



Comparative Study of Farmer Producer Organizations in Bihar and Maharashtra

INTRODUCTION

By setting the target of doubling farmers' income by 2022, the government signaled a significant policy change, shifting focus on food production to farmers' welfare. Toward this goal, several schemes are in place, with the promotion of farmer producer organizations (FPOs) being a prominent one, important because of small and fragmenting landholdings (85 percent of farms are less than 2 hectares, and 67 percent are less than 1-hectare holdings (GOI 2015). Small farm size is associated with limited marketable surplus and lower access to inputs, like seeds, fertilizers, credit, information, and extension services. Small and marginal farmers also have poor access to public goods, such as public irrigation and government subsidies. Poor transportation and communication networks restrict farmers from accessing remunerative markets and result in opportunities for rent seeking by local traders. Lack of adequate local markets and costlier transport for small quantities force farmers to sell to local traders at low prices (Hegde 2010). Without large volumes, small farmers face low bargaining power in input procurement and in output sale (Kirsten and Sartorius 2002).

With the formation of FPOs, the role of middlemen is significantly reduced (Fafchamps and Hill 2008). Hence, farmer organizations can create opportunities for small and marginal farmers to participate more effectively in markets (Stockbridge et al. 2003). FPOs can lower information cost for better timing of sale and provide market clues, as well as access to technologies. Furthermore, small farmers' access to better machinery and optimal timing of operations, such as sowing, spraying, and harvesting, are also expected to improve through participation in FPOs. Different forms of collective

action among farmers have long existed in India, as cooperative societies. Primary agricultural societies include dairy and sugar cooperatives. Farmer producer organizations (FPOs) have also been strongly supported by the government. The year 2014 was declared as the Year of the FPOs (GOI and SFAC 2014).

With economic liberalization, policymakers and cooperative sector leaders started to rethink how to reorganize FPOs, to make them more market-oriented and infuse professionalism in them. Hence, the government formed a committee under Y. K. Alagh for the conversion of cooperatives into companies (registered under special provisions of the Companies Act 1956), with the aim of minimizing government interference (GOI 2000). Farmer producer companies (FPCs) work on mutual assistance principles, voluntary membership, voting rights independent of shareholding, elected board from among members, limited return on share capital, and distribution of surplus on patronage basis.

This project conducts a comparative study of FPOs in Bihar and Maharashtra to assess their performance. Maharashtra, a comparatively rich state with greater extent of markets, has been known for its vibrant cooperative sector, especially, sugar cooperatives. Bihar, in contrast, does not have as well-established tradition of farmer organizations.

Almost all FPOs in Bihar have been promoted (PFPOs); in Maharashtra, some have organically evolved (OFPOs), with farmers taking the lead and coming together to adopt market-oriented practices, address logistic issues, and develop cost-effective solutions in production and marketing. These groups started with a narrow focus, then evolved as independent business entities, formalizing into FPCs. Their experience of working together, with alignment of incentives

between managers and farmers, gave them an edge in handling aggregation, market search, and price discovery. The essential difference between PFPOs and OFPOs is not whether finance, official capital, or other resources from an external entity are involved, but with respect to the agency problem, in which farmers' and members' objectives and incentives are not aligned with those of the leaders and managers. PFPOs are disadvantaged because of negative selection at different levels (managerial level, member level in determining the size and composition of FPO, and market orientation), which leads to perverse incentives and subpar outcomes for the farmers.

Based on this distinction, the study shows that PFPOs fall short, comparatively, of the required level of internal cohesion and alignment of incentives to achieve goals related to common good of members. This difference turns out to be of material consequence in explaining their performance, as PFPOs come with accompanying policy-induced distortions, leading to negative selection over the life cycle of FPOs. The negative selection is in terms of the leaders of the FPOs, based on their objectives, and choice of members. This is then reflected in the outcomes for the farmers.

The time-bound funding support, for example, has led to the emergence of FPOs that last for short periods, tallying with the funding cycle and culminating in the death of FPOs. Upon formation, emphasis on size, that is, on large number of members, has also been a bane, leading to nonserious and ineffective membership. The findings show that size and composition of FPOs is important for success. The subpar performance is partly explained by the fact that most FPOs have not delivered in terms of product differentiation, which can create value and give market power to farmers, increase farmer's share in value, and reduce their risks.

The farmer outcomes are assessed in terms of adoption of technology, diversification, access to credit, access to markets, and risk mitigation. How is the differential performance associated with the type of FPO, OFPO, or PFPO? What are the factors determining members' satisfaction with success or operation of a FPC? To address these issues, primary surveys of FPO members and nonmembers in Bihar and Maharashtra were conducted.

DESIGN OF THE STUDY

The survey was conducted in randomly selected districts in Bihar and Maharashtra. All four agroclimatic zones in Bihar were covered: four districts (Gopalganj, Muzaffarpur, Purvi Champaran, and Vaishali) from zone 1; 2 districts (Khagaria and Purnia) from zone 2; 1 district (Jamui) from zone 3; and 4 districts (Bhojpur, Buxar, Jehanabad, and Nalanda) from zone 4. Given the difference in sizes, 575 farmers in Maharashtra were surveyed, of which 400 were members of FPOs and 175, nonmembers. The Maharashtra survey covered districts in 3 major agroecological regions: Amravati from Vidarbha region, Beed from the Marathwada region, and Pune from Western Maharashtra. The study involved mixed methods, combining quantitative surveys with focus group discussions and expert elicitation. Farmers were interviewed using a structured questionnaire, gathering information on demographics, experience in farming, sources of income, expenditure, and occupation. To assess creation of value, information was also gathered on Good Agricultural Practices (GAPs), market access, and product differentiation.

Activities of FPOs in Bihar

In terms of size, membership varied from 300 in the Nagarnausha Vegetables Agro Producers Company Limited in Nalanda district to about 3,100 in the Arniya Agri Producers Company Limited in Purnea. All FPOs strived to achieve larger memberships. The analysis based on the research shows that there is an optimal size of FPOs, determined by competing forces of scale economies and the ability to monitor and deliver on attributes like quality and product differentiation. Emphasis on size per se leads to the chances of negative selection. FPOs located in Nalanda district are engaged in marketing of vegetables, including potato and onion, but not in large quantities. FPOs located in Muzaffarpur district are engaged in marketing of lychee and are trying to link fruit and vegetable marketing with Big Bazaar, a supermarket chain. As a recent arrangement, the returns to farmers from such coordination with the formal sector remains a research question.

Almost all FPOs in the maize-producing

areas of Bihar are concentrated in marketing of maize. Only one FPO, the Arniya Agro-producers Company Limited, has been selling maize through an online platform. The maize sales by FPOs in Bihar, although having increased over time, remain much below the target (2,000 MT, compared to the the target of 15,000 MT). Some FPOs, sponsored by JEEViKA, have also linked up with the Indian Farmers Fertiliser Cooperative (IFFCO), for making quality fertilizers available to members at a better price. Some FPOs are engaged in backyard poultry. For betel vine, some FPOs have targeted distant markets, mainly in Varanasi. In general, FPOs in Bihar have not scaled up, have not graduated with product differentiation for value creation, or targeted new markets, possibly due to policy-induced negative selection.

Types of FPCs in Maharashtra

In contrast with Bihar, some FPOs in Maharashtra have evolved more organically. Promoting organizations have different incentives and objectives vis-à-vis the farmers. FPCs differ in the pattern of assistance received, as well as timing for it. Most rely on NGOs, however, for the necessary mobilization, capacity building, and formation of the companies. Another type of FPCs are those promoted under corporate social responsibility (by corporations, engaged in agriculture-related business, such as Deepak Fertilizers and Rallis India Limited, as well as by some exporters of agriculture commodities. The geographical spread of the FPCs formed in Maharashtra shows a peculiar pattern. One expects the districts having higher densities of cooperatives to begin shifting to FPCs, but the traditional cooperative belt of Western Maharashtra (except Pune) has shown tepid response to form FPCs. On the other hand, regions

of Marathwada and Vidarbha, with comparatively poor history of cooperatives and farmers' organizations, show much higher numbers of FPCs.

Comparing members and nonmembers of FPOs

There is a significant difference between the average monthly income of FPO members and non-FPO members, in Bihar, Rs. 18,555 versus Rs. 16,353, respectively—that is, 14 percent higher among non-FPO members. The difference in incomes and expenditures between the two groups was statistically significant. In both Bihar and Maharashtra, upper caste and Other Backward Classes (OBC) are more likely to join FPOs. The social stratification in FPO membership is also revealed in terms of education. Among FPO farmers, 19 percent have no education while 33% of nonmembers have no education. The percent of farmers who have education until middle school is also higher for FPO members, compared to nonmembers (43 percent and 33 percent, respectively).

Pathways for differential performance and revealed benefits from membership

Table 1 lists the perceived benefits of farmers from FPO membership. The majority (70 percent) report receiving new information about crops, technology, and seeds availability. Around 25 percent also cite benefits of obtaining inputs at cheaper prices and at the right time. One of the important roles of FPOs is to bridge the gap between farm price and market price (through greater bargaining power, including product differentiation), but very few members report this to be effective. A large majority (70 percent) report that buying inputs such as seeds, pesticides, and fertilizers of better quality became easier upon

Response	% Maharashtra	% Bihar
Get new information about crops, technology, seeds	81.64	70.44
Get inputs at cheaper costs and at right time	67.74	24.82
Get better prices for my produce, new markets	28.54	13.14
Have better access to credit, government schemes	18.61	2.55

Table 1: Perceived benefits as a member of FPO (Maharashtra).

joining. A smaller percentage (11 percent) benefited from the assistance in the right application of fertilizers or pesticides, even if beyond improved access. A very small percentage reported that postharvest operations, such as grading and storing, become easier post joining the FPO.

With the formation of the FPC, one of the prime objectives was to make access to credit for the members easier, due to the organization having been registered as a company. However, evidence from Bihar shows no significant improvement in credit access, with 59 percent members reporting no easing of credit constraints, either individually or as an organization.

Table 1 presents the share of farmers in terms of perceived benefits. Inter alia, although the fraction of farmers reporting receiving higher prices after joining FPO is comparatively high in Maharashtra, overall, it is still low at 28 percent. In the survey, farmers were asked about the operations that are easier upon being a FPO member. In contrast with Bihar, about 32 percent saw improvement in postharvest operations, such as grading and storing of produce..

Aspirations of FPO farmers

FPO membership does seem to create aspirations for greater diversification away from low value cereals. Thirty-two percent of FPO farmers in Bihar, currently not engaged in vegetables, want to diversify into it. Among the technologies adopted in Bihar upon membership, the most has been for crop management (52 percent), comprising varietal choice, land preparation, and soil management. Merely 15 percent, 4 percent, and 1.6 percent of farmers, respectively, have adopted pest management, water management, and postharvest technology. There has been no adoption of poly houses and shed nets upon membership in Bihar. Overall, technology adoption fostered by FPO membership in Bihar is low and confined to simpler and low-cost technologies. The main constraint in technology has been high cost of technology for both members as well as nonmembers, well above lack of credit and risk.

What determines FPO membership?

Results on determinants of membership in an FPO/ FPC in Bihar indicate:

Variables	FPO member (1 = yes, 0 = otherwise) Marginal effects (dy/dx)
Gender (1 = male; 0 = female)	-0.226*(0.12)
<i>Social group (base: SC/ST)</i>	
<i>Education (base: no school)</i>	
Middle school	0.209***(0.05)
High school	0.298***(0.07)
Intermediate	0.213***(0.08)
Bachelor's degree and above	0.210*(0.11)
Farming primary occupation (1 = yes; 0 = otherwise)	0.153***(0.05)
Have taken loans in the last 3 years (1 = yes; 0 = otherwise)	0.134**(0.06)
<i>Sources of information about new technologies, other socioeconomic, agricultural controls</i>	
KVK/ATMA/ICAR/government extension officials	0.170***(0.05)
Block fixed effects, crop fixed effects	Yes, Yes
Note: Values in parentheses are robust standard errors; *, **, and *** and indicate statistic significance at the 10%, 5%, and 1% level, respectively	

Table 2: Determinants of FPO membership in Bihar.

- More educated farmers are more likely to be members of FPO;
- There does not seem to be selection based on caste;
- Farmers who avail themselves of loans and those who are linked to formal extension services have a greater likelihood of being FPO members; and
- There is differential association engaging with public extension vis-à-vis other sources of information with respect to membership in FPO.

What are the benefits of FPO membership and what does it not provide?

Results from Bihar show that on average FPOs are successful in reducing input costs but work minimally in bridging the gap between farm and market price. Even after registering as companies, there is little improvement in credit access. The success in getting new information about crops, technology, and seeds, and getting inputs cheaper, such as fertilizers, pesticides, and insecticides, are areas in which FPO members seem to fare better. The big message is that even after joining, sudden decline or collapse in market price remains the biggest perceived risk for the farmers (65 percent farmers in Figure 1).

Other challenges remain, such as lack of proper monitoring and evaluation, no record of farmer members, no penalties for wrongdoers, and no incentives for well-performing members.

There are no performance-based incentives for members. If FPOs want to get higher prices for their produce, they need to bring in product differentiation. One can differentiate the products by labeling, certification, delivery systems, conveying of distinct characteristics (growing center to delivery distance and freshness), or geographical indication, among several possibilities. One can also differentiate the products by packaging.

Several implications follow from the FPO study. First, if FPOs are to be a promising approach to improving the condition of small and marginal farmers, they need a proper selection mechanism for members. There is an optimal size; just having a greater number of farmers can be counterproductive. The right size and composition is important for an FPO to create value. Second, if FPOs want to maximize value generation, FPOs need to foster greater product differentiation. In our field survey, not any FPO was found doing this for value addition, except for the idea of online sales, in a few cases. There are many ways to bring about product differentiation. FPOs can differentiate their products by labeling with information, such as freshness (plucked in the morning), organic nature of product, or other attributes, like geographical indicator or innovations in delivery.

MAHARASHTRA

The Maharashtra survey looks at characteristics of farmers by membership status, stratified by membership in type of FPCs: PFPO or OFPO. The

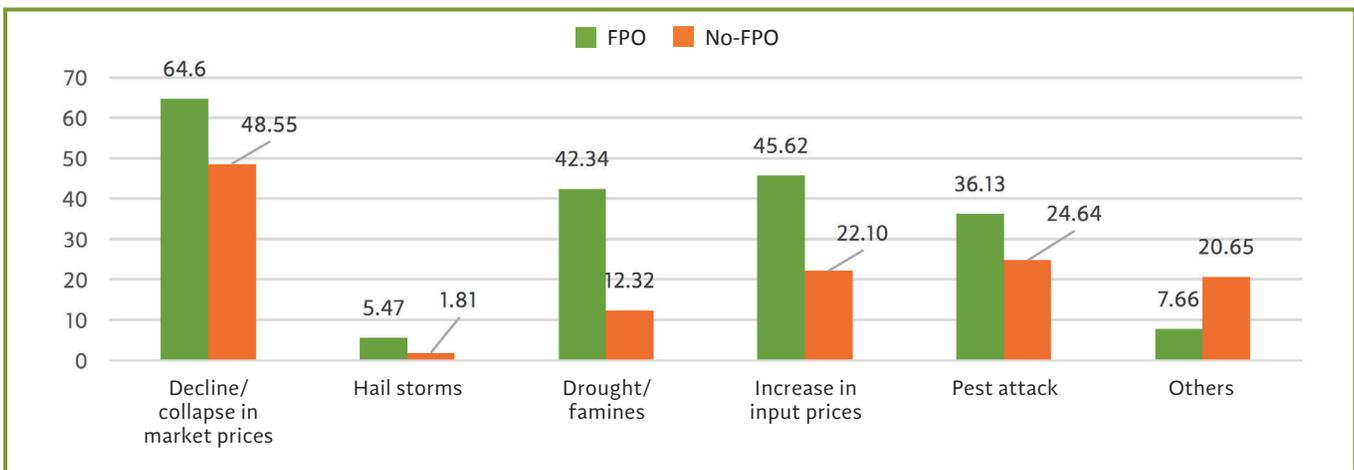


Figure 1: Risks faced in agriculture.

average size of landholdings is comparatively large for the FPO members, with average monthly expenditures 14 percent higher than nonmembers. Compared with the outcomes for OFPOs, the expenditure of the nonmembers on average is 21 percent lower. Social stratification in membership is also evident in Maharashtra. Like Bihar, higher caste and OBCs dominate membership, and members are comparatively educated. In terms of the perceived benefits for farmers, 82 percent of members report receiving information about crops, technology, and seeds being the primary benefits. About 68 percent joined for cheaper and timely inputs, and 42 percent, for technical knowledge. About 29 percent of farmers joined the organization, expecting better prices and access to new markets, and 19 percent members also reported better access to credit and government schemes as the perceived benefit of joining the FPO, in contrast with FPOs in Bihar. In terms of characteristics of members, controlling for location and crop fixed effects, regression results in Maharashtra assessed significant determinants as being experienced in farming, prior experience as a cooperative member, and greater reliance on private sources of information.

Figure 2 shows that upon joining a FPC, the majority of members experienced increase in gross income, but there are significant differences in the gross income changes between members of OFPO and PFPO. Only 32 percent of non-FPC members report increase in gross income. Also, considerably higher numbers of nonmembers (34 percent) report reduction in gross income. Changes in incomes can occur due to better output prices, input prices, cost reduction, or through increases in productivity. In contrast with Bihar, most FPC members attributed the change as due to better prices and access to new markets. The major reason for change in income was receiving better prices, owing to fewer rejections, driven by better quality. The results also show OFPOs are outperforming PFPOs in strengthening smallholders' position in the value chains.

About 94 percent of OFPO members report cost reduction, compared to mere 27 percent of PFPO farmers. The dynamics of voluntary formation of FPCs play a pivotal role in this aspect. The role of an FPC as an aggregator of inputs at negotiated prices helps reduce production costs

significantly. The PFPO also reported spikes in their costs (46 percent), but with simultaneous increase in gross income levels. Among members, most attribute technology adoption as the principal reason for cost reduction.

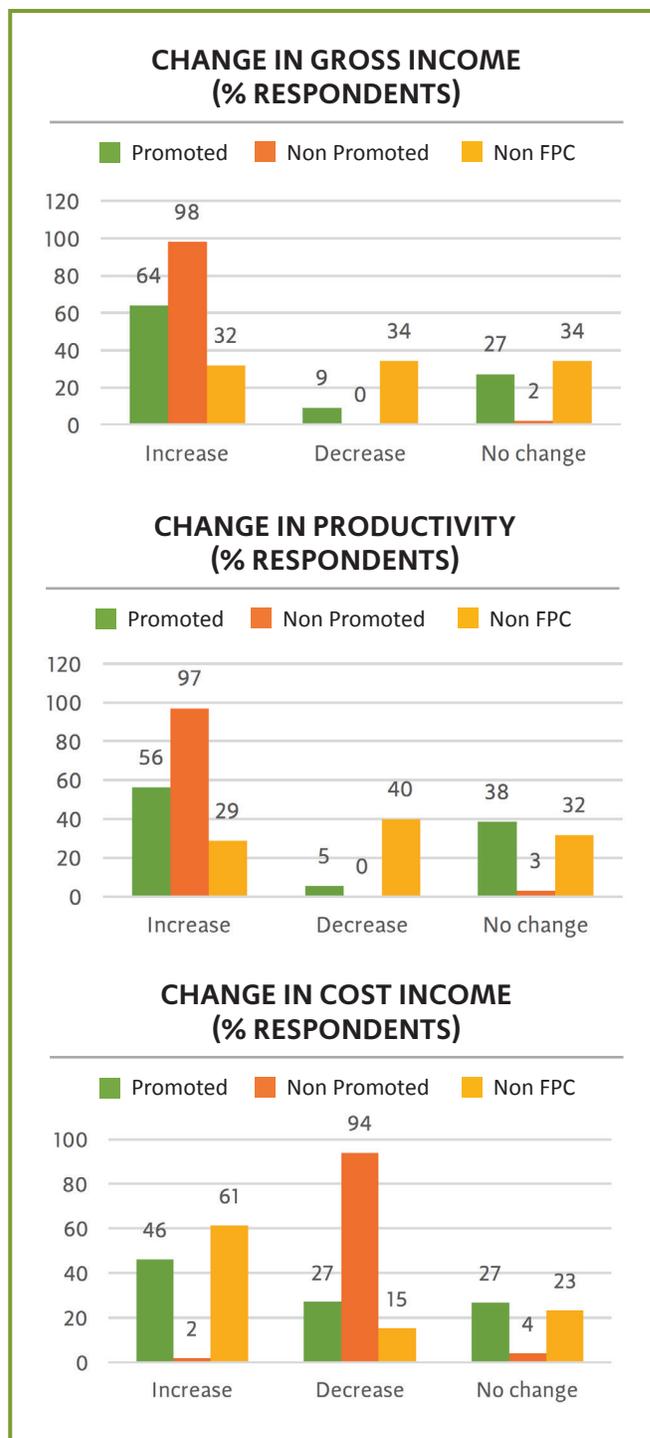


Figure 2: Comparative analysis of PFPOs and OFPOs. (PFPO = 303, OFPO = 99, Non-member = 171)

With technology adoption being a prime driver of outcomes, Error! Reference source not found. shows a significant number of FPC members reported increase in productivity of crops. Only 29 percent of non-FPC farmers reported any change in productivity, while 40 percent saw a drop in their productivity. Moreover, there is evidence for reduction in variability in productivity, thereby mitigating risks. The increase in productivity among OFPO farmers is higher, while almost 40 percent of non-FPC farmers reported decline in productivity.

Table 3 presents results of assessed changes in productivity, costs, and income. After controlling for characteristics and location fixed effects, the likelihood of increased income and productivity, as subjectively assessed, is higher for FPC members. In the case of OFPO, changes in productivity and income are significant. Use of mobile technology for agricultural information is associated with higher productivity. FPC members with higher irrigated area show further improvement in income. Higher costs for new technology inhibit change in productivity for members as well as nonmembers. Lack of credit constrains adoption of new technology for members while nonmembers are worse off, with negative effects on productivity and income.

Performance assessment

The simplest index of performance is based on a count of changes upon joining the organization. It comprises two input indicators relating to technology adoption and risk mitigation.

- Adoption of technology: Crop management, water management, integrated pest management (IPM), improved application of pesticide and insecticide, improved postharvest techniques, and adopting poly houses and shade nets
- Risks mitigation: Decline in market prices, hailstorms, drought/famines, increase in input prices, and pest attacks

The simple index is the average value of the binary 0 and 1 across all possible benefits to the farmers, as subjectively assessed. The index value of assessed benefits values are higher for OFPOs, and benefits are assessed higher in high-income districts. Table 4 presents the Poisson regression results for the counts of perceived benefits. After controlling for several covariates, including location fixed effects, the count of benefits is higher in case of OFPOs (0.43 versus 0.37), and as already observed in index values, also higher in case of FPOs in comparatively high-income districts.

Marginal effects-probit regression	Members			Nonmembers		
	Productivity increase (yes = 1; no = 0)					
OFPO member	0.154*** (0.05)	0.04 (0.06)	0.11** (0.04)			
Social Group Base: General Caste (included)						
Experience in agriculture	0.002 (0.002)	0.003 (0.002)	0.004* (0.002)	-0.004 (0.003)	0.000 (0.004)	-0.006 (0.004)
Using mobile for information	0.151** (0.06)	0.151** (0.06)	0.151** (0.06)	0.151** (0.06)	0.151** (0.06)	0.151** (0.06)
Other controls: MPCE, years of membership, irrigated area, access to credit, sources of information						
Governance indicators						
Observations	394	394	394	166	166	166
Fixed Effects (crop and location)	Yes	Yes	Yes	Yes	Yes	Yes
Robust standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1						

Table 3: Determinants of increases in productivity, decreases in costs, and increases in net income.

Variables	Count
High Income District (1 = Yes, 0 = Otherwise)	0.400*** (0.08)
OFPO (1 = Yes, 0 = Otherwise)	0.080*** (0.01)
Other Controls	
Observations	569
Note: Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1	

Table 4: Poisson Regression Results for count of benefits in the affirmative

		Associated with FPO	Not Associated with FPO	Treatment Effect ATT/ATU	% change
OFPOs	Associated	Not associated with FPO	1985.2	ATT = 337.5***	17.0
	Not associated	Treatment Effect ATT/ATU	1749.8	ATU = -21.4ns	-1.2
PFPOs	Associated	% change	1605.6	ATT = 226.8***	14.1
	Not associated	1995.9	1749.8	ATU = 246.1***	14.1
*** p<0.01, ** p<0.05, * p<0.1					

Table 5: Impact of FPO membership on Monthly Per Capita Expenditure (MPCE)

Finally, assessing the subjective values on benefits, results from ordered probit regressions indicate that, accounting for several covariates, the revealed assessment is even on a ordered scale, that the satisfaction of the farmer is more likely seen in OFPO membership.

Income impacts of FPOs (accounting for crops and location)

In assessing the impact on farmers' incomes of FPO membership (voluntary versus promoted), we use the monthly per capita expenditure (MPCE) as a marker of household welfare. Farmers may face a choice of being members across different types of FPOs/FPCs. The selection of FPOs is based on a farmer's expected net return, subject to constraints. Therefore, selection of FPOs is based on individual choice and may be correlated with unobservable characteristics, which would also affect performance in farming and in markets and would bear on the MPCE. Therefore, the right estimation of impacts necessitates accounting for both observable and unobservable characteristics through random selection of individuals or households for treatment. The study employs a

multinomial endogenous switching regression (MESR) framework to estimate the parameters. Farmers may be independent, join a PFPO, or an OFPO. The MESR framework is used to examine the average treatment effects of the treated (ATT) by comparing the expected outcomes of each alternative FPO's choices.

The treatment effects, estimated through multinomial switching regression, show that when controlling for crop/activity, location fixed effects, and selection into membership, membership in voluntary FPOs is associated with a higher average monthly per capita expenditure of Rs. 337.5 that translates to about Rs. 1,688 at household level and about an annual Rs. 20,250 at the household level, assuming an average family size of five members.

Comparison between FPCs in Bihar and Maharashtra: Farmer producer companies

As there were only promoted FPCs in Bihar, the three sets that have emerged in our analysis are:

- Bihar PFPO
- Maharashtra PFPO
- Maharashtra OFPO



Figures 3, 4, and 5 illustrate how OFPOs from Maharashtra fare better, with 98 percent of OFPO members expressing boosted income. For PFPO, this reporting is 64 percent for Maharashtra, only 47 percent in Bihar. The reasons attributed for increased income in Bihar is new markets while in Maharashtra, for OFPOs, it is better prices and less quality-related rejections.

We compare the performances of these three different FPC groups on various parameters. What makes the company more successful?

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Maharashtra, for OFPOs, it is better prices and less quality-related rejections.

For many FPCs, aggregation of input purchases is the starting point of group operations. This role is also echoed much more in OFPOs, the dominant reason being technology adoption. In Bihar, new technology as well as aggregation discounts on input purchases are the major reasons for cost reduction. With reduction in costs, compared

across the three types of FPCs, increase in productivity is the most commonplace in case of OFPOs. Farmers from both states face many risks in agriculture, but the market risk (decline or collapse in prices) tops the list among members in both states.

Due to diverse agroclimatic conditions, Maharashtra FPC members (for both OFPOs and PFPOs) rank pest attacks and hailstorms much higher than in Bihar. Drought is the top risk perceived by PFPO members in Maharashtra, but for OFPO farmers, this risk is far lower, reflecting adoption of water-efficient technologies. In Bihar, too, being an FPC member has helped in risk mitigation to some extent, however the spread is not as impressive. The best coping strategy seems to be in case of membership in OFPOs.

Conclusion and implications

The comparative study of FPOs in Bihar and Maharashtra, and among types of FPOs, indicates that for outcomes that matter for farmers, organically evolved ones, with greater control and participation of farmers in decision-making, fare better. The policy-induced negative selection plays out in the choice of managers, members, their objectives, and functioning that lead to subpar outcomes for farmers. The incentives that are offered by policy, akin to infant industry protection, leads to agency problems in which elite capture and rent seeking results in subnormal outcomes. Policies must offer incentives that are linked to performance.

Upon formation, the policy spotlight on the number of FPOs, with each comprising large numbers of farmers is suboptimal. All FPOs tend to not mitigate market risk, and only some FPOs, mainly the organically evolved ones, tend to create value through product differentiation and new market discovery. Even after formation of companies, there is no significant improvement in credit access. Fostering product differentiation and creation of value through food safety, labeling, certification, and innovations in delivery are channels through which FPOs need to improve market access, which is commonly not the case. Group size and composition play an important role in this regard, that is, in creation of value above distribution of value. Heterogeneity in the group

membership, in which different skills combine, seems to deliver better results. Policies should minimize entry barriers into FPO membership.

In Bihar, FPOs have been able to obtain inputs less expensively for farmers, but technology adoption is confined to basic technologies. There is a basis for FPOs in Bihar to move toward comparatively high-end technology, such as drip irrigation and improved packaging and storage. Farmers who are members of FPOs, in which farmers' and managers' incentives are comparatively aligned, are more successful in adopting new technology and better managing their risks. OFPOs mitigate the problem of negative selection by selecting members based on their willingness and skills to maximize the collective returns. This brings a sense of purpose to the farmers' enterprise and makes the production and marketing objectives align properly. If the objectives and incentives are aligned, intermediation costs can be effectively reduced with tangible benefits to the members. The FPOs in both Bihar and Maharashtra show a propitious spur toward diversification, or aspirations for diversification.

FPCs can create level playing fields for smallholders to deal with new corporate buyers who cater to growing urban demand. If the producer companies can undertake and modernize production processes, according to the needs of the markets, and make contractual agreements, it builds symbiotic relationships between the corporate buyers and the FPO. The inherent risks in production are hedged, and the gains can be distributed to individual farmers. The access to high-value markets also enables the transmission of knowledge for adjusting the production schedule, according to the changing patterns of consumer demand. The expressed aspirations of the farmers in terms of crops and activities and the failure of FPOs in delivering on market access need to be accommodated in policy reforms.

In policies related to FPOs, leadership and managerial resources seem to matter significantly. Along with the quality of leadership, commitment of member farmers to the collective cause is an important determinant of FPO success, for which the right incentives need to be engendered, whether at the manager or member level. A performance-based system that addresses problems of adverse selection and moral hazards needs

to be part of the policies. Leadership, which encourage active member participation in day-to-day activities for handling, builds positive learning curves. Identifying new ways in which an organization can work, expand, and excel in its activity depends on the quality of leadership. When the constituents have no prior exposure or experience in remaining cohesive as a group for performing business functions, it becomes incumbent on leadership to identify ways to address the problems.

As part of the study, personal interactions revealed that some farmers are unhappy about a company as a format of farmer enterprise. What farmers can achieve in informal groups could be more effective, opined these farmers. Being a company means higher compliance costs (fixed costs) that may not be justifiable below a threshold turnover. Either through observed benefits in terms of credit and market access or through reduced compliance costs, the uptake of FPCs can increase. In Amrawati, for example, a FPC has been

particularly vibrant and had actively taken over the traditional role of traders, by selling orange and bananas in distant markets, with exponential growth over the last three years. Led by a trader, the leadership was adept at navigating the markets.

The evidence from Bihar and Maharashtra show that forming FPCs can be beneficial to small and marginal farmers in various ways, mainly in adopting market-oriented production technologies and accessing lucrative market opportunities. However, creating an ecosystem that facilitates structurally similar entities to OFPOs is called for. The government interventions toward PFPOs have achieved success in small measures, mainly because of negative selection across the whole chain in FPOs, leading to perverse incentives. FPCs with evolving natures and continuous adaptation clued to the markets, with product differentiation based on product attributes and supporting systems like IT-enabled production and marketing systems, show promise for the future.

Fafchamps, Marcel, and Ruth Vargas Hill. 2008. "Price Transmission and Trader Entry in Domestic Commodity Markets." *Economics of Development and Cultural Change* 56 (4): 729–66.

GOI (Government of India). 2000. "Report of the High Powered Committee for Formation and Conversion of Cooperative Business into Companies." March, Department of Company Affairs, Ministry of Law, Justice & Company Affairs, New Delhi. <http://reports.mca.gov.in/Reports/26-Alagh%20committee%20report%20of%20high%20powered%20committee%20for%20formation%20and%20covering%20of%20corporate%20business%20into%20Companies,%202000.pdf>

GOI (Government of India). 2015. "Agriculture Census 2010–2011 (Phase II)." Agriculture Census Division, Department of Agriculture & Cooperation, Ministry of Agriculture, New Delhi. <http://agcensus.nic.in/document/agcensus2010/allindia201011H.pdf>

GOI (Government of India) and SFAC (Small Farmers' Agribusiness Consortium). 2014. "Year of Farmer Producer Organizations." Ministry of Agriculture, Department of Agriculture & Cooperation, New Delhi. http://agritech.tnau.ac.in/farm_association/pdf/Year-of-FPO2014.pdf

Hegde, N. G. 2010. "Development of Value Chain for Sustainable Agriculture." *Financing Agriculture* 42 (7): 26–8.

Kirsten, Johann F., and Kurt Sartorius. 2002. "Linking Agribusiness and Small-Scale Farmers in Developing Countries: Is There a New Role for Contract Farming?" *Development in Southern Africa* 19 (4): 503–29.

Stockbridge, Michael, Andrew Dorward, and Jonathan Kydd. 2003. "Farmer Organisations for Market Access." Briefing paper, June, UK Department of International Development, London. https://assets.publishing.service.gov.uk/media/57a08ce540f0b652dd001634/R8275_040516_Bfg_Paper_FO_for_market_access.pdf

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