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Marketing of farmer professional cooperatives in the wave of transformed agrofood market in China☆

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ABSTRACT

The upstream agrofood market in China is dominated by a vast number of small farmers and traders, which challenges food safety compliance. To promote small farmers' access to the commercialized agrofood market, membership in farmer professional economic cooperatives (FPCs) is considered to be an important strategy by the Chinese leaders. The goals of this study are to investigate the marketing of FPCs in China and to determine their record of food safety compliance. Based on 157 FPCs from a nearly national representative survey, this paper shows that marketing FPCs in China relies primarily on the wholesale market, but there is a notable penetration of the modern supply chain via FPCs. Government-driven agribusiness facilitates farmers' access to markets via FPCs. However, food safety standards are not well-specified in the current FPCs' marketing.

1. Introduction

Institutional reform in rural China significantly contributed to agricultural productivity growth during the early reform period. During the socialist era, millions of small peasant farms in China were replaced by collective farms that were subject to central planning. China introduced the Household Responsibility System (HRS) in the late 1970s, which was the primary source of agricultural growth prior to the mid-1980s (de Brauw, Huang & Rozelle, 2004; Johnson, 1998; Lin, 1992). This increase in agricultural productivity moved millions of people in rural areas out of poverty. The incidence of rural poverty declined from 30.7% in 1978 to 14.8% in 1984 (NSBC, 2007).

The household farming economy, together with China's market reforms, continues to promote the transformation of the rural market. The upstream segment of the market chain has evolved dramatically from a country with a food system that was based on rationing in the cities, to one that was based on wet markets and small shops, to one in which the supermarket and restaurant sectors are growing faster than anywhere else in the world (Huang et al., 2007). In the midstream wholesale sector, consolidation is occurring, and there is an emerging group of large wholesalers that have formal and informal ties with supermarket chains. The downstream segment of the agrofood market saw a faster rate of supermarket emergence than in other developing regions (Hu et al., 2004).

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Internationally, small holdings face a systemically unfavorable situation regarding the adoption of technology, climate change, an agrofood market moving toward consolidated modern supply chains, and various other uncertainties (Dorward, Kydd & Poulton, 1998; Hazell et al., 2006). Recent narratives suggest that these unfavorable situations are rooted in the growing role of supermarkets, grades and standards, and export horticulture (Reardon et al., 1999; Reardon & Timmer, 2007; Reardon et al., 2003; Swinnen, 2007). Each of these studies observed that smallholder farmers are excluded from the new wave of Chinese market liberalization and the transformed agrofood chain.

The agrofood market in China is competitive in every segment, which helps shield upstream farmers from rent extraction to the downstream industries (Huang et al., 2007). In a study on the horticultural market in China, Huang et al., found that although the agrofood market moves toward a slight consolidation in the direction of modern supply chains, such a transformation presents modest penetration at the farm gate, and marketing at the farm gate is dominated by the sales of farmers to small traders and small wholesalers (Huang et al., 2007). The agrofood market in China is inclusive to the poor.[1]

Although the upstream agrofood market in China includes the poor, the lack of vertical coordination in the agrofood chain poses tremendous challenges for complying with food safety standards. Huang et al. (2009) found that no farmers had their fruits tested for pesticide residue in their large-scale farm survey. After selling their output on the spot market, farmers in China's horticulture economy are free of all accountability. The same situation is observed on China's dairy market. Milk stations even accepted bad" milk when raw milk at the farm gate was found to be unsafe (Huang et al., 2008). Given the increasing concerns over food safety, smallholder farmers in China find it difficult to gain access to high-value markets that have stringent food safety and quality standards (World Bank, 2006a).

Given these complex issues, it is important for China to embark on organizational innovations to meet them. One intervention that the Chinese government carried out in the early 2000s was to promote vertical coordination between agro-industrial enterprises and individual farmers. As a political initiative, the so-called “dragon-head-driven” companies were promoted at the national, provincial, municipal and county levels.[2] These firms were thus selected and asked to contract with farmers to produce specific attributes. For example, the “dragon-head” firms may provide seed, fertilizer and other inputs, as well as technical expertise. In exchange for their role in enhancing the vertical coordination of the agrofood system, these firms receive support and subsidies from the government.

Although some studies find that agro-industrial enterprises promote vertical coordination between individual farmers and the midstream and downstream segments through contract farming (Guo, Jolly & Zhu, 2007), based on a large-scale household survey on horticultural farmers in the Shandong province with a randomized sampling scheme, Huang et al. (2007, 2009) found that there were almost no written contracts at the farm gate. Indeed, in only 6% of the tomato-producing villages and 9% of the cucumber-producing villages did the villagers believe that there was any commitment from buyers to purchase farmers' output. Any commitment to purchase was not written down, but was mainly maintained through a long-run business relationship. Relational contracting is chosen over formal contracting in China's horticultural marketing at the farm gate.

Recognizing the challenges and the institutional deficiency of the current agrofood system, the Chinese government initiated a national campaign to boost farmer cooperatives. According to a recent internal report by the Ministry of Agriculture, the number of farmer cooperatives reached 180,000, and nearly 10% of farmers participated in such organizations nationwide. Theoretically, farmer professional economic cooperatives (FPCs) have been believed to be able to reduce the costs the agro-industry faces when working with individual smallholder farmers, as well as to strengthen the farm–business linkage (Rottger, 2005). Collective action by farmers also plays a crucial role in promoting food quality in developing countries (Moustiera et al., 2010).

Although the transformation of the agrofood market in developing countries has appeared in a vast number of studies (Reardon & Timmer, 2007), farmer organizations remain under-addressed. The recent campaign of FPCs in China provides a country-wide case study. The overall goals of this paper are to examine the roles of the emerging FPCs in restructuring the agrofood chain and to assess their impacts on food safety in China. Specifically, we want to know: 1) how does the emergence of farmer cooperatives in China affect the marketing channel at upstream segment; 2) how are the food safety standards specified along the agrofood chain via farmer cooperatives; and 3) how does the policy-oriented agribusiness mode affect the marketing channel of farmer cooperatives?

The empirical evidence of this study is based on a cross-regional representative survey of 157 FPCs, and the unique dataset provides the most updated observation on the recent development of farmer cooperatives in transitional China. The paper is organized as follows. Section 2 briefly introduces the history and development of farmer cooperatives in China. Section 3 presents the method of data collection and the descriptive analysis. In section 4, we model the determinants of the marketing channel of FPCs in China. Conclusions are provided in section 5.

[1] The modern channel in Huang's research refers to special suppliers, processing companies, farmers' associations, supermarkets, restaurants, and export companies. They found that the share of farm gate marketing through modern channels was very small. This is not surprising given the fact that the study by Huang et al. (2008) was based on a randomly sampled survey in Shandong province. In some other case studies, however, there is evidence that the segmentation of the traditional and export-oriented agrofood market in China has been emerging. In the export-oriented chain, tight vertical integration and food safety control were found to be widely implemented (World Bank, 2006a).

[2] While county dragon-head firms are at the lowest level with the smallest size, the national-level dragon-head companies must meet certain scales, as well as the management criteria given by the Ministry of Agriculture.

2. FCOs in China: History and evolution

Historically, the term 'cooperative' (*hezuo she*) was widely used in the planned economy era, and it did not have the same connotations as it does in the context of other counties.[3] Under the system of collective farming, both the "Rural Credit Cooperatives" (RCCs) and "Supply and Marketing Cooperatives" (SMCs) were a *de facto* government-owned organization. In the case of SMCs, agricultural products were procured and distributed by the government, and were normally not allowed to trade freely on markets. SMCs became a primary unit of the 'Unified Purchasing and Supplying System' (UPSS, i.e., '*tong-gou-tong-xiao*' in Chinese) which was the dominant institution for marketing agricultural products until the early 1980s. At that time, the term 'cooperative' had merely a literal meaning.

Since the early 1980s, the centrally-planed agrofood market has gradually been transformed to a market-oriented system. Thanks to the HRS in the early 1980s and market liberalization in the following years, family farmers could make cultivation decisions by themselves, and the decision-making was fully contingent on the markets. This implies, to the extent that farmers make correct decisions in both producing and marketing, that farmers are capable of benefiting from the transformation. When technological change has demonstrated an overriding role in contributing to agricultural productivity (Huang & Rozelle, 1996), farmers face institutional disadvantages in accessing appropriate technologies, inputs, information and value-added content of the supply chain. The public extension system, however, provides only feeble services (Hu et al., 2009).

For these reasons, since the late 1980s, new cooperative organizations—called Farmer Specialized Associations (FSAs) and Farmer Specialized Cooperatives (FSCs)—were established to generate and disseminate agricultural technology among farmers.[4] Meanwhile, emerging new forms of agribusinesses began to view cooperatives as a viable channel for introducing technologies to farmers and thus to maintain food quality by using contracts (Guo et al., 2007). The grassroots development of farmer cooperatives, however, presents low national coverage and high regional disparities. Shen et al. (2005) note that there were very few farmer cooperatives in 1994. A notable increase in farmer economic cooperatives has occurred since 1998; 40% of the surveyed farmer cooperatives were established between 1998 and 2004. Nonetheless, the legal framework for farm cooperatives was missing at that moment, although there were regional attempts to draft laws to legitimize farm cooperatives[5].

The systematic promotion of farmer cooperatives began in 2004, as in December 2003, the Standing Committee of the 10th People's Congress officially accepted the "Law of Farmers Cooperative Economic Organizations" into the agenda for drafting legislation. Meanwhile, several relevant laws impinged on the operation of farmer cooperatives. For example, in the "Agricultural Law" of 2003, "Farmers Specialized Cooperative Economic Organizations" were officially encouraged, but the operations were to be confined to production and marketing. Furthermore, the law does not explicitly set a framework for how and with which government bodies registration should take place (World Bank, 2006b, p. 17). Nor did the "Corporate Law" clearly specify the unique governance structure of cooperative organizations. The ambiguous interpretation of farm cooperatives leads to both strong influence and prioritized operation of local government.[6]

On October 31st, 2006, the "Law of Farmers Professional Cooperatives" was passed in the Standing Committee of the 24th People's Congress, and the law was promulgated on July 1st, 2007. The law highlights cooperatives' provisions of service, such as purchasing agricultural inputs, marketing, processing, transportation, storage, agricultural technology and information. However, cooperatives' function in providing finance and other social services is not declared. While the law nudges mass organizations, companies and other persons to invest in agriculture, farmers' basic rights are reaffirmed and sworn to be protected. For example, the law clearly notes that the governance of cooperatives should be based on principles of "voluntary participation, free withdrawal, democratic control and return of surplus earnings to members". Farmers' membership is a minimum set level of 80%, and for cooperatives that have a membership of more than 20, enterprises and other external members are allowed to hold up a maximum 5% of the cooperative's equity. The principle of 'one-person-one-vote' is specified as the basic rule for decision-making.

The legal framework facilitates the development of FPCs in rural China. The Ministry of Agriculture claims that 4–5% of farmers belonged to 140,100 farmer cooperatives by 2004 (Chen, 2004). By using large-scale survey data, Shen et al. (2005) reported that 2.9% of farmers and 10% of villages were covered by FPAs by 2003.[7] By tracing the same villages and employing a panel dataset, Deng et al. (in press) found that 21% of China's village and county seats had FPCs in China, and these FPCs provided services to about 24 million farm households in 2008. Although there are many factors that correlate with the emergence of FPCs in rural China, the role of government is of primary importance.

[3] A detailed review on the history of cooperatives in China is available in Hu et al. (2007) and the World Bank (2006b).

[4] Farmer specialized (or professional) associations and farmer specialized (or professional) cooperatives were different. With a business registration, the latter could have their own assets and carry out their own product marketing activities. In contrast, the former were not economic organizations, and thereby did not directly carry out marketing activities (Hu et al., 2009).

[5] In 1995, the Jiangsu Province issued local regulations on the operation of supply and marketing cooperatives, followed by the Jilin Region and the Xinjiang Uighur Autonomous Region (World Bank, 2006b).

[6] In November 2004, the Zhejiang Province passed the first provincial law regulating the operation of 'Farmer Professional Cooperative Organizations'. Farm cooperatives were clearly placed under the supervision of the Agricultural Bureau at the county level, but had to be registered with the Industry and Commerce Bureau.

[7] The statistical figure of village coverage is misleading, as there are both formal FPCs that are barely functional and FPCs that were not formally registered, but provided functional services to farmers. Shen et al. (2005) decomposed the functional and formal farm cooperatives and found that 7% of villages in China had functional FPCs.

3. Survey data and descriptive analysis

3.1. Survey, sampling and terms

The data used in this study are from a nationwide survey in 5 provinces.[8] The first survey was conducted in late 2003, and primarily collected 2003 data in 6 provinces. Within each province, all counties were sorted in descending order of gross value of industrial output per capita, and two from each tercile of listed counties were selected from each stratum.[9] Finally, 6 counties were selected in each province. The same strategy applies to the selection of township in each county; six towns were selected and we asked each to send two representatives (typically the village leader and accountant) for a questionnaire-based survey at the village level. In total, 2459 villages were surveyed.

In each village survey, the two village cadres were asked whether any farmer in their villages participated in any FPC, regardless of its location. If the answer was "yes", a set of relevant questions (for example, the legal status, initiation, major functions) was presented.

The second round survey was conducted in early 2009 to investigate the developmental status of FPCs in 2008. Considering the increased survey costs related to the FPC survey, in the second round survey we drew a sub-sample from the first round. We then surveyed 5 provinces and, in each province, the six sampled counties (from the 2003 survey) were grouped into 3 terciles, from which we selected one county each.[10] In each county, the six sample townships from the 2003 survey were sorted into two groups (viz. poor and non-poor); we then randomly drew one from each group. Finally, the second round survey in 2009 covered five provinces, fifteen counties, thirty townships and 380 villages.

In the second round survey, we asked the village representatives, "Is there any farmer in your village currently participating (or has historically participated) in any registered or non-registered farmer professional cooperatives that may not necessarily be in the residential villages". If the answer was "Yes", rather than surveying the village representatives about the FPCs at the village level (as the first round did), we traced the FPCs and surveyed the FPC heads after identifying them through the village survey. A separate questionnaire was used to investigate the following aspects of FPC participation: initiation, managed products, internal governance structure, the provision of inputs and other technical services, the provision of marketing and other services, and the personal data of FPC heads. In total, we surveyed 189 FPCs and found that 157 of them have specific products. *In this study, the term FPCs refers to farmer economic organizations that organize the production and marketing of specific agricultural products.*[11]

3.2. The emergence of FPCs in China: When and who

Legal framework. Before 2007, the lack of a clear legal status was one of the main constraints to the development of FPCs in China (World Bank, 2006b). Various governmental departments (such as the Ministry of Agriculture, Ministry of Civil Administration, State Administration for Industry and Commerce, and the Science and Technology Association) had all been involved in the administration. The 2007 law clearly names the Industrial and Commercial Bureau as the authorized institution for registration. The Agricultural Bureaus at the county level (or higher) are responsible for supervising the FPCs' operation. As shown in Table 1, 60% of the surveyed FPCs (94 of 157) registered themselves with the Industrial and Commercial Bureau, and 82% of them were initiated after 2007. The legal framework facilitates the development of FPCs in rural China.[12]

When. The development of FPCs in rural China has experienced four stages since the late 1980s. There were quite a few farmer cooperatives prior to 1998, and there was an accelerated increase during 1998 and 2003. Shen et al. (2005) found that 40% of the surveyed farmer cooperatives were established during this period. In our study, 9% of surveyed FPCs were established before 2003 and most of them were initiated between1999 and 2003.

The systematic promotion of farmer cooperatives occurred in 2004. We find that 24% of FPCs were established between 2004 and 2006. Finally, when the "Law of Farmer Professional Cooperatives" was promulgated on July 1st, 2007, the legal framework created an environment conductive to the development of FPCs. As shown in Table 1, 68% of surveyed FPCs (106 of 157) were established after the introduction of the formal legal framework. Thus, policy support is determining the growth of FPCs in China.

Who. The role of government in the initiation of FPCs is evident. As shown in Table 3, 64% of FPCs had initiating sources related to the government—28% from the government exclusively, and 36% from both the government and farmers. The presence of

[8] More details about the first round survey are available in Deng et al. (forthcoming) and Shen et al. (2005).

[9] The gross value of industrial output per capita (GVIO/capita) was found to be one of the best predictors of living standards and development potential (Rozelle, 1996).

[10] We divide China's major agricultural production provinces into five groups: the eastern coastal areas (*Jiangsu*, Shandong; Shanhai, Zhejiang, Fujian, Guangdong and Hainan); the southwestern provinces (*Sichuan*, Guizhou , Chongqing, Yunnan, Tibet and Guangxi); the Loess Plateau and the northwestern provinces (*Shaanxi*, Shanxi, Inner Mongolia, Gansu, Ningxia; Qinghai and Xinjiang); the north and central provinces (*Hebei*, Henan, Beijing, Tianjin, Anhui, Jiangxi, and Hunan); and the northeastern provinces (*Jilin*, Liaoning and Heilongjiang). The first province in italics within the parentheses is selected as a representative province of the group. While we recognize that we have deviated from the standard definition of China's agro-ecological zones, the realities of survey work justified our compromises. Pre-tests in Guangdong demonstrated that data collection was extraordinarily expensive and the attrition rate was high. Our budget did not allow us to add another central province (e.g., Hunan or Hubei) to the sample.

[11] The dropped 32 FPCs either provided mechanization and technical services or they were "empty-shell" organizations that provided no services to farmers. Additionally, we dropped some samples that managed non-food products, for example, silk or cotton.

[12] It is not rare that the registration of FPCs to an agency (or more than one agency) is done to qualify for support from various sources. The national campaign on "Farmers Cooperative Organizations" and increased financial support from various government agencies amplify and distort the incentive of initiating cooperatives and associations. In the survey, we found a few "empty-shell" cooperatives that provided no service to members, but still received preferential support from the government.

Table 1
Registrations of farmers' professional cooperatives in China.

	FPCs by starting year (%)				Totals
	≤1998	[1999, 2003]	[2004, 2007)	≥2007	
Registered in:					
Civil Affairs Bureau	0	7	53	40	15
Industrial and Commercial Bureau	1	3	14	82	94
Rural or Agricultural Affairs Office	0	0	0	100	8
Science & Tech Association	14	29	43	14	7
Others	0	33	0	67	3
Non-registration	7	10	43	40	30
Number of observations	4	10	37	106	157

Source: Author's own survey.

government in initiating FPCs in China was regarded as "too much enthusiasm", and some commentators posit that local government officials in rural China view their performance related to promoting FPCs as the quantitative targets for evaluating their work (World Bank, 2006b). Nevertheless, in this study we find that the potent promotion of government has been responded to on a grassroot basis; 21% of surveyed FPCs reported initiating sources from farmers exclusively, some of which were the emerging group of specialized farmers. In addition, 15% of FPCs had initiating sources from agricultural industries. FPCs thus became a new mode of agribusiness.

3.3. Where do FPCs market in China

In this study, we asked the president of the FPCs about all the channels through which agrofood products were marketed in 2008. When the cooperative sold the products in a wet market, directly to local consumers, or to brokers of other purchasers, we define the market channel as *traditional*. When the products were sold to supermarkets, processing firms, restaurants, or other professional suppliers, we label the marketing channel as *modern*. The third category is for products sold via wholesalers, i.e., the *wholesale* channel.

Our analysis shows that while modern marketing channels for the new agribusiness mode via FPCs are emerging, farmers still rely on multiple outlets to market their products. Table 1 shows that more than 40% of the surveyed FPCs reported utilizing more than one market channel (Table 2). For the FPCs using a single market channel, 36 (of 92) marketed through the modern channel.

For the two major channels, we asked "whether the buyer in channel x specified food safety requirements", and if the answer was "yes", whether they supervised the production and what action they took (or will take) if danger was (or is) detected?" Depressingly, only 18% of the samples reported a food safety requirement from the buyers, and an even lower percentage of the sample noted that the buyers supervised the production stage and refused to purchase products that were unsafe. Among the small sample, most of them marketed through the modern supply chain exclusively. The food safety standards are enhanced in the modern agrofood chain via FPCs in China.

We observe an emerging new mode of agribusiness via FPCs; 24% of FPCs claimed to be a "production base" (*shenchan jidi* or *jidi*) and 27% contracted with "dragon head companies" (Table 2). Nevertheless, very few FPCs in China have value-added content themselves. Only 21% of the samples had their own processing line—namely, basic packaging and sorting facilities.

Table 2
Marketing, food safety and new agribusiness modes of FPCs in China.

Samples	Total[1]	Traditional[2]	Wholesale	Modern	Mixed
	157	21	35	36	65
Distribution of samples (%)	100	13	22	23	41
Food safety					
Specify food safety requirement	28 (18)	7	11	54	29
Supervise production	18 (11)	0	6	67	28
Refuse when poor quality identified	27 (17)	4	7	48	41
Value adding content					
Has processing	33 (21)	0	24	21	55
Has own brand	27 (17)	4	19	19	59
Quality certification	28 (18)	11	14	11	64
Agribusiness mode					
Is production base (*jidi*)	37 (24)	3	14	49	35
Dragon-head-driven company	42 (27)	0	0	50	50

Note: 1) Numbers in the parentheses of the column are percentages of total samples. 2) Numbers in the table body are percentages of total samples.

Table 3
Marketing channel and initiation of FPCs in China.

	Total[1]	Traditional[2]	Wholesale	Modern
	157	I (65)[3]	II (77)	III (84)
For whole samples		23	41	36
Initiation time				
1994–2003	14 (9)	16	42	42
2004–2006	37 (24)	34	31	35
2007–now	106 (68)	21	43	35
Initiated by…				
Government	44 (28)	27	47	26
Government + Farmers	57 (36)	22	45	32
Farmers	33 (21)	27	28	44
Enterprises	23 (15)	13	33	54
Spatial coverage				
Within village	74 (47)	29	41	30
Other villages within township	43 (27)	21	48	30
Outside township	40 (25)	14	31	54

Note: 1) Numbers in the parentheses of the column are percentages of total samples. 2) Numbers in table body are mean shares of market volume by marketing channel. 3) Numbers in the parentheses of the row are sample size through different market channels.

To explain reputation specificity, we asked two questions: a) Does the FPC have a brand for the product, and (b) is the product FPC-certified as Safe Food (*wu-gong-hai*), Green Food (*lv-se-shi-ping*) without using pesticide, or Organic food (*you-ji-shi-ping)*? In this study, we do not differentiate the various certifications. As shown in Table 2, we find that 17% of FPCs brand themselves and 18% certify their products to certain safety and quality standards.

3.4. Marketing channel and initiation of FPCs

Table 3 reveals the relationship between initiation and marketing channels; the earlier an FPC has been established, the higher the percentage of market volume that flows through the modern channel. For the FPCs initiated before 2003, the percentage of marketing through the modern channel was 42% in 2008, while the figure for newly established FPCs was 35%. FPCs that had initiating sources from the government had lower flows through the modern chain than FPCs initiated by agro-industrial firms. In comparison, when FPCs were initiated by farmers exclusively, the market share flowing through modern channels is much higher than FPCs with governmental initiation sources (column III).

FPC membership is by and large within township boundaries. As shown in Table 3, 47% of surveyed FPCs were within their own villages, and 27% were in other villages in the same townships. Almost 25% of the surveyed FPCs stretched outside local townships. We find a reversed trend of traditional and modern marketing channels with different spatial coverage of FPCs. While village FPCs rely more on the wholesale market, FPCs outside the township boundaries market primarily through the modern channel. Scale economies matter in the modern supply chain. However, when FPC membership is outside of the township, transaction costs may increase due to the increased heterogeneity of membership and the divergence of members' interests. This explains the low incidence of safety requirements, as it is difficult to organize standardized and centralized production when FPCs have wider spatial coverage.

3.5. Marketing channel and agribusiness

Both brand and reputation have distinct roles in promoting FPC marketing through the modern channel. When FPCs have their own brand, the marketing shares through the modern supply chain and wholesale market are higher than that of FPCs without a brand, and are higher than the average level as well (Table 4, columns II and III). The quality certification, however, does not present such a trend. When FPCs are 'production bases' for the buyers, or when FPCs market with "dragon-head" firms, the marketing shares through the modern supply chain are higher than the average level (column III).

3.6. Marketing channel and membership

FPC membership in China is not exclusive. Nearly half of the surveyed FPCs provided services to 'client members', who in some cases differentiate themselves from 'formal members' only in registration status and related voting rights. As shown in Table 5 (column I and II), the median size of client members is larger than that of the formal ones (or registered members).[13] While the

[13] The size of formal membership may be underestimated. When FPCs update their formal membership at the Industrial and Commercial Bureau, they need to collect the full fingerprints of all formal members. Such work is time-consuming and troublesome in rural China. As such, FPCs may not update membership rosters at the ICB, and the surveyed number may thus be understated, although we asked the enumerators to explain this to the FPC presidents.

Table 4
Marketing channel and agribusiness.

	Total[1]	Traditional[2]	Wholesale	Modern
	157	I (65)[3]	II (77)	III (84)
For whole samples		23	41	36
Brand				
Has own brand	27 (17)	16	44	40
Has no brand	130 (83)	25	40	35
Certification				
Has own certification	28 (18)	28	39	34
Has no certification	129 (82)	22	41	37
Production Base				
Is a production base	37 (24)	10	31	58
Is not a production base	120 (76)	27	43	29
Dragon				
Has tier with dragon-head firm	42 (27)	11	14	74
Has no tier with dragon-head firm	115 (73)	28	50	22
Products				
Livestock	68 (43)	25	34	40
Aquatic	12 (8)	15	69	16
Grain	12 (8)	33	20	47
Vegetables	46 (29)	27	38	36
Orchard fruits	19 (12)	7	65	28

Note: 1) Numbers in the parentheses of the column are percentages in total samples. 2) Numbers in the table body are share of market volume through different marketing channels. 3) Numbers in the parentheses of the row are sample size through different market channel.

size of membership presents variations (due to initiating sources and products) and may not be comparable, we create the variable of the percentage of formal members to those members wholly serviced. Interestingly, we find that FPCs providing services to only formal members are more inclined to market through the modern supply chain (column III).

4. Econometric results

Based on the second round survey of FPC presidents, we create cross-sectional data for 157 FPCs. As explored in the previous section, the explanatory variables (or the right-hand variables) are grouped into the initiation of FPCs, membership, product attributes, and connection with agribusiness. As almost half of the sample had more than one market channel, we define the percentage of market volume through different marketing channels as dependent variables. When we carried out the survey, we asked the FPC presidents to report all their marketing channels and corresponding market share in descending order. For the two primary channels, we went into detail and surveyed the buyers' characteristics (viz. Who are they? Where do they come from? When did you start to market through this channel?); product attributes (viz. brand, certification, and processing status); contractual arrangements; safety requirements and vertical service from the buyers. Although some explanatory variables are taken from the two primary channels, in the regression modeling the dependent variables contain the market share of the whole channels, as we find the two primary channels accounted for approximately 90% of market volume. We also run the regression by weighting the percentage of market volume of the two channels. The results present no variations and are included in the Appendix.

The econometric results are presented in Table 6. The results show that the model performs well generally. First, R^2 range from 0.169 for traditional channel equations to 0.404 for modern marketing channel, which are levels that are normal and even quite high for such cross section regression analyses. Second, and more importantly, many of the coefficients on the key variables which we are interested in have important policy implications.

Initiating sources do not affect the market channel of FPCs. Compared with FPCs initiated by agro-industrial enterprises (as we drop this dummy), FPCs initiated by government and farmers are not significantly excluded from the modern supply chain. Nor do grassroot FPCs necessarily market through traditional channels. When looking at the spatial coverage of membership, compared

Table 5
Marketing channel and membership of FPCs in China.

	Total sample	Formal Members in initiating year (median)	Client member in initiating year (median)	Percentage of formal members to total (median)
		(I)	(II)	(III)
Whole samples	157	23	35	87
Traditional channel	65	29	35	76
Wholesale channel	77	23	50	83
Modern channel	84	20	35	100

Table 6
Determinants of the market channels of FPCs in China.

	Traditional (I)	Wholesale (II)	Modern (III)
Initiating year	−1.153	1.185	−0.086
	[1.271]	[1.478]	[1.256]
Initiating source of government (D)	6.044	5.654	−12.097
	[10.453]	[12.158]	[10.332]
Initiating source of government and farmers (D)	2.006	13.136	−15.455
	[9.700]	[11.282]	[9.588]
Initiating source of farmers (D)	6.519	−4.232	−2.583
	[10.244]	[11.915]	[10.125]
Spatial coverage: Within village (D)	17.149**	0.492	−17.375**
	[7.834]	[9.112]	[7.744]
Spatial coverage: Other villages within township (D)	5.111	10.036	−15.458*
	[8.371]	[9.737]	[8.274]
Ratio of formal members to total	−0.062	−0.058	0.124
	[0.081]	[0.094]	[0.080]
FPC has own brand	−13.356	5.478	8.007
	[9.837]	[11.442]	[9.724]
FPC certify product to certain quality standards	10.918	−3.759	−7.020
	[9.334]	[10.856]	[9.226]
FPC contract with industry as “production base” (*jidi*)	−10.268	1.057	9.331
	[7.267]	[8.453]	[7.183]
The downstream buyer of FPC is “dragon-head” company	−14.208**	−33.645***	46.980***
	[6.939]	[8.071]	[6.859]
Product of livestock (D)	−7.614	16.976	−9.114
	[11.606]	[13.500]	[11.472]
Product of aquatic (D)	−24.055	41.109**	−17.097
	[14.823]	[17.241]	[14.652]
Product of vegetables (D)	−2.669	19.848	−17.356
	[11.755]	[13.672]	[11.619]
Product of orchard fruits (D)	−27.349**	44.779***	−17.231
	[13.407]	[15.594]	[13.253]
Constant	2342.937	−2355.208	218.905
	[2549.573]	[2965.469]	[2520.123]
N	157	157	157
R^2	0.169	0.245	0.404

Note: 1) Standard errors in brackets * $p<.10$, ** $p<.05$, *** $p<.01$. 2) “D” refers to the dummy variable.

with FPCs that are outside township boundaries, localized FPCs within township boundaries have a higher marketing share through the traditional market channel (column I). In other words, the midstream processors and downstream retailers favor large FPCs that have reached a certain scale (column III).

Branding and certification are both types of reputation specificity containing value-added content for FPCs to attain additional profit margins. A reliable and efficient quality labeling system can help enforce the food safety standards. As “quality brands” are assets specific to farmer cooperatives, it enhances farmers' ownership along the transformed agrofood supply chain (Hendrikse & Bijman, 2002; Hendrikse & Veerman, 2001). Nevertheless, none of them are found to significantly affect the marketing channel of FPCs in China. Farmer cooperatives are free to brand their products, but to certify products at a certain quality standard, they must go through a procedure with governmental bodies at various levels. For FPCs already possessing public certification, branding is primarily used as a means of advertising and promoting sales. The midstream processors and downstream retailers are not attracted by branded or certified products, as they want to capture the added value as much as they can.[14]

The emerging agribusiness presents a mixed role in affecting FPCs' marketing through different market channels. FPCs' of a ‘production base’ (so-called *jidi*) promote no higher marketing share through the modern supply chain. Nevertheless, FPCs' market share through the modern chain via FPCs notably increases when ‘dragon-head’ enterprises become the buyers. In the meantime, we find that FPCs marketing with the ‘dragon-head’ companies seldom take the traditional channel (as the coefficient in column I is significantly negative), although 50% of them adopt a combination of wholesale and modern channels (Table 2).

Interestingly, when comparing FPCs that produce grain products (as we drop the corresponding dummy), we do not find notable marketing of FPCs in the high-value sector through the modern channel. The wholesale market becomes the main market channel for FPCs producing particularly aquatics and orchard. Although not significant, the coefficients for the variable of livestock and cash crops are still positive. These findings are consistent with the observations on the horticultural market in

[14] Zhou and Jin (2009) determined FPCs' certification to certain food quality standards, and found that the market destination is statistically significant. However, the estimation may be subject to the endogeneity of the market channel with the adoption of FPCs' quality certification.

China conducted by Huang et al. (2007). The authors found that, in nearly all villages in the samples, production is equally small-scale, and marketing is dominated by the sales of farmers to small traders and small wholesalers in horticulture in general. There is minor penetration of midstream processors and modern downstream retailers (namely, supermarkets). However, the mid-wholesale sector evolves quickly (but still less rapidly than the retail sector), and consolidation occurs. In addition, there is evidence of specialization and the emergence of markets that are focused on providing more high-quality products.

5. Conclusions

This study aims to investigate FPC marketing channels during the transformation of the agrofood market in China. The empirical analysis is based on a multi-regional representative survey of 157 farmer professional cooperatives in China. We described the marketing strategy of the emerging FPCs in China, and determined the market channel of FPCs' initiating sources, product attributes, and their tier regarding the agribusiness movement in China.

Our analysis reveals several interesting findings. First, although the emerging FPCs in China still rely primarily on marketing through the wholesale market, the modern agrofood chain (viz. processors and supermarkets) has increasingly become an important channel. Second, food safety standards are rarely specified in FPC transactions in China. With some exception, the modern agrofood chain has tightened food safety standards through farmer organizations. As many foreign buyers market through the emerging modern agrofood chain, the agrofood market in China presents a segment that is export-oriented, with high safety standards and a domestic agrofood chain (World Bank, 2006a). Third, scale economies matter for FPCs' marketing through the modern agrofood chain. Fourth, brand and certification do not affect the marketing outlet of FPCs. Governmental support for the public certification of farmer cooperatives may help farmers gain from the value-added content in the agrofood supply chain and mitigate the marginalization of consolidated downstream segments. And last but not least, agro-industrialization in China strengthens farmers' access to the modern agrofood chain via FPCs.

The commercialization of China's agrofood system has triggered a gradual transformation of the country's subsistence farms. While the smallholder farmers recognize the opportunities brought from the commercialized agrofood market, great challenges remain in the country's vast farm sector. The government-driven agro-industrialization, achieved by promoting the “company leading households”, may strengthen farmers' access to market and technology. However, given the small farm size (less than 0.6 hectares per farm), it is challenging for such a new agribusiness mode to organize, monitor, and standardize the quality of products.

Historically, agriculture in both developed and developing countries is neither organized as large hired-labor farms, nor as agricultural producer cooperatives. Farmer organizations are primarily subject to family governance (Binswanger, Deininger & Feder, 1995; Schmitt, 1993, pp. 155–157). The emergence of FPCs in China is an institutional adaptation to the systemically unfavorable situation that small farmers face, which also reflects the political will of Chinese leaders to promote the FPCs (Deng et al., in press). However, thus far we do not know how farmers are included in or excluded from the FPC movement in China. Neither do we understand how farmers are affected in FPCs by various governance structures. The answers to these questions require a large-scale household survey that covers both FPC members and non-members.

Appendix A

	Traditional (1)	Wholesale (2)	Modern (3)
Initiating year	−1.200	1.269	−0.153
	[1.278]	[1.496]	[1.273]
Initiating source of government (D)	6.567	7.571	−13.878
	[10.508]	[12.303]	[10.466]
Initiating source of government and farmers (D)	3.292	13.877	−17.110*
	[9.751]	[11.417]	[9.713]
Initiating source of farmers (D)	7.403	−4.056	−2.889
	[10.297]	[12.057]	[10.257]
Spatial coverage: within village (D)	17.603**	−0.400	−17.133**
	[7.875]	[9.221]	[7.844]
Spatial coverage: other villages within township (D)	6.137	8.916	−15.024*
	[8.415]	[9.853]	[8.382]
Ratio of formal members to total	−0.074	−0.055	0.129
	[0.082]	[0.096]	[0.081]
FPC has own brand	−14.604	6.866	8.297
	[9.889]	[11.579]	[9.850]
FPC certify product to certain quality standards	10.542	−4.603	−6.886
	[9.383]	[10.986]	[9.346]
FPC contract with industry as “production base”	−9.614	0.240	9.465
	[7.305]	[8.554]	[7.276]

(continued on next page)

Appendix A (*continued*)

	Traditional (1)	Wholesale (2)	Modern (3)
The downstream buyer of FPC is "dragon-head" company	−14.407**	-33.019***	47.111***
	[6.975]	[8.167]	[6.948]
Product of livestock (D)	−7.548	17.061	−9.584
	[11.667]	[13.661]	[11.621]
Product of aquatic (D)	−22.821	40.564**	−17.684
	[14.901]	[17.447]	[14.842]
Product of vegetables (D)	−2.466	21.170	−19.055
	[11.817]	[13.836]	[11.770]
Product of orchard fruits (D)	−28.017**	45.594***	−18.010
	[13.478]	[15.781]	[13.425]
Constant	2437.423	−2523.388	355.291
	[2562.932]	[3000.930]	[2552.862]
N	157	157	157
R^2	0.172	0.241	0.405

Notes: 1) Standard errors in brackets. 2) *$p<.10$, **$p<.05$, and ***$p<.01$. 3) "D" refers to the dummy variable.

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