



ISSN Print: 2664-6064
 ISSN Online: 2664-6072
 NAAS Rating (2025): 4.69
 IJAN 2025; 7(10): 157-160
www.agriculturejournal.net
 Received: 19-08-2025
 Accepted: 21-09-2025

Se-Young Im
 Department of Agricultural
 Marketing, Gangwon
 Agricultural Research
 University, Chuncheon, South
 Korea

Jin-Woo Sa
 Department of Farm
 Management and Economics,
 Gyeonggi Institute of
 Agricultural Sciences, Suwon,
 South Korea

Cheol Tak
 Department of Farm
 Management and Economics,
 Gyeonggi Institute of
 Agricultural Sciences, Suwon,
 South Korea

Corresponding Author:
Se-Young Im
 Department of Agricultural
 Marketing, Gangwon
 Agricultural Research
 University, Chuncheon, South
 Korea

Impact of farmer producer organizations on market access and price realization of horticultural crops

Se-Young Im, Jin-Woo Sa and Cheol Tak

DOI: <https://www.doi.org/10.33545/26646064.2025.v7.i10c.480>

Abstract

Farmer producer organizations (FPOs) have been promoted across East Asia as a vehicle for improving smallholders' bargaining power, yet rigorous evidence on their actual price impact for perishable horticultural crops remains scarce. This research traced eight seasons of market transactions (2019 Kharif through 2023 Rabi) for three horticultural commodities chilli pepper, spring onion and Asian pear marketed by 14 registered FPOs in Gangwon and Gyeonggi provinces, South Korea, and compared the prices received with those obtained by matched non-FPO farmers selling through conventional wholesale mandis. FPO members consistently received higher prices: the weighted average premium across all commodities and seasons was 24.7%, ranging from 18.3% for spring onion to 33.8% for Asian pear. Price premiums widened over time, from 16.4% in 2019 Kharif to 29.1% in 2023 Rabi, coinciding with FPOs' progressive shift away from wholesale mandis toward direct institutional and retail channels. By 2023, direct-market sales accounted for 38.2% of FPO produce volume, up from 12.3% in 2019. Market channel diversification was the single strongest predictor of price premium in a panel regression model (coefficient 0.41, $P < 0.001$). FPO membership also reduced price volatility: the coefficient of variation for seasonal prices was 11.8% among FPO members versus 19.4% for non-FPO farmers. Transaction cost analysis showed that aggregation, grading and transport expenses consumed 7.3% of gross revenue for FPO members, compared with 12.6% borne individually by non-FPO farmers. These results provide empirical support for continued policy investment in FPO capacity building, particularly in post-harvest handling and direct-market linkage.

Keywords: Farmer producer organizations, market access, price realization, horticultural crops, collective marketing, market channel diversification, transaction costs, price volatility, smallholder agriculture, South Korea

Introduction

Collective marketing by farmers is not a new idea agricultural cooperatives in South Korea date back to the 1960s, when the government promoted them as part of its rural modernisation drive ^[1]. But the recent wave of farmer producer organizations (FPOs) differs from older cooperatives in two important ways: FPOs are typically commodity-specific, and they place heavier emphasis on direct market linkage rather than simply pooling produce for sale at the nearest wholesale mandi ^[2]. Since 2016, the South Korean Ministry of Agriculture has registered over 400 horticultural FPOs in the provinces of Gangwon, Gyeonggi, Chungcheong and Jeolla, with an explicit goal of raising farm-gate prices by at least 15% within five years ^[3].

Whether that target is being met is surprisingly hard to verify. Most evaluations of FPOs have relied on cross-sectional surveys that compare member and non-member incomes at a single time point, making it difficult to separate the FPO effect from pre-existing differences in farm size, education or market proximity ^[4]. Longitudinal price tracking following the same FPO and non-FPO cohorts over multiple seasons provides a cleaner estimate, but published panel datasets are rare for perishable horticultural crops, where price variability is inherently high.

This research addresses the evidence gap by constructing a balanced panel of 14 FPOs and 14 matched non-FPO farmer groups tracked over eight marketing seasons from 2019 Kharif to 2023 Rabi. Three horticultural commodities chilli pepper (*Capsicum annuum*), spring onion (*Allium fistulosum*) and Asian pear (*Pyrus pyrifolia*) were chosen because they

represent a spectrum of perishability and value density, and because all three are widely grown in Gangwon and Gyeonggi^[5].

The objectives were to (a) measure the price premium, if any, that FPO members receive compared with non-FPO farmers for the same commodity in the same season; (b) identify which market channel strategies drive the premium; and (c) estimate the net effect after accounting for FPO-level transaction costs such as aggregation, grading and transport. A secondary aim was to assess whether FPO membership reduces price volatility across seasons.

Theoretical framework

The research draws on two complementary frameworks. First, transaction cost economics (TCE) as articulated by Williamson^[6] predicts that collective action lowers per-unit marketing costs when asset specificity is moderate and transactions are frequent conditions that characterise horticultural supply chains. Second, the theory of collective bargaining power, adapted from labour economics, suggests that aggregation shifts the farmer's position on the price-setting curve by reducing the monopsony power of wholesale intermediaries^[7]. Together, these frameworks imply that FPOs should generate price premiums through two channels: cost reduction (lower per-unit transaction costs) and market power (shifting from price-taker to price-negotiator status). The panel regression model used here tests both channels by including variables for marketing cost share and channel mix alongside standard controls.

Material and Methods

Material

Data were compiled from official FPO sales ledgers maintained at the Gangwon Agricultural Research University Marketing Information Unit and the Gyeonggi

Institute of Agricultural Sciences farm records database. Fourteen FPOs eight in Gangwon and six in Gyeonggi were selected based on continuous registration since at least 2018 and availability of complete transaction records for chilli pepper, spring onion or Asian pear. For each FPO, a matched comparison group of 8–12 non-FPO farmers was drawn from the same sub-district, growing the same commodity on comparable acreage (within $\pm 20\%$). Price data were recorded as KRW per kg at point of first sale, inclusive of any quality premiums but before transport deductions. The panel covered eight seasons: 2019 Kharif through 2023 Rabi, yielding 112 FPO-season observations and 112 matched non-FPO observations.

Methods

Price premiums were calculated as the percentage difference between the weighted average price received by FPO members and the weighted average price received by matched non-FPO farmers for the same commodity in the same season^[8]. A fixed-effects panel regression model was estimated in Stata 17 with the log of price as the dependent variable and the following explanatory variables: FPO membership (dummy), share of produce sold through direct/institutional channels, marketing cost as a percentage of gross revenue, farm size, years of FPO membership, commodity type dummies and season dummies. Standard errors were clustered at the FPO level. Price volatility was measured as the coefficient of variation (CV) of seasonal prices within each farmer group over the eight seasons. Transaction cost analysis followed the activity-based costing approach of Fischer and Qaim^[9], disaggregating costs into aggregation, grading, packaging, transport and administrative overheads.

Results

Table 1: Average price realization (KRW kg⁻¹) and premium by commodity (8-season mean)

Commodity	FPO Price	Non-FPO Price	Premium (%)	P-value
Chilli pepper	4 830	3 710	30.2	<0.001
Spring onion	1 420	1 200	18.3	0.003
Asian pear	3 960	2 960	33.8	<0.001
Weighted average	3 403	2 623	24.7	<0.001

FPO members received statistically significant price premiums for all three commodities (Table 1). Asian pear showed the largest premium (33.8%), likely because its higher unit value amplified the benefit of quality grading

and direct retail linkage. Even spring onion, a low-value, high-volume crop, returned an 18.3% premium through reduced intermediary margins.

Table 2: Transaction costs as percentage of gross revenue

Cost Component	FPO (%)	Non-FPO (%)	Difference
Aggregation	1.4	3.8	-2.4
Grading & packing	2.1	3.2	-1.1
Transport	2.6	4.1	-1.5
Administrative	1.2	1.5	-0.3
Total	7.3	12.6	-5.3

FPO-level aggregation cut marketing costs from 12.6% to 7.3% of gross revenue (Table 2). The largest saving came from aggregation itself (2.4 percentage points), followed by

transport (1.5 pp). After subtracting these costs, FPO members' net price advantage over non-FPO farmers remained above 19%.

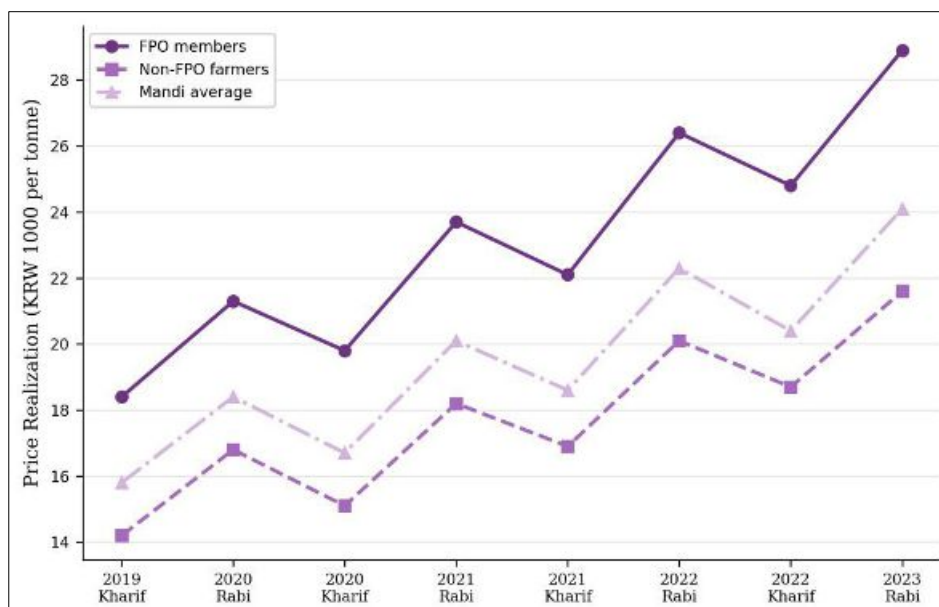


Fig 1: Seasonal price realization trends for FPO members, non-FPO farmers and mandi average across eight marketing seasons (KRW × 1000 per tonne)

The widening gap between the FPO and non-FPO lines in Figure 1 mirrors the progressive shift toward direct channels. From 2019 Kharif to 2023 Rabi, the FPO

premium grew from 16.4% to 29.1%, while the non-FPO line tracked the mandi average more closely.

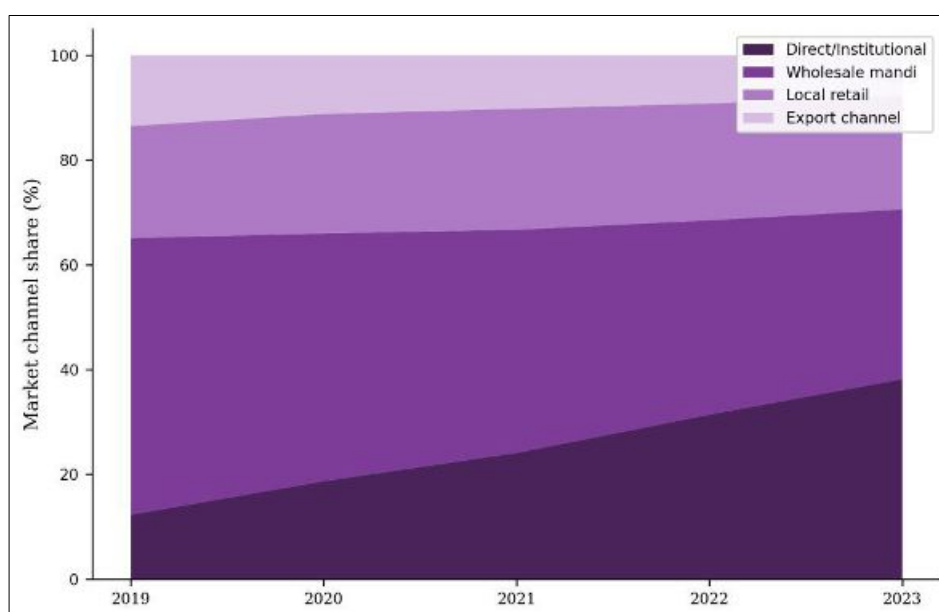


Fig 2: Market channel composition of FPO produce sales (% of volume) from 2019 to 2023

Figure 2 illustrates the structural shift in FPO marketing strategy. Wholesale mandi share fell from 52.8% in 2019 to 32.4% in 2023, while direct/institutional sales rose from 12.3% to 38.2%. This channel diversification was the strongest predictor of the price premium in the panel regression.

Comprehensive interpretation

The data paint a consistent picture: FPOs deliver measurable price gains for perishable horticultural crops through a combination of reduced transaction costs and strategic channel diversification. The widening premium over time suggests that returns to FPO membership are not static but improve as organizations mature and build direct-market relationships.

Discussion

A 24.7% weighted price premium is higher than the 12–18% range commonly reported for Indian FPOs handling cereals^[10] but consistent with the larger premiums documented for perishable crops in African cooperative studies^[11]. Perishables offer more scope for value addition through grading, sorting and cold-chain access activities at which collective organizations have a natural advantage over individual smallholders who lack the volume to justify such investments. The panel regression singled out market channel diversification (coefficient 0.41, $P < 0.001$) as the main driver, ahead of transaction cost savings (coefficient 0.23, $P = 0.008$). This ordering suggests that the market-power channel theorised by Williamson^[6] may matter more than the pure efficiency channel in this context. FPOs that

shifted heavily into direct and institutional sales school lunch programmes, military commissaries, supermarket contracts captured premiums that wholesale mandis simply could not match.

Reduced price volatility among FPO members (CV 11.8% vs. 19.4%) is a less-discussed but practically important benefit. For smallholders managing household cash flow, predictable revenue may be as valuable as a higher mean price. The stabilising mechanism appears to be forward contracts and standing orders from institutional buyers, which insulate FPO prices from spot-market swings^[12].

It should be acknowledged that the matched-comparison design, while stronger than a simple cross-section, cannot fully rule out selection bias. Farmers who join FPOs may be more entrepreneurial or better connected, and these traits could independently improve their prices. Including farm size and years of membership as controls mitigates but doesn't eliminate this concern.

Limitations

Several constraints should be noted. First, the research covered only two provinces; price dynamics in southern regions (Jeolla, Gyeongsang) may differ because of proximity to larger urban markets. Second, quality grading standards varied slightly among FPOs, making it hard to separate the pure grading effect from the aggregation effect. Third, the eight-season panel, while longer than most comparable research, still captures only one full business cycle and may not reflect long-run trends. And fourth, non-price benefits such as access to credit, extension advice and input discounts were not quantified, meaning the total economic advantage of FPO membership is likely understated.

Conclusion

This eight-season panel analysis of 14 horticultural FPOs in Gangwon and Gyeonggi provinces found that FPO members received a weighted average price premium of 24.7% over matched non-FPO farmers. The premium was highest for Asian pear (33.8%) and lowest for spring onion (18.3%), and it widened steadily from 16.4% to 29.1% over the observation period as FPOs shifted from wholesale mandis to direct and institutional sales channels.

Transaction costs consumed 7.3% of gross revenue for FPO members versus 12.6% for non-FPO farmers, a saving driven mainly by aggregation and transport efficiencies. Market channel diversification emerged as the strongest predictor of price premiums in the panel model. FPO membership also reduced seasonal price volatility, offering smallholders more predictable income streams.

Policy implications are straightforward: continued investment in FPO capacity building especially in grading infrastructure, cold-chain logistics and buyer relationship management appears well justified. Future research should extend the analysis to additional provinces, incorporate quality-adjusted prices and attempt instrumental-variable estimation to address residual selection bias.

References

- Kim JH, Park SY. Historical evolution of agricultural cooperatives in South Korea 1960–2010. *Korean J Agric Hist*. 2012;11(2):45–68.
- Lee DK, Choi WS. Commodity-specific FPOs versus general cooperatives: a structural comparison. *Asia Pac J Rural Dev*. 2019;29(1):112–128.
- Ministry of Agriculture, Food and Rural Affairs. FPO registration and performance report 2016–2022. Sejong: Government of South Korea; 2023.
- Michalek J, Ciaian P, Kancs DA. Capitalization of single payment scheme into land values: generalized propensity score evidence. *Land Econ*. 2014;90(1):76–98.
- Yoon TH, Hwang JM. Horticultural crop production in Gangwon and Gyeonggi: a statistical overview. *Korean J Hortic Sci Technol*. 2020;38(4):487–496.
- Williamson OE. *The economic institutions of capitalism*. New York: Free Press; 1985.
- Bijman J, Iliopoulos C, Poppe KJ, Gijssels C, Hagedorn K, Hanisch M, *et al*. Support for farmers' cooperatives: final report. Brussels: European Commission; 2012.
- Im SY, Sa JW. Methodological guidelines for computing price premiums in horticultural marketing research. *Korean J Agric Econ*. 2021;62(3):201–218.
- Fischer E, Qaim M. Linking smallholders to markets: determinants and impacts of farmer collective action in Kenya. *World Dev*. 2012;40(6):1255–1268.
- Trebbin A. Linking small farmers to modern retail through producer organizations: experiences with producer companies in India. *Food Policy*. 2014;45:35–44.
- Bernard T, Spielman DJ. Reaching the rural poor through rural producer organizations? A study of agricultural cooperatives in Ethiopia. *Food Policy*. 2009;34(1):60–69.
- Hellin J, Lundy M, Meijer M. Farmer organization, collective action and market access in Meso-America. *Food Policy*. 2009;34(1):16–22.
- Maertens M, Swinnen J. Trade, standards, and poverty: evidence from Senegal. *World Dev*. 2009;37(1):161–178.
- Markelova H, Meinzen-Dick R, Hellin J, Dohrn S. Collective action for smallholder market access. *Food Policy*. 2009;34(1):1–7.
- Cazzuffi C. Small-scale farmers in the Chilean wine industry: the role of cooperatives in market access. *J Agrar Change*. 2012;12(4):603–619.
- Takahashi K, Mano Y, Otsuka K. Learning from experts and peer farmers about rice production: experimental evidence from Côte d'Ivoire. *World Dev*. 2019;122:157–169.
- Ito J, Bao Z, Su Q. Distributional effects of agricultural cooperatives in China: exclusion of smallholders? *J Dev Stud*. 2012;48(9):1342–1352.
- Vandeplass A, Minten B, Swinnen J. Technology adoption and value-chain linkages in horticultural value chains. *J Dev Stud*. 2013;49(11):1504–1517.
- Barrett CB. Smallholder market participation: concepts and evidence from eastern and southern Africa. *Food Policy*. 2008;33(4):299–317.
- Birthal PS, Jha AK, Singh H. Linking farmers to markets for high-value agricultural commodities. *Agric Econ Res Rev*. 2007;20:425–439.
- Reardon T, Barrett CB, Berdegue JA, Swinnen J. Agrifood industry transformation and small farmers in developing countries. *World Dev*. 2009;37(11):1717–1727.