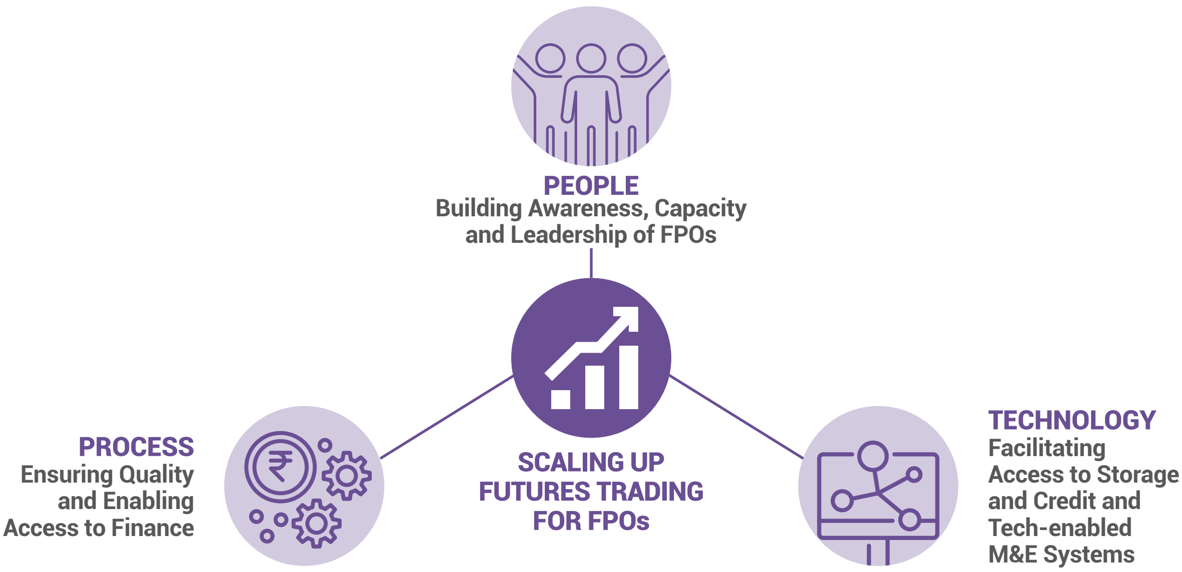
Further, the leaders and management of mature FPOs need to be open to developing business capabilities required to understand the futures market and make informed decisions regarding hedging and price risk management. With futures markets, at times, refraining from hedging may be the best decision given the circumstances.

Key Components to Orchestrate the Process

The following framework offers a visual representation of the orchestration required to scale up futures trading for FPOs.



To elaborate further, the stakeholders need to come together to drive efficiency of people, processes and technology for FPOs to scale up futures trading in agri commodities:



1. People: Building awareness, capacity and leadership of FPOs

i) Nonprofits who have been working to scale up market linkages for FPOs are the ideal stakeholder for building their awareness and capacity with respect to futures trading. Futures markets may seem like a risky venture even for FPOs who have established market linkages, because of the policy restrictions, and quality and quantity specifications of contracts. Additionally, FPOs may not want to hedge before harvesting their produce and may not fully grasp the benefits of pre-harvest hedging at the relevant time. **Therefore, awareness and understanding of futures markets and futures trading is the essential first step.**

Once FPOs have an understanding and their apprehensions regarding futures trading are addressed, the next step is to build their capacity in order to engage in futures markets. While there are multiple skills that FPOs need to develop, this perspective limits its scope to the skills of **leadership and decision-making**.

Fully grasping the complex algorithms of futures prices based on weather indices, or the intricate processes required to hedge on commodity exchange platforms, may be a long-term goal for FPOs. In the short term, a basic understanding of the technical aspects of futures trading can be achieved by the FPO leadership. Developing leadership and decision-making skills will enable the FPO management to leverage available ecosystem expertise to support them in all aspects of futures trading.

While NGOs need to provide handholding support for beginners to start futures trading on the market platforms, a more important task for them in the medium and long term is to ensure capable leadership for FPOs.

ii) FPOs need to build and strengthen a network with nonprofit organisations, resource institutions, social enterprises and other successful FPOs. Nonprofits may only be able to support for a certain number of years, after which they may need to exit the field. If NGOs can enable access to advisory mechanisms for FPOs, they can leverage that to trade repeatedly in the futures market even after enabling agencies withdraw, ensuring the FPOs' business sustainability. Advisory mechanisms can enable them to utilise the expertise of NCDEX product managers, call centres meant to facilitate futures trading, and social enterprises that provide support with finance and logistics, among others.

Additionally, establishing a larger network of FPOs who work in the output markets can give each FPO visibility on the do's and don'ts of futures trading by sharing lessons learned.

2. Process: Ensuring quality standards and enabling access to finance

i) FPOs themselves need to work closely with member farmers to mitigate multiple risks. Mobilising farmers to create awareness about futures trading and its benefits, and getting their collective consent before hedging produce is the first step.

The FPO management should establish clear communication with members about choosing low-risk commodities and planning crop sowing and harvest. The risk of rejection has to be mitigated by raising awareness of quality standards during the harvest season. These steps simplify the process of transacting on futures markets through coordination and cooperation.

ii) Innovative financing for FPOs needs to be explored with social enterprises for the former to gain access to working capital and risk capital. Futures trading in agriculture requires payment of margins, before prices can be locked down. While this amount is not particularly high, the FPOs' limited access to capital makes this challenging.

Additionally, FPOs need to pay member farmers after procurement and pay for quality testing and warehousing facilities to store their produce. Around the date of delivery, the FPOs would also need to pay for transport to the delivery centres accredited by platforms like NCDEX.

There are a few solutions available in the ecosystem. For example, **the warehousing receipt system** allows farmers to use produce as collateral for loans, and can enable access to working capital. This solution was utilised by AAPCL in Bihar, while trading maize in futures. Similarly, concepts like Output Procurement Loans by Samunnati, an NBFC, can enable FPOs' access to working capital before they draw in the remuneration after fulfilling the contract (Samunnati n.d.)

It is important to note, that right now, most of the credit needs of FPOs are met by a few non-banking financial companies (NBFCs), including NABKISAN, Samunnati, Ananya Finance, and others (NABARD 2020). Banks have not been very keen to lend to FPOs so far. However, Samunnati recently signed a co-lending agreement with SBI which facilitates customised financial solutions to enable FPOs to scale up their operations (Sammunati 2022). This will also enable FPOs' access to collateral- and mortgage-free loans.

Partnerships with formal banks can go a long way in boosting credit availability for FPOs and improving market linkage for matured FPOs in the ecosystem.

Since banks have access to low-cost funds, they can provide the cheapest finance solutions for FPOs. Additionally, while lending to FPOs is considered risky, loans for FPOs would essentially be smaller, translating to a lower risk (Murray 2018). While NBFCs can bring in their expertise in credit requirements for FPOs, public sector banks can provide the much-needed push with their wider reach in rural India.

3. **Technology: Facilitating access to storage, credit and tech-enabled monitoring and evaluation (M&E) systems:**

   i) Warehouse service providers are considered indispensable for creating a nurturing ecosystem for FPOs. Their importance in facilitating post-harvest market linkage, especially in the context of futures trading, is even more crucial.

   Learnings from the success story of Samruddhi Mahila Crop Producer Company Ltd. indicate that it is a challenge to find and book warehousing space despite having a reputed NGO supporting them through this process (Chatterjee et al. 2019). In general, because post-production infrastructure is fragmented and inadequate, it becomes inaccessible to farmers (Raj et al. 2020).

   Additionally, stakeholders in this sector, like Arya.ag, have launched innovative agritech platforms that will allow FPOs to ensure quality standards and instil transparency in the process (Mustaquim 2022). Therefore, it will be imperative for FPOs to collaborate with warehouse service providers to scale up operations and ensure quality standards and gain access to storage, and make this orchestrated solution work.

Collaborative action needed for improving access to post-harvest facilities at farmgate

An important step for FPOs will be cleaning, drying, sorting and grading the aggregated produce before they are transported into the warehouses. For that, FPOs will need access to technology and support in procuring the right kind of post-harvest management equipment.

In 2018, NCDEX partnered with Bajaj Foundation to provide quality testing equipment to FPCs in the Wardha district of Maharashtra (Bajaj Foundation 2020). NCDEX has been collaborating with corporate organisations with CSR funds to facilitate FPOs' access to the capital required to procure the machinery, or the equipment itself.

   ii) Finally, facilitating collaborations between these stakeholders will require **a tech-enabled M&E system**. Nonprofits, finance and logistics players need to come together to enable the process for FPOs. A tech-enabled platform can provide access to market information in a simple format for FPOs, and also allow them to keep a track of various activities in the pre-production, production and post-production phases. This would equip them to not only make informed decisions, but also take corrective action as and when needed while trading in futures.

The synergy that can be achieved by these stakeholders coming together can enable FPOs to engage wisely in the futures market, and utilise the efficiency of risk management and transparent price discovery.

Understanding Pivotal Risks and their Mitigation

While this perspective focuses on the advantages of trading in futures markets for FPOs, it is equally important to understand the risks that all stakeholders need to be aware of before trading in futures platforms.

i) Policy intervention: As recently as December 2022, several agri commodities have been banned on futures trading platforms. During a situation where there is a risk of food price inflation, a case in point being the Russia-Ukraine war, SEBI acts quickly to ban items on futures platforms that are important from the aspect of ensuring food security. As of now, Bengal gram, paddy, wheat, soybean, and mustard seeds, are a few of the major commodities that have been banned. However, this can be mitigated by focusing on low-risk commodities that SEBI is unlikely to ban, which includes most major spices and cotton.

ii) Market risks of trading in futures: FPOs and all the other stakeholders mentioned above, need to have a clear understanding of the financial risks involved in trading in futures. For example, an FPO may be advised to hedge on NCDEX before harvest, and it may happen that in this particular season, the spot market prices rise. The FPO may stand to lose out on profit if such a situation arises. In such a year where there is uncertainty, FPOs can go for 'options' instead of commodity exchange platforms by paying a small premium. Their prices remain locked in through this, however, if they do not want to fulfil the contract, then they can simply forego the premium paid and sell it at a higher price in the spot market (NABARD 2019).

Once risks and ways to mitigate them have been fully understood, futures trading provides a great opportunity to unlock value and protect farmer producer organisations against price volatility in agriculture markets.

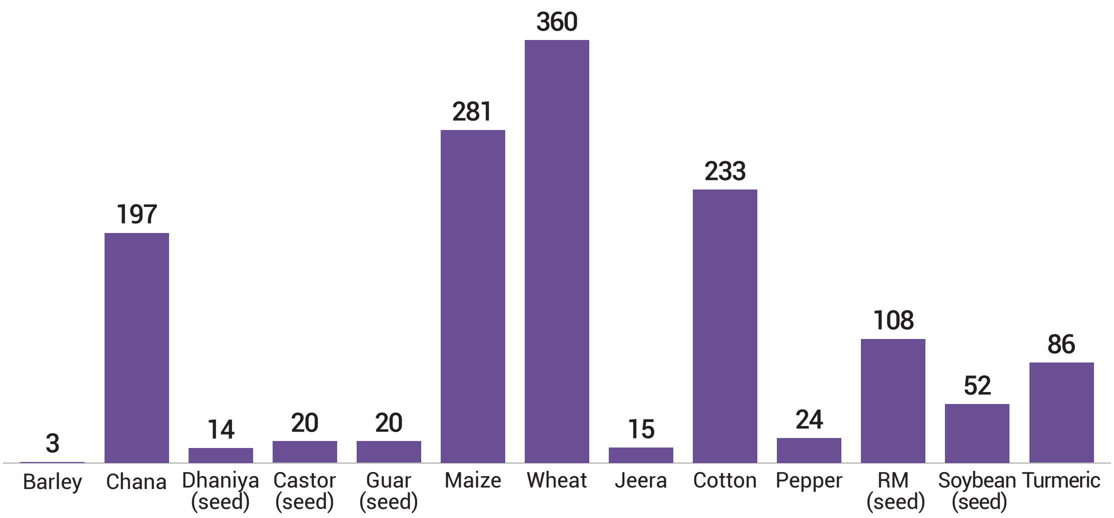
The Impact that Can be Achieved

The potential for futures trading for FPOs is massive. As of 2021, only 0.07% of the total production of the 13 listed crops on NCDEX made it onto the platform. This number can be increased significantly by orchestrating a collaboration between nonprofits, financial institutions and warehouse and storage solution providers to create an enabling ecosystem for FPOs to trade in futures markets.

i) Number of farmers that can be linked to Futures trading via FPOs

We analysed the data available on the Database for Indian FPOs on the Tata Cornell Institute website. Out of a sample of 4,442 FPOs, a total of 1,413 FPOs produce the 13 crops that are listed on NCDEX. An average of 4.7 lakh farmers are estimated to be part of these FPOs. The total number of FPOs beyond this sample is likely to be much higher.

Figure 5: Number of FPOs growing the crops listed on NCDEX



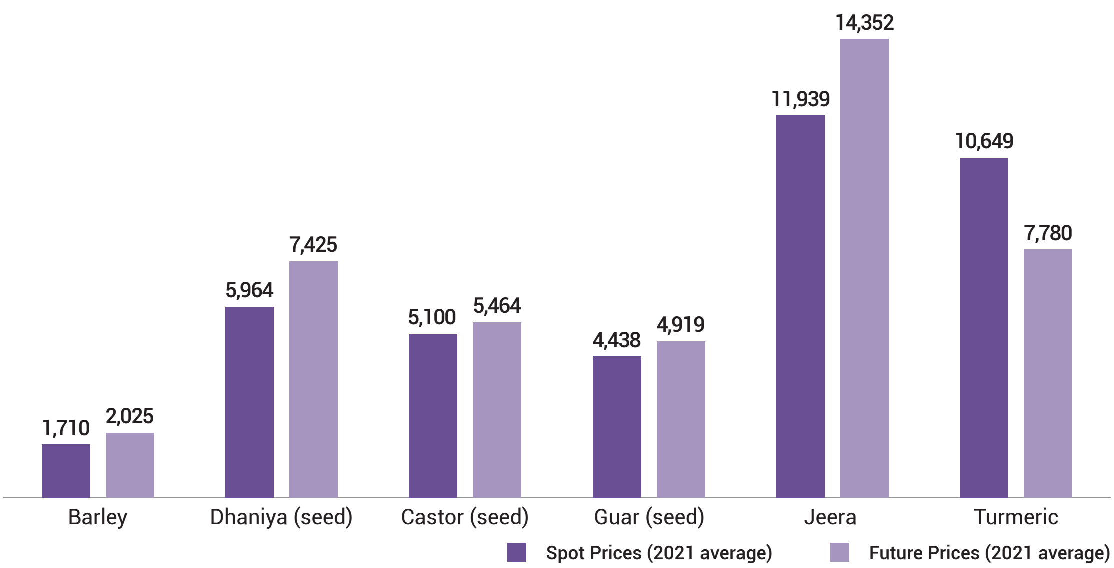
(Source: TCI Database of Indian FPOs)

Over the next five years, the objective should be to work with mature FPOs to increase their access to the market, and enable them to trade in futures.

ii) Potential of incremental revenue for FPOs

Futures prices in low-risk commodities mostly remain higher than spot prices in major producing states. We analysed the price data available at Agmarknet and futures prices from NCDEX to look at six commodities, categorised by us as low-risk on the basis of them having little relevance to food security, to understand the price difference between future and spot prices and the reasons for it.

Figure 6: Spot Prices vs Future Prices (in INR per lot)



(Source: Agmarket and NCDEX)

With the exception of turmeric, **prices for five of the low-risk commodities were slightly higher on NCDEX compared to spot markets of major producing states.** This is firstly because futures markets offer wider participation of sellers compared to a particular spot market within one state. Secondly, futures prices usually factor in the cost of logistics of carrying the commodity from the spot date to the futures date.

Futures markets work well with both pre-harvest and post-harvest hedging. However, t**he highest potential to unlock value lies in pre-harvest hedging** where farmers can pay for margins and lock-in prices during the off season. This insulates them from the price risk that may happen in a post-harvest supply glut scenario.

iii) Increase of volume of trade in agri-commodities in the futures market

An increase in the volume of trade by FPOs in the futures market not only benefits FPOs but also adds liquidity and depth to the market itself. Participation of primary producers directly in the market adds to the platform's reliability and stability, and boosts the confidence of both buyers and sellers. NCDEX has dedicated many resources to encourage farmers to participate in the commodity exchange platform. These include conducting awareness and training sessions, setting up call centres and SMS-based price information services, to partnering with agtech providers like Arya (NCDEX).

As of December 2022, the volume traded on NCDEX for FY 2022-23 stood at only 9,508 metric tons for eight commodities, and the turnover was valued at a total of ₹10,920 lakh (NCDEX 2022). This was achieved by only **29 FPOs**, while as of January 2023 there are a total of 2,433 FPOs onboarded on e-NAM. This demonstrates an overall increase of FPO participation in agriculture markets and digital platforms. Similarly, with the right kind of supporting ecosystem for futures trading for FPOs, the participation numbers can be accelerated steadily to benefit both FPOs and the futures market.

Conclusion

With the 2023-24 Union Budget proposing to give additional momentum to farmer collectives and FPOs, efforts to boost the sustainability and scalability of their business are likely to increase. The promise of the futures market in effective price discovery and price risk management will be realised once FPOs' access to agriculture markets is improved significantly. The time is now for the multiple stakeholders to come together to orchestrate scaling up futures trading for farmer producer organisations.

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