

# Farmer Cooperatives

## as Intermediaries

for Agricultural and Rural Development in China



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**Farmer Cooperatives as Intermediaries  
for Agricultural and Rural Development  
in China**

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Huan Yang

**Thesis**

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# Abbreviations

AIS	Agricultural Innovation System
CAST	China Association for Science and Technology
CCAP	Center for Chinese Agricultural Policy
CCTV	China Central Television
COHD	College of Humanities and Development Studies (COHD) of China Agricultural University
FC	Farmer Cooperative
FPTA	Farmer Professional Technology Association
GMRI	Guangxi Maize Research Institute
ICA	International Co-operative Alliance
IDRC	International Development Research Center, Canada
IFAD	International Fund for Agricultural Development
JONA	Japan Organic and Natural Foods Association
MOA	Ministry of Agriculture
NGO	Non-government Organization
OCIA	Organic Crop Improvement Association International
OFDC	Organic Food Development Center
PCD	Participatory Community Development (an NGO based in Hongkong)
SMCS	Supply and Marketing Cooperative System
USDA	United States Department of Agriculture

# Chapter 1

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Introduction





## **1.1 Introduction**

This thesis investigates the functions of newly emerging farmer cooperatives in China, their endeavour to link farmers to modernized innovation and food market systems, and their embeddedness in a rapidly changing social, economic, cultural and political context. This study was carried out from 2008 to 2012 within a farmer cooperative support project, named Supporting Farmers' Organization and Rural Innovation Process and coordinated by the Center for Chinese Agricultural Policy (CCAP) of the Institute for Geographical Sciences and Natural Resources Research, Chinese Academy of Sciences and College of Humanities and Development Studies (COHD) of China Agricultural University. The project aimed to identify needs, opportunities and constraints experienced by farmer cooperatives and to design and test supportive policies and mechanisms. The data were collected from 2009 to 2011.

This research has two objectives. It firstly explores the types and scope of services provided by farmer cooperatives in China based on a national survey and selected case studies across provinces carried out in 2009. On the basis of the findings and the types of farmer cooperative distinguished, the research selected four farmers' cooperatives in Shandong and Henan provinces as in-depth case studies to explore and investigate the functions of the cooperatives in practice and how they differed from the new regulations. The empirical cases adopt an actor-oriented approach to focus on the everyday practice of farmer cooperatives and the dynamic processes of interactions within the cooperative and between the cooperative and external actors. This thesis contributes to theory by looking at the farmer cooperative as an organizing process rather than a final product or structure. It also contributes to policymaking by revealing the diversity and dynamics of farmer cooperatives in practice, in relation to the rapid social, economic, cultural and political transformations in rural China.

This chapter firstly elaborates the background to the research in section 1.2, and then explains the research objective and research questions in section 1.3. Section 1.4 introduces the conceptual framework and the key concepts used in the study, followed by the research methodology in section 1.5. In section 1.6, the structure of the thesis and the content of the chapters are briefly introduced.

## **1.2 Research background**

### **1.2.1. Small-scale farming and the changing context for agriculture and rural development in China**

Since the late 1970s, rural reforms in China have brought fundamental changes to agricultural production and rural development. As the right to use farmland was given to households, farmers started to take responsibility for their own purchasing and marketing decisions (World Bank, 2005). This institutional change significantly improved agricultural productivity and farmer household income in the 1980s (Huang and Rozelle, 1996). In 2008, more than 200 million farmers had an average farm size of 0.6 ha, according to the National Bureau of Statistics of China. This small-scale farming system, as elsewhere in the world, is facing numerous challenges to adapt to the changing social, economic and political context for agricultural development. From the 1990s onward, farmers have diversified their farming from grain production to high-value crop and livestock production to raise their income (Huang et al., 2012). Facing the diversified demands of farmers in relation to technology and marketing, the public extension system could not provide adequate services because of the lack of resources and the difficulty of accessing a large number of small farmers (Gao, 2008; Hu et al., 2009). At the same time, services provided by the private sector, such as input producers and agribusiness companies, are not consistent in quality and availability. On the one hand, farmers cannot efficiently deal with problems they meet during the production process; on the other hand, the excessive or improper use of fertilizers and pesticides often causes serious environmental and food safety problems (Sanders, 2006). Regarding marketing, considerable price fluctuations of high-value crops and livestock have become a common phenomenon as the market for agricultural products has moved from supply shortage to excess supply. At the same time, an increasing concentration of input suppliers, processors and retailers has squeezed farmers' profits from farm production. Although the improved living standard and income level of urban consumers has opened up a quality food market, it is difficult for small farmers to grasp the opportunities because of their limited access to technical and marketing services (Hu and Xia, 2007).

### **1.2.2. Emergence and development of farmer cooperatives**

Facing the difficulties and challenges in production and marketing, from the 1980s farmers started to organize themselves into associations or cooperatives to collectively solve the problem after rural reform. The development of associations and cooperatives was accelerated from the middle of the 1990s as a result of a better market orientation of the food system, new demands from urban consumers and intensified government support (Han, 2007; World Bank, 2005). In 2007, a Farmer Cooperative Law was enacted after several years of discussion. It legalized the status of the farmer cooperative as a legal market player and regulated its structure and operation on the basis of widely agreed cooperative principles. Ac-

According to Deng et al. (2010), in 2008 there were more than 0.2 million farmer cooperatives all over the country and more than 9% of rural households participated in cooperatives.

Farmer cooperatives provide a wide range of services to members to deal with the above mentioned problems experienced by farmers and to optimize their performance in production and marketing. Firstly, they supply technology services to farmers, such as introducing new technologies, forging information exchange among members and technical consultations. Secondly, they help farmers to access market information and outlets, including input supply, product transportation and marketing. Thirdly, some of them also provide other supportive services, such as credit service and collective resource management (Bijman and Hu, 2011; Deng et al., 2010; Han, 2007).

## **1.3 Problem statement**

### **1.3.1. Diversity of farmer cooperatives and their embeddedness in practice**

As in many other developing countries, the farmer cooperative (FC) in China is mainly an externally introduced institution heavily driven by government policies, despite some small-scale initiatives by grassroots organizations (Deng et al., 2010; Zhang et al., 2007). The Farmer Cooperative Law implemented in 2007 and relevant policies formulated earlier aim mainly to promote FCs engaging in agricultural commodity production and marketing. The legal definition of a FC is consistent with the cooperative principles established by the International Cooperative Alliance.

Existing research on FCs in China focuses mainly on the functions and services provided by FCs, and their membership and organizational structure. These studies demonstrate the diversity and variation of FCs in China. For example, there is great variety in terms of types and combinations of services provided by FCs (Sun, 2006). It is also illustrated that a wide range of actors are involved in farmer cooperative innovation, besides farmers themselves, including dragon head enterprises<sup>1</sup>, public administration offices for agriculture and extension agencies, supply and marketing cooperatives, science and technology associations, national NGOs and international organizations (Han, 2007).

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<sup>1</sup> Dragon head enterprises are agribusiness enterprises recognized by the government at different administrative levels. They have priority in receiving support from the government. The criteria for being labeled as a dragon head firm include the number of farmers contracted and services provided to farmers in addition to product purchasing, such as input and technology services.

Although these studies reveal the diversity of FCs, they do not go further to investigate the different practices and dynamic relationships behind these different functions, services and organizational structures. Moreover, the role of FCs in agricultural and rural development has to date been understood mainly from an economic point of view and has not been examined in relation to the wider societal discussion about resource management and sustainable food systems. To fill that gap, the present study focuses on the embeddedness of FCs in the everyday practice of rural life and rural–urban linkages. The research makes clear that the linkages between the diverse functions of FCs and the different ways in which they contribute to agricultural and rural development need to be understood from such a broader and more dynamic perspective.

### **1.3.2. A static view on farmer cooperative research**

Economic theories about FCs are based mainly on experience from North America and Europe, and focus on input supply and marketing cooperatives. Many preconditions and assumptions that fit the context of these countries are used to develop the models about the rational choice of farmers to adopt the cooperative and the evolvement of FCs' organizational structure (Cook et al., 2004; Torgerson et al., 1998). These theories were adopted by several Chinese researchers to analyse Chinese FCs' organizational structure in terms of investment, benefit sharing and decision making by FCs in China (Guo, 2001, 2011; Hu et al., 2005). These studies provided interesting perspectives to investigate the FC, although the main problem is that the farmer cooperative is a new phenomenon in China, and hence there is not yet enough empirical understanding. A deductive approach might fail to include the context-specific aspects of Chinese FC development. There are also many other studies analysing farmers' participation in FC activities, decision making and benefits for FC members in terms of their individual attributes, such as age, education level and landholding (Bernard and Spielman, 2009; Fischer and Qaim, 2012). Other more relational or contextual factors, such as the trust between members and leaders, are taken into consideration in other studies (Österberg et al., 2009).

Following this approach, some authors have suggested that many FCs in China were dominated by small numbers of large farmers in terms of investment structure and management (Hu et al., 2005; Pan, 2011). Their studies provide rich information elucidating the membership and benefit to members of participating in a FC, but the majority have just taken a cross-section along the whole development process of FCs and not a closer look at how the interactions between FCs, government and other actors contributed to FCs' development. So, a dynamic view is needed to look at the organizing processes of farmers' cooperatives to un-

derstand their diversity and the ways they aim to fulfil their objectives in a rapidly changing rural and urban context.

## 1.4 Conceptual framework

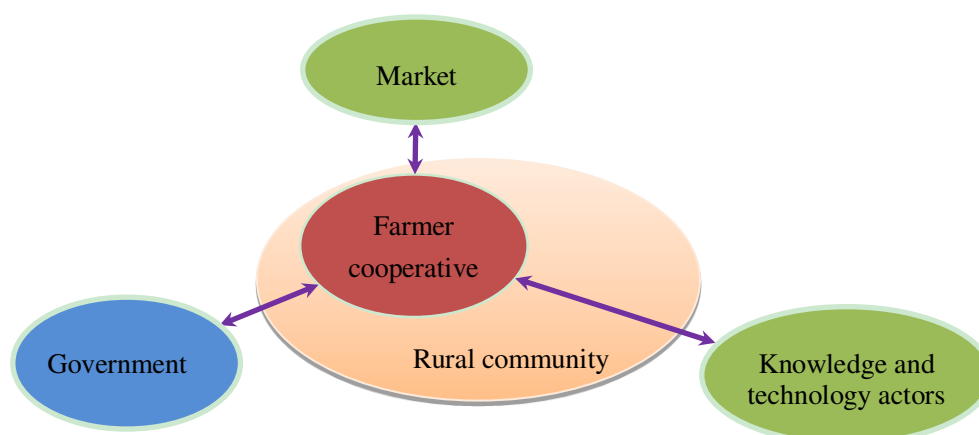
This research focuses on FCs' intermediation functions to connect farmers and rural communities to the wider rural and urban environment. We are especially interested in their active intermediation roles. This section provides a brief overview of the two perspectives elaborated in empirical chapters 2 to 4.

### 1.4.1. FC as intermediary organization

The FC as a membership organization for the rural population is considered as having an organizational structure whereby it acts as an intermediary between its members and other actors in the wider environment, as shown in figure 1.1 (Esman and Uphoff, 1984; Rondot and Collion, 2001). Its principle roles include intensifying the interactions among members, and between members and external actors to establish new relations, developing new rules and mobilizing resources for agricultural and rural development in the interests of its members (Esman and Uphoff, 1984; Gouët et al., 2009; Rondot and Collion, 2001).

A large body of literature on intermediation in innovation networks and innovation systems has been developed in recent years. Klerkx et al. (2010) illustrated the high level of unpredictability of innovation initiatives and the importance of boundary spanning and mediation in networking to smooth agency and structural interactions. Researchers have suggested that an innovation intermediary that includes network formulation and coordination as part of its task, or specializes in it, can formally take the role of boundary spanner and mediator to connect diverse actors in agricultural innovation systems (Devaux et al., 2010; Klerkx et al., 2009; Krisjanson et al., 2009). The functions of the innovation intermediary go beyond classic extension services, bringing together all the relevant actors and resources to foster knowledge generation and use, and creating the conditions for innovation (Howells, 2006; Kilelu et al., 2011; Schut et al., 2011). FCs have been found to provide different kinds of services to facilitate innovation in various developing countries (Heemskerk and Wennink, 2004; Hellin, 2012; Wennink and Heemskerk, 2006). It is worthwhile investigating the role of FCs as innovation intermediary in the Chinese context. At the same time, their functioning might be influenced by their positioning in the innovation system. Klerkx and Leeuwis (2009b) suggested that innovation intermediaries might face tensions regarding their legitimacy because of the diverging and conflicting interests with which they

are confronted, and accountability conflicts because of multiple demands from different network actors.



**Figure 1.1** Farmer cooperatives' intermediation relations with external actors

FCs as intermediary organizations in food supply chains are also mentioned in the literature. It has been shown that the coordination between actors in food supply chains has become increasingly important for the two trends in the operation of food supply chains. On the one hand, new mechanisms and organizational forms are needed to coordinate actors at a distance in the development of long value chains to provide new quality food at international and national levels (Ponte and Gibbon, 2005; Sánchez-Hernández, 2011). On the other hand, the emergence and development of short food supply chains require more intensive and closer interactions between consumers and producers as well as relevant other actors to provide food to which new social values have been attached (Brunori and Marescotti, 2007; Marsden et al., 2000). Research has demonstrated that farmer cooperatives help to integrate farmers into value chains by reducing the transaction costs with other chain actors and providing technical services to members (Biénabe et al., 2007; Moustier et al., 2010). It has also been illustrated that farmer cooperatives contribute to bridging the gaps between practices at farm level and other actors (Kanemasu and Sonnino, 2008; Marsden et al., 2000). It is therefore meaningful to explore the FCs' roles in quality coordination at food supply chain level for small-scale farmers and the difficulty coordinating them, since there have been few studies on this topic in the Chinese context.

FCs' intermediation role is also important in collective resource management, which always involves situations of social dilemmas and power inequalities. On one hand, a FC can function as a platform for information sharing and collective decision making among members (Gouët et al., 2009) and as a pool of members' resources to meet public needs (Esman and Uphoff, 1984). On the other hand, FCs can represent farmers collectively to reshape relations between rural communities

and the government; and FCs help to increase room for manoeuvre in government policies and generate self-organization in resource management in practice (Agrawal and Ostrom, 2001; Wiskerke et al., 2003).

#### **1.4.2. FCs' agency in agricultural and rural development and constraints from social, economic and political structures**

In section 1.3, we explained the gap between FCs' practice and the formal law and government policies regarding the types and scope of services provided and FCs' organizational structure. Actually, this gap between practice and theory or policy formulation is a common phenomenon in government interventions to promote agricultural and rural development in developing countries and has been widely studied (Hebinck and van der Ploeg, 1997; Long, 2001; Nuijten, 2003). In order to investigate and present the diversity and variation of FCs in China's rural and agricultural development, this thesis adopts the actor-oriented approach proposed by Long (2001) to investigate and illustrate the diverse processes of policy implementation of FCs at the local level.

The actor-oriented approach appreciates the agency of individual and institutional actors. Agency is people's capability to intervene in a sequence of actions and change outcomes (Long, 2001). Actors are reflexive and monitor the on-going flow of activities and structural conditions (Giddens, 1984). In this sense, all the actors who engage in agricultural and rural development, including farmers, government officials, traders, researchers and agri-companies, introduce their own interests and knowledge to create space for themselves to pursue their own projects (Long, 2001). Taking this perspective in FC research means that attention should be paid to the daily practices, interactions and activities among FC members and their interactions with other actors to assess their knowledge and resource endowment in interpreting and internalizing government policies and market opportunities.

The actor-oriented approach provides us with a new perspective to investigate FC both as a collective actor and as an organization. In most situations, FC is defined as an organization composed of members who share a common objective or vision on organizational development (e.g. ICA); but Long (2001) has reminded us that the agency of the collective actor – the capacity to process experience, make decisions and act up on them – cannot be assumed, but is generated in the interactions between actors and their enrolment into one another's projects. Hence, an organization is always challenged by the different interests and the imbalance of power as discussed by Wolf (1990). In this regard, FC is an organizing process



composed of a complex set of social practices rather than a finished product (Long, 2001; Nuijten, 2003).

However, this does not mean that a farmer cooperative and the actors involved act in a vacuum and free of choice. According to Giddens' (1984) statement about duality of structure, actions that imply actors' agency produce the structure of our society, and they are constrained by that structure at the same time. Therefore, it is important to examine how the actions of a particular FC and the relevant actors are constrained by the relevant social, economic and political structures as well as by their actions to create space for themselves and shape the structure of the organization. Giddens (1984) postulated that structure refers to rules implicated in the production and re-production of both social systems and resources. Following an institutional approach, this thesis pays more attention to the rule aspect of structure to investigate FCs' roles in the production and re-production of the systems while discussing the influences of FCs and members' resource endowment on the functioning of FCs.

## 1.5 Research questions

To address the research problems discussed in section 1.3, by looking at both the outcomes and the processes of intermediation, this thesis aims to investigate how farmer cooperatives coordinate farmers and act as intermediaries in relation to external actors to provide services to enhance agricultural and rural development. Four research questions are elaborated below. In the first question, a bird's eye view is taken to explore the services and functions provided by FCs and their relationships to rural communities in the context of agricultural and rural development. In answering the second question, and based on the main FC functions identified, the thesis focuses on the various roles of FCs in innovation intermediation. The third question addresses intermediation in quality food marketing. The dynamics of intermediation processes in providing relevant services are illustrated with four cases (see section 1.6.2). The last question addresses the correlation between the internal dynamics of FC organizing processes and their interactions with external actors, which is identified as one of the key factors influencing FCs' functioning.

**Research question 1:** How can the diversity of farmer cooperatives be characterized based on the types and scope of services they provide to members and rural communities?

In this thesis, we are interested not only in the diversity itself, but also in its relations with agricultural and rural development. We investigated: (1) the types of services that FCs provide to members and rural communities; (2) the categories of farmer cooperatives that can be identified; (3) how different categories of farmer cooperatives contribute to agricultural and rural development.

**Research question 2:** What are the intermediation functions that farmer cooperatives perform in the agricultural innovation system to build linkages with other actors, provide technical services and enhance farmers' farming and marketing practices?

The agricultural innovation system in China is becoming increasingly dynamic as diverse demands emerge from farmers to change the production process, and a wide range of actors from both the public and the private sector participate in the supply of knowledge and input. Given the importance of network coordination in enhancing knowledge creation, exchange and usage, this thesis takes the innovation intermediary perspective to explore: (1) the intermediation functions of farmer cooperatives in agricultural innovation system; and (2) how their positions in the system influence their functioning as innovation intermediaries. This leads to the third question.

**Research question 3:** What roles do farmer cooperatives play as intermediary organizations participating in quality improvement and quality coordination in food supply chains, and helping farmers to access the quality food market?

The quality food market has opened up and expanded in China in recent years as a result of consumers' increasing income and concerns about food safety. It is considered that FCs could play a role as intermediary organizations to link small farmers to the quality food market. By taking this perspective, we explored: (1) how farmer cooperatives develop linkages with other actors and FCs' participation in quality coordination; and (2) the relations that exist between FCs' control of chain linkages, participation in quality coordination and the outcomes of chain participation.

**Research question 4:** How are farmer cooperatives shaped institutionally by the everyday interactions of farmers within the cooperative and with external actors, and how does this influence their functioning as intermediary organizations?

In China, the everyday practices of many farmer cooperatives appear to be quite different from the cooperative principles formulated in governmental laws and regulations regarding the role of FCs in rural development. An empirical re-

search like ours helps to understand this gap between law and practice. We investigated: (1) the dynamic processes of institutional change resulting from the interaction between farmers and between cooperatives and external actors; and (2) the influence of these processes on the functioning of farmer cooperatives in terms of providing services to tackle problems experienced by farmers.

## 1.6 Methodology

Chapters 2, 3, 4 and 5 answer the four research questions listed above. Different methodological approaches are adopted to answer different research questions. This sub-section gives an overview.

### 1.6.1. Combined quantitative and qualitative methods to answer research question 1

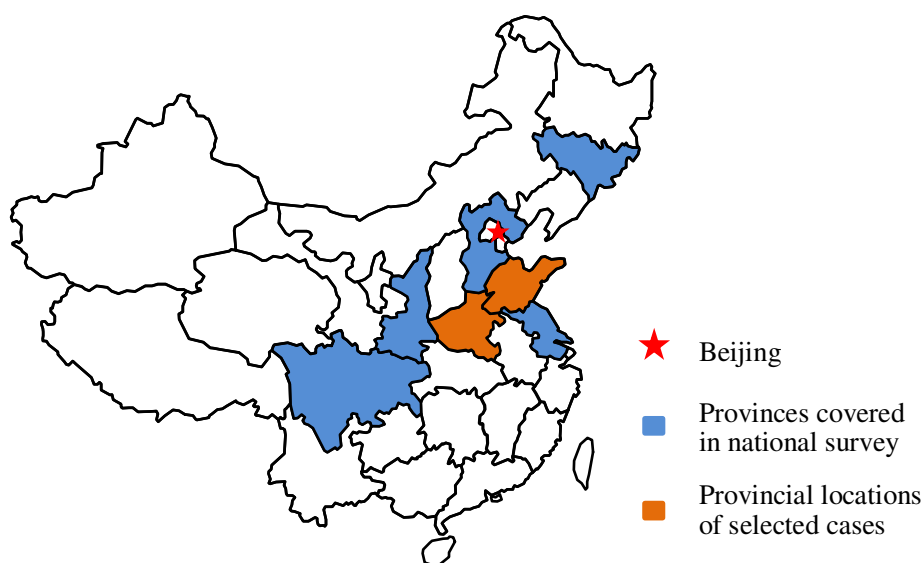
The answer to research question 1, which aims to provide an overview of farmer cooperative development in China, is based on two sets of data covering a large number of farmer cooperatives from different regions of the country. See figure 1.2. The first set of data results from a national survey conducted among 173 FCs and carried out by the Center for Chinese Agricultural Policy of the Chinese Academy of Sciences in 2009. A closed questionnaire was used in the interviews, which included questions on the initiation of FCs, membership, management structure, market-oriented services, technological services, credit-oriented services, financial management and personal information about FC leaders. Another data set was collected by studying 28 FC cases in 15 provinces in 2009. The data were collected by the national research network focusing on *Supporting FC and Rural Innovation* coordinated by the Center for Chinese Agricultural Policy of the Chinese Academy of Science and the College of Humanity and Development of China Agricultural University. Information about each case included the history of each FC's development, its relations with rural communities, initiation of FC, membership, management structure and types of services provided. By cross-checking the results from the two data sets, different types and scopes of services provided by FCs were analysed. From the multiple case studies, different categories of FCs were distinguished based on both their services coverage and connections to rural communities.

## **1.6.2. Case study method to address research questions 2, 3 and 4**

To answer research questions 2, 3 and 4 focusing on the dynamics of FC intermediation processes and everyday practice, the thesis adopted a case study approach. The processes of farmer cooperative development connect closely to the context in which they emerge. Hence, it is difficult to limit variables for investigation beforehand. As pointed out by Yin (2009), the in-depth case study is an appropriate method to investigate a phenomenon in its real-life context when the boundaries between phenomenon and context are not evident and deal with a situation where there are many variables.

### **1.6.2.1. Case selection**

Four FC cases were purposefully selected to investigate the questions in this study. An exploratory (inductive) approach was followed because the case selection was informed by the previous study (Gomm et al., 2000). Findings from our investigation on question 1 resulted in the classification of four types of farmer cooperatives based on their services coverage and connection with the rural communities: commodity-based FC, community-based FC, specialized technology provider and credit service provider (see chapter 2). Among these four types of FCs, the first three are directly involved in agricultural production and marketing and identified as the focus of this study. These three cases – Funong Vegetable Cooperative, Tianli Vegetable Cooperative and Hongmin Farmer Cooperative – were selected from the 28 cases introduced above (and other accessible cases from the FC supporting project mentioned at the beginning of this chapter) to cover the diversity of FCs identified. During the fieldwork it became clear that all three cases to a greater or lesser extent experienced problems in marketing and represented all FC types in terms of their positions in food supply chains. Therefore, a fourth case – the Taoyuan Organic Vegetable Cooperative, which was more successful in marketing and involved in an international value chain – was added to answer question 3.



**Figure 1.2** Locations of survey sites and selected cases

**(a) *Funong Vegetable Cooperative*** (chapter 3)

Funong Vegetable Cooperative was selected as a case representative of the specialized technology provider. It is located in the same county as Tianli. It was initiated in 2004 as a farmer association aiming to promote organic vegetable production technologies and marketing. It was initiated by Jin, a local farmer who engaged in organic greenhouse vegetable production, and Xiao, a graduate student from a provincial agricultural university. In 2007, after the implementation of the Farmer Cooperative Law, it was registered as a farmer cooperative. In 2011, it provided technical and input services to more than 1,000 farmers in the county, and it was recognized as an outstanding farmer cooperative by the provincial Trade and Industry Bureau in 2009.

**(b) *Tianli Vegetable Cooperative*** (chapters 3 and 4)

Tianli Vegetable Cooperative was selected as a case representative of the commodity-based FC. It is located in a county of Shandong Province where many farmers specialized in greenhouse vegetable production. It was initiated in 2007 by Liang, a local farmer who had been conducting vegetable trading for about ten years. From his marketing experience, he regarded supermarkets as an emerging market for high quality food products, and recognized the importance of trademarks and certification to be able to do business with supermarkets. He persuaded seven greenhouse vegetable farmers in the village to found the cooperative and set supermarkets as their target market. In 2011, it had loosely involved more than 200 members.

**(c) Hongmin Farmer Cooperative (chapters 3, 4 and 5)**

Hongmin Farmer Cooperative was selected as a case representative of the community-based FC. It is located in a county of Henan Province. It was established in 2004 with wide participation from farmers in the village with strong support from Dr. Li, a researcher and local official. The cooperative aimed to promote village development and organized different activities. In 2004, a credit cooperation section was established under the cooperative. It organized the collective purchase of inputs like fertilizer, seeds and piglets, hazard-free rice production and marketing, and ecological pig production and marketing. In 2011, it had about 100 members in total, participating in different activities. It was recognized as an outstanding FC by the regional government in 2009.

**(d) Taoyuan Organic Vegetable Cooperative (chapter 4)**

Taoyuan Organic Vegetable Cooperative was selected as a case representative of FCs engaging in international food value chains, and it also fell into both the commodity-based and the community-based FC category. It is located at the foot of Taishan Mountain in Shandong Province. Organic vegetable production in the village started in 1995 under promotion from a food company exporting frozen organic vegetables to Japanese, US and EU markets. The cooperative was established in 1997 to coordinate farmers involved in vegetable production and mediate with the company. In 2011, it had 296 members, including all the households still engaged in farming in the village. It was recognized as an outstanding FC by the regional government in 2012.

**1.6.2.2. Data collection**

To rebuild dynamic development processes within each case, various data resources and data collection methods were used. It is noted that data triangulation is a rationale for using multiple sources of evidence (Yin, 2009). The methods used in the data collection are briefly introduced and summarized in table 1.1.

***Questionnaires***

For the first three cases, a questionnaire – structured interview – was used to understand the general situation of cooperative development by interviewing cooperative leaders, members and non-members. The members were randomly selected from the member lists provided by the cooperative; and the non-members were randomly selected from the villager registers provided by the village committee in the villages where members were interviewed. The questions asked in-

cluded demographic information about farmer households, employment and income of household members, agricultural production and marketing activities, services received from cooperative, participation in cooperative activities and management, and the farmers' evaluation of cooperative services and management. This information was not used in the thesis writing directly, but it provided useful background information on the cooperative and served as a basis for further sample selection in semi-structure interviews.

**Table 1.1** Data sources for the research

	Tianli	Hongmin	Funong	Taoyuan
Questionnaire	<ul style="list-style-type: none"> <li>- cooperative leader</li> <li>- 31 members</li> <li>- 21 non-members</li> </ul>	<ul style="list-style-type: none"> <li>- cooperative leader</li> <li>- 20 members</li> <li>- 24 non-members</li> </ul>	<ul style="list-style-type: none"> <li>- cooperative leader</li> <li>- 28 members</li> <li>- 20 non-members</li> </ul>	--
Semi-structured interview	<ul style="list-style-type: none"> <li>- 1 leader</li> <li>- 10 members</li> <li>- 2 managers from supermarkets cooperating with FC</li> </ul>	<ul style="list-style-type: none"> <li>- 8 leaders in different periods</li> <li>- 11 members</li> <li>- 9 non-members</li> <li>- 5 consumers</li> <li>- Dr. Li (who played a crucial role in cooperative development)</li> </ul>	<ul style="list-style-type: none"> <li>- 2 leaders</li> <li>- 7 members</li> <li>- 5 non-members</li> <li>- 1 manager from export company cooperating with FC</li> </ul>	<ul style="list-style-type: none"> <li>- Cooperative chairman</li> <li>- 5 members</li> <li>- CEO and 2 managers from the export company</li> </ul>
Participant observation	<ul style="list-style-type: none"> <li>- meetings of core members</li> <li>- everyday interactions between leaders, members and traders</li> </ul>	<ul style="list-style-type: none"> <li>- cooperative training</li> <li>- cooperative committee meetings</li> <li>- group meetings of "happy pig" raising group</li> <li>- everyday interactions between leaders and members</li> </ul>	<ul style="list-style-type: none"> <li>- meetings of core members</li> <li>- everyday interactions between leaders, members and export company</li> </ul>	<ul style="list-style-type: none"> <li>- meetings of the committee</li> <li>- everyday management of the cooperative</li> </ul>
Documentation and archival records	<ul style="list-style-type: none"> <li>- Newspaper articles and on-line reports</li> <li>- TV programmes about FC</li> </ul>	<ul style="list-style-type: none"> <li>- FC activities record</li> <li>- FC member diaries</li> <li>- Newspaper articles and on-line reports</li> <li>- FC website information</li> </ul>	<ul style="list-style-type: none"> <li>- FC website information</li> <li>- Newspaper articles and on-line reports</li> </ul>	<ul style="list-style-type: none"> <li>- Export company website information</li> </ul>

### ***Semi-structured interviews***

Semi-structured interviews were carried out to collect information from different actors, including cooperative leaders, cooperative members, non-member farmers and relevant external actors (managers from export companies, supermarkets and researchers involved). Quota sampling was used to select members and non-members for in-depth interview from respondents in the questionnaire survey. Age, household income level and extent of participation in cooperative activities and management were the criteria considered in quota setting (Bernard, 1995). Information about technology adoption in agricultural production, marketing practices and understanding of the nature of a cooperative were collected from both members and non-members. For the members, detailed information was collected about technical and marketing services received from the cooperative, their participation in service provision and cooperative management, their opinions on the cooperative services and management. The number of interviews varied across the four cases because of the variability of the situation in the cases. The interviews were carried out on a one-to-one basis, and data collection stopped at the saturation point when no new information could be elicited from new interviews (Kumar, 2005). Another point that needs to be mentioned is that only members were interviewed in the Tianli and Taoyuan cooperatives because all farmers in the village are cooperative members in Taoyuan, and all the farmers interviewed in Tianli claimed they were members, although the cooperative did not recognize them all as members.

Purposive sampling was used to select other respondents, like the cooperative leaders and the relevant external actors, who were likely to provide rich information (Kumar, 2005). In the interviews with the cooperative leaders, the questions asked included key events in the development of the cooperative, services provided by the cooperative, key linkages built by the cooperative with external actors to provide services, the linkage development process and their opinions on cooperative development. In the interviews with the external actors, the questions focused on their interactions with the cooperative and their opinion on the roles played by the cooperative in their interactions.

### ***Participant observation***

Participant observation is when the researcher participates in the activities of the observed group in the same manner as its members, with or without their knowing that they are being observed (Kumar, 2005). Hume and Mulcock (2004) noted that the rationale of participant observation is that by “being there” and actively taking part in the interactions at hand, the researcher can come closer to experiencing and understanding the “insiders’” point of view. During my many field



visits to each of the research sites, walking through the villages, the fields and the local markets, sitting in the offices of cooperatives and attending cooperative meetings, observing and asking for explanations for different things enabled me to understand the rural life in the villages, the everyday practice of farmers in farming production and marketing, and the dynamic relations between farmers.

### ***Documentation and archival records***

Yin (2009) suggested that documents are important to “corroborate and augment evidence from other sources” in case studies. To complement and cross-check data collected from other sources, this thesis collected information from FC activities records, FC members’ diaries, FC website information, newspaper articles, on-line reports and TV programmes.

#### **1.6.2.3. Data analysis**

Findings of the thesis are based on the analysis of the data shown above. Generally, data from the questionnaire survey is used as background information to confirm the functioning of FCs in terms of service providing to members by comparing the data from members and non-members. This part of results do not fully presented in the chapters because they are organized as article for journal. Concerning the Hongmin case which is used in chapter 3 to 5, different respondents are selected according to the activities of the case FC. Chapter 3 discusses the hazard-free rice project; chapter 4 discusses happy pig project; and chapter 5’s discussions draw on findings from both cases.

The findings and analyses presented in chapter 3 to 5 are based on the data from members and other relevant external actors. Two approaches are used to analyse and demonstrate the data: time series analysis and explanation building.

### ***Time series and critical events analysis***

Within each case, time series analysis was used to rebuild the FCs’ development processes (Gray, 2004; Yin, 2003). Event analysis can reveal the on-going relationships and interests of directly and indirectly involved actors (Long, 2001). Hence it helps to better understand the intermediation functions of FCs which are always relevant to different actors. The key events in FC development were identified with the information collected from different sources, and in chapters 3 and 5 the potential causal relationship between these events is analysed based on their time series.

### ***Explanation building***

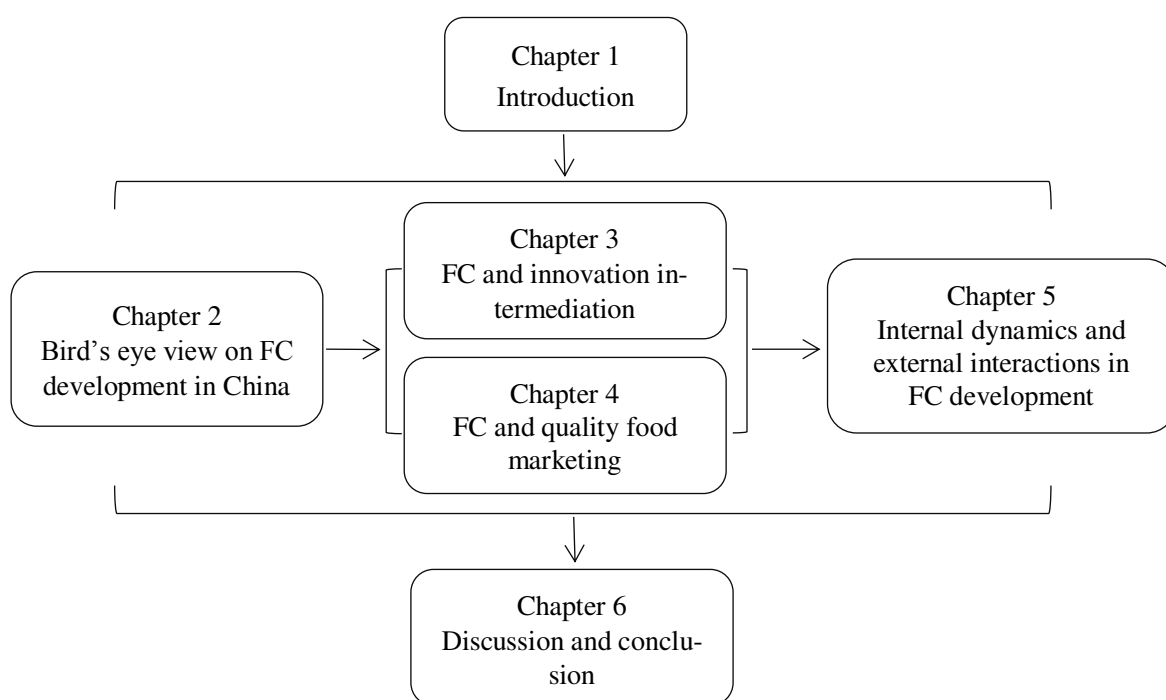
Explanation building is a repeated process of comparing findings from cases with the initial statements based on the theoretical position and revising the statements to reach a conclusion (Gray, 2004; Yin, 2003). Data collection and analysis were spread over the fieldwork period. The data collected were coded in Atlas with codes developed from the identified theoretical perspectives and the interesting issues emerging from the fieldwork. The initial findings from different cases led to further fieldwork and data collection with new focuses and complementary case selection to answer research question 3, the Taoyuan case). I compared the findings from different cases with different characteristics to find patterns of relations between FCs' functioning as intermediary organizations, their positions in the innovation system and the food supply chain, their internal dynamics and network development.

## **1.7 Structure of the thesis**

This thesis consists of six chapters. The relations between the chapters are shown in figure 1.3. Chapters 2, 3, 4 and 5 answer the four research questions, respectively. The research questions are interrelated as introduced in section 1.5. One of the major objectives of this thesis is to reveal the diversity of FCs and their contributions to agricultural and rural development. Chapter 2 illustrates the diversity of FCs; but the following chapters are organized not by the different types of FCs identified, but rather by the key issues across different types and cases selected. This helps us to focus each chapter and have in-depth discussions on each issue. As we have selected different cases to reflect diversity, a comparative discussion about the different types of FCs based on the findings in chapters 3, 4 and 5 is presented in chapter 6.

Chapter 2 answers research question 1, which aims to explore the diversity of FCs in China based on the types of services provided and their connections with rural communities. This chapter presents and analyses the national survey data of 173 FCs and case studies of 28 FCs to investigate this research question. Three conceptual approaches, value chain, innovation system and collective resource management, are employed to examine the types and scopes of services provided by FCs. Linking services to FC relations with rural communities, four types of FCs are distinguished. By reflecting on the government policies and different actors involved in FC initiation, this chapter also elucidates the relation between types of FCs and the major actors in their development.

Chapter 3, which deals with research question 2, investigates the innovation intermediation functions served by FCs. This chapter draws findings from three cases and adopts an innovation journey analysis that focuses on the important events in innovation processes within each case. It extends the FC roles in innovation beyond the classical agricultural extension services by referring to newly developed theories about innovation intermediaries that pay more attention to network building between diverse actors involved in agricultural innovation. After the discussions about FC intermediation roles in the Chinese context, this chapter also analyses the relations between the functioning of the FC as innovation intermediary and its position in the innovation system as a locally oriented organization representative of members.



**Figure 1.3** Structure of the thesis

Chapter 4, which examines research question 3, aims to explore the roles of FCs in quality food marketing. The findings from the three FCs with different positions in the food supply chain are interpreted in terms of the FCs' distance to consumers. By combining two theoretical perspectives – the political economy of the food supply chain and the social construction of food quality – this chapter explores the FCs' intermediation roles in quality improvement at farm level and quality coordination at food supply chain level, and investigates their control over the linkages in the food supply chains and the outcomes of participation in chain activities. On the basis of these findings, the correlations between the political-economic position of the FCs in the chains and the chains' roles in quality improvement and coordination are discussed.

Chapter 5, which answers research question 4, addresses the internal dynamics of the institutional process of constructing a farmer cooperative and shows the influence of this process on the functioning of the FC. Hongmin Farmer Cooperative, which is engaged in various collective activities, is used as the case to illustrate daily FC practices. Critical events analysis and the concept of institutional bricolage are employed to follow the institution building and change process and detect the engagement of the different actors, including members and FC leaders, government agencies, researchers and market actors. The case firstly examines the institutional changes of the FC and then shows how the changes are shaped by the creative actions of FC leaders and members to grasp opportunities and respond to the challenges from the social and economic environment.

Chapter 6 provides a bird's eye view and synthesis of the findings from the four in-depth cases and the findings in chapter 2. First, cross-cutting issues between the studies and the cases are identified to analyse the current situation of FC development in China and the major constraints experienced by FCs in functioning as intermediary organizations and promoting integrated agricultural and rural development. Secondly, policy implications of the findings are presented and discussed to provide support or create a favourable environment for FC development.



# Chapter 2

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## The landscape of farmer cooperatives in China

- Functions and diversity in a changing environment

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## **Abstract**

The agricultural sector and the rural sector in China have experienced fundamental changes from the 1980s onward, and farmer cooperatives have emerged in response to these changes. Beginning in 1990 a series of different policies have been implemented by the Chinese government to promote farmer cooperatives (FCs). This article aims to explore the functioning of FCs on the basis of the type and scope of the services they provide and their connections with the rural communities. The findings show that activities carried out by FCs help to extend farmers' engagement in value-chain participation and management. FCs, as organizational innovations, also provide opportunities to bring knowledge providers and farmers together. Some FCs are starting to coordinate activities for farmers, rural communities and local government to make better use of collective resources. Four types of FCs are identified in the research: commodity-based FCs, community-based FCs, specialized technology providers and credit service providers. The emergence of these four types of FCs is embedded in broader institutional developments. The government mainly promotes commodity-based FCs and specialized technology providing FCs. Companies focus on commodity-based FCs, and research institutes and development organizations are involved in community-based FCs. These findings imply that an integrated and broader view of policies is needed to promote the development of FCs in the long run.

## **Key words**

Farmer cooperative; agricultural innovations system; value chain; collective resource management

## **2.1 Introduction**

Over the past three decades, China's agricultural and rural sector has experienced profound changes. From the early 1980s on, when collectively owned land became allocated equally to farmers within each village, farmers started to take responsibility for their own production, purchases, marketing and resource management decisions. Previously, during the People's Commune era, agricultural production had been organized by collective farms under a central planning system. Institutional reform and increased grain production are considered to be the major factors leading to economic development in the early rural reform period (Huang and Rozelle, 1996). However, the tension between the increasing rural population and the decreasing area of arable land has been rising during this period. The average farm size in China dropped from 0.73 ha in 1984 to 0.58 ha in 2007 (Deng et al., 2010).

At the same time, the agricultural and rural sector in China has been encountering the same challenges as elsewhere in the world while farming is becoming more and more market oriented. As a consequence of a general improvement of living standards and changing consumption behaviour, urban consumers are showing an increased demand for higher quality food and packaged, processed products. The rapid growth of processors and supermarkets brings challenges as well as opportunities for farmers. Large buyers prefer large and qualified suppliers, but with products of higher added value (Chen et al., 2005; Gulati et al., 2005; Hu and Xia, 2007). Increasing public awareness of food safety and the development of relevant certification systems also impose new requirements on agricultural production and offer opportunities for farmers to enter high-value markets (Hu and Xia, 2007). At the same time, farming is becoming more and more dependent on external inputs (including chemical fertilizer, pesticide, modern seeds, etc.), and new farming technologies are becoming more market oriented (Jin et al., 2010). Intensified agriculture poses pressures on vulnerable nature resources and environment (Qiu et al., 2008).

New FCs have emerged to meet the above-formulated challenges and overcome problems faced by farmers after the rural reform. According to existing studies, early FCs were established in the 1980s and engaged in facilitating technology exchange and supplying extension services to members (Han, 2007; World Bank, 2005; Zhang et al., 2007). In the middle and the late 1990s, the number of farmer organizations increased steadily nationwide (RAF, 2004). The services provided by FCs extended to input supply, market information services, marketing and transportation. From the late 1990s, especially after the implementation of the Farmer Professional Cooperative Law in 2007, the number of FCs increased dra-



matically (Han, 2007). According to data from the Ministry of Agriculture (MOA), there were more than 480,000 FCs formally registered as at September 2011. They involve more than 38 million farmer households, which accounts for about 15% of the total number (MOA, 2011).

Experiences from both developed and developing countries show that FCs can serve multiple functions to meet demands in rural and agricultural development (Chlouplova, 2002; Hellin et al., 2009; Mauget and Declerck, 1996; Rondot and Collion, 2001). This article adopts and integrates theoretical perspectives of value chains, agricultural innovation systems and collective resource management to present a holistic view on these functions. We aim to explore the roles FCs play in a changing environment for agricultural and rural development. Moreover, we want to know what categories of FCs can be distinguished on the basis of the type and scope of the services provided. Additionally, we reflect on policy implications that result from these findings. After briefly discussing the institutional environment of FCs in China from 1990 onwards, we examine the functions that FCs serve from those theoretical perspectives. After the section on research methodology, the result section draws a comprehensive picture of the roles of FCs based on empirical data. Finally, the diversity in the landscape of FCs in present-day China is sketched.

## 2.2 Institutional environment of Chinese FCs

From 1990 onwards, the agricultural and rural institutional environment started changing fundamentally. Looking at emerging cooperatives within China and based on experiences in western countries and other Asian countries, the Chinese government gradually recognized the important role that FCs can play in improving farmers' situations in relation to production and marketing. A series of different policies were developed and implemented, and several government departments were involved in different aspects of promoting FCs. Table 2.1 lists key regulatory or institutional shifts in the development of FCs and shows that different government departments and actors - dragon head firms<sup>1</sup> - partly driven by policies are involved in the promotion of FCs.

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<sup>1</sup> *Dragon head firms* are agri-business enterprises recognized by the government at different administrative levels. They have priority in receiving support from the government. The criteria for being labeled as a *dragon head firm* include the number of farmers contracted and services provided to farmers besides product purchasing, such as input and technology services.

**Table 2.1** Regulatory or institutional shifts in the development of FCs from 1990 onwards.

<b>Year or period</b>	<b>Motivated by</b>	<b>Regulatory or institutional shift</b>
1990 onwards	CAST	Encouraged its branches at different administrative levels to set up Farmer Professional Technology Associations (FPTAs) at local level.
1993	MOA	Became main administrative department in charge of guiding and supporting the development of FCs (designated by State Council).
1993	CAST	Carried out a pilot project to support 1,000 FPTAs to demonstrate practical models.
1994	MOA	Established the Exemplary Charter of Farmers' Professional Association.
1994	MOA with CAST	Promulgated the document "Strengthen the Support and Direction to the Farmers' Professional Technology Association".
Mid-1990s onwards	SMCS	Started to facilitate development of FCs to maintain and improve their relations with farmers to sustain their business of input supply and products marketing.
Mid-1990s onwards	Dragon head firms	Became involved in the establishment of FCs to stabilize their relations with farmers.
2002	MOA	Supported 100 professional cooperatives selected from 6 provinces which carried out information, technology, training, marketing and product quality certification services.
2003	CAST	Carried out the project "Top 100 Farmer Professional Technology Associations".
2007		The Farmer Professional Cooperative Law was enacted.
2007	China Banking Regulatory Commission	Issued the Interim Regulations on Rural Mutual Aid Credit Cooperative, which clarifies the roles that FCs play in the rural finance system.

2008	MOA with Ministry of Finance	Formulated the Regulation on Finance and Accounting Systems of Farmers' Professional Cooperative.
2008	MOA and Commerce Department	Carried out the project "Linking FCs to Supermarkets", which created a platform for FCs and supermarket chains to communicate and set up forms of cooperation.
2009 onwards	MOA with ten administrative departments	Carried out the project "Promoting Demonstration Farmer Cooperative" involving all provinces.
2010	MOA with six administrative departments	Announced the project "Suggestions on Supporting Qualified Farmer Professional Cooperatives to Take up Publicly Funded Agricultural Development". This further clarified the role of FCs as an entity to represent farmers as a group and its potential in agricultural technology development.

The implementation of the Farmer Professional Cooperative Law in 2007 is a milestone for the development of FCs. Before that, different government departments and actors mainly developed policies or actions separately. The China Association for Science and Technology (CAST)<sup>1</sup> focuses on promoting farmer associations devoted to enhancing rural technology development. The Supply and Marketing Cooperative System (SMCS)<sup>2</sup> and the dragon head firms play an important role in facilitating FCs to take part in marketing activities. Dragon head firms became involved in the establishment of FCs to stabilize their relationship with farmers. Governments at different levels started to support dragon head firms as a measure to promote "agricultural industrialization". The cooperation between companies and farmers is usually carried out in the form of contract farming. To stabilize relations between companies and farmers, FCs act as a kind of intermediary to coordinate relations (Zhou and Cao, 2001).

<sup>1</sup> The China Association for Science and Technology (CAST) is the largest national organization of scientific and technology workers in China. As a bridge linking the Chinese science and technology community with the *Communist Party of China* and the Chinese government, CAST is a constituent member of the *Chinese People's Political Consultative Conference*, where it joins the nation's political parties and other social groups in the state affairs of political consultation, policymaking and democratic supervision (<http://english.cast.org.cn/>).

<sup>2</sup> The contemporary Supply and Marketing Cooperative System evolved from the national Supply and Marketing Cooperative System established in the 1950s. Now the system is led by the China Federation of Supply and Marketing Cooperatives, which is directed by the State Council. The objective of the system is to serve farmers through mechanism innovation to develop farmers' cooperatives (adapted from <http://www.chinacoop.com/>).

After implementation of the new law, MOA cooperates more with other administrative departments in FC policy design and implementation. Support measures become more specific, like linking FCs to markets and involving FCs in agricultural development projects. The scope of support also expands to credit services. However, its cooperation with CAST and SMCS is not clearly identified although they have initiated a large number of FCs within their own systems. According to data from 2008 from CAST, the number of FPTAs at different levels reached 133.6 thousand throughout the country, incorporating more than 1.1 million farmers (Han, 2007). In 2007, the number of FCs initiated by SMCS reached 36,000 and covered more than 7.5 million farm households (Yuan, 2007).

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Apart from the actors discussed above, there are many other national and international organizations involved in FC promotion in China. For example, the China Women's Federation actively participates in stimulating rural women's employment and livelihood improvement through micro-finance support and facilitating women's professional associations or cooperatives.<sup>1</sup> The World Bank and the International Fund for Agricultural Development (IFAD) started to support farmer associations or cooperatives in rural development projects as an innovative approach to link farmers into the market or technology systems from the 1990s onwards. The World Bank also introduced the Water User Association in China to improve irrigation management in rural areas.<sup>2</sup>

### **2.3 Theoretical perspectives on the functions of FCs**

The changes outlined in section 2.2 leave agriculture situated in an interwoven network that involves consumers, retailers, traders, processors, researchers, governments and producers. New research paradigms adopting systematic per-

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<sup>1</sup> See [www.women.org.cn](http://www.women.org.cn) (in Chinese).

<sup>2</sup> See <http://operations.ifad.org/web/ifad/operations/country/projects/tags/china> and the *World Bank's* website about projects in China.

spectives have emerged in this changing landscape. Value chains and innovation systems are now two central concepts in today's agricultural research and, with a growing concern for the environment, the relationship between farming and collective resource management is also becoming a key issue. In this section, we briefly discuss existing research in these fields and explore the functions that FCs can fulfil.

### **2.3.1. FCs' functions and the value chain**

The concept of value chain is adopted from research on the globalization of industry and introduced to agri-business research to emphasize the intensified flow of information and coordination between different segments and vertical coordination (Gereffi et al., 2005). In recent years, some trends can be identified in the value chain structure of the global agri-food market. First, there has been a rise and a concentration of food retailers (supermarkets) and several global food processors (Murphy, 2006). These large buyers have stricter standards on quantity and quality of products supplied by producers (Humphrey, 2005). Second, we can also identify a concentration on the input supply side of the agri-food value chain, with large input suppliers maintaining strong control. In general, today's agricultural production uses many materials from outside the local eco-system, and farmers rely heavily on input suppliers for chemical fertilizers, pesticides, herbicides and seeds to improve their agricultural production (Morgan and Murdoch, 2000). A third trend relates to the introduction of environmental and safety standards in food and agriculture by both the public sector and the private sector (Humphrey, 2005; Murphy, 2006).

FCs are considered to play a decisive role in responding to the above challenges (Rondot and Collion, 2001). Within the agri-food value chain, farmers can explore opportunities by organizing themselves in two ways: 1) being involved in more activities along the chain, and, 2) participating in chain management (KIT et al., 2006). FCs can pool members' purchasing power, achieve larger quantities of products or increase bargaining power (Berdegué Sacristán, 2001; Moustier et al., 2010; Murray-Prior, 2007). Moreover, cooperatives can pool resources to establish entities that could not be achieved by individual farmers. Being a membership-based organization, farmers are both owner and user of a FC. Bijman and Wollni (2008) argue that this decreases the costs of information collection and sustains business in the long run on the basis of trust between members and the organization. Furthermore, this structure can improve the quality of information as a result of short communication lines.

FCs are also considered to play an important role in enhancing farmers' participation in chain management. One aspect is coordinating farmers' farming practices. Emerging standards in the agri-food sector codify more and more complex information and knowledge relating to food safety and environmental and social issues of products and production processes. It is an opportunity for farmers to create a more modular value chain structure if they are capable of standardizing their production accordingly (Gereffi et al., 2005). FCs can be supportive to member farmers in standardizing their production. The other aspect is to coordinate transactions between farmer and buyer. In order to enhance the efficiency of their operations and ensure the quality of products, large buyers tend to build up long-term relationships with producers and enforce stringent requirements on products and transaction processes (Blanc and Kledal, 2012). FCs are helpful in collecting market information for members. They negotiate with buyers, make collective decisions, reduce the costs of individual farmers and help them to make sounder decisions (Bijman and Ton, 2008; Bijman and Wollni, 2008).

### **2.3.2. FCs' functions and innovation systems**

An innovation system is considered to be a network of organizations or individuals who demand and supply knowledge and technology focused on bringing new products, new processes and new forms of organization into economic use, together with the institutions and policies that affect their behavior and performance (World Bank, 2006). An innovation is a successful combination of hardware, software and 'orgware' (Smits, 2002). Orgware refers to the organizational and institutional conditions that influence the development of an invention into an innovation and the actual functioning of an innovation.

FCs can play the role of intermediaries in providing favourable conditions for using knowledge in agricultural production processes and integrating farmers into innovation systems. In China, agricultural extension is called agricultural technology extension, which indicates its inherent focus on technology (Gao, 2008). This fundamental focus on technology cannot provide effective solutions for farmers who are facing diversified demands from buyers, a decreasing availability of resources and financial constraints. At the same time, privatization of knowledge in agriculture requires the readjustment of relations between the government, the private sector and farmers (Kidd et al., 2000; Leeuwis and van den Ban, 2004). In the last two decades, innovation intermediaries have emerged as new organizations – often in developed countries – to enhance interaction between end users and knowledge providers. These intermediaries were often established in the context of diversification of agricultural production and the privatization of public agricultural research and extension (Klerkx and Leeuwis, 2008). Klerkx and Leeuwis (2009a)

identified three main roles for intermediaries in supporting the demand for and supply of agricultural knowledge: demand articulation, network brokerage and innovation process management.

FCs can facilitate demand articulation in agricultural innovation systems. Articulation of demand requires initiating a dialogue between users and suppliers to clarify demand and supply (Klerkx and Leeuwis, 2008). FCs can negotiate with actors in the public extension system and voice the problems and needs of farmers. This helps to formulate the direction of public extension services, including research, extension and agricultural education, to meet the needs of farmers (Wennink and Heemskerk, 2006). FCs can be significant players in bringing farmers together in innovation networks and promoting user-oriented innovations. FCs are also considered to be efficient in directing funds to farmer-oriented innovation. Both the government and NGOs provide funding for FCs to articulate farmers' demands and search for services from the market (Cristóvão and Pereira, 2004; Currie and Hoffmann, 2004; Rondot and Collion, 2001). Peers showed to be an important source for information and experience in farmers' networks in practice (Oreszczyn et al., 2010). Through FCs, learning networks can be created for member farmers in which they can better share knowledge on technology and the market (Wennink and Heemskerk, 2006). Wennink and Heemskerk (2006) also note that FCs can establish partnerships with the public and private sector to advance and guide experiential learning. Hall et al. (2001) have shown that FCs initiate cooperation with several public research institutions to realize marketing objectives.

### **2.3.3. FCs' functions and collective resource management**

Agricultural development is based on natural resources and infrastructures developed and shared by farmers. However, collective resource management always involves situations of social dilemmas and power inequalities. FCs can play a crucial role in these situations by representing farmers collectively and help to bring sustainable resource management discourse into practice (Bjørkhaug and Richards, 2008). They can function as a platform for information sharing and collective decision making (Gouët et al., 2009). Wiskerke et al. (2003) and van der Ploeg (2010a) show that cooperatives help farmers develop a shared understanding of their problems and in formulating possible solutions for balancing farming and environmental protection. Uphoff and Wijayarathna (2000) demonstrate the success of farmer organizations in water management. Based on vast experience, collectively developed rules are thought to be more commonly agreed upon among members and more effective in implementation than imposed rules (Leeuwis and van den Ban, 2004). FCs can also pool resources from members to meet public

needs. Esman and Uphoff (1984) note that resource management and resource generation are important dimensions in evaluating the performance of organizations.

**Box 2.1 FCs' potential functions**

- Involve farmers in more activities along the value chain, including:
  - Input supply services
  - Processing services
  - Product marketing services
- Promote participation in value-chain management:
  - Improving and coordinating farmers' farming practices
  - Coordinating transactions between farmers and buyers
  - Promoting certification and product quality management
- Provide classic technical extension services
- Articulate farmers' demands
- Assist in innovation network building:
  - Triggering peer learning between farmers
  - Setting up relations with public and private innovation actors
- Contribute to innovation process management
- Support collective resource management:
  - Collective rule-making
  - Pooling resources
  - Reshaping relations between farmers, rural communities and the government in resource management

FCs can also play an important role in reshaping relations between rural communities and the government. Agrawal (2005) argue that in developing countries the decentralization of resource management and the introduction of favourable policies for generating self-organization among local groups are supportive factors for success. Wiskerke et al. (2003) show that cooperatives actively interact with the government to increase farmers' room for manoeuvre in natural resource management. Uphoff and Wijayaratna (2000) show that it is possible for farmer organizations to attract funds or subsidies from the government.

Box 2.1 gives an overview of the potential functions of FCs, discussed in sections 2.1, 2.2 and 2.3, in relation to value chain, innovation systems and collective resource management.



## 2.4 Research methodology

This article is based on two sets of data. The first set is the result of a national survey conducted among 173 FCs and carried out by the Center for Chinese Agricultural Policy of the Chinese Academy of Science in 2009.<sup>1</sup> This survey aimed to investigate FC development in China. It was conducted in five provinces from each of China's major agro-ecological zones. Within each province, counties were classified into three groups by gross value of industrial output per capita, and one county was randomly selected from each group. Within each of the 15 selected counties, townships were divided into two groups – poor and non-poor – again according to gross value of industrial output per capita. One township was randomly selected from each group, which led to a total of 30 townships to be included in the survey. As an administrative entity, each township consists of several villages. The survey then included all villages in the selected townships and interviewed the leaders of these villages using a questionnaire. In total, the survey covered 380 villages from five provinces, 15 counties and 30 townships. When village leaders were interviewed, they were asked whether any farmers in the villages had joined FCs. If the answer was “yes”, we traced the FC and interviewed that FC's leader. In total, information was gathered in this way from 173 FCs. Some villages did not have farmers in any FC at that time, and some FCs covered more than one village. A closed questionnaire was used in the interviews and included questions on the initiation of FCs, membership, management structure, market-oriented services, technological services, credit-oriented services, finance management and personal information about FC leaders.

Another data set was collected by studying 28 FC cases in 15 provinces in 2009. The data were collected by the national research network focusing on Supporting FC and Rural Innovation coordinated by the Center for Chinese Agricultural Policy of the Chinese Academy of Science and the College of Humanity and Development of China Agricultural University. The member research institutes and universities were asked to provide FC cases that are considered to be functioning well and offering diversity in service provision and scale of operation, and having established relations with local government and village committees. Forty-six cases were provided and 28 were purposefully selected, covering the existing diversity of FCs. Two criteria were used to construct the sample. The first criterion was that the FC's main activities needed to be in the agricultural sector. The second criterion was that information about services provided by the FC needed to be available.

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<sup>1</sup> More details of the survey can be found in Deng et al. (2010).

The data from the national survey and the data from the case studies complement each other. The results of the national survey give a general view of the performance of FCs, and the case studies provide in-depth information on services provided.

## **2.5 Roles performed by Chinese FCs in practice**

In this section, we use the theoretical perspectives discussed in section 2.3 to analyse the empirical data from both the national survey conducted in 173 FCs and the 28 FC case studies.

### **2.5.1. The roles of FCs in a value chain**

The data presented in Table 2.2 are derived from both the survey and the case studies and show the percentages of market-oriented services provided by FCs. The services are divided into three groups. One group consists of services relating to helping farmers take part in more activities along the value chain. Another group of services relates to promoting farmers' participation in chain management and the third group consists of credit-oriented services. The last column gives a summary of concrete activities as an outcome of the specific services.

The provision of input-oriented services is the most common function provided by FCs. Items supplied include chemical fertilizers, pesticides, seeds, young stock and medicines for animals. Nine out of the 173 FCs that participated in the survey do not supply any market-oriented services to members. This partly explains the difference in percentages between the survey data and the case studies. The case studies show that cheaper prices and more ensured quality are achieved as claimed by organizations and members. Eighty-two percent of the FCs demonstrated this performance. This relates to a direct advantage of FCs: larger numbers of farmers lead to increased purchasing and bargaining power to match with the growing input supply in the value chain. One FC established a feed factory collectively and further consolidated its advantage in input supply. This activity is counted as processing in the table. FCs also supply input to members to improve and standardize product quality as well as reduce costs for members. Ten FCs supply seeds to members and some of them require members to use their seeds as a prerequisite for member farmers selling their products through the FC. Uniform

seed varieties supplied by FCs are more reliable and helpful to ensure standardized products. Three FCs explicitly claim that they provide quality inputs to ensure the safety of products. As safety becomes part of the quality issue, input supply is starting to play a role in pest and weed management to help farmers to better use low-residue or bio-pesticides or herbicides with easier access and better guidance.

**Table 2.2** Percentage of FCs providing market-oriented services and their performance.

Services	Survey data (n=173) %	Case studies (n=28) %	Performance
<b>Services towards extending activities in the chain</b>			
Input supply	55	82	<ul style="list-style-type: none"> <li>- Cheaper price, ensured quality of input</li> <li>- Improve and standardize product quality</li> </ul>
Processing or packaging	19	14	<ul style="list-style-type: none"> <li>- Input processing</li> <li>- Food processing</li> <li>- Product packaging</li> </ul>
Collective marketing	22	36	<ul style="list-style-type: none"> <li>- Stabilize relationship with buyers</li> </ul>
<b>Chain management-oriented services</b>			
Farming coordination	65(30)*	25	<ul style="list-style-type: none"> <li>- Control farming process</li> <li>- Collective implementation of certain procedures</li> </ul>
Trademark or certification	15	14(4)	<ul style="list-style-type: none"> <li>- Provide price information</li> <li>- Search for and keeping contact with buyers</li> </ul>
Coordinating transactions	40	32	<ul style="list-style-type: none"> <li>- Product differentiation</li> <li>- Consumer relationship building</li> </ul>
<b>Credit-oriented services</b>	7	11	<ul style="list-style-type: none"> <li>- Credit services</li> <li>- Support activities to make better use of credit</li> </ul>

\* The number given here is the percentage of FCs that set criteria for farming procedures. The number within the brackets is the percentage of FCs that collectively implement one or more procedures in farming according to a set of criteria.

Collective marketing and coordinating transactions, which help to reduce barriers to farmers' access to the market, involve relatively high percentages of FCs. Ten FCs are marketing collectively to reposition themselves in the market. Bringing members' products together provides the possibility of establishing stable relations with buyers and increases their bargaining power to some extent. In transaction coordination, FCs basically help to collect marketing information and look for buyers, but stable relationships with buyers are not established and contracts are not signed. For the better organized ones, a well-developed information network has been built to update marketing information around the product regularly. Such a network usually extends outside the county and even the province. For newly established organizations with limited experience, marketing information is mainly retrieved from personal relations and limited to the local market. In some cases, FCs are even further involved in activities such as price setting and product classification. Some of them charge an agent fee, mainly from the buyers, for this process. Members of some organizations prefer this approach over collective marketing because of lower risks and securing a stable income from service fees. Collective marketing by FCs can sidestep the middlemen. It further integrates farmers in the value chain, whereas transaction coordination on the other hand is based within the existing market structure. Jia and Huang (2011) also note that there has been an increase in contracts signed between FCs and buyers and that the use of these contracts for stabilizing relationships has intensified.

A large number of FCs engage in farming coordination to increase the productivity and quality of products. The survey data show two figures here: 65% of the FCs set some standards for members' farming practices, but only 30% have control over the implementation of these standards. The case studies show a similar ratio of FCs (25%) that enforce standards through field instruction and field checks in farming processes. This reflects the fact that an organization taking action to apply standards is of crucial importance in addition to just having standards. About 15% of the FCs provide a trademark or certification for their products. The survey data and the case studies show similar results here. Trademarks or certifications help to differentiate FCs' products from other products in the market. Products of three FCs from the case studies with a non-pollution food certification or a green-food certification (certification licensed by the MOA) received higher prices, 0.2 to 10 yuan more a kilo compared to the regular market price. FCs can also develop identification of products through another approach. The number in brackets (4%) in Table 2.2 represents two FCs engaged in organic production and

reaching consumers through interactions supported by research institutes and NGOs. By collective efforts in interaction with consumers (e.g. field tourism), trust is built and a product's quality can be guaranteed in the long run.

Similar percentages of FCs in the survey and the case studies are reported in relation to processing and packaging. One difference is that FCs in the survey are mainly involved in packaging, whereas FCs in the case studies are also involved in processing. One case is the previously mentioned feed factory. Another case is a small sweet potato noodle processing machine, which is run by a FC. Another two cases, engaged in processing and packaging, also have their own trademark and function well in regard to collective marketing. So services listed in the table are not separated but linked to one another in complex ways. In both the survey and the case studies, 7% of the FCs supply credit-oriented services to members in two different models. The first model is that cooperatives pool funds from members and savings in banks serve as a joint guarantee. Members can get credit from the bank under that guarantee. The other model is that the FC gives credit to members from funds provided by the government, NGOs and members' investments. The FCs also provide other services, such as input supply-related services and technology training, to help members to make better use of credits.

The above shows that FCs participate in different types of chains, from modern value chains involving third party certification to short supply chains linking to consumers directly. The most frequently supplied market-oriented services are on the upstream of the value chain, like services oriented towards input supply. In the face of changes in agricultural development, new FC roles are emerging. FCs are starting to provide services in the areas of collective marketing, certification application and brand identification development. These services help to extend farmers' engagement in value-chain participation and management. However, farmers' participation and benefit sharing becomes a problem in this process. This is the case with three FCs that are initiated by companies and three FCs that are running under a combined cooperative-company model. Leaders of these FCs are not producers, but former extension officials or company staff members. The invested funds come mainly from companies or FC leaders. Relations between farmers and FCs show aspects of contract farming. Farmers follow instructions in production and FCs purchase products after negotiated prices, without involving farmers in decision-making and profit dividend.

### **2.5.2. The roles of FCs in an agricultural innovation system**

Table 2.3 shows the percentage of FCs involved in technology-oriented services. From the survey, we found that 90% of the FCs engage in such services.

The figure derived from the case studies is even higher. Here, all 28 FCs (100%) are providing technology-oriented services. This is in line with the results of the research conducted by Bijman and Hu (2011).

**Table 2.3** Percentage of FCs providing technology-oriented services and their performance.

Services	Case studies (n=28) %	Performance
Technology in general	100	
Classic extension	100	- Collect and introduce technology-relevant information - Provide training, field consultation with knowledge provider
Demand articulation	21	- Informal procedure to amass members' needs for technology
Innovation process management	7	- Carry out in situ experiments
Network building		
Forging peer learning among farmers	18	- Organize meetings or exchange visits for experience sharing
Setting up relations with public and private knowledge providers	50	- Stable relation with knowledge provider for constant support

Closer examination of the case studies reveals some notable variations in frequencies. All FCs provide classic extension services to members, including introducing new technologies and seeds, providing technology training, disseminating reading materials and providing consultancy. Almost all of them rely on knowledge providers for these new technologies and information. They collect new technologies and information from knowledge providers and then introduce them to members. The FCs also facilitate direct interaction between knowledge providers and farmer members by inviting experts to give training and field instructions. As most FCs do not charge members for these services, and others only require members to pay a small membership fee, the farmers can receive these kinds of extension services at low cost.

Fourteen FCs (50%) have stable relations with public extension agencies, research institutions or private companies. However, they have played different roles

in the development of their relationships. Three of them took the initiative to establish contact with research institutes. They selected these institutes because they could supply technologies identified as important or promising by the organization. In contrast, the establishment of other FCs' stable relationships was driven by knowledge providers. Three FCs were targeted by companies to facilitate their technology dissemination to farmers. Another eight FCs were encouraged by supportive research institutes to participate in specific technology introduction or by members' demand articulation. Although in these cases FCs are passive in the network building, they do play a role in linking individual farmers to knowledge providers. Besides linking farmers to external knowledge providers, five FCs (18%) started setting up learning networks within the organization to facilitate information sharing among members. They try to achieve this by setting up meetings or exchange field visits. Informal communication in daily interaction among farmers also plays a role in this information network building. Farmers report that peer farmers are an important source of information about technology.

Twenty-one percent of the FCs (6 cases) engage in demand articulation. For these FCs, this is not a formally organized process that follows pre-set procedures. It is loosely based on daily communication between members and FC leaders or staff. Most of the solutions offered to farmers are based on existing information or technology. Where no existing information or technology is available, demands are framed as research issues. Two FCs participate in an innovation process in the form of an in-situ experiment. One FC is host to an experiment on the appropriate amount of fertilizer in organic rice production. This experiment is supported by a research institute. The other FC participates in integrated maize production. This experiment is managed by a research institute. It is further observed that the activities of FCs are often motivated by external actors. FCs seldom initiate an innovation process by themselves.

From the findings it is interesting to see that FCs, as an organizational innovation, offer opportunities for bringing knowledge providers and farmers together. However, the findings also show that the role of FCs at the level of the agricultural innovation system is limited and that FCs mainly operate at local levels. In most FCs, the capacity for network building and setting up a research agenda is rather weak and their functioning in agricultural innovation highly depends on intervention and support from external actors.

### **2.5.3. The roles of FCs in collective resource management**

The case studies show that some of the FCs play a role in collective resource management (see table 2.4). The services provided in this regard relate mainly to pooling resources for infrastructure development and management. Eight FCs

(29%) fall into this category. They are involved in road construction, irrigation infrastructure building, greenhouse building and livestock farming area development, which help to make better use of resources like water and land. Three FCs, operating in the field of greenhouse building and livestock farming area development, developed collective production areas with a better road infrastructure and an improved water supply. In order to accomplish this, the three FCs needed to negotiate with the village committees for the right to use the collective land of the villages. If the production area was not being developed for all farmers in the village, the FCs also needed to reach agreement with participating farmers to pay rent for the use of the land.

**Table 2.4** Percentage of FCs involved in collective resource management.

Services oriented towards	Case studies (n=28) %	Performance
Collective rule-making	4	Collectively develop and change rules for resource management
Pooling resources of members	29	Mobilize members to invest money and labour
Reshaping relations between farmers, rural communities, government and other external organizations	29	Active in articulating farmers' demands and report to government and other external organizations Coordinate farmers and villages in collective resource management

Another case – a water user association – demonstrates the effectiveness of FCs in practice. This association was set up for the decentralization of water management at the county level and has branches at township level and village level. The FC is responsible for water supply and the management of the irrigation system. A basic rule within the association is that the formulation of regulations and the change of regulations should obtain consent from at least 70% of the members.

The eight FCs also coordinate relations between farmers, government, research institutes and banks to mobilize resources for infrastructure development and maintenance. This coordination always involves large investments of resources, including funds and labour. Six FCs requested the government or a research institute to invest in local small-scale infrastructure, including roads, irriga-



tion channels, collective shelters for cattle and the organization of offices. They showed their commitment to the projects by investing labour (all of them) and funds (three of them). Two FCs help their members to get bank loans through a collective FC guarantee system.

## **2.6 Exploring the diversity of FCs**

### **2.6.1. A typology of existing FCs**

The results presented in section 2.5 demonstrate the variety in services provided by FCs in China. In this section, we look at the patterns in combinations of services provided by FCs, using data from the case studies. Some FCs focus mainly on one domain or label themselves as one kind of cooperative. Two FCs engage mainly in technology improvement in farming practices and can be classified as specialized technology service providers. This is a small number compared to the total number of FCs, who somehow already provide technology services, but not in a specialized way. When we study the development of services provided by FCs, we can identify a clear path showing how some FCs developed from a single service organization to a multiple services organization. It seems that there is a recognition that one service provided by one organization cannot fully solve farmers' complex problems in agricultural production and that complexity needs to be approached in its totality. A representative example of this can be found in box 2.2. There are two FCs labelled as credit service cooperative because they have received the formal finance business license from the government. The new regulation legitimizing FCs' participation in rural finance markets was implemented in 2007. So the FCs focusing on credit services are just emerging and the number is also small at the national level (see table 2.2).

### **Box 2.2 Moving to multiple service organizations**

Two organic rice associations are located in the traditional rice production area of Guangxi Autonomous Region in Southwest China. They have been established by farmers who engage in organic rice production under the support of an organic products promotion project coordinated by the Guangxi Maize Research Institute (GMRI) and funded by Participatory Community Development (PCD), an NGO in Hong Kong. The associations were set up to bring together farmers and project staff for technology development. This included organizing training activities, sharing experiences with peer farmers and carrying out local experiments. In the first year and a half of its functioning, members were satisfied with the associations' contributions, and more farmers accepted the idea that organic products are healthier and friendlier to the environment. The number of members increased from five to about 25 for both organizations.

At this point, the associations found it difficult to attract new members. Members complained that they had invested in more labour but could not get higher prices and had to settle for lower crop yields. From 2007 onwards, the associations started to market their products with the help of GMRI and PCD. They invited consumers to the villages for field experience visits and held meetings with consumers in cities to introduce their products. By 2010, both organizations had established long-term relationships with consumers in Nanning, Liuzhou and Hong Kong. Their rice is now recognized as organic among these consumers and attracts twice the price of ordinary rice. In some seasons, their rice could not meet the increasing demand of consumers. The associations have covered all farmers in the initial villages and are extending their activities to other villages.

Most FCs try to overcome farmers' complex problems by providing multiple services. In the case studies, two different approaches can be found in dealing with this complexity. The first approach focuses on improving one or several products to increase the income of those farmers who are involved in the production of these specific products. Services that are then provided include tailor-made technical services, market-oriented services and financial services. The second approach tries to promote agricultural development in one area as a whole (usually within a community). This is done from different angles, such as general improvement of agricultural production, income generation, social well-being of residents and the management of common resources. In this article, we classify cooperatives taking the first approach as commodity-based FCs and cooperatives taking the second approach as community-based FCs.

**Table 2.5** Classification of FCs and services provided (based on the case studies).

<b>Services oriented towards</b>	<b>Commodity -based FCs</b>	<b>Community -based FCs</b>	<b>Specialized technology service providers</b>	<b>Credit service providers</b>
Total number of FCs (n=28)	17	7	2	2
<b>Market-oriented services</b>				
Input	16	5	1	1
Processing	0	1	0	1
Collective marketing	6	4	0	0
Farming coordination	1	5	0	1
Trademark or certification	2	2 (2) *	0	0
Coordinating transactions	7	1	0	1
<b>Technology-oriented services</b>				
Classic extension	17	7	2	2
Demand articulation	2	3	1	0
Innovation process management	0	1	0	0
Network building				
Forging peer learning among farmers	2	3	1	0
Set up relations with public and private knowledge providers	9	5	2	0
<b>Collective resource management</b>	1	6	0	1
<b>Credit-oriented services</b>	0	1	0	2

\* The figure between brackets represents the percentage of FCs that do not have a legal trademark or certification, but whose products have an established reputation among consumers.

On the basis of the above discussion, four types of FCs can be distinguished: specialized technology service providers, credit service providers, commodity-based FCs and community-based FCs. Table 2.5 indicates the distribution of FCs according to the services provided by each type. Commodity-based cooperatives and community-based cooperatives seem to be similar in trying to combine

different kinds of services and creating compatibility between them, but they do show differences in the kinds of services they combine and provide.

## **2.6.2. Example cases for different types of FCs**

Table 2.5 showed that different types of FCs follow different patterns in service providing in terms of the key functions that were discussed in section 2.5. In this subsection, we present an example case for each type of FC to demonstrate specific characteristics in practice. It is helpful to better understand the different roles FCs play and the different contexts in which they operate.

### **2.6.2.1. CASE 1: The Yangliu Technology and Community Development**

#### **Association: a specialized technology service provider**

The Yangliu Technology and Community Development Association is located in Yangliu, a town in Yunnan province. It is a mountainous and poverty-stricken area, characterized by limited access to farming land, agricultural knowledge and technology. In 2000, the Yangliu Technology and Community Development Association was established as a NGO under the promotion of a rural development project funded by the provincial Science and Technology Committee and the Ford Foundation and facilitated by the Center for Regional Development of Yunnan University. The association operates at two levels. The first is the town level, composed of staff from the town government office and other government agents. The second level of operation is the village level. This level is composed of leaders and members from the villages and operates through technical support groups (18 groups in total). The association collects farmers' technical demands, provides relevant knowledge and technology services, helps the groups to collect funds for relevant projects and assists in making and implementing a community development plan.

Each technical support group develops its own projects with the support of the association. The technical support group in Jiangjing village, for example, stimulated pig breeding in the village. Before the establishment of the group, 8 households had only 14 sows in total, and 80 percent of the piglets for fattening were bought from outside. In 2008, 31 households were engaged in pig breeding, and together they had produced more than 1500 piglets a year. This increase was the result of two support measures from the association and the group. On the one hand, the association and the group facilitated access of the farmers to the services provided by a pig feed company. Farmers changed from home-cooked feed to uncooked feed and learned how to use the formula that was supplied by the company. On the other hand, the group provided small amounts of credits that were provided

by the association to households to help them to start production or increase the scale of production. The members of the group also got a chance to exchange their experiences of pig breeding and pig fattening through this platform.

The association also established a network with other public technical departments to collect information about new technologies and to help farmers evaluate new technologies. For example, the association introduced a new pumpkin variety and provided relevant technical services to the groups who wanted to join the project. The association also cooperated with the provincial research institute to introduce and experiment with new maize varieties to select the ones that could adapt to the local climate. According to the self-evaluation of the association, the groups and the farmers not only acquired new knowledge and technologies through the association's activities, but also significantly improved their capacity to search for new technologies and their management skills.

#### **2.6.2.2. CASE 2: The Baixin Credit Cooperatives: a credit service provider**

The Baixin Credit Cooperatives is a group of cooperatives located in Lishu County, Jilin Province. One of the major functions is to provide credit services. The cooperatives that are part of the group emerged from the needs of local farmers. They have developed by adopting different operational models that are being disseminated all over China.

After the implementation of the Interim Regulations on Rural Mutual Aid Credit Cooperative, one of the cooperatives, called the Yanjia Baixin Credit Cooperative became the first credit cooperative to gain formal recognition by the national government. The establishment of this group of cooperatives has received strong support from outside, especially from Jiang Bolin, an expert working in the local branch of the China Banking Regulatory Commission. From 2000 onward, he used his professional knowledge to help farmers to develop regulations for credit cooperation and mobilize resources to provide training for farmers in cooperative management and credit cooperation. The China Industrial Cooperation Association is one of the major supporters of the training.

The cooperatives provide their credit services in two principal ways. One is by directly providing small amounts of credit to members from their own funds. These funds come from the savings of members and loans with lower interest from other commercial banks or financial institutions. A series of rules, based on the exemplary chart of credit cooperatives provided by the China Banking Regulatory Commission, regulates the members' investments and borrowings. Basically, only members who invest in the cooperative have the right to get credit, and the largest amount that can be borrowed is ten times the members' investment. The chart used

by the Yanjia Baixin Credit Cooperative has become an important model for other credit cooperatives all over the country.

The other way is saving members' shares in the local Rural Credit Cooperative as guaranty money for members who borrow money from the Rural Credit Cooperative. This is the major source of credit for farmers. Before the establishment of the Baixin Credit Cooperatives, information asymmetry was a problem between the farmers and the Rural Credit Cooperative. The cost to the bank for collecting information about individual farmers is high, and the farmers are disadvantaged by the dominance of the bank when they go through the whole process of borrowing. By the intermediation of the credit cooperative, farmers have easier access to credit, and the bank can better control the risk for the larger amount of guaranty money put in the bank. The Lijia Baixin Credit Cooperative has adopted this model.

Besides credit services, all the Baixin Credit Cooperatives are involved in agricultural development projects to help farmers make better use of credit. Taking the Lijia Baixin Credit Cooperative as an example, it has mainly invested the credit in pig production. When the cooperative was established in 2001, eight members invested 3,000 yuan and got 70,000 yuan in credit from the Rural Credit Cooperative. With the money, the cooperative started the collective purchase of pig feed and lowered the cost of pig production. In cooperation with a processing company, the members got higher prices. The success attracted more farmers, and investment by the individual members also increased. Now the cooperative has 36 members and an investment of 640,000 yuan from these members. At the same time, the cooperative purchased and built new fixed assets, like a feed processing facility, to provide more services to its members.

### **2.6.2.3. CASE 3: The Sister Chu Melon Cooperative: a commodity-based cooperative**

The Sister Chu Melon Cooperative is located in Jiaxing, Zhejiang Province. The cooperative is about a 50-minute car drive from Jiaxing City, and farming is the major source of income in this area. Before the establishment of the cooperative, local farmers already had more than ten years' experience in melon production. In 2005, the initiator of the cooperative, Miss Chu, who was a melon producer and at that time the chairman of the party branch in the village, learned about FC promotion policy from a government meeting in town. She shared the information gained from this meeting with the eight melon farmers in the village, and seven of them agreed to set up a melon cooperative. In 2006, the cooperative was formally established and registered. In 2012, the cooperative had 150 members from the village and nearby area.

The cooperative provides a series of services in melon production, including input supply, technical support, processing, storage and marketing services. The cooperative got the hazard-free certification for the melon production field in 2007, and their application for green food was approved in 2009. In order to improve and ensure the quality of the product, the cooperative requires its members to follow its own standards in the production process. At the season of planting, fertilizing and pest management, the cooperative organizes trainings for its members. To share Miss Chu's experience in melon production, in 2011 the cooperative also opened a Weibo-account. Weibo is an online social network application – similar to Twitter, used to provide updated information about seasonal farming operations and to interact with its members.

The cooperative also develops technologies according to the local context. For example, the cooperative developed the “rice-melon” rotation model. With the application of greenhouse technology, melons can be planted from December to June in the year after the harvest of late rice. The rotation with rice not only makes it easier to control disease and pests, but also improves the quality of the melons. To increase their income, the farmers can also harvest about 500 kg rice per mu. . The cooperative also provides services concerning rice production, processing and marketing to encourage members to adopt the technology.

In order to distinguish its products from other melons in the market, in 2006 the cooperative obtained the trademark Sister Chu. It has built stable relations with the Jiaxing agri-products wholesale market, and the melons are sold to several big buyers. Sister Chu is now widely recognized as the trademark from Jiaxing, and annual sales have reached 10 million yuan a year.

#### **2.6.2.4. CASE 4: The Gengguantun Cooperative: a community-based cooperative**

The Gengguantun Cooperative is located in Gengguantun village, Hebei Province. It provides technical and marketing services to all the farmers in the village and has close relationships with the village committee. These characteristics make it a typical example of a community-based cooperative. The cooperative is involved in the production of multiple products, including Chinese dates, and several kinds of cereals, vegetables and eggs. It was initiated in 2006 by a village woman, Miss Song, who had a lot of experience in Chinese date production and marketing. Realizing that a good product will not fetch a good price without classification, she started to classify and pack the products of good quality. After several years of exploration, she had built a network of supermarkets and hotels for her product, and farmers in the village gained access to these markets through her.

In this situation, the leader of the village committee, Mr Pan, urged Miss Song to establish a cooperative to provide technical and marketing services to all the farmers in the village. An agreement was made that the cooperative rented infrastructures from the village committee at half the market price and that the cooperative include all farm households (about 1,000) in the village as members. The infrastructure covers an area of 1 ha, including offices, three processing workshops, one exhibition room and two agri-product storages. The cooperative has three types of members. The first type consists of share-holding members, who have the responsibility to share market risks and the right to receive dividends from the profits. About 30 farmers are invested in the cooperative. The second type consists of contract members who adhere to the production standards of the cooperative and receive higher prices for their products. They have the right to decision-making, to vote and to stand for election, but they do not have the right to claim dividends. About 400 farm households fall into this category. The third type consists of regular members who can receive technical training, input supply and farm machine services at lower prices but who do not market their products through the cooperative.

The cooperative signs contracts with contract members in terms of the cooperative's requirements about the production process and product quality, the procurement price and the relevant services provided by the cooperative. For example, the cooperative requires that its members use the fertilizer and pesticide provided by the cooperative to control food safety. Members can also receive better prices for better quality. For instance, the price for a special variety of maize is 2.6 yuan/kg, while the market price for ordinary maize is 0.8 yuan/kg. To ensure product quality, the cooperative invites experts from extension agencies to give training before the production season. The extension agents inspect the production field regularly and provide consultation services during production. They also organize the harvest to ensure the purity of such products as wheat. The cooperative does not make any profit from the input supply services to both contract members and non-members. All the farmers in the village benefit from the cooperative to a different extent, depending on the kind of participation.

The cooperative collectively markets all products under the same trademark—Gengguantun (the name of the village). The trademark is owned by the village committee and authorized to be used for free. The products are sold in supermarkets, stores and exclusive shops, both locally and in large cities, such as Beijing and Tianjin. Any profit becomes the main source for the cooperative's capital accumulation. According to an investigation by the College of Humanity and Development of the China Agricultural University, this practice also motivates the share-holding members to invest.



Following the establishment and stabilization of the marketing network, the cooperative started to diversify its products and to develop ecological agriculture to make better use of the resources in the village and strengthen its market position. At the beginning, the cooperative mainly engaged in Chinese date and cereals production and marketing. Now it has extended to vegetable production, poultry and egg production and wheat flour processing. It also experiments with wheat and maize varieties to improve productivity and flavour. Taking wheat production as an example, the cooperative provides seeds to farmers and commits them to only use organic fertilizer as a base fertilizer and to only use pesticides provided by the cooperative. In processing, it uses the improved traditional stone mill to preserve the traditional flavour. The flour is welcomed at the local market, and the demand exceeds the supply because of limited processing capacity.

### **2.6.3. Characteristics of different types of FCs**

Based on the findings from the case studies and the example cases presented above, we summarized the characteristics of the different types of FCs in table 2.6. As shown in section 6.1, multi-functionality is the trend for FC development. It is interesting to compare the different approaches that combine different services and are adopted by community-based and commodity-based FCs. Community-based FCs, as compared to commodity-based FCs, engage more in farming coordination and collective resource management. As already discussed, community-based FCs are essentially territorially based and devoted to the development of the area. This leads to some differences from commodity-based FCs. Firstly, community-based FCs claim that they serve the whole village and membership is open to all farmers in a village. Members of the organization are known to one another, and members' lands are located close to one another. Because of this social and territorial proximity, farming coordination is relatively easy to implement. Secondly, community-based FCs have a greater chance than commodity-based FCs of receiving support from village committees in the form of offices and financial or personnel support as their contribution is more relevant to village development. In some cases, the FCs also organize cultural activities in the villages. Thirdly, community-based FCs tend to engage in multiple products, including crops and livestock. Recognition from village committees and farmers for their multiple services legitimize their role in collective actions in the village, including natural resource management.

**Table 2.6** Characteristics of different types of FCs.

Type of FC	Characteristics
Commodity-based FC	<ul style="list-style-type: none"> <li>- Organized around products and tends to focus on a single product</li> <li>- Open membership without restrictions on the location of members</li> <li>- Limited involvement in collective resource management and farming process management</li> </ul>
Community-based FC	<ul style="list-style-type: none"> <li>- Open membership to farmers in the village</li> <li>- Shares public resources with or receives support from village committees</li> <li>- Engagement in multiple products based on community resource endowment</li> <li>- Participation in common-pool resource management and public services</li> </ul>
Specialized technology service provider	<ul style="list-style-type: none"> <li>- Mainly provides technology-oriented services to members and relevant input services to realize the use of new technology</li> </ul>
Credit service provider	<ul style="list-style-type: none"> <li>- Mainly provides credit services to members and provides relevant support to make better use of the credit</li> </ul>

Comparatively, commodity-based FCs engage more in coordinating transactions and less in resource management and farming coordination. Some similarities can be found among these commodity-based FCs. Most commodity-based FCs are organized around one product. Fourteen out of the 17 commodity-based FCs fit this principle. FCs motivate farmers to collectively produce one and the same product without restriction on location of members. In this way, the quantitative needs of large buyers or of regular supply can be met. Quality improvement is also an important part of organizational activities, and FCs mainly achieve this through input management and product selection, rather than engagement in cultivation process management.

Looking back to the institutional background of the development of FCs in China, we can find a correlation with the diversity of FCs. Table 2.7 indicates the number and percentage of different actors involved in the initiation of FCs. The heavy involvement of the government in the initiation of FCs reveals the strong governmental influence on the development of FCs. This is also noted by Deng et al. (2010). From the case studies we learn that the government is mainly involved in commodity-based FCs and in specialized technology service providers. Closer

examination reveals that the Agricultural Bureau and CAST, operating at the local level, are the main governmental agencies engaged in the process. They mainly provide technological supports to FCs. Companies are important players in the establishment of commodity-based FCs. This involvement is directly linked to the objective of smoothing transactions with farmers. Other organizations, including research institutes and NGOs, are also involved in the initiation of FCs, but not the commodity-based type. These research institutions and local NGOs cooperate with international development organizations, such as IFAD, IDRC, and share the idea that rural development should cover economic, social and environmental aspects.

**Table 2.7** Initiators of FCs.

Initiator	Survey data (n=173) %	Case studies (n=28)			
		Commodity -based FCs	Community -based FCs	Specialized technology service pro- viders	Credit service providers
Farmer	73	9	3	0	1
Government	31	3	1	2	0
Company	16	5	0	0	0
Research in- stitute	1	0	3	2	0
NGO	0	0	1	1	1

Note: Figures in each column are not mutually exclusive.

## 2.7 Policy implications

From the 1990s onwards the Chinese government has developed a series of different policies to promote the establishment of cooperatives. Different actors have been involved in the development process, including government departments, companies, research institutes, NGOs and international organizations. The findings above carry some policy implications for better supporting FCs and making better use of FCs to promote sustainable agricultural and rural development in the long run.

Firstly, more compatible and synthesized policies could enhance the FCs' functioning because most FCs serve multiple functions in different combinations. This can be understood from two angles. On one hand, considering the effectiveness of existing policies, the policies discussed in section 2.2 were designed and

implemented by different government departments with different focuses. This does not only decrease the compatibility of policies at a higher level, but also increases the difficulties for FCs to access and integrate resources from different government agencies at the local level (Tong, 2008). MOA has started to cooperate with other departments in order to develop more comprehensive policies, but it remains to be seen if this cooperation will lead to an improvement in serving the diverse functions of FCs in practice. On the other hand, in terms of the recognition of different functions of FCs, the formal recognition of government policies could encourage the FCs' participation in providing relevant services. This can be inferred from the wide coverage of marketing and technical services among FCs under the strong support from the government. The significance of multiple function organizations lies in the fact that different functions can enhance the performance of each other as showed in the cases for different types of FCs in section 2.6. The success of innovation in agricultural development depends on the appropriate combination of resources, knowledge, technologies and organizational structure (Leeuwis and van den Ban, 2004). Collective resource management is one of the functions that have not been well recognized in current policies. The Water User Association has been introduced to facilitate the water and irrigation management in the rural areas with the promotion of the World Bank and other international and national organizations (Tong, 2005), but the scope and extent of FCs to engage in resource management is limited.

Secondly, the emergence of different types of FCs, especially the community-based ones, challenges the view of the government on the role of FCs' in rural and agricultural development. The current model promoted by the government focuses on cooperatives that are organized around commodities. This approach might not fully reach the objective of promoting the equal development in rural areas. Some farmers are excluded from the cooperative activities because they have limited capacities and resources to specialize in certain agri-products. The wide coverage of community-based FCs' membership helps to solve this problem by providing basic services to all farmers within its territory of operation. Support from collective or public organizations is an important motivation for the FCs to provide services to benefit all farmers.

At the same time, the commodity-based model mainly gained success in North America where agriculture is dominated by large-scale and mono-culture farming. The farming system in China consists of millions of small farms and is characterized by diversity within the regions. Hence the costs for public extension agencies to reach all the farmers and the costs for individual farmers to get appropriate services are high. The wide coverage of community-based FCs helps public extension agencies to reach large numbers of small farmers and improve their performance.

Taking the multiple functions of agriculture into consideration, the specific territorial connection that community-based FCs have is an important characteristic for getting engaged in resource management. Resulting the depletion of different kinds of resources, like fertile land and water, sustainable resource management is important to reorient agriculture in China (Qiu et al., 2008). Considerable experiences from other countries show that collective action and farmer cooperatives could contribute to the sustainable use of resources for the wide involvement of local people from the same region when the government leaves enough room for them to manoeuvre (Agrawal and Ostrom, 2001; van der Ploeg, 2010b).

Based on the argumentation above, some researchers argue that the models in Japan, South Korea and Taiwan based on traditional and geographically defined rural boundaries are more appropriate in the context of China (Wen, 2010; Yu, 2007a, b). They engage in public resource management, insurance services and social activities besides focusing on market-oriented activities (Choi, 2006; Klinedinst and Sato, 1994; Lin, 2006). The community-based FC classified in this study is similar to this model. This model does not exclude the community-based FC, but integrates these two types to serve different functions. Taking the FC system in South Korea as an example, it is constituted by the regional cooperatives that are made up by farmers in the region and commodity cooperatives that are made up by farmers specialized in one cash crop or livestock (Hong, 2004). At the same time, these two types of FCs, especially the community-based one, integrate the resource management and credit services into other services directly related to agricultural production. Hence, a more sophisticated policy on FC promotion is needed for the Chinese government to balance the development in the short run and the long run and to ensure an equal benefit for farmers and environmental sustainability.

## 2.8 Conclusion

This article has given a general picture of the diversity to be found in FCs in contemporary China and the services they provide in responding to changes and challenges in agricultural and rural development. In market-oriented services, FCs most frequently supply services on upstream in the value chain, like input supply, and start to focus on collective marketing and farming coordination, and are beginning to become involved in certification issues and brand identification. These activities are helpful in extending farmers' engagement in value-chain participation and management. In terms of technology-oriented services, FCs offer opportunities to bring knowledge providers and farmers together as an organizational innovation, but they mainly operate at local levels and play a limited role at the

innovation system level. Considering collective resource management, some FCs are starting to coordinate activities for farmers, rural communities and local governments to achieve better use of resources, such as land and water, and to develop infrastructure for rural communities. Within each kind of function, different FCs adopt different approaches, such as between modern value chain and linking to consumers directly or introducing external knowledge and developing contextual knowledge.

Four types of FCs can be distinguished depending on the different services they provide and their relationship with rural communities. There are commodity-based FCs, community-based FCs, specialized technology providers and credit service providers. The emergence of these four types is embedded in broader institutional developments. The government mainly promotes commodity-based FCs and specialized technology providing FCs. Companies focus on commodity-based FCs, whereas research institutes and development organizations are involved in community-based FCs.

Current government policies do not fully recognize the multiple functionality of the FCs and the importance of community-based FCs in agricultural and rural development in the long run. More sophisticated policies that integrate different support measures and cover more functions could contribute to the further development of FCs in the future.

In the development of FCs, positive efforts can be identified, but negative sides are found as well. More detailed insights are needed on the everyday performance of the different types of FCs. We would like to know whether they perform differently as intermediaries between farmers and external worlds. It is also important to look at the relation between internal and external dynamics and their influence on the functioning of FCs.



# Chapter 3

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Functions and limitations of farmer cooperatives as innovation intermediaries: findings from China

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## **Abstract**

This article takes an innovation intermediary perspective to examine farmer cooperative's (FC) roles in facilitating agricultural innovation and its positioning in the agricultural innovation system (AIS). The article draws experiences from the rapidly emerging FC field in China. Three cases are selected to cross check findings from them and innovation journey analysis is used within each case to understand FCs' engagement in innovation processes. The findings show that FCs cover a wide range of knowledge intermediation and innovation intermediation functions identified by the literature. FCs recognize the importance to connect technical, social and economic dimensions of farming practice and provide corresponding services to link farmers to relevant actors, like extension agencies, research institutes and supermarkets. Though they mainly work through bilateral relationships as opposed to acting as a systemic intermediary, they could take the role of coordinator in the service system and bridge the gap between the research and policy system and everyday farming practice, especially in the absence of a systemic coordinator. However their legitimacy as intermediary might be challenged due to the potential conflicts with governments, market actors or their members, and their local position, providing insufficient clout for developing durable relationships with relevant actors.

## **Keywords**

Farmer cooperatives; innovation intermediaries; network building; agricultural innovation system

### **3.1 Introduction**

In recent years, the concept of agricultural innovation system (AIS) has gained currency as a way to understand how agricultural innovation takes place, and how innovation can best be supported (see e.g. Hall et al., 2003; Klerkx et al., 2010; Morriss et al., 2006; Spielman et al., 2008). An AIS is defined as a system that consists wide range of actors from public, private and civil sectors to bring new products, new processes, and new forms of organization into economic use, together with the institutions and policies that affect the way different agents interact, share, access and exchange and use knowledge (World Bank, 2006). Although there is much emphasis on knowledge creation, exchange and use in the above definition of AIS, innovation systems need to fulfil several other functions that are essential for innovation. These functions include fostering entrepreneurial driven activity, vision development, resource mobilisation (e.g. capital), market formation, building legitimacy for change, and overcoming resistance to change by means of advocacy and lobbying (Hekkert et al., 2007; Klerkx et al., 2010). The AIS approach thus recognizes that innovation is a process in which technological developments are combined with new organizational and institutional arrangements. This implies that new forms of coordination within a network of actors is key (Leeuwis and Aarts, 2011; Smits, 2002).

To enhance AIS functioning it is key to stimulate the building of linkages between heterogeneous actors and make their subsequent interactions effective in terms of joint learning, changing practices, and shaping new institutional arrangements (Hounkonnou et al., 2012; van Rijn et al., 2012) , and actors who span boundaries between different actor groups and act as systemic “innovation intermediaries” have been found essential for this (Eastwood et al., 2012; Klerkx et al., 2010; Kristjanson et al., 2009; Morriss et al., 2006). An innovation intermediary has been defined as “an organisation or body that acts as an agent or broker in any aspect of the innovation process between two or more parties. Such intermediary activities include: helping to provide information about potential collaborators; brokering a transaction between two or more parties; acting as a mediator, or go-between, for bodies or organisations that are already collaborating; and helping find advice, funding and support for the innovation outcomes of such collaborations” (Howells, 2006:720). The provision of brokerage and mediation functions may often not be the primary role of an innovation intermediary as Howells argues, because these, for example, “also cover more traditional contract research and technical services which involve no third-party type collaboration” (2006:726). Previous research has shown that wide range of actors from public, private and civil sectors can take on such innovation intermediary roles, doing brokering both as core activity (these specialized organisations have been coined “innovation

brokers”) and as one activity in a range of other activities (Kilelu et al., 2011; Klerkx and Leeuwis, 2009a).

Farmer cooperatives (FC – also called producer organization or farmer association), which exist at village, regional, national and even international level (Bijman and Ton, 2008), have been found to link different actors and bring synergy to agricultural innovation efforts (Clark, 2002; Gouët and Van Paassen, 2012; Klerkx et al., 2009; Poulton et al., 2010; Wennink and Schrader, 2007; World Bank, 2006), combining innovation intermediation with other kinds of services, like input supply and collective marketing (Carney, 1996; Hussein, 2001; Ito et al., 2012; Wennink and Heemskerk, 2006). Few researches have taken an innovation intermediary perspective to examine FC’s role and position in the AIS. To fill this gap in the literature, the goal of the article is to investigate what intermediation functions are served by FC and how the different functions influence FCs position as intermediary in the innovation system. Besides adding to the body of knowledge on the functions of FCs, it also aims to contribute to the still unanswered question whether innovation intermediation is best fulfilled by a specialized dedicated organization (innovation broker) or whether it can be done as one activity amongst others (Klerkx et al., 2009) .

This article draws on experience from the rapidly emerging FC sector in China (see e.g. Deng et al., 2010; Zhao and Develtere, 2010). Section 3.2 provides a conceptual framework to analyse functions of innovation intermediary and delineate issues concerning its positioning in the AIS. Section 3.3 introduces the research methods. Section 3.4 presents data on three case FCs which actively engaged in innovation activities and analyses the findings from the cases. The last section discusses the key points from the research and gives implications for FC policy in China.

## **3.2 FC as innovation intermediary: functions and positioning in agricultural system**

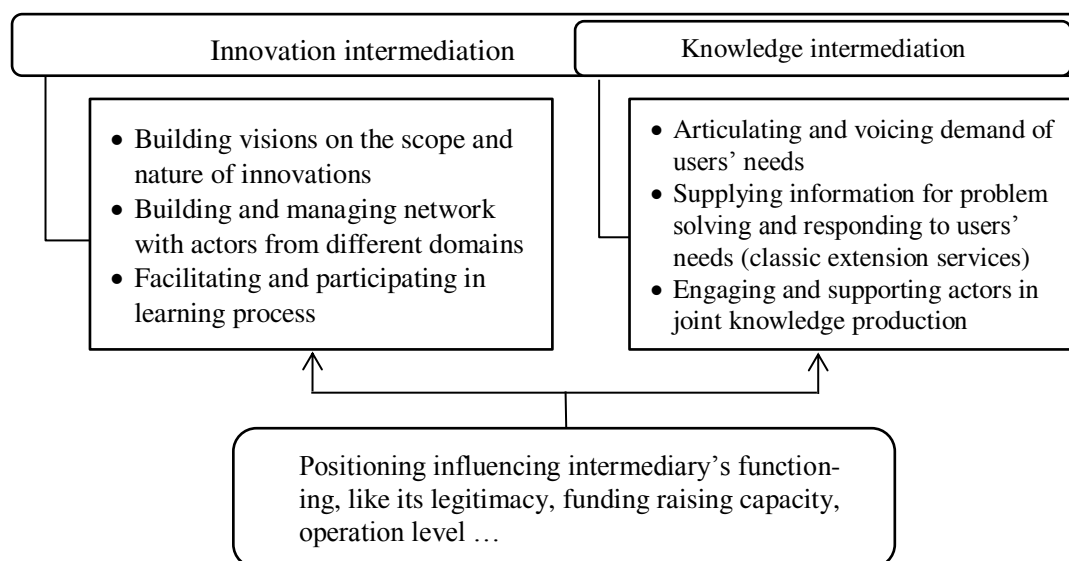
This section will provide a conceptual framework to understand FCs’ functions in intermediation and how positioning influences their functioning.

### **3.2.1. Innovation intermediary and its functions**

Innovation intermediary is a widely used concept in innovation studies and also described in terms like brokers, network broker or boundary organization (Howells, 2006). The innovation intermediary role in agricultural innovation has

traditionally been attributed to agricultural extension, which originally was seen to act as a bridge between science and farming practice, but now the extension is called upon to expand its mandate and act as a systemic intermediary coordinating pluralistic advisory service systems and agricultural innovation systems (Christoplos, 2010; Rivera and Sulaiman, 2009). Systemic intermediaries do not simply operate in bilateral relations, but broker more complex relationships, like “many-to-one-to-one”, “many-to-one-to-many” or even “many-to-many-to-many” in distributed innovation networks (Howells, 2006). The literature identifies several roles for innovation intermediaries to support innovation process (figure 3.1). Knowledge intermediation is an important part (Kilelu et al., 2011). This function relates to classic extension services, but includes broader functions beyond technology dissemination (Rivera and Sulaiman, 2009), since knowledge is considered to be contextual and co-constructed by stakeholders rather than a fixed “product” transferred from producers to users (World Bank, 2006). We identify three functions of intermediaries for effective knowledge production and use (Kilelu et al., 2011; Krisjanson et al., 2009; Schut et al., 2011): (1) Articulating and voicing demand of users: articulating needs and demands in terms of technology and relevant knowledge, and voicing the demands to direct innovation support services from research, advisory and training organizations; (2) supplying information for problem solving and responding to users’ needs; (3) engaging and supporting actors (farmers, researchers) in participatory knowledge generation through facilitating demand led research or articulating experimental/local knowledge.

Given that the innovation system perspective emphasizes other resources important for innovation than knowledge (Hekkert and Negro, 2009; Klerkx, 2008), innovation intermediaries need to embrace wider functions to bring together all the necessary actors and resources and thus foster conditions for innovation (Howells, 2006; Kemp et al., 1998; van Lente et al., 2003): (1) building vision on the scope and nature of innovations contemplating new technology, market arrangements, value chain models, etc.: this includes identifying opportunities and constraints and coupling expectations of different actors; (2) building and managing network with actors from different domains: facilitating linkages between potential collaborators as well as other actors that need to be involved due to their enabling or constraining position by scanning, scoping, filtering and matchmaking of actors; (3) facilitating and participating in learning process: creating conditions for and participating in learning by doing, using, interacting and searching.



**Figure 3.1** Possible function of intermediary and influencing factors

Sources: Based on Schut et al. (2011), complemented with van Lente et al. (2003), Howells (2006), Klerkx and Leeuwis (2008), Kristjanson et al. (2009), Kilelu et al. (2011).

### 3.2.2. FC as innovation intermediary and its positioning in agricultural system

As innovation intermediaries fulfil liaison positions and stand between many actors, they gain influence from being accountable to different actors, and they need to balance these accountabilities to be able to create a legitimate position (Fernandez and Gould, 1994; Williams, 2002). This balancing of accountabilities is not easy, and innovation intermediaries may face legitimacy tensions as they generally confront diverging and conflicting interests and face accountability conflicts to multiple demands (Klerkx et al., 2009; Klerkx and Leeuwis, 2009b). Intermediaries can take in this a neutral position, not choosing a particular view or interest, but may also take a non-neutral position, advocating or representing certain interests (including their self-interest) (Kimble et al., 2010; Obstfeld, 2005), which can have implications for the types of relationships they can engage in. They may not be able to broker certain connections because of perceived conflicting commercial or political interests. Other tensions observed are that some people may not grasp their role and see them as an unnecessary in-between in what could also be a direct relation, which has been called function ambiguity (Klerkx and Leeuwis, 2008). A third tension relates to willingness to pay: service values from their innovation intermediation activities are invisible under existing evaluation methods and this may affect willingness-to-pay of private actors and patience of public funding to support them in a longer term.

When applying the innovation intermediary concept in the context of developing countries, Klerkx et al. (2009) suggest that different types of intermediaries beside specialized ones which specifically position them as a neutral “honest broker”, may be needed for different problems to be addressed, in different social and cultural contexts. A FC can be conceptualized as a non-neutral intermediary who aims to gain a position for farmers in the agricultural innovation system (Hussein, 2001). Basically, it is a membership organization representing farmers and improving their position in production and commercialization (Rondot and Collion, 2001). So it can be seen to be in a representation or gatekeeper position for farmers in its relations with other actors (Fernandez and Gould, 1994). A FC is not a specialized innovation broker, as it combines innovation intermediation with other functions, like input and credit supply and collective marketing (Poulton et al., 2010; Wennink and Heemskerk, 2006).

### **3.3 Research methods**

The research reported in this paper used a case study approach to understand the innovation intermediary functions served by FCs. As innovation is a dynamic and situated phenomenon, case studies are an apt approach to explore and explain the what and how questions the study addresses (Yin, 2009). Three cases were purposefully selected to represent different types of FCs classified by Yang et al. (2013) according to services provided and their connection with rural communities and cross check findings from them. In China, FCs emerged in the 1980s and mainly operate at village level (Deng et al., 2010). Case 1 (Funong Vegetable Cooperative) deals with a specialized technology services provider which mainly engages in technology improvement to optimize farming practices. Case 2 (Tianli Vegetable Cooperative) falls into the type of commodity-based FC which combines technical and marketing services around one or several products. Case 3 (Hongmin Farmer Cooperative) is a community-based FC which includes improving agricultural production and marketing as well as natural resource management, credit services to promote development in rural communities.

Considering that the interaction between different actors in innovation is a dynamic process, innovation journey analysis focusing on important events provides a useful method (Klerkx et al., 2010; Spielman et al., 2009). Within each case, we try to understand case FCs’ functions through their engagement in innovation events and efforts to shape the process. The fieldwork was carried out between Sept. 2009 and Sept. 2011. Both retrospective and real-time perspectives

were taken to build the process of FCs' innovation journeys depending on the cases (Hoholm and Araujo, 2011). Information was collected from different sources and kept updated through time. Semi-structured interviews were set up with FC leaders and members and relevant external actors (such as managers from export company, supermarket and researcher involved) who were accessible were interviewed. The key information gained from these interviews include: the key points of FC development, management structure of FCs, services provided by FCs and how these services evolve along time, establishment and evolvement of FCs' relations with external actors (like government, market actors, researchers and research institutions), members' perspectives on these issues, external actors' perspectives on relevant issues. Secondary data was also collected to complement interviews. Details of data sources are presented in table 3.1.

**Table 3.1** Data sources of the research

Case FC	Number of interviews	Interviewees	Secondary information sources
Funong Vegetable Cooperative	10	<ul style="list-style-type: none"> <li>- Two leaders</li> <li>- Seven members</li> <li>- One manager from export company cooperating with FC</li> </ul>	<ul style="list-style-type: none"> <li>- FC website information</li> <li>- Newspaper articles and on-line reports</li> </ul>
Tianli Vegetable Cooperative	13	<ul style="list-style-type: none"> <li>- One leader</li> <li>- Ten members</li> <li>- Two managers from supermarkets cooperating with FC</li> </ul>	<ul style="list-style-type: none"> <li>- Newspaper articles and on-line reports</li> <li>- TV programmes about FC</li> </ul>
Hongmin Farmer Cooperative	10	<ul style="list-style-type: none"> <li>- Six leaders</li> <li>- Three members</li> <li>- A high-profile researcher who gave strong support to FC activities</li> </ul>	<ul style="list-style-type: none"> <li>- FC activities record</li> <li>- Newspaper articles and on-line reports</li> <li>- FC website information</li> </ul>

### 3.4 Findings

This section presents the development process and activities of the FCs in the three cases. FCs in case 1 and case 2 both engage in greenhouse vegetable produc-

tion and marketing, and are both located in a county of Shandong Province, where a lot of farmers specialize in greenhouse vegetable production. The FC in case 3 is in a region along the Yellow River in Henan province, where farmers cultivate rice to take the advantage of the irrigation system while grow multiple crops. First we will provide a description of the innovation journeys (section 3.4.1), followed by a deeper analysis (section 3.4.2).

### **3.4.1. Innovation journey descriptions**

#### **3.4.1.1. Funong Vegetable Cooperative: engaging in organic technologies to deal with safety problems in greenhouse vegetable production**

The Funong Vegetable Cooperative was first established as a farmer association in 2004, aiming to promote organic vegetable production and marketing. It was initiated by Jin, a local farmer who engaged in organic greenhouse vegetable production, and Xiao, a graduate student from provincial agricultural university. Constraints of the association as a legal form became clear after two years' operation, including the lack of legal status in the market and the loose connection with members. Jin and Xiao told that "We considered registering as a company to solve these problems at first. When the cooperative law came out in 2007, it fitted to our needs at that time. We registered at the Commerce and Industry Bureau as the first cooperative in our county."

Jin, as from 1992, realized that farmers used much highly toxic pesticide to control pests and disease without awareness of negative consequences, and he became worried about this. He spent one year studying in Shandong Agricultural University in 1994 to find out the alternative solutions to farmers' problems. He got acquainted there with Prof. Nie, a soil fertility specialist, and kept contact with her. After that, he experimented with some farmers and started using traditional knowledge and organic methods for pest and disease control, like using of organic fertilizer and medical herbs as pesticides. In 2002 Xiao, a student of Prof. Nie, did his bachelor thesis in Jin's village and became very interested in Jin's ideas. Then he co-established a demonstration site with Jin in 2002 which has eight greenhouses (each with about 600 m<sup>2</sup> planting area) to do experiments to formalize the indigenous knowledge and apply it more broadly to horticultural production.

Jin and Xiao received anaerobic bacteria and actinomycete from Prof. Nie's lab. They cultivated the bacteria and converted them into different products. Anaerobic bacteria are made into a fermented solution, which is mainly used to improve use efficiency of organic fertilizers, like manure, soybean cake. Actinomycete is made into a bio-fertilizer for controlling nematodes. Jin furthermore ex-



perimented with medical herbs to make pesticides, with the help from local traditional Chinese doctors, and developed three formulas to tackle different plant diseases.

The organic vegetable association, which re-registered as a cooperative in 2007, was initiated in 2004 to be able to attract more farmers to adopt the technology Funong developed. It supplied technical services, like problem diagnosis and pest and disease management trainings and inputs. From 2009 onward the association employed three technicians who were responsible for the field visit to farmers and delivering inputs. All farmers interviewed mentioned that they could call the association to send a technician to their greenhouse or bring infected plants there for diagnose, and buy the necessary inputs to deal with it. Leaders and technicians always used these visits to explain to farmers the risks of overusing chemical fertilizers and pesticides, the advantages of their technologies and the importance of hazard-free.

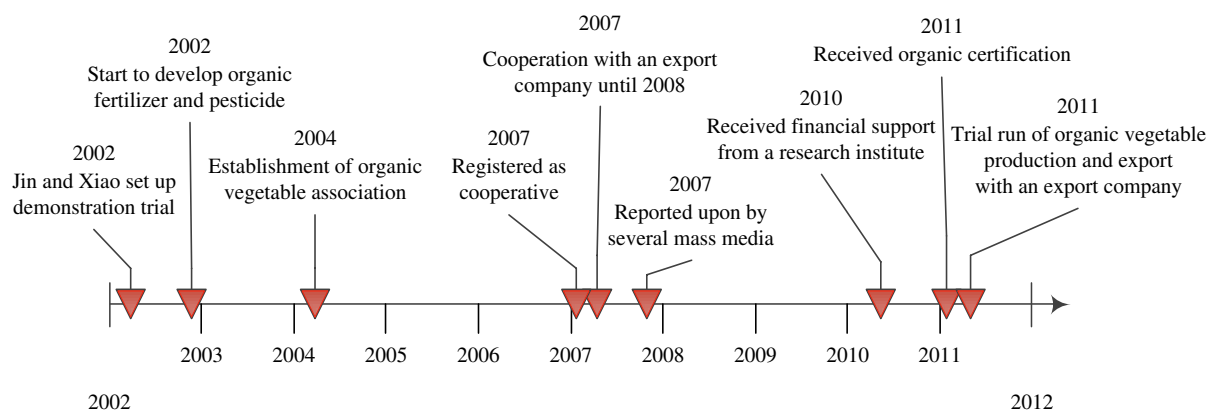
To make the technologies easier for farmers to use, Funong designed technical regulations according to the organic production standard of the Chinese Ministry of Agriculture and made it into booklets. These booklets gave guidance on farming procedures, and pesticide and fertilizer use. Funong also introduced new technologies developed by other service providers. For example, the cooperative experimented with a bumble bee for pollination supplied by a Dutch company and organized farmers to attend the company's introductory training. Farmers who used Funong's technologies increased steadily to about 1,000, but just a few of them adopted the whole organic production package.

In 2007, Funong started to collaborate with an export company to market members' products. This year a quality problem in eggplant, due to which the fruit flesh turned black, spread in the region. The export company found that only products from Funong's members did not have the problem. Then it targeted Funong to source eggplant, negotiating 0.4 yuan more a kilo compared to the market price for its members. In this process, Funong introduced members to the company without engaging in the transaction process and generating income from it. However, the cooperation with the export company stopped in 2009 due to the shrinking export market under economic crisis.

The agricultural channel of the provincial TV station got to know Funong's success in dealing with the problems of farmers. It interviewed the cooperative and made a program in 2008 about its organic technology for disease control. The cooperative was also reported upon by other local and regional newspapers.

In 2010, Funong applied for organic certification with the China Organic Food Certification Center of the Ministry of Agriculture and got approval in 2011. This required the cooperative to take records of the cooperative's technical ser-

vices and farmers' production process. This activity was financially supported by the Center for Chinese Agricultural Policy (CCAP, a research institute in Chinese Academy of Science) within an action research project on FC. Funong gained this support through recommendation by local government and because of its dedication to promoting organic production among farmers. After receiving the certification, Funong cooperated with an export company to run a trial of producing and exporting certified organic vegetables. The investor of the export company found Funong through news items about it in the media and kept in close contact to find a chance to cooperate. In the trial run, different from simply introducing members to the previous export company it cooperated with, Funong became a formal partner in collaborative venture, being mainly responsible for production, offering technical services and process control. The company took charge of marketing. It offered good prices and farmers had the freedom to sell to the market if the market price was higher than the price offered by the export company. In this collaborative venture, Funong also acted as a gatekeeper: it has contracts with members to meet the quality requirements for certified organic products. This leads to the situation that mainly farmers who had a lot of experience in the use of the cooperative's technology package were included.



**Figure 3.2** Time line of major activities carried out by Funong Vegetable Cooperative

### 3.4.1.2. Tianli Vegetable Cooperative: targeting on higher quality market and bringing new technology for higher quality

Tianli Vegetable Cooperative was initiated in 2007 and formally registered in 2008 by Liang, a local farmer who had conducted vegetable trading for about ten years. Based on his marketing experience, Liang regarded supermarkets as an emerging market for high quality food products, and recognized the importance of trademarks and certification to be able to do business with supermarkets. When

the farmer cooperative law was put into effect, he saw the opportunity in starting a cooperative as a legal body to organize farmers. He persuaded seven greenhouse vegetable farmers in the village to found the cooperative and set supermarket as their target market. His investment accounted for more than 90% of the total working capital of the cooperative.

After its establishment, the cooperative started to help farmers improve their technologies. Tianli invited experts from the county public extension agency to give trainings on greenhouse vegetable production, organized about three times a year, and brought farmers to the trainings. In 2011, it also tried to introduce organic fertilizer from Funong vegetable cooperative to members and invited Xiao to give some guidance.

In 2008, Tianli registered its own trademark, as this was considered as key to advancing the cooperatives objectives, as illustrated by the following quote from Liang:

*“Trademark and certification are essential to enter supermarket and It is a trend for agricultural products in general. I learnt the county government policy to subsidy certification application when I was in the training for cooperative leaders and small enterprisers. Then I contacted the Agricultural Bureau to help us prepare the documents and the application took us one year.”*

Hence, in 2009, Tianli applied for hazard-free certification at the Ministry of Agriculture and got approval. To operationalize hazard-free production, Tianli took members to trainings organized by government to build awareness and exchange ideas on the importance of food safety.

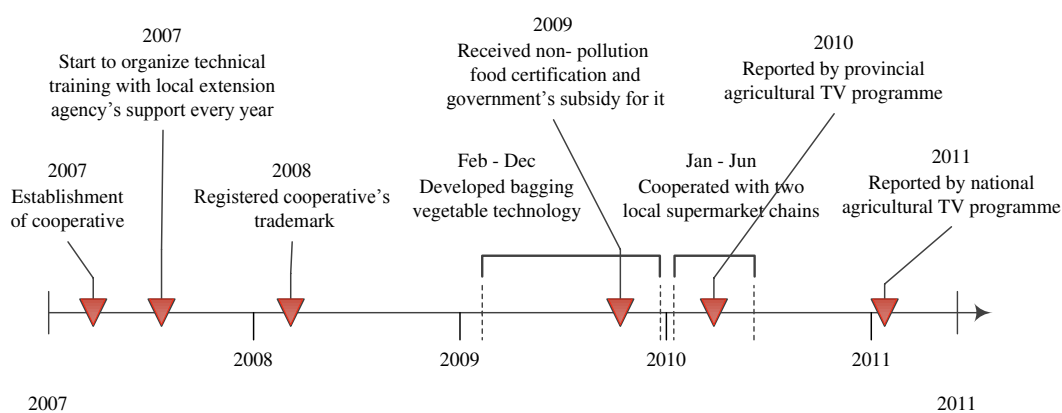
During the application of hazard-free certification, Liang and another farmer came up with the idea of a “bagged vegetable”, using bagging technology widely used in fruit protection in the region to protect fruit from pests and hence lower pesticide use. They contacted a plastic bag producer to supply the bag according to their requirements and experimented with cucumbers in the farmer’s greenhouse. Initially, the cucumber started rotting, so they tried to improve the air permeability of the bag by adding holes on top and bottom, changing the type of plastic, choosing proper time to coat the cucumber and so on. This experiment took about one year. After achieving their initial objective, they also found the bagged cucumbers’ taste improved and storage life extended. Then they designed bags in different sizes for cucumber, eggplant and towel gourd and put the cooperative’s trademark and certification on it. At the end of 2009, Liang introduced this technology in a training to cooperative members and gave support in its application. Five farmers adopted it with the condition that Liang provided the bags for free and purchased

the products at the price of 0.4 yuan higher than the market, because farmers argued that it took time to put bags on the vegetables and that the labour cost was higher.

Liang started to promote the products using the bagging technology with the county Agricultural Bureau. The officials were quite interested and recommended it to the local agricultural TV channel and newspapers. They reported this new technology and also included comments from experts about its advantages. Liang also visited to the managers of local supermarket chains with samples, and two supermarket chains accepted the products. Being a cooperative and having broad support clearly were advantages, as illustrated by a quote from a purchase manager:

*“Their products are reported by newspapers and TV program. The cooperative can take responsibility for their products, which is not the case for individual farmers.”*

However, the cooperation with supermarkets did not last long. One stopped the purchase from cooperative after three months, due to the low sales of the bagged vegetables. Liang gradually withdrew from cooperation with the other supermarket after five months, because he lost more than 20,000 yuan from the business and could not carry it further anymore. Because Liang had the idea that he was investing in the bagging technology and other reaped the benefits, he gave up promoting bagging technology, but the technology was still spreading. Agricultural channel of CCTV (China Central Television) found the technology from local media and made a program with the cooperative to introduce the development and application of the technology. When the program was broadcasted, Liang was surprised that farmers from different regions called him to consult about the technology.



**Figure 3.3** Time line of major activities carried out by Tianli Vegetable Cooperative

### **3.4.1.3. Hongmin Farmer Cooperative: trying to promote village development through increasing income from agricultural production**

In 2004, four farmers in Hongmin village were invited to attend a training on farmer cooperative development organized by Dr. Li, a researcher from a national university and part time deputy mayor of the county. They found that a cooperative could be a good approach to promote development of the village, and initiated the Hongmin Farmer Cooperative with support from Dr. Li. The executive committee and supervisory board of the cooperative were elected by its members. The cooperative aimed to promote village development and organized credit provision, collective purchase of inputs like fertilizer, seeds and piglets, and had more than 100 members.

In the village, rice is the major cash crop in the summer season. In 2005 the cooperative got to know hazard-free certification from the county Agricultural Bureau and started hazard-free rice production and a marketing project to obtain a higher price. Based on voluntary contributions, six farmers who mainly were cooperative leaders each invested 8,500 yuan to start. Soon after that, Dr. Li informed the cooperative about a FC supporting project which was funded by the Ministry of Agriculture (MOA) and allocated some funds to the research team she was working with. Hongmin gained financial support of ten thousand yuan with the proposal for a hazard-free rice production project. Other members from the cooperative were encouraged to invest and share the funding from MOA, and most of them put in a small amount, around 100 yuan. In May 2005, the cooperative formally registered a “Hazard-free rice Production Association” in the county’s Civil Affairs Bureau.

Two of the leaders of the cooperative, Zhen and Meng, being formally recognized agronomists took charge of technical services. Fan had worked with the county extension agency for about 10 years. He was responsible for contacting the Agricultural Bureau and preparing documents for trademark and hazard-free rice certification application. These applications were approved before July – the start of rice season. At the same time they organized farmers for trainings on hazard-free rice production and project management. In March, a three day training was organized and extensionists from local and other regions’ public extension agency were invited to explain how to do hazard-free rice production. More than 100 farmers attended the training. The national standard on hazard free rice production only mentions limitations on the kinds of chemical residues and this is not directly useable for farmers as a guide for hazard-free production. To better guide and regulate farmers, the cooperative developed a technical pamphlet with the county Agricultural Bureau, on hazard-free rice farming practices. Members had

to sign a contract with the cooperative about compliance with cooperative hazard-free regulations and use of the inputs supplied by the cooperative.

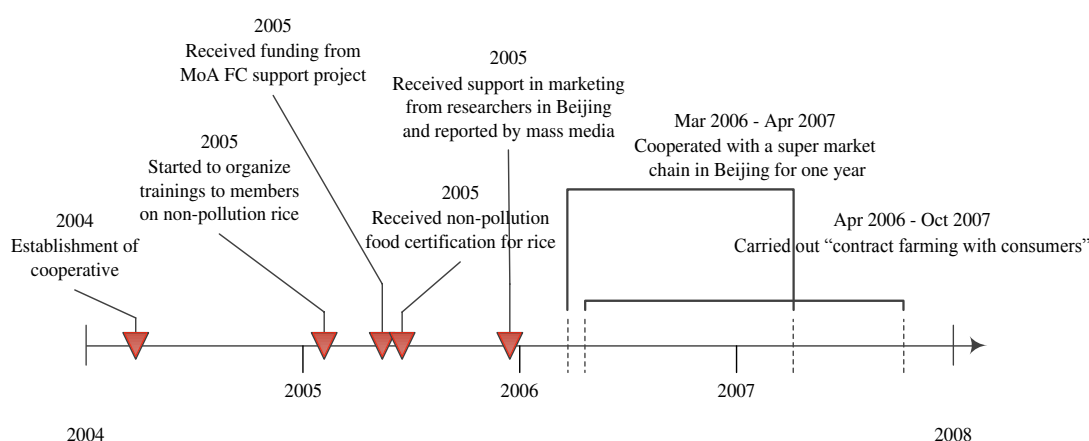
In the 2005 production season, about 300 farmers joined the project. The cooperative organized farmers into groups and group leaders were responsible for distributing inputs and guiding farmers' practices. The group leaders came together twice a month to exchange information and decide on follow-up activities. When farmers encountered problems, the two farmer agronomists also did field consultations. However, the cooperative had inputs provision problems in the 2006 season. Before the season, Hongmin contracted an inputs company in Beijing for the pesticide used for hazard-free production. However, the pesticide sent by the company did not effectively control disease and led to a 30% to 50% lost in total harvest. Despite the company admitting their error and sending another pesticide, the loss could not be recovered and some farmers did not pay the pesticide to the cooperative. The leaders who invested lost more than 20,000 yuan.

After harvest, Hongmin started marketing the rice. It purchased un-milled rice from members at 0.1 yuan/kilo higher than the market price. They firstly searched for large buyers in Zhengzhou (the capital city of the province) without good results. Then they turned to Dr. Li for help and brought ten tons of rice to Beijing. Dr. Li, together with other researchers and social activists, introduced the rice to citizens through some social activities, like public lectures and promotion seminars. They stressed the social commitment of the farmers in producing healthy rice. Mass media, including newspapers and TVs, was attracted by the involvement of researchers and the FC in rice marketing and food safety issues. Many consumers saw the news and trusted the cooperative for the quality of the rice. The cooperative started deliveries of rice to consumers' homes by members who were staying in Beijing during this period.

In 2006 the cooperative found new opportunities in marketing. In March the rice entered into a supermarket chain in Beijing with the influence from mass media and through intermediation of a business man who wanted to help the cooperative. Sales were good when they just started, but dropped down gradually because of the decreased attention from media and consumers. The cooperation with the supermarket chain lasted for one year and Hongmin quited in 2007 because it could not make money from it. At the same time some consumers showed their willingness to keep long term relation with the cooperative in the home-delivery of rice. The leaders told this to Dr. Li and they came up with the idea of "contract farming with consumers". Dr. Li helped the cooperative to organize a consumer network in Beijing and brought consumers to Hongmin village to experience rural

life. The citizens signed a contract with the cooperative and paid for the rice in advance; the cooperative would deliver the rice after harvest to consumers. This model was implemented in 2006 and 2007 but stopped in 2008 due to the high costs of coordination and the limited number of consumers involved.

In 2006 and 2007, the cooperative directly provided services to members to reduce costs and risks of input supply. It set up an input shop to supply seeds, fertilizer and pesticide required in the production, which was connected to the two farmer agronomists responsible for the technical support. This lasted until 2008, when the two farmer agronomists left the cooperative due to internal conflicts and low profits from the project. Together with the ending of the cooperation with the supermarket chain and consumers, the cooperative stopped most of the input supply and advisory services, and only kept on supplying seeds to farmers.



**Figure 3.4** Time line of major activities carried out by Hongmin Cooperative

### 3.4.2. Analyses

#### 3.4.2.1. FCs’ roles in knowledge and innovation intermediation

The three cases above illustrate FCs’ active engagement in intermediation to innovate agricultural production and marketing in China. Table 3.2 summarizes the intermediary functions served by case FCs according to conceptual framework outlined in section 3.2. It shows that FCs cover most of the knowledge intermediation and innovation intermediation functions identified in the literature as summarized in figure 3.1.

**Table 3.2** Functions served by case FCs in innovation intermediation

	Funong	Tianli	Hongmin
<b>Knowledge intermediation</b>			
1. Articulating and voicing demand of farmers' needs	—	—	Communicated with the county Agricultural Bureau about the lack of non-pollution rice technology and developed technical regulations together.
2. Supplying information for problem solving and responding to farmers' needs	Organized trainings, supplied free problem diagnoses.	Organized greenhouse vegetable production trainings.	Organized non-pollution rice production trainings and provided field consultation services.
3. Generating knowledge applicable in production	Developed technical regulations for organic greenhouse vegetable production through generating and integrating a series of technologies.	Created vegetable bagging technology to improve the safety of greenhouse vegetable.	Developed technical regulations for non-pollution rice production.
<b>Innovation intermediation</b>			
4. Building vision on new technology	Identified organic production to solve safety and productivity problem in existing technology and tried to couple it with farmers.	Targeted the high quality food market (e.g. Supermarket) and explored and developed relevant technology.	Intended to take opportunities supplied by the new certification system and adopted and developed relevant technologies.
5. Building and managing network with actors from different domains	Linked with agricultural universities and companies for technology development and introduction. Kept contact with export companies and consumers in marketing. Gained reputation for FC' products through mass media and daily communication.	Kept contact with local extension agency to give technical trainings and with a company to improve the bags for production. Established partnership with local supermarket chains. Made FC's bagged vegetables recognized by supermarkets through personal network and mass media.	Kept contact with extension agencies, both local and other regions, to give technical trainings. Established relationship with one supermarket chain in Beijing and consumers from Beijing and other regions. Involved researchers, mass media, consumers and government agencies in promoting healthy production and consumption.



6. Facilitating and participating in learning process	Fostered farmers' understanding of food safety and bio-technology. Kept farming records and prepared application for organic certification.	Fostered farmers' recognition on food safety. Prepared applications for hazard-free certification.	Fostered farmers' recognition of food safety. Prepared application for hazard-free certification.
7. Providing necessary resources and services	Provided a whole range of inputs needed in organic vegetable production. Attained organic certification for greenhouse vegetable and keep control on farmers who marketed under certification.	Provided bags to adopt bagging technology and run an input shop. Gained non-pollution certification and used in bagged vegetables.	Provided all inputs in non-pollution rice production, but only kept seeds supply later. Got non-pollution certification for rice and keep control of the production process, but gave up later.

From the descriptions in section 3.4 it becomes clear that FCs' knowledge intermediation activities are all organized around broader objective – higher quality products for marketing. They bring new technologies into farming practice through different ways. Basically, they provide classic extension services, including organizing trainings, providing personalized consultation and preparing written materials (table 3.2, item 2). Going beyond this, they develop more contextualized technologies through local experiments, interpreting and integrating scientific knowledge (table 3.2, item 3). Public standards introduced by government are generic, and described in abstract scientific terms. As could be observed FCs in Case 1 and 3 help farmers to interpret standards by developing corresponding technical guides with detailed guidance with integrated knowledge from different disciplines, like water, pesticide and fertilizer management. The FCs in case 1 and 2 carry out *in-situ* experiments and introduced directly applicable technologies for farmers.

However, it appears that the FCs studied are not so much involved in facilitating joint knowledge production (table 3.2, item 1). The technology demands are identified from consumers' perspective for higher quality food and aim to fill the gaps in farmers' farming practices, rather than focusing on problems identified by farmer themselves. At the same time, the FCs mainly rely on themselves to generate new knowledge or make use of existing knowledge provided by other knowledge providers.

As shown from the different innovation intermediation functions performed, all case FCs recognize the close connections between technical, social and economic dimensions through their practices (table 3.2, item 4), and they develop coherent visions on how the better position products from smallholders in the markets, and made the necessary connection to build the support networks to enable

this vision (table 3.2, item 5). They develop such networks for obtaining financial support for R&D, training and certification, and develop contacts with buyers and consumers. FCs also represent farmers to formulate contracts with buyers, supermarkets and consumers. Hereby mass media are mobilized to introduce FCs or their products to the public and provide a channel for FCs to access to potential consumers or buyers who they cannot access directly. However, in all cases buyers like supermarkets and export company, are all integrated at the later stage in the innovation process and often the cooperation ends only after a short period.

FCs also engaged in learning facilitation between different actors involved in networks (table 3.2, item 6), building awareness on issues such as food safety and translating technical and market information and policies about food safety to farmers. They also do translation work between different systems by facilitating paper work, like project applications, reporting and farming records for certification. This is important to formalize FCs' activities and link to external systems which are organized in different ways of daily farming practice of farmers. In cases, FCs provide services to support the innovations they promote, including input supply, collective certification and production process management.

#### **3.4.2.2. FC's positioning in the agricultural innovation system**

As section 3.4 shows, the FCs in our cases have different kinds of relations in their capacity of innovation intermediary with the different actors in agricultural innovation system (see table 3.3). Overall, the case FCs all operate in small scale at village level and this is in accordance with FCs' service coverage in China in general (Deng et al., 2010; Han, 2007). They supply services directly to individual farmers and try to connect them with other relevant actors, like extension agencies, research institutes and supermarkets. What could be observed is that FCs (and then often in the person of their leaders) mainly engaged in bilateral relationships but did not bring multiple actors directly in contact with each other but always acted as an in-between. In making their connections with different ambits often the FCs mobilized actors (such as government officials and influential researchers) who could again act as boundary spanners for them (table 3.3, item 1 and 6). Because the FC leaders in case 1 and 3 were found to have technical expertise they possessed a certain legitimacy and had a position to engage with influential boundary spanners (table 3.3, item 7). However, most of the external actors are mobilized through personal relations rather than institutionalized mechanisms. This restricts the scope of their cooperation to providing knowledge, and brings difficulties to expanding to joint knowledge generation as analysed in section 4.2.1.

**Table 3.3** Situations of case FCs' relations with different actors and members

	<b>Funong</b>	<b>Tianli</b>	<b>Hongmin</b>
1. Access to technology services	Established relations with academic institutions through long term personal interaction of FC leaders	FC leader mobilized personal relations to gain local public extension agency support.	Gained access to local and other regions' public extension agencies through support of researcher and its active attitude.
2. Relations with actors from market	Linked with buyers after advantage of products recognized in market. Recognized by technical companies for providing access to farmers and export companies for better quality products.	Linked with supermarkets after having products. Supermarkets valued its efforts in organizing farmers and its effort to raise quality.	Linked with supermarkets after having products. Supermarkets valued its efforts in organizing farmers and improving food safety.
3. Relations with government	Its establishment was motivated by policy and it was involved in food safety promotion activities of government.	Its establishment and engagement in certification were both motivated by policy and it was involved in food safety promotion activities of government.	Its hazard-free rice production project was encouraged by recognition from government.
4. Participation of FC members	Limited participation of farmers in decision making and financial contribution. Generated revenue from input supply to support technical services and technology development.	Limited participation of farmers in decision making and reluctant to invest in FC activities. Limited membership fee from farmers and only the leader invested.	Mainly key members invested in FC and participated in decision-making. Limited membership fee and small amount investment from farmers.
5. Availability of funding from government and other organizations	Received funds from local government and research institute for promoting organic production.	Received subsidy from local government for non-pollution certification application.	Received funds from MOA for hazard-free rice production project.
6. Involvement and support from researchers and civil societies (beside funding)	—	—	Strong support from researchers and social activists helping the FC access to funding, mass media, consumers and so on.
7. Local context based technology and local experts in technical services	Two key leaders were well equipped with scientific knowledge and production experience.	The key leader was activity to borrow experience from other context, but without relevant experience.	Two leaders recognized by government as agronomists in 1980s.

As regards their position as intermediary, sometimes they take a neutral position when they translate for example standards into guidelines for farmers or make contacts with service providers. However, this neutrality appears to be relative, as FCs also need to take into account government policies in order to be able to support farmers and make links with sources of support (table 3.3, item 5). The cases show that governments gain access to farmers through FC, like organizing farmers to governments' trainings, transferring food safety policies to farmers. Sometimes FCs also act as representatives for the farmers, for example in contract making with buyers. However, different degrees of farmer involvement could be observed in steering the activities of the FC, which determines to what extent the voice of the members is taken into consideration. In case 1 and 2, FCs act like a private business mainly following the interest of the main leader, and farmers are more or less "recruited" and there is a limited involvement of members in management and finance. In case 3, the community-based FC, farmers participated more in its initiation and management, the FC is still very weak to take collective action and move innovation activities forward. Given this sometimes weak representation, the FCs' bargaining power with other actors is also problematic for limited participation and investment from members in FCs (table 3.3, item 4).

### **3.5 Discussions and conclusions**

The goal of this paper was to analyse the roles of FC as innovation intermediaries. In line with earlier suggestions by Klerkx et al. (2009), it has been confirmed that they take up several innovation intermediation roles and contribute to linkage building within the agricultural innovation systems. These include both more "classical" knowledge intermediation roles, and broader innovation intermediation roles.

Firstly, consistent with findings of Heemskerk and Wennink (2004), the FCs studied actively engage in generating contextual and integrated knowledge. Following Knickel et al. (2009) and Stuiver et al. (2004), this indicates that FC helps to fill the gap between segmented knowledge in expert agricultural systems and complex farm-level realities and everyday farming practice identified by many researchers. This is done both by "internal translation" by farmer experts in FCs who have rich experiences in farming and are familiar with scientific language but also by connecting to other knowledge service providers. The FCs in the cases are crucial as "network spark plug", because in contrast to the argumentation by Hellin (2012) –farmers seldom self-organize themselves.

Secondly, as regards broader innovation intermediation, case FCs' multi-functionality helps to bring compatibility between technical, social and economic dimensions of farming. What could be noted however here is that FC did not always engage in systemic intermediation by bringing together "many-to-many-to-many" relationships, but rather engaged in a broad package of bilateral relationships, in which the FC acted as an integrator. Furthermore, it could be noted that they acted within a web of intermediaries confirming the findings of Stewart and Hyysalo (2008) and nuancing the earlier findings of Klerkx et al. (2009) about seeing innovation intermediaries as the main central intermediary who takes care of all relevant issues in innovation. Although FC did not act in such a central way, they did fulfil the role of coordinator in the service system (advice, inputs, quality management, market relation formation), which indicated that besides public extension services (cf. Alex et al., 2004; Birner et al., 2009; Christoplos, 2010; Rivera and Sulaiman, 2009) also FC could take this role (e.g. Jia and Huang, 2011; Poulton et al., 2010). This can be especially relevant in a country like China where the extension service is still dominated by a linear transfer of technology approach and does not yet possess the competences to act as service system coordinator (cf. Ito et al., 2012).

As regards the positioning of the FC as innovation intermediary, it cannot always act as a neutral actor because it clearly represents the farmers' interest (cf. Devaux et al., 2010; Hellin, 2012; Krisjanson et al., 2009). In this sense it follows an approach taken also by other representative organisations with a sector improvement agenda which do have a clear normative orientation (see e.g. Goldberger, 2008). Although our cases do not clearly indicate conflicts (except the tension between leaders and members over investment in collective activities and the lack of mechanism in public extension system to meet farmers' technological demands), this can be a potential problem if the scope of action and the stakes represented of FCs become greater, and may cause the FCs to lose legitimacy. Here also the connection to certain government policy can become a problem, if government's and farmer's interests start to diverge (following Klerkx et al., 2006). What can also be a problem, is that leaders' personal interests start to conflict with those of members (e.g. case 1 and 2), which corresponds with earlier findings by (Zhao and Develtere, 2010), or that conversely they are held personally accountable for failures of others (such as in the case of the deficient pesticide supply in case 3). This suggests that it could be better not to mix leadership roles of FC with innovation intermediation roles, although this will be probably not possible for small scale FCs.

Another point related to the positioning is that the local level orientation of the FCs, gives them the benefit of being in close contact with farmers' needs, demands and initiatives. However, despite them receiving media attention and nation-wide coverage, this may provide insufficient clout for developing durable relationships with service providers and buyers, and be not conducive to establish economies of scale which can enhance the durability of commercial relationships. This resonates with findings by Poulton et al. (2010) on that complexity of collective decision-making structures make them less well placed to respond quickly to changes in buyers' requirements, and at another level to the observation by Ton and Jansen (2007) that local level FCs are more knowledgeable on demand articulation while FC federations are more functional on issues around technology R&D contract making and management. This also indicates that local level FCs cannot effectively supply multiple dimensional services unless higher level actors in the innovation system are active to respond to local needs (cf. Hellin, 2012; Poulton et al., 2010).

To enhance the role of FC as innovation intermediaries, a possible connection with China's on-going extension reform (Gao, 2010; Rivera, 2011) could be opportune. Two potential policy measures could help to strengthen local FC's intermediary role and overcome limitations they meet. One is to better incorporate FC into the extension system as a service provider rather merely service receiver from public extension system or separated actor. For example, regular funding can be provided to FC for taking service provision coordination roles. The other measure is developing federation of FCs which have the capacity to manage relations with other actors at higher level in a more integrative way, to better address generic issues faced by many local FC (Sulaiman and Hall, 2005), for example to enhance more durable connections with buyers.



# Chapter 4

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## Participation in quality food supply chains: outcomes and challenges for farmer cooperatives in China

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## **Abstract**

This article explores the roles of farmer cooperatives in China as intermediary organizations in their efforts to link farmers to quality food markets. The analysis combines insights from convention theory and political-economy perspective to understand the social construction of food quality in diverse Chinese contexts. In order to investigate the everyday practices of the participation of farmer cooperatives in food supply chains, a case study approach is used. Three cases representing different distances between producers and consumers in food supply chains provide evidences from the field. The findings reveal that farmer cooperatives have been successful in various degrees to build multiple linkages with other chain actors. The cooperatives have played the role of intermediary organizations, thereby contributing to quality improvement at farm level and better quality coordination at chain level through the integration of new quality conventions. The room for the participation of farmer cooperatives in quality coordination depends on their political-economic relations in the chains. At the same time, intermediation with more types of actors allow farmer cooperatives to enter or initiate different types of food supply chains and thus gain better political-economic positions. The cases also illustrate that participation of other chain actors and their attachment to different food quality conventions influence the effectiveness of quality coordination. Active roles of these actors can compensate for the still weak capacities and experiences of many Chinese farmer cooperatives to operate as highly skilled intermediaries.

## **Keywords**

Farmer cooperative; food supply chain; quality construction; quality food; China

## **4.1 Introduction**

The agri-food system in China is experiencing a change from a mass consumption model to an increasingly quality differentiated system of products and demands. A rapidly growing number of consumers are openly expressing concerns about food quality. This trend is triggered partly by raising income levels, partly by recurring serious food safety scandals (Gale et al., 2007). In parallel, Chinese government and civil society have become more concerned about environmental pollution and a loss of soil fertility resulting from the widespread overuse of chemical fertilizers and pesticides. Voices for sustainable production practices can be heard across the country. This turning point toward quality concerns in food supply chains is leading to a variety of structural changes in food markets. Supermarkets emerged in the 1990s and grew rapidly in number. They have been leading actors in the vertical integration of agri-food value chains. Compared to the traditional Chinese wet markets, supermarkets exercise more control on food quality (Bi et al., 2007; Hu and Xia, 2007). At the same time, short food supply chains, in which producers sell products directly to or through close relationships with consumers, have been taking shape in numerous places initiated by groups of citizens sometimes supported by NGOs and research organizations (Song et al., 2012; Vernoy, 2012). The actors in this type of food supply chain put emphasis on sustainability, social responsibility and equity as well as food safety (Shi et al., 2011).

Millions of Chinese smallholder farmers, whose average farming area is 0.60 ha, face considerable challenges to re-orient their farming and marketing practices to adapt to these changes (Deng et al., 2010). Research has demonstrated that concentration and re-organization on the side of wholesalers and retailers have largely occurred without the vertical integration of smallholder farmers into the domestic food market in China (Huang et al., 2007). Some authors have argued that unless smallholder farmers become fully integrated, food quality, especially food safety, will remain a serious problem considering the huge number of smallholder farmers, their geographic spread and diversity in terms of production practices (Huang et al., 2012). Previous studies have demonstrated that farmer cooperatives can act as intermediary organizations to integrate farmers into value chains through bridging existing gaps with other chain actors (Moustier et al., 2010). Farmer cooperatives can also be very effective in short food supply chains to collectively unify and justify the practices of farmers in quality food production and promote their recognition among consumers (Kanemasu and Sonnino, 2008; Marsden et al., 2000).

Farmer cooperative development in China started in the 1980s and its growth accelerated in the 2000s, notably after the implementation of the Farmer Coopera-

tive Law in 2007 (Deng et al., 2010). Increasingly, farmer cooperatives have been instrumental to make smallholder farmers adopt food safety and quality standards to some degree due to the introduction of new technologies, such as reduced chemical fertilizer and pesticide use (Jin and Zhou, 2011; Yang et al., 2013). However, as our own field research suggests, this does not automatically lead to stable marketing relations between farmers and buyers and the integral improvement of quality in the whole chain (Jia and Huang, 2011; Yang et al., in preparation). This finding has led us to do further research to investigate the engagement of farmer cooperatives in quality coordination at the food supply chain level as well as quality improvement at the production level. This article presents the results of this additional research. It aims to explore the roles of farmer cooperatives in the transition of smallholder farmers toward significant quality improvement and coordination in two types of food supply chains: conventional and short supply.

Following this introduction, in section 4.2 we will pay special attention to the relation between the participation of farmer cooperatives in quality construction, the political-economic relations in food quality chains and their intermediation with external actors regarding to linking farmers to the quality market. Section 4.3 introduces the research methods, followed by the main findings in section 4.4. In section 4.5, the findings are analysed and discussed, and section 4.6 concludes with reflections on the implications for practice and further research.

## **4.2 Conceptual framework**

### **4.2.1. The social construction of food quality**

The recent development of quality food market has opened up a debate about food quality. Many researchers agree that definitions and perceptions of food quality result from social processes in which actors formulate and explain the justifications about what is good in the different aspects of food, concerning aspects such as appearance, taste, safety and sustainability (Callon et al., 2002; Sonnino and Marsden, 2006). Convention theory offers a useful conceptual framework to analyse how a wide range of types of justifications of quality are incorporated into food system (Ponte and Gibbon, 2005; Rosin and Campbell, 2009). Table 4.1 offers a synopsis of the main conventions and related justification principle. Convention theory suggests that conventions are not predetermined, but emerge in the process of negotiation and coordination between actors in diverse everyday practices (Wilkinson, 1997). From these practices emerge diversified organizational

forms often combining different types of conventions and hierarchical orders (Thévenot, 2001).

It is also suggested that all relevant actors in food supply chains, including producers, consumers, retailers and professionals in marketing and design, take a role in the process of quality construction (Callon et al., 2002; Rosin and Campbell, 2009). Successful coordination can fulfil mutual expectations of different actors by forming mutual agreed justifications (Kirwan, 2006). Specified quality practices and organizational forms of coordination are not static but evolve over time to adapt to the changing demand from consumers and practices in food production (Henson et al., 2005; Sánchez-Hernández, 2011). However, often different actors have conflicting agendas in terms of their participation in chain activities and try to negotiate the conventions in favour of their own positions (Rosin and Campbell, 2009). Among the actors in the chain, consumers are as important and active as other actors in forming and negotiating new conventions, not only through their participation in the qualifying of available products, but also through the expression of alternative values about society, environment and economy, most notably through their food purchases and consumption behaviours (Brunori et al., 2012; Seyfang, 2006).

**Table 4.1** Types of conventions and justification principles

<b>Conventions</b>	<b>Justification principle</b>
Market	Price (and the capacity to claim a price premium), competitiveness
Industry	Efficiencies in production and distribution
Domestic	Personal relationship, trust and repetition
Civic	Contribution to the good of society and environment
Renown	Public opinion and general social standing

Adapted from Ponte and Gibbon (2005) and Rosin and Campbell (2009).

#### **4.2.2. Political-economic relations in food supply chains**

Several authors offer complementary and more in-depth perspectives on convention theory either explicitly or implicitly. van der Ploeg et al. (2012) suggest that different political-economic relations are entailed in different types of food supply chains. The nature of these relations is determined by: the actor or actors who dominate(s) the formation of linkages between actors in the chains; the

ways in which the tasks from production to consumption are distributed; and how the benefits are distributed among actors. Sonnino and Marsden (2006) connect the analysis of political-economic relations to the construction of food quality construction arguing that quality is always negotiated in specific production-consumption contexts and reflects different patterns and locations of economic power in particular food supply chains.

In value chains led by large firms, farmers tend to only provide raw material, have no control over the linkages in the chain and receive a small share of the total profit (van der Ploeg et al., 2012). Lead firms use their power to control the qualification process through influencing the content of standards. They also have the capability to passing on the costs of acquiring the standard of “civic quality” through third party certification mechanism (Busch and Bain, 2004; Ponte and Gibbon, 2005). Smallholder farmers tend to be excluded from these value chains due to their limited capacities and restricted access to resources which do not allow them to update technologies and manage the complex information flows in the interaction with certification bodies and buyers. Better endowed farmers often receive the premium price provided by lead firms in these chains (Biénabe et al., 2007; Chen et al., 2005; Hu and Xia, 2007).

In the newly emerging short food supply chains, farmers gain control over the linkages with consumers, participate in processing and marketing and obtain much higher share of total added value of the products (van der Ploeg et al., 2012). Farmers develop more symmetrical power relations with other actors along the chain because they are disconnected from the dominant power of lead firms (Arce, 2009; Goodman and DuPuis, 2002). In the short chains, more room has opened up for farmers, as well as consumers, to express and negotiate diverse justifications for food, including food safety, fair distribution of cost and benefit, social connection (Brunori and Marescotti, 2007; Kirwan, 2006). Agency of and initiatives from both farmers and consumers are crucial drivers to establish the networks in and around these chains (Brunori et al., 2012; Kanemasu and Sonnino, 2008)

From above discussion of the literature it becomes clear that different organizational forms of food supply chains are backed up by different combinations of conventions and result from diverse practices of multiple actors along the chains. In the rest of the article we apply this conceptual approach to the study of the role of farmer cooperatives in China, in particular focusing on how links between farmers to quality markets are being facilitated. The aim is to investigate how farmer cooperatives are both enabled and constrained by the “quality turn” in the re-organization of the Chinese food system. Such an analysis has not been widely used yet in China. The research questions we address are: (1) What kinds of linkages do farmer cooperatives, as intermediary organizations, establish with chain

actors and to what extent do they have control over these linkages? (2) How do farmer cooperatives participate in quality construction? (3) What are the outcomes of their participation in the chains in terms of farmer cooperatives' and cooperative members' shares of profit in the chain and in terms of the number of farmers connected? (4) What patterns are emerging with regard to the answers to the questions 1-3?

### **4.3 Research methodology**

The research is based on a case study that focuses on the everyday practices of the involvement of farmer cooperatives in China's food supply chains and the social construction of quality. Given the very dynamic nature of the subject of study and the participation of different kinds of actors, a case study is a useful approach to explore what and how research questions (Yin, 2003). Based on a national survey and in-depth analysis of farmer cooperatives across all Chinese provinces<sup>1</sup>, three cases of farmer cooperatives were purposefully selected according to the types of food supply chain they are engaged in as well as their positions in the chain in terms of the distance from consumers. Case 1 (Taoyuan Organic Vegetable Cooperative) integrates farmers into an international food value chain and provides raw materials for export. Case 2 (Tianli Vegetable Cooperative) connects farmers to local supermarkets in the domestic market value chain. Case 3 (Hongmin Farmer Cooperative) directly links farmers to consumers in a short food supply chain, representing a more recently emerging form of food supply chain development and integration.

For each case, information was collected to reconstruct the history and evolution of the farmer cooperative. Semi-structured interviews were conducted with leaders and members of each farmer cooperative and with actors engaged in the downstream of the relevant food supply chains. Additional interviews were conducted with other relevant actors connected to the cases, such as researchers and policy makers. The key information obtained from these interviews include: the perspectives on food quality and the marketing of quality products of farmer cooperative members and leaders; their actions to link members to actors in the downstream side of the food supply chains; the perspectives of farmer cooperative members, chain actors and other actors on these issues; and the outcomes of participation in chain activities in terms of the shares of the cooperatives and of the cooperative members in generating direct profits from chain participation. Secondary data were also collected to complement the interviews. Details of the data collection are shown in table 4.2.

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<sup>1</sup> Details about the study can be found in Yang et al. (2013).

**Table 4.2** Data sources of the research

Case study	Number of interviews	Interviewees	Secondary information sources
Taoyuan Organic Vegetable Cooperative	9	<ul style="list-style-type: none"> <li>- Cooperative chairman</li> <li>- Five members</li> <li>- CEO and two managers from the export company</li> </ul>	<ul style="list-style-type: none"> <li>- Export company website information</li> </ul>
Tianli Vegetable Cooperative	13	<ul style="list-style-type: none"> <li>- One leader</li> <li>- Ten members</li> <li>- Two managers from supermarkets cooperating with the FC</li> </ul>	<ul style="list-style-type: none"> <li>- Newspaper articles and on-line reports</li> <li>- TV programmes about the FC</li> </ul>
Hongmin Farmer Cooperative	20	<ul style="list-style-type: none"> <li>- Six leaders</li> <li>- Eight members</li> <li>- Five consumers</li> <li>- A high-profile researcher who gave strong support to the FC activities</li> </ul>	<ul style="list-style-type: none"> <li>- Record of the FC's activities</li> <li>- Newspaper articles and on-line reports</li> <li>- The FC's website information</li> </ul>

Source: own research. FC= farmer cooperative

## 4.4 Case studies: main findings

This section presents the main findings from the three cases. For each case, first a brief introduction of the background of the farmer cooperative will be presented. The farmer cooperative's position in the food supply chain, its participation in quality construction and the outcomes of the farmer cooperative and its members' participation in chain activities are described in subsections.

### 4.4.1. Taoyuan Organic Vegetable Cooperative

The Taoyuan Organic Vegetable Cooperative is located in Taoyuan village at the foot of the Taishan mountain in Shandong Province. The organic vegetable production in the village started in 1995 promoted by Letian, a food company exporting frozen organic vegetables to Japanese, US and EU markets. The cooperative was established in 1997 to coordinate the activities of farmers involved in vegetable production and to serve as mediator with the company. Starting with about 100 members, the cooperative now has 296 members, including all the households that still engage in farming in the village. These members cultivate approximately 110 ha organic vegetables in total and about 0.37 ha on average per

household. All the farming land in the village, except the area for family grain consumption, is being used for organic production.

#### **4.4.1.1. The cooperative's position in the value chain**

In this international food value chain, the cooperative only provides fresh vegetables to Letian company. The company processes and packages the vegetables according to the requirements of international buyers. The cooperation between Taoyuan cooperative and Letian follows the rules of contract farming. Types of vegetables, volume, production procedures and requirement concerning the appearance of products are all specified in a contract. The price for products is also included in the contract. Prices have been stable over seasons. However, the tension between the farmers and the company over the prices at farm gate has increased in recent years. In an interview, the CEO of Letian said that the price offered by the international buyers has limited flexibility, and the company is under high price pressure due to increased competition in the market and as a result of the appreciation of the Chinese currency. This pressure is reflected in the farm gate price, as described by the manager of the production base management department in Letian:

*“The company's purchasing price has been kept at the same level for many years. For example, the price for spinach has been 0.5 yuan a kilo for ten years. It actually decreased if you take the increasing price of inputs and labour into account.” [August 2011]*

#### **4.4.1.2. The cooperative's participation in quality construction as intermediary organization**

The CEO of Letian explained that organic production and certification were first introduced to him by a Japanese company. Third party certification is the main mechanism adopted by the international buyers to verify the products as organic. As a result of the gradual expansion of its international market, Letian now receives organic certification from agencies including USDA (United States Department of Agriculture), OFDC (Organic Food Development Center), OCIA International (Organic Crop Improvement Association International) and JONA (Japan Organic and Natural Foods Association) for all its products, including those from Taoyuan.

In order to translate organic standards into specific farming techniques, Letian and members of Taoyuan maintain a high level of mutual engagement, which is typical of the domestic convention. The company provides technical training at the start of every production season to update farmers on new technologies, reiter-



ate the required organic standards and distribute inputs, such as seeds, organic fertilizer and pesticides for the vegetable production. The cooperative acts as intermediary in terms of facilitating the following interactions:

- Dividing types of vegetables and production volume to members according to the quality and area of land they hold;
- Coordinating the technical training sessions and the overall farm management with a technician from the company, including diagnosing pests and diseases, distributing inputs and monitoring their proper use;
- Coordinating the transactions to avoid deliberately undervalued quality in appearance of products or non-contractual sales of produce by cooperative members.

The importance of the cooperative's intermediary role for smallholder farmers has become more apparent since the appearance of large scale farmers through the newly developed land leasing market in recent years. Letian, according to its CEO, values the good relationship with the smallholder producers and will continue to offer them stable prices even when the company itself is under increasing price pressure. The CEO emphasized that this distinguishes Letian from other companies that regularly violate contracts<sup>1</sup>. In practice, however, it appears that the domestic convention is subordinated to market and industry conventions. This becomes evident in the light of Letian's recent market expansion which follows the development path of new production bases managed by large scale farmers based on the argument that this lowers production, coordination and monitoring costs. According to the manager of the production base management department, this new development is driven by concerns over food safety. He also stated the following:

*“Of course, the productivity of small farmers is much higher and the quality of their products is higher in terms of yield of raw products for processing. But a well-managed cooperative that can guarantee safety and efficiency at the same time such as Taoyuan is rare.” [August 2011]*

Despite the stable price provided by the company, the increasing tension over prices has triggered some action by the Taoyuan cooperative to explore alternative markets apart from Letian. The cooperative has established relations with several potato traders. Potatoes sold to them are not sold as organic although they are produced in an organic way. The reasons for this are that, on one hand, organic products are not recognized by the traders; and on the other hand, the organic cer-

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<sup>1</sup> Zhang (2012) demonstrates that contract farming relationships in China are unstable due to the violation of contracts by both farmers and companies.

tification scheme of the potato production base is owned by Letian. Attempts by the cooperative to directly enter supermarket are facing some difficulty as well.

*“We established contacts with several supermarkets and companies. The requirements of the supermarkets are quite strict for us, like timely delivering to the stores, and responding to the lost and un-sold products. One company would like to cooperate with us to deliver vegetables to consumers directly. We did not come to an agreement because we need to build two cool stores and a packing workshop, which together cost more than 1 million yuan. It is difficult to get that amount of money and there is no government policy to support this kind of activities.” [Cooperative chairman, May 2011]*

#### **4.4.1.3. Outcome for the cooperative and its members' participation in chain activities**

The chairman of Taoyuan cooperative expressed his appreciation of the cooperation with Letian because it helped farmers to move from grain production to vegetable production and develop both the cooperative's and farmers' capacities in organic production. One farmer interviewed also said that he is free from worries about technologies and marketing because of the cooperative's cooperation with the company.

The cooperative's and members' share of profit is low compared to the final price of the products. However, the total income received by the cooperative and its members is substantive when considering the scale of the operation. In 2011, the Taoyuan cooperative provided about 2000 ton of vegetables to Letian and collected a 0.7 million yuan service fee from the company. Since 1995, the average farmer household's income has increased steadily due to the steady enlargement of the organic vegetable farming area and the increased yield per area, although the price has remained stable. In 2011, the average household net annual income was approximately 23,600 yuan and 80 percent of the income came from the organic vegetable production. The figure was about 5,000 yuan in 1995.

#### **4.4.2. Tianli Vegetable Cooperative**

The Tianli Vegetable Cooperative is located in Shouguang county of Shandong province where many farmers specialize in greenhouse vegetable production. The cooperative was initiated in 2007 and formally registered in 2008 by Liang, a local farmer who had been trading vegetables for about ten years. Based on his marketing experience, he regarded supermarkets as an emerging market channel

for high quality food products and recognized the importance of trademarks and certification to be able to do business with supermarkets. He persuaded seven greenhouse vegetable farmers in the village to establish the cooperative and set supermarkets as their target market. In 2011, the cooperative loosely gathered more than 200 members.

#### **4.4.2.1. The cooperative's position in the value chain**

In 2010, Tianli succeeded to integrate into the domestic value chain by connecting to two local supermarket chains through the sales of its “bagged vegetables”. The vegetables were sold under the name of the cooperative with a hazard-free certification<sup>1</sup> and the trademark of “Tianli”. However, Tianli did not gain the expected profit from the improved product quality in the cooperation with the supermarkets. The main reason given for this setback, given by Liang, was that the supermarkets dominate the chain and oblige the cooperative to follow its rules.

“Most of the profits have been taken by the supermarkets. The cooperation model is that they deduct 22 to 26 percent from the shelf price. The cooperative is responsible for delivering to each store and for the un-sold products. The cost to deliver the products every day is very high. You cannot make money unless you have high sales volume or a high price.”  
[July 2011]

#### **4.4.2.2. The cooperative's participation in quality construction as intermediary organization**

Regarding chain development, Tianli took the initiative to integrate food safety into its vegetable production and marketing as a means to enter into the quality food market from 2008 onward. This move can be analysed as belonging to the civic convention. The impetus for the move was the increasing public concern about exposed poisonous vegetables with very high chemical residues. In response to the public clamour, the local government started to promote food safety relevant certifications. Tianli swiftly followed suit by connecting to different actors who could help to improve farmers' production technologies, verify the quality of the products and facilitate entry to supermarkets.

In 2009, Tianli applied for hazard-free certification (a scheme coordinated by the Ministry of Agriculture) with financial support from local government. To help

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<sup>1</sup> Hazard-free certification is one of three public certifications in China under the administration of the Ministry of Agriculture. The other two are organic and green certifications. Hazard-free is the basic requirement which allows use of artificial chemicals, but in a limited amount and of a certain type only. The first regulation on hazard-free certification was implemented in 2001.

farmers improve their production technology, the cooperative invited experts from local extension agencies to give training to farmers about hazard-free technologies. At the same time, Liang and another farmer spent one year to develop a bagging technology for vegetables based on the widely used bagging technology in local fruit production which protects fruit from pests and pesticides. The vegetable plastic bags were specially designed through an experimental process and are now produced by a factory based on instructions from the cooperative. The vegetable fruits are placed inside the bag when they are still small and in the growing stage and then placed on supermarket shelves. Liang explained that in this way consumers are able to see the safety for themselves in the bagged products while a mere certification sign itself does not prove anything.

After the “bagged vegetable” product was developed, Liang introduced it to the officials in the county Agricultural Bureau. They reacted positively and recommended the products to the local agricultural TV channel and newspapers. Later, Liang built up direct relations to local supermarket chains, contacting staff coming from the same village as the cooperative. Managers from both supermarket chains indicated that supermarkets only cooperate with formally registered companies and not with individual farmers. They explained that Tianli as a cooperative can provide quality certification and be responsible for product quality. The two supermarket managers pointed out another factor concerning product quality relevant for the introduction of the bagged vegetables.

*“Tianli’s products are introduced by the news on TV and in the newspapers. Our supermarket also wants to improve our image to consumers by introducing higher quality products such as the bagged vegetables. Nowadays, more and more consumers pay attention to food safety.” [July 2011]*

However, attracting consumers into the value chain was difficult and the sales volumes remained at a low level, less than 200kg per day in total. One manager thought it was because the price was too high for local consumers and this kept them away from the products. For example, the price of bagged cucumber was about 5 yuan/kg, twice the price of ordinary product in the supermarkets. The other manager considered the lack of promotion as an important reason, because the products were new in the market and they required sales promotion to attract consumers. In the end, it appears that the bag protecting the vegetables did not attract consumers as much as expected as a signal of improved safety. Sales did not meet Liang’s expectation that the new product would open up the quality market.

#### **4.4.2.3. Outcomes for the cooperative and its members' participation in chain activities**

Tianli's cooperation with the two supermarkets ended after only five months, seeing no progress in terms of increased sales and profitability. Liang said that the cooperative did not have enough resources to do products promotions and unfortunately, he had not thought about it beforehand. As a result, the cooperative did not receive the expected higher share of profit. It also turned out that the cost to produce the bagged vegetable was relatively high.

*“Four cucumbers weigh about one kilo. A plastic bag is about 0.3 yuan; plus 0.2 yuan for labour to bag them. The cost for bagged cucumbers is 2 yuan higher than of ordinary ones that cost about 2 yuan/kg at this moment.” [A member farmer, Nov. 2010]*

According to our interviews, the five farmers actively involved in the trial run during the five month period did not suffer any major setback in their livelihoods notwithstanding the failure of the experiment.

#### **4.4.3. "Happy pig raising" group in Hongmin Farmer Cooperative**

The Hongmin Farmer Cooperative is located in L County in Henan province. The cooperative was initiated in 2004 by four farmers who participated in a training workshop on farmer cooperatives organized by Dr. Li, a researcher from a national university and part-time deputy mayor of the county at that time. The cooperative aims to promote village development in general. It has a sub-unit working on credit cooperation with members investing in the organization. In the past several years, the cooperative has organized a variety of activities, including credit provision, collective purchasing of inputs, and hazard-free rice production and marketing. In 2011, the cooperative involved about 100 members in different activities.

##### **4.4.3.1. The cooperative's position in the food supply chain**

In 2010, Hongmin started a new project known as “happy pig” raising. The goal was to develop a short supply chain to provide products directly to consumers. Happy pig is the name given by farmers to pigs raised in the traditional way fed with vegetables, maize, bran of rice and wheat instead of processed feed which contains various kinds of chemical additives. The cooperative adopted a model known as “contract farming with consumers” . Consumers are recruited before the production season and a contract is signed between the cooperative and them. It is

made clear in the contract that the cooperative keeps the consumers informed about the pig raising process through regular emails and phone calls. The pigs are slaughtered, packaged and delivered directly to consumers before the Chinese New Year or another time decided by the consumers. Consumers have to buy whole pigs instead of small pieces. It is agreed in the contract that the price should be negotiated between the cooperative and consumers and twice the market price is set as the reference price. In practice, the cooperative has followed the reference price in the past two production seasons. Consumers pay 500 yuan upfront as "earnest money" for each pig to indicate their willingness to buy the pig. Farmers will keep the money if the reservation is withdrawn.

#### **4.4.3.2. The cooperative's participation in quality construction as intermediary organization**

In the "happy pig" project, Hongmin coordinates farmers and actively links to different actors –researchers, research institutes, government agencies, media as well as consumers - to develop a short supply chain. Different quality conventions are consciously or unconsciously incorporated into the chain. In 2009, happy pig raising was first adopted by Yu, an innovative farmer who knew from his relatives in cities that some urban consumers prefer food produced in traditional ways and consider them safer and tastier. This idea gained attention from Dr Li and she helped the cooperative join in an action research project that supported farmer cooperative development supported by two national research institutes. In 2010, with the financial and personnel support from the project, Hongmin formed the happy pig raising group with eight pig farmers, including Yu. The group reached consensus to follow the traditional raising method as a means to improve food safety. The group decided to directly sell pigs to consumers who were concerned about this issue.

In order to attract consumers to the chain, the cooperative used several approaches to disseminate their idea about improving food safety and the establishment of direct marketing relations. First, the cooperative mobilized consumers through personal relations, the local women's federation and a consumer network in Zhengzhou (capital city of the province). Second, it organized so-called "ecological tourism events" in the village to develop its ecological image. The event included diverse activities, such as tasting local dishes, visiting ecological rice fields, fishing crabs in integrated farming pond of lotus and crabs, and watching traditional dance and kongfu fighting. The first of such event received support from the Kaifeng (a larger city in the province and close to L county) radio station helping the cooperative to recruiting members through the radio programming, and to coordinate transportation between producers and consumers. Students from

the Agricultural and Rural Study Association in Henan University helped the cooperative out in the preparation and organization of the event. Third, the cooperative's project received attention from public media for its innovative idea and activities. In the spring of 2011, a TV program about the happy pig project entitled "The ecological dream of Hongmin" was shot by and broadcasted on CCTV (China Central Television). Last, the cooperative systematically invited local newspapers to their public activities such as the ecological tourism event.

The cooperative tried to keep the contracted consumers informed about the pig raising process. Farmers kept diaries about their raising practices, including of what feed they used, how they interacted with the pigs. One intern funded by the national farmer cooperative project prepared newsletters based on these diaries, illustrated with photos, which were published and shared with consumers once a month. In all these interactions, Hongmin focused on their efforts to improve food safety and their understanding about the issue. Yu's words during the contract ceremony with consumers in 2010 illustrate this well.

*"Through so many years of pig farming, I feel quite uneasy about the modern and industrialized raising method. Several kinds of additives, such as a sedative, lean meat essence, and antibiotics are added to the feed to maximize the profit... In my opinion, pigs live healthier and happier with natural feed; and people will be healthier with healthier meat."*  
[Cooperative archive]

Based on the initial efforts, Dr. Li tried to broaden the direct marketing project. In an online interview by a provincial program she explained the idea.

*"Farmers will only be motivated to produce healthy products when they can make a profit from them... Civilized consumption advocated by us means fair trade between rural and urban areas."* [Cooperative website 2011]

Some consumers were attracted to join the supply chain, but the number was small and about 50 happy pigs were sold in both 2010 and 2011. Two problems that constrained the expansion of the market came up in the interviews with consumers who ordered the pigs. One concerned a portion of the meat delivered to a consumer who ordered 10 pigs. The meat ostensibly was no longer fresh when the packages were opened in 2010. The consumer returned most of the meat and discontinued the purchase from the cooperative in 2011. The other problem was a lack of open communication between the cooperative and consumers. One consumer expressed concern about a problem of animal hygiene surrounding the slaughtering of pigs in the village. She expected to see some official proof of

proper handling, for example, a stamp from the Health Bureau. Afraid of insulting the farmers, she did not raise the issue openly, but it influenced her purchasing behaviour. Another consumer interviewed, doubted the pricing of the meat.

*“The cooperative asked twice the market price, but did not give us a convincing reason during the interaction. Consumers need to know what they pay for if the price is high: does it include the cost of feed, the cost of labour? We still don't have a clear picture of the price when the pork is delivered.” [June 2011]*

Dr. Li, as a consumer, also mentioned that the price in 2011 (70 yuan/kg) was very high. The cooperative insisted on the "double price" principle without carefully considering the changing situation – the market price for pork was 22 yuan/kg in 2010 and increased to 35 yuan/kg in 2011.

#### **4.4.3.3. Outcome for the cooperative and its members' participation in chain activities**

In this short supply chain, the cooperative and its members gained all the profit in terms of added value. Ten percent of the profit of each pig went to the raising group. The money gained this way was used for a trademark application, the purchase of a package machine and bags, and transportation. One farmer said that the profit from one happy pig was much higher than from a pig raised in the conventional way. The average income from happy pigs for farmers involved was about 25,000 yuan in 2010 with a price of 44 yuan/kg and about 29,000 yuan in 2011 with a price of 70 yuan/kg. The average farmer household income in the village, which mainly comes from off-farm work and crop production, was about 25,000 yuan in total in 2010 according to village statistics. However, the number of farmers involved in the project was small and limited due to the small number of consumers involved. In 2011, the group members increased from 8 to 11, but the number of pigs sold as happy pig only increased from 50 to 59.

## **4.5 Analysis and discussion**

This section will address the first three research questions through and analysis the findings from the cases presented. Further discussion will explore emerging patterns among the key research issues.



### **4.5.1. Farmer cooperatives: intermediation, control over the chain linkages and outcomes of chain participation**

All three cases presented have had some success in linking smallholder farmers to a targeted high quality food supply chain. As summarized in the first row of table 4.3, in general the three cooperatives coordinate the actions of farmers to achieve quality improvement in the production and marketing processes and to interact with other chain actors in terms of quality construction. Comparing the cases, we find that farmer cooperatives that actively pursue these two goals tend to establish a higher number of linkages with chain actors as a means to serve quality food market. Taoyuan cooperative for a long period of time did not follow this path as it only interacted with the export company given its contractual relationship in the chain as provider of qualified raw products to the company. Tianli cooperative built multiple links to knowledge and input providers, a certification agency and supermarkets to develop an improved technology, verify the quality as well as produce the new product. Hongmin cooperative tried to verify the quality of its products through interactions with mass media, researchers and consumers instead of relying solely on a certification agency from the formal certification system. Establishing and maintaining new and diverse links is a far from easy task and success is not guaranteed, as the cases indicate.

It becomes clear from the descriptions of the cases that taking on various roles in quality production and coordination can contribute to farmer cooperatives' efforts of acquiring more control over the linkages of the food supply chains in terms of what and how to produce and what kind of market to use (third row of table 4.3). However, our cases do not demonstrate a positive relation between these increased linkages and the outcomes of the participation of cooperatives and their members in chain activities (fourth row of table 4.3). First, Tianli did not receive the expected higher share of profit for its participation in more chain activities as suggested by theory. Second, comparing cases 1 and 3, the share of profit in the chain was not the single factor that influences farmers' income; other factors are the scale of production and number of farmers involved.

**Table 4.3** FCs' intermediary roles and political-economic positions in the food supply chains

	Taoyuan	Tianli	Hongmin
Key linkages	- Coordinate farmers and between farmers and the export company.	- Link to knowledge and input suppliers, certification body, government agency, mass media and supermarkets.	- Link to researchers, research institute, government agencies, mass media, volunteers and consumers.
Activities carried out by FCs	- Ensure the application of technologies among farmers, thereby the product quality. - Enhance the efficiency in transaction and knowledge transformation. - Represent farmers to balance the relation, e.g., negotiating better price for members.	- Connect to knowledge and input suppliers to develop new technology and improve products quality. - Promote technology adoption among farmers; - Connect to certification agency. - Coordinate with supermarkets to verify the new technology.	- Reach agreement between farmers about pig raising method and its contribution to food safety. - Organize activities in the village and cities to interact with consumers. - Mobilize kinds of support from researchers, research institutes, government and social activists to carry out their activities.
FCs' control over the linkages	- The chain is driven by international buyers and controlled by downstream actors. The FC had no control over any linkages along the value chain.	- Own the hazard-free certification and partly has control over the linkage with supermarkets. But the linkage is dominated by the supermarkets.	- Own the short circuits that link them to consumers.
Outcomes from chain participation	- FC generated income for the services to sustain its operation and production infrastructure maintenance; - All members receive stable price and predictable production volume; - But the price for the farmer is a small portion of the final price and its comparative advantage to local market price has decreased.	- FC did not gain the expected higher share of profit for the improved quality. - Number of farmers involved was small and linking to the chain did not increase their income.	- FC generates income for further collective actions. - Farmers receive all the profit from the improved quality, but the benefit is only limited to a small number of farmers.

Source: own research. FC= farmer cooperative

#### **4.5.2. Conventions in food supply chains and the participation of farmer cooperatives in quality construction**

Table 4.4 presents the types of conventions that are incorporated in the food supply chains in which the three cases take part and the ways in which the farmer cooperatives participate in the market integration process. It can be observed that the extent of involvement of the farmer cooperatives in the negotiation process of conventions varies in different food supply chains. In the international value chain led by international buyers, Taoyuan was marginally involved in the coordination of the domestic convention in the upstream of the chain contributing to the construction of civic quality. In the domestic value chain, Tianli took the initiative to incorporate food safety as a core issue thus contributing to civic convention in the chain. Tianli also intended to build domestic convention in the chain by developing its own brand, but did not succeed due to the short lifespan of the chain. In the short food supply chain, Hongmin gained more room to coordinate the chain operations and prioritize civic and domestic conventions as a means to distinguish its product. At the same time, Hongmin succeeded to integrate some practices of renowned convention in the chain through means of its multiple interactions with researchers and activists.

The findings also indicate that the effectiveness of the quality coordination differs between the chains regarding the reach of conventions in terms of the different actors along the chain. In the international value chain, with a standardized and relatively long lasting mode of operations and a gradually expanding scale of production, all the actors were well coordinated concerning the relevant conventions. In the domestic value chain, civic convention received different attention from chain actors. Tianli treated it as core of the quality construction process while supermarkets subordinated it to market and industry conventions; and consumers were not well attached to it. In the short supply chain, incorporation of new conventions involved consumers through new relations, but the number of consumers attached to the chain was limited. The farmer cooperative did not reach consensus with the consumers about fair prices and adequate safety. Despite good intentions, tensions remained. It is likely that the novelty of the new relationships and thus inexperience in terms of social interaction led to this situation.

**Table 4.4** FC's participation in quality construction in different food supply chains

Conventions	Taoyuan in international value chain	Tianli in domestic value chain	Hongmin in short food supply chain
Market	Price is central to the chain coordination and determined by the international buyers and transmitted to farmers through export company.	Price dominates the chain coordination. Supermarkets guarantee their profit through collecting royalty or fees from suppliers.	Higher price is the major motivation for farmers to improve quality. From consumers' perspective, the price given by FC is not fully legitimized.
Industry	Efficiency and scaling-up are pursued to increase the profit.	Higher sale volume is considered important to make profit for FC.	-
Civic	International buyers incorporate food safety, environment sustainability to distinguish the products and adopt third party certification. The export company takes the major role of information management and FC only complies with the standards in production.	Motivated by government policy and the safety problem. FC takes the initiative to incorporate food safety by introducing new technology.  But few consumers are attracted by the products.	FC claims food safety as core of its product in the interactions with other actors, including consumers, but pays less attention to the fair-trade principle implied in the transaction. Perceptions and concerns about food safety from consumers are neglected by the FC.
Domestic	Intensive interactions are kept between FC and the export company to operationalize the standards and ensure the implementation.	FC wants to develop its own brand with the products. Supermarkets are interested in the idea of improved safety to develop its good image to consumers.	FC tries to develop close and long term relations with consumers. But the communication does not completely satisfy consumers.
Renown	-	-	Researcher and activists advocate the importance of food safety and fair-trade.

Source: own research. FC= farmer cooperative

### **4.5.3. Room for farmer cooperatives to participate in quality construction is linked to their political-economic positions**

When combining the findings of table 4.3 and 4.4, we find that political-economic relations in the food supply chains largely determine the types and priorities of conventions in quality coordination and thereby shaping the room for farmer cooperatives to engage in quality construction. This finding is consistent with observations of other researchers in the field, such as Sonnino and Marsden (2006). In both the international and domestic value chains, the retailers had and maintained control over the chains. But the ways in which they exercise their power were different in terms of the priorities that they set regarding the food conventions. Confirming findings of cases researched by Ponte and Gibbon (2005), retailers in the international value chain led the re-organization of the chain by integrating the civic convention. In the domestic value chain, the supermarkets still mainly follow market and industry conventions to regulate their relations with suppliers and consumers, although they paid some attention to the civic convention. More room for manoeuvre was available for the farmer cooperative in the domestic value chain to negotiate the quality in terms of the civic convention compared to the international value chain. In the short food supply chain, the farmer cooperative gained considerable room to actively construct food quality due to the absence of a strong coordination mechanism determined by dominant chain actors. Such opening up of space has also been observed by other researchers, such as Arce (2009) and Brunori and Marescotti (2007). Diverse conventions were integrated into the chain to justify the quality of the product (Brunori and Marescotti, 2007)

The three cases make clear that farmer cooperatives are not passively involved in food supply chains. They are active actors grasping opportunities in the emerging quality food market. The cases demonstrate that engagement in intermediation activities and participation in quality construction contribute significantly to the appearance of farmer cooperatives in the social construction of food quality and the reshaping of political-economic relations in the food supply chains. As Biénabe et al. (2007) have argued, farmer cooperatives can play the role of intermediary organization connecting smallholder farmers to downstream chain actors in order to improve product quality to match the civic convention and to increase the efficiency of transactions to match the market and industry conventions. Taoyuan serves as an example of how smallholders are integrated into an international chain, contrary to many other cases, including in China, where contract farming leads to exclusion of these farmers (Hu and Xia, 2007; Miyata et al., 2009). Tianli played an active intermediary role that allows its members to switch from an undifferentiated market to a quality product market and gain a certain lev-

el of control over the chain operation, in particular concerning the certification and trade-marking. Such a move has been observed in other countries as well (Bolwig et al., 2011). Hongmin actively initiated the short food supply chain and gained control over the links to consumers and with room to decide price and profit margin levels. This has been illustrated by Kanemasu and Sonnino (2008) who found that farmer cooperatives can play key roles as to coordinate the connections between farmers, consumers and other chain actors.

#### **4.5.4. Effectiveness of quality coordination**

The mixed outcomes of the participation of the three farmer cooperatives and their members in the different chains suggest that actual benefits do not merely rely on the roles taken on by the cooperatives in quality construction or on their political-economic positions. What is also important is the effectiveness of the quality coordination along the chain. The three cases demonstrate that there is no single blueprint for success. Taoyuan is a case of effective coordination in which a large number of members received a stable income over considerable time from participation in an international value chain although the individual household share of profit was relatively low. The other two cases, engaging in different types of chains, faced some serious problems in quality coordination leading to unstable incomes and low or not enduring profits.

The varied effectiveness of quality coordination in different types of food supply chains partly results from the way that conventions are incorporated in the food supply chain and the nature of participation of other chain actors. The Chinese context is different from the certification system that had its origin in social movements in western countries (Barham, 2002). In China, food certifications are established, promoted and operated by government (Ortega et al., 2011; Sanders, 2006). In general, awareness and willingness of consumers to pay for food safety and certifications vary greatly between groups and regions, although in recent years it has become a fiercely debated social issue (Ortega et al., 2011; Wang et al., 2008; Xu and Wu, 2010). Only a few initiatives taken by consumers to incorporate the civic convention have been documented and they are all on a very small scale (Li, 2012; Vernnoy, 2012). In the Chinese domestic value chain, most supermarkets are not motivated to actively participate or invest in chain re-organization and quality coordination. According to Li (2009), this is due to the lack of clear and strong demands from consumers. Although Hongmin is an example of more effective involvement of consumers in the food supply chain, in this case they do not have a very clear identity and lack a collective voice to express concerns over food safety and pricing. At the same time, the farmer cooperative approaches each consumer individually rather than through a group or net-

work mechanism. In other countries, collective voice (Brunori et al. , 2012) and clear identity (Seyfang, 2006) have made a big difference, contrary to what the Hongmin case indicates.

Considering the roles of the three farmer cooperatives in the integration of new conventions, it becomes apparent that their intermediation power has its limits. Inexperience and lack of resources contributed to ineffective quality coordination in the domestic value chain and short food supply chain. In the domestic value chain development, on one hand, the farmer cooperative failed to identify consumers as key actors who have to be mobilized and connected to the chain. On the other hand, a lack of resources constrains the farmer cooperative from developing long-term relations with supermarkets and developing a brand, although it did recognize the importance of these two elements, which have been highlighted by some authors (Beverland, 2007; Kontogeorgos, 2012). In the short food supply chain, the cooperative fails to recognize the diverse interests of consumers and the importance to reach mutual agreement through open negotiation. Both elements are identified as crucial in this kind of relationship development (Marsden et al., 2000). Hence, the rules drawn up by the cooperative do not lead to stable relations with consumers, and fail to contribute to rural development in a broader sense.

## 4.6 Conclusions

In this explorative study, we investigate the roles of various kinds of Chinese farmer cooperatives in linking smallholder farmers to quality food markets as intermediary organizations by applying the conceptual framework of the social construction of food quality and political-economic relations in food supply chains. The findings from our cases reveal that farmer cooperatives contribute to integrating new conventions (other than market and industry) in the food supply chains leading to improved food quality, in particular food safety, and to better quality coordination along the chain by building various linkages with other chain actors as intermediary organization. The findings also indicate that the room for the participation of farmer cooperatives in quality construction depends on their political-economic relations in the chains. At the same time, it appears that intermediation with more types of actors allow farmer cooperatives to enter or initiate different types of food supply chains and thus gain better political-economic positions. However, the cases also indicate that farmer cooperatives that take initiatives to integrate the new conventions often have limited capacities and lack of experience. This results in a vacuum in their intermediation capacity and impedes expansion of the linking of other and more actors in the chain. Building stronger allies seems difficult in the Chinese context where formal certification systems are

led by government and other chain actors (including consumers and retailers) have no participation in certification development and new connection building with farmers.

The results from this study suggest that both increasing the capacity of farmer cooperatives and enhancing the effectiveness of food supply chain coordination are important to improve the performance of smallholder farmers in the expanding domestic quality food market. External support for farmer cooperatives could focus on strengthening marketing and communication capacities besides offering tax exemptions and financial support (cf. Deng et al., 2010). In addition, participation in food supply chains of other actors, notably consumers, could be encouraged to develop new conventions and new forms of chain organization through active interaction and negotiation. In China, there is space for more than one model in this regard (cf. Waldron et al., 2010).





# Chapter 5

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## Hybrid institutions: unexpected outcomes from farmer cooperative development in China

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## **Abstract**

This paper provides a sociological explanation for the common phenomenon that newly emerging farmer cooperatives (FC) in China deviate from the formally accepted principles. Actor-oriented methodology and critical event analysis help to explore the organizing processes of FCs in the changing social, economic and political context. The concept of institutional bricolage is used to illustrate the ad hoc combinations of chances, networks and materials in the processes of FC development. The authors find that the FCs are hybrid institutions resulting from the creative actions of FC members combining FC principles and other institutional arrangements to grasp opportunities and respond to environmental challenges and structural demands. The inconsistency and incompatibility of markets, government policies, and the FCs' limited access to resources lead to the bricolage which does not correspond to pre-designed cooperative principles.

## **Keywords**

Farmer cooperatives; bricolage; organizational change; hybrid institutions; China

## **5.1 Organizational change at village level after rural reform**

The farmer cooperative (FC) is regarded an important institutional arrangement to voice the needs of and provide the services to farmers as an intermediary between rural communities and their environment (Esman and Uphoff, 1984; Rondot and Collion, 2001). FCs were introduced into contemporary China rural life by government agencies, NGOs and research institutes to promote farmers' collective action for agricultural development. From the early 1990s, the Ministry of Agriculture (MOA), the China Association for Science and Technology, and the national Supply and Marketing Cooperative System are the main government agencies who carried out a series of projects to promote and support FC development with a different emphasis on FCs' role in technical or marketing services (Han, 2007; RAF, 2004; Yuan, 2007). As demonstrated by Deng (2010), since the 1990s the government supplies multi-dimensional support, including official documents down to village level to introduce relevant policies, financial support, tax exemption, insurance of credits and awards in cash, to stimulate FC development. These supports were intensified after the implementation of the Farmer Cooperative Law in 2007.

From the early stage onward, the FC is defined as an autonomous organization collectively owned by its members. The newly implemented Law further clarifies rights and obligations of members which are consistent with the cooperative principles identified by the International Cooperative Alliance, but with a focus on the economic objective. MOA introduced an exemplary charter to demonstrate the structure and operational rules of the cooperative after the implementation of the Law. Principles, including voluntary and open membership, one-member-one-vote, members' economic participation, are operationalized in this charter. However, in practice many FCs deviate from the law and regulations. Zhang et al. (2007) show that nearly half of the FCs are not formally registered nor functioning according to the principles listed above. Many studies find that FCs are dominated by leaders and core members in their establishment, share-holding and decision-making, while the participation of members varied greatly between FCs (Bijman and Hu, 2011; Hu et al., 2005).

Some researchers argue that structural and managerial diversities of FCs relate to different levels of economic development in different regions according to the evolution of the cooperative structure following a western model and the emergence of a new generation cooperatives in the USA (Guo, 2001, 2011; Xu and Huang, 2005). Xiong (2009) points out that this diversity results from the

State bureaucracy strengthening its relations with rural economic organizations through development projects, and the strategic adoption of nominal institutions, including the farmer cooperative, by rural economic elites and their organizations to attract resources from projects to construct an autonomous space for their profit. Other studies suggest that the erosion of traditional norms in which trust is based on personal relations and the lack of trust in modern rules and regulations during the transformation period lead to a lack of coordination in collective actions and little trust in leaders (Guan, 2005; Huang, 2012; Zhang, 2004). These researches provide interesting perspectives to understand how FC practices are influenced by economic and cultural transformations and changes in governmental structure. Few discussions focus on farmers' behaviour, whether only considering leaders' strategic actions ( Xiong, 2009), or discussing farmers' internal conflicts within FC (Huang, 2012). Taking an actor-oriented perspective, this article will demonstrate how both farmers and leaders struggle to meet their needs in everyday practice both within the FC and with external actors, like researchers, government, supermarket and consumers, and explain why this practice deviates from what is defined in governmental laws and regulations.

## 5.2 Research methodology

The membership and management structure of the FC is widely described in existing research. Individual attributes of farmers, like age, education level, land holding, and property are used to explain their choice to participate or not in cooperatives. The “middle class effect” is observed in membership composition while it is recognized that heterogeneity in rural communities is mapped in cooperatives (Bernard and Spielman, 2009; Fischer and Qaim, 2012). A more relational attribute - trust - is adopted and measured to explain FC's performance, while members' trust in leaders is considered crucial for their participation in both cooperative activities and decision-making (Guo et al., 2008; Huang, 2012; Österberg et al., 2009). Though these studies provide a broad overview of FCs, the static pictures limit us to further explore how the members with different attributes and different trust relationships interact and shape the operation of cooperatives.

In order to capture the dynamic interactions in FC development, this study adopts an actor-oriented approach which focuses on describing actors' everyday practices. It does not only identify the structural outcomes of the social interactions, but also the interactions themselves and the actors who actively process their and other's experience and act upon them (Long, 2001). Departing from this point, FC is regarded as an organizing process made up by a complex set of social practices, rather than a finished product resulting from a social script (Nuijten,

2003; Wolf, 1990). In order to follow up this process and detect the engagement of different actors, we look at the flow of actions taken by these actors and ask about when, why and how they are involved (Wolf, 1990). At the same time, story-telling and reflexive narratives by actors are central to the organizing process of FCs because the formulation of objectives and the presentation of arguments for decisions taken are explicit or implicit in the creation and recreation of stories (Long and Van der Ploeg, 1994b; Nuijten, 2003).

We also use critical events analysis (Das, 1995; Long, 2001) as it is a useful tool to catch the dynamics of interactions and discourses by actors in organizing processes. Critical event analysis also enables us to go beyond the boundary of the village where a FC is located and link the FC's local activities to wider social relations and transformations going on at a more inclusive societal level. As Long (2001) and Das (1995) suggest, critical event analysis documents both on-going relationships and situational interests of directly involved actors and broader political, economic and cultural implications in situations when an existing set of relations is challenged and new social arrangements are negotiated. Although the critical event for a FC is not comparable in scale and influence to the cases described in the literature, they have one thing in common – the inevitable structural impact on the research object. As organizational change is a continuous process, identification of a series of critical events and documentation of different actors' actions and reflexive narratives in these events are indications of the organizing process.

In this article, we integrate an actor-oriented approach with critical event analysis by introducing the concept of bricolage (section 5.3). Bricolage for us means the ad hoc combinations of chances, networks and materials in the FC and the on-going development processes. The Hongmin Farmer Cooperative<sup>1</sup> is chosen as a case study to illustrate the dynamic interactions in cooperative development. The authors re-construct the critical events in the context of the FC development process on the basis of ethnographic data gathered by the first author during her PhD research between November 2009 and December 2011. Various qualitative methods were used to triangulate the different outcomes as shown in table 5.1. Two different projects are demonstrated as specific cases to show the diversified practices even within one cooperative. The first case is about hazard-free rice focusing on activities carried out from 2004 to 2009. The second case is about ecological pig raising implemented from 2010 onward. While secondary data enriches the information gathered in interviews in the first case, in the second case participatory observation provides more situational information (table 5.1).

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<sup>1</sup> Authors have changed the name of the name of the village, cooperative and all relevant actors.

**Table 5.1** Research methods and data collected

Methods	Data collected
Questionnaire	<ul style="list-style-type: none"> <li>- 20 members</li> <li>- 24 non-members</li> </ul>
In-depth interviews	<ul style="list-style-type: none"> <li>- Three former leaders</li> <li>- Five current leaders</li> <li>- Eleven members</li> <li>- Nine non-members</li> <li>- Five consumers</li> <li>- Dr. Li (who plays a crucial role in cooperative development)</li> </ul>
Participatory observation	<ul style="list-style-type: none"> <li>- One cooperative training on consumption cooperation and food safety</li> <li>- Several meetings of cooperative committee</li> <li>- Several group meetings of happy pig raising group</li> <li>- Following the everyday interactions between leaders and members</li> </ul>
Secondary data	<ul style="list-style-type: none"> <li>- FC activities records</li> <li>- Newspaper articles and online reports</li> <li>- FC website information</li> </ul>

### 5.3 Institutional bricolage and organizing process

Following the research objective and research methodology outlined above, we will deconstruct the normative understanding of the FC as a membership organization and discuss the dynamic interactions between members within the FC and with actors from outside by adopting the concept of institutional bricolage. In principle, members in a FC are expected to engage in collective action striving to shared objectives (Bijman and Ton, 2008). Most intervention oriented institutional authors take the perspective that rules in collective action can be formed through rational negotiations between the different parties involved and that social capital is an important stock of resources that can be relied upon to enhance the interactions between the parties (Ostrom, 1994, 1999). External intervention is shown to be important to foster the collective action of farmers and improve FC's capacities in organization operations (Hellin, 2012; Poulton et al., 2010; Rondot and Collion, 2001). However, more actor-oriented authors hold that "intervention ... is an ongoing, socially-constructed, negotiated, experiential and meaning-creating process, not simply the execution of an already specified plan of action with expected behavioural outcomes" (Long, 2001:25). Also, Cleaver (2002) questions the feasibility of the idea that an appropriate mechanism can be designed in the strategic use of norms and relations of trust. To better understand collective action, she propos-

es the concept of “institutional bricolage” with the idea that “institutions are constructed through a process of bricolage – gathering and applying analogies and styles of thought already part of existing institutions” (Cleaver, 2002:15).

Bricolage originates from Lévi-Strauss (1966) and can be seen as an ad-hoc creative construction or making do with whatever is at hand. Bricoleurs – those who are engaged in the bricolage – rely on a finite stock of materials and tools to finish the project. Extending bricolage into institutional thinking, Douglas (1986:66) also emphasized that “the bricoleur uses everything there is to make transformations within a stock repertoire of furnishings” in the construction of institutions. In this sense, bricolage is characterized both by the bricoleur’s agency and by structural constraints (Cleaver, 2002). On the one hand the bricoleur can apply his agency to social relations and resource management in different ways which may result in diversified social and physical arrangements. Baker and Nelson (2005) show that the entrepreneur carries out bricolage with elements in several domains, including materials, skills, labour, regulatory and institutional elements to maintain and develop their business. On the other hand, the choices of the bricoleur are limited by the structural context and he or she has to act upon the circumstances confronted with the tools available (Baker and Nelson, 2005; Lévi-Strauss, 1966).

In farmer organizations, every member is an individual bricoleur who needs to learn the elements of other repertoires and compromise with others to make negotiation at organizational level possible (Duymedijan and Ruling, 2010). Learning and compromises between members lead to the composition of different institutional arrangements within one organization (Cleaver, 2002; Long, 2001; Thévenot, 2001). Moreover, each institutional arrangement has corresponding orders of worth and value which justify systemic relationships between human and non-human beings: “domestic worth, evaluated from the perspective of anchored tradition; the worth of ‘fame’, understood as visibility in public opinion; ‘market’ worth, determined by competition; ‘industrial’ worth, understood as technical efficiency; ‘civic’ worth, pertaining to the general interest and egalitarian solidarity” (Thévenot, 2007: 410).

Thévenot (2001) points out that power plays a role in defining the order of worth and values in organization. Similarly to Wolf (1990) who clearly noted a decade earlier that : “power is implicated in meaning through its role in upholding one version of significance as true, fruitful or beautiful against other possibilities that may threaten truth, fruitfulness or beauty” (Wolf, 1990: 593). He further explained that the power balance is always shifting between actors and that the organization is made, shaped and reshaped in a never ending process. At the same time, the objective of bricolage is shaped in the process of discovering new op-



portunities in responding to limitations imposed by the environment (Baker and Nelson, 2005). So the institutional bricolage at both individual and organizational levels helps us to examine the dynamic and complex nature of farmer cooperative's operation and management and its relations with different institutional arrangements and integrated social networks. In section 5.4, we will present two sub-cases in the FC of Hongmin. Within each case, bricolage in critical events is described with the actual institutional changes in the FC and the reflexive narratives of different actors involved. Analysis and discussion on the findings from the cases follow in section 5.5. The last section summarizes the main conclusions of the research.

## **5.4 The bumpy journey of the Hongmin Cooperative**

### **5.4.1. Hongmin village and establishment of Hongmin Cooperative**

The Hongmin Farmer Cooperative is located in Hongmin village, L County in Henan province. The village is 8 km away from the county and the road to the county is in good condition. It has about 1,500 inhabitants in 450 households. Every household has its own land, the size of which depends on the number of family members at the last time in the 1990s when land was re-allocated. The village has a total of 190 ha farming land, all of which has access to irrigation water. Two crops a year are taken, mainly wheat in winter and rice or maize in the summer. The per capita net income of the village is at the average level of the province and about 10 percent below the national level of the per capita net income of rural residents. In 2005 the national average was 2,900 yuan (about 420 US\$), and it rose to 4,700 yuan (about 680 US\$) in 2010. In general, 45 percent of the households of members have an annual income lower than 15,000 yuan (approximately equivalent to a per capita income of 5,000 yuan), while this figure is 25 percent for non-members. Crop (mainly food crop) farming and non-farm work are the two main income sources. About 50 percent of the households of members and 35 percent of the households of non-members gain more than half of their income from the crops. At the same time, 30 percent of the members' households have an income from husbandry while very few non-members are engaged in animal husbandry.

Dr. Li, a researcher in sociology from a national university, is considered to have played a significant role in the development of the Hongmin Cooperative. She was delegated to L County as deputy mayor in 2003 and she now is working as the mayor's assistant of prefecture government<sup>1</sup>. She developed an approach of

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<sup>1</sup> This delegation relation originates from cadre and personnel system of Chinese government and

cooperation within the village and with urban citizens from her working experience at local level. Cleverly using her dual identities of researcher and government official, she is able to channel and integrate financial, personnel and policy resources from government, universities, college student associations, voluntary citizens, and NGOs to support the cooperative initiatives in the county and the six villages involved, including Hongmin.

The Hongmin Cooperative was established in 2004. In August of that year four farmers (Yu Qiangmin, Meng Qishan, Fan Tianyun and Zhao Senlin) in Hongmin were invited to attend a training organized by Dr. Li about farmer cooperatives in another village. They found that cooperative could be a good approach to promote development in the village, and initiated the Hongmin Farmer Cooperative in September. 48 farmers joined the cooperative and selected cooperative chairman (Meng Qishan), a management committee and a supervisory committee. As the farmers learnt from the training that a cooperative has its own autonomy and should be independent from the village committee and party branch<sup>1</sup>, cadres of the village committee and party branch were excluded from the group of leaders of the cooperative and joined only as ordinary members. Both Dr. Li and the leaders I interviewed recollect that the reason for this was the tension between farmers and village cadres at that time. Before abolition of agricultural tax in 2006, one important responsibility of the village committee and party branch was tax collection. On one hand, the village committee relied on taxation for public affairs and clerical costs; on the other hand, it led to tensions between farmers and village cadres, sometimes leading to serious conflicts.

When considering organizing activities, the cooperative took advice from Dr. Li and other researchers to start as credit cooperation because risk can be controlled within the cooperative. After two months' preparation, a four day cooperative training was held in December 2004 with support of Dr. Li. Experts on credit cooperation and the leader of one famous credit cooperative were invited to introduce their experiences and operation regulations. In the training, cooperative rules were formulated mainly following the proposed regulations: 86 members were required to buy at least one share of 200 yuan each and the maximum possible in-

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Communist Party in which higher level organization delegates a cadre to lower one and appoints a temporary post. The delegated person keeps administrative relation with higher level. In 2003, China Agricultural University started cooperation with K prefecture government (higher level government of L county) to support local development. Dr. Li is one of the researchers who were chosen to work temporarily in different levels of local government.

<sup>1</sup> The village committee is the self-governance organization of the village and the leaders of village committee are elected by villagers. The Party branch is the organization of Communist Party at village level and the chairman is elected by Party members. At township level party committee plays an important role in the appointment of the chairman. In recent years, that the same person takes both positions of chairman of village committee and party branch becomes more common. Yan Binqi in our case is an example.

vestment of one member was limited to 5 percent of the cooperative's total capital stock.

Starting from credit cooperation, the cooperative organized series of activities, including seed and fertilizer supply, integrated lotus and crab farming and a project for the the production and marketing of agricultural products. A part of revenues from the marketing is used for public services. In the following section, we will focus on the hazard-free rice and ecological pig raising projects to illustrate the dynamic interactions among farmers and between farmers and external actors and their influence on institutional change of the cooperative.

#### **5.4.2. Case one: the Hazard-free Rice<sup>1</sup> Association**

The Hazard-free Rice Association was initiated by three farmers in 2005 when they got to know about the hazard-free certification system from the county's Agricultural Bureau and wanted to obtain a higher price for local rice through the certification. The association was formally registered in County Civil Affairs Bureau<sup>2</sup> and they obtained a hazard-free certification for the rice. At the beginning, only six members who mainly were village cadres invested 8,500 yuan each to start the project based on voluntary contributions. Soon after that the association received 10 thousand yuan from a Farmer Association Support project of MOA on a proposal about organizing hazard-free rice production and marketing project in association.

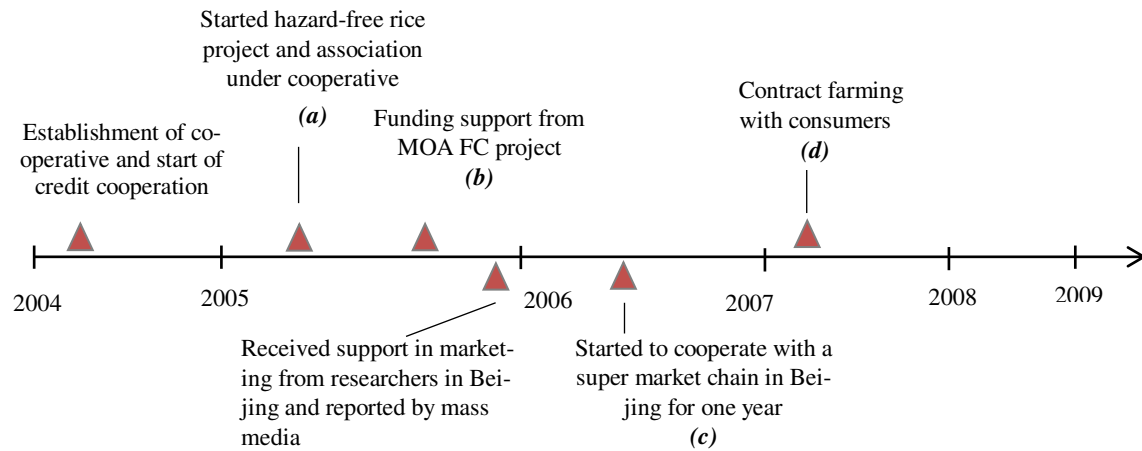
In 2005, farmers were trained on hazard-free rice technologies and were divided into groups. The group leaders were responsible for distributing inputs and guiding farmers' practice. Unfortunately, after the harvest the association met difficulties to find buyers for the product by itself. It transported 10 tons of rice to Beijing and turned to Dr. Li for help. Together with other researchers and social activists in Beijing, Dr. Li introduced the rice to citizens through social activities, like public lectures and promotion seminars. The emphasis on farmers' commitment to producing safe food and their collective action to reach this objective attracted the attention of the mass media, like newspapers and TV, and even more consumers were reached through these media. The association delivered rice to

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<sup>1</sup> Hazard-free food is one of three public certifications in China for food safety under the administration of Ministry of Agriculture. The other two are organic and green certifications. Hazard-free food is the basic requirement which allows use of artificial chemicals but with limitation of amount and varieties. The first regulation on hazard-free food was implemented in 2001. (<http://www.aqsc.gov.cn>)

<sup>2</sup> Before the implementation of Farmer Cooperative Law in 2007, farmer cooperative was not formally recognized by government. Farmer professional association was the term used in government policy documents and the associations were required to register in Civil Affairs Bureau as a social organization with limitations in for-profit activities.

consumers directly upon reservations made by mobile telephone. It sold about 50 tons of rice before Chinese New Year of 2006.



**Figure 5.1** Time line of critical events in the Hazard-free Rice Association

In 2006 the association’s hazard-free rice entered into a supermarket chain in Beijing through the intermediation of a business man who wanted to help them. Another marketing opportunity also emerged when a consumer showed his interests to establish a long term relationship with the association. A “contract farming with consumers” project was initiated with the help of Dr. Li to coordinate with consumers in Beijing. However, neither of the cooperation projects lasted very long. The cooperation with the supermarket ended in 2007 and the second one was implemented in the production seasons of 2007 and 2008 only. The main reason for discontinuation was that the association could not make profit from the business.

Critical events of the association described above are indicated in Figure 5.1. Four key bricolage moments were identified and will be described in detail in the following sub-section.

#### **5.4.2.2. Integration of cooperative arrangements, farmers’ experience in technology, marketing and contract farming (a)**

In the establishment of the hazard-free rice association, farmers had their own understanding of a farmers’ cooperative though they first learnt the term “farmer cooperative” from researchers and accepted their suggestion of starting with credit cooperation. Yu Qiangmin, one of the association’s initiators, still vividly recalls:

*“Some experts, including Dr. Li, always warn us not to cooperate in production and marketing for the high risk involved. I have different opinion with them. Farmers are producers. If we do not cooperate in production,*

*what should we cooperate for? Every cooperation activity relates to production.” [Yu Qiangmin, Hongmin, 2 August 2010]*

So three farmers, Yu Qiangmin, Meng Qishan and Zhen Baode, identified hazard-free rice production could be an opportunity in agricultural production and initiated the hazard-free rice project in the cooperative. Yu and Meng tried rice marketing together in 2000. Meng and Zhen were trained in agricultural technology in the 1980s and are agronomists recognized by the local government. Zhen had about ten years of experience working in the public extension system.

In January 2005, the Hazard-free Rice Association was established. It was agreed that the association was a sub-unit of the Farmer Cooperative and kept separate accounting books. Zhen Baode became the chairman of the association with acquiescence from its members because of his working experience in extension and his enthusiasm for the project, though he was also the treasurer of the village committee at that time. Differently from the credit cooperative which requires members to buy at least one share, the investment in the association was voluntary based on the uncertainty of obtaining profit, even if the initiators were quite confident about the project. Fan recalled:

*“When we discussed about the hazard-free rice project in the cooperative training in Dec. 2004, only seven farmers showed interest to invest. When the association was established, only five really put in money, including Yu Qiangmin, Zhou Aiguo, Yan Binqi, Yang Zengli and me. Meng Qishan joined later. Each of us invested about 8,500 yuan in the project.” [Zhen Baode, Hongmin, 31 July 2010]*

8,500 yuan is about three times of a farmer’s annual average net income at that time. All the members who invested were in fact the better-offs, Yan Binqi being the chairman of village committee until now. The money was collected mainly for hazard-free certification, trade mark application, input supply and so on. But no agreements were made between these investors about the cost and benefit sharing at that time.

In order to reach economies of scale in an ideal cooperative, the association mobilized other farmers to join through friends, relatives or influential local people, like the headmaster of the village school. In total, 310 farmers participated in hazard-free rice production in 2004 - 150 from Hongmin village and 160 from nearby villages. Contracts were made between the association and the members about the requirements of the production process and the price at the farm gate.

#### **5.4.2.3. Integrating the “equal sharing of public funding” principle enforced by a government fund into the existing association institutions (b)**

When the hazard-free rice project had just started in 2005, the association was informed by Dr. Li that they could write a proposal to apply to a MOA Farmer Association Support project that subsidized development plans of associations. The association submitted a proposal about hazard-free rice production and marketing and got it approved with the support of Dr. Li. Zhen attended a training organized by MOA about project management and financial requirements of the government's umbrella project. It was required that funds from MOA should be equally shared by members and its use should be transparent to the members; the government would evaluate the fund management.

To meet the requirement of equal sharing, the association appealed members to invest in the project and allocate government funding to investors accordingly. The rule was that farmers invested according to the area they used for hazard-free rice production: 20 yuan/mu<sup>1</sup>, and receive 60 yuan/mu from government funding. In the end, 69 farmers invested under this rule and received a share certificate from the association. These shareholders had the right to share the profit from the project. So among the 310 farmers, six invested 8,500 yuan from beginning; 69 (including the six mentioned above) invested to share government funding and profit from running project; while another 241 farmers who did not invest but produced rice for the association had the right to access the association's services and sell the rice to the association at the same price as members who had invested - 0.1 yuan/kg above the market price.

#### **5.4.2.4. Privatizing association's business in Beijing for the disagreement between key investors on market prospects (c)**

After the harvest in 2005, the association purchased rice from members at 0.1 yuan/kg above the market price as agreed. The association also followed the rule that poor families had priority to sell their products. But marketing did not go as smoothly as they expected. When they were searching for buyers in Zhengzhou, the capital city of Henan province, the company which they made contract with appeared to be a swindler and did not plan to pay them. They had to get the rice back with help from local media and Dr. Li. They lost 6,000 yuan in the process. After several unsuccessful trials, they turned to Dr. Li for help to sell rice in Beijing. Together with other researchers, social activists and undergraduates who were concerned rural development, Dr. Li organized rice taste events, public speeches to potential consumers emphasizing the farmers' efforts to improve food

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<sup>1</sup> 1 mu = 0.067ha; 1ha = 15mu

safety and the need to support them with a higher price. These activities attracted several mass media in Beijing.

In 2006, the association's rice entered a supermarket chain in Beijing. It was a breakthrough for the association's marketing experience as mentioned by Yan Binqi:

*“When we signed contract with the manager of the supermarket, we had a forum with consumers and media. I still remember that there were nine cameras from those big media there.” [Yan Binqi, Hongmin, 30 July 2012]*

But a lot of problems came up later in the cooperation:

*“The supermarket gave us 4.4 yuan/kg, and sold it at 5 yuan/kg. Our association was responsible for all the damage to the product, even in the supermarket. At the beginning, they paid us every half month and gave us an area as big as a dining table to display our products. After some time we were not treated especially anymore. The display area became smaller for only one package. The account was set every three months and we had to fill in 16 tables for it every time. The sales went down with less media coverage, and the cost went up for the rent for places for our products. Until March 2007, we lost money in our cooperation with the supermarket.” [Yan Binqi, Hongmin, 30 July 2012]*

Consequently, conflicts arose within committee members, who were also investors, in 2007 when they found they could not make money from the Beijing market. Except Zhen Baode and Yan Binqi, others wanted to withdraw from the market. After negotiation, they came to the agreement that Zhen and Yan would take over the business in Beijing and the association sold them the rice at the village price of 3.5yuan/kg. Yan recalled:

*“Zhen and I were on the same line at that time. We wanted to stay in Beijing longer to explore the market and tried to find a person capable of marketing. Dr. Li criticized us that we took the association's market for ourselves. We knew it was a transitional, not a real cooperative activity.” [Yan Binqi, Hongmin, 30 July 2012]*

#### **5.4.2.5. Increased conflicts between leaders about the involvement of other village cadres into the “contract farming with consumers” activity and financial problems (d)**

In 2007, the “contract farming with consumers” project was implemented and one area near the entrance of the village was chosen for the rice production. The village committee and party branch led by Yan Binqi took over the role of the association to coordinate the production and marketing with consumers. The three hazard-free rice project initiators insisted that: “the village committee and the party branch hijacked the association” by excluding them from this activity. However, Yan explained this in a different way:

*“When the project started, Dr. Li helped us hold a rice price hearing with consumers. Some consumers hoped to visit our village and paddy fields to see our production. So the contracted paddy fields need to be linked to each other. Zhen was against this project out of uncertainty of its success as the plots of members were scattered between non-members’ plots. How to include non-members in the project was a problem. Then the village committee signed contracts with them with support from other village committee members<sup>1</sup>.” [Yan Binqi, Hongmin, 30 July 2012]*

Yang Youquan, a village Party branch member, described why the village cadres joined in the project:

*“Contract farming with consumers started in 2007. Yan Binqi mobilized us (village cadres) to join in the project. Five of us, including Zhen Baode, invested 5,300 yuan each in the project. We did not make profit that year and Zhen withdrew in 2008 because of that. The training on cooperatives said that the village committee and party branch should not be involved in the cooperative management, but we did a lot of work in the association from 2005.” [Yang Youquan, Hongmin, 30 March 2010]*

According to interviews with different people involved, the other investors had already left the association gradually before this project. Zhou Aiguo and Yang Zengli did not participate in any relevant activities after the association lost money in their input for supply and marketing. Meng Qishan took his money back from the project to build a house. Conflicts about dealing with accounting issues led to the further breaking-up of relationships between leaders. Yu Qiangmin gave the responsibility of the association’s accounting to Zhen Baode after a disagreement in accounting. He blamed Yan Binqi:

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<sup>1</sup> According to Land Administration Law of PRC, rural land is collectively owned by the residents in the village and collectively managed by the village committee. Farmers have legal rights on their farming land except ownership. So village committee has influence on farmers’ land allocation and use.



*“Yan Binqi was reimbursed more than 10,000 yuan for his stay in Beijing in Feb. 2006. I did not agree with this.” [Yu Qiangmin, Hongmin, 2<sup>nd</sup> August 2010]*

Yan Binqi, from his side, described a much more complex situation:

*“For the cooperative account, the first thing is that we lost about 30,000 in input supply for the bad quality of the pesticide. How to share the cost is a problem. The second is they do not want to reimburse Zhen’s expenditure on buying his and my mobile phone bills in Beijing. The third is 20,000 was taken out of the MOA fund for building offices shared by the cooperative and village committee. This cannot formally be included in the accounting of the fund. Another problem is that rice was robbed twice during transportation under charge of Zhen Baode and Meng Qishan respectively. The second loss was suspicious. So it was difficult to balance the account.” [Yan Binqi, Hongmin, 30 July 2012]*

At this point, the Hazard-free Rice Association’s activities were taken over by the village committee and party branch. Village cadres think they just “take up what others do not want to go on doing anymore” and they paid for some public expenditure, like electricity for streetlights, street cleaning and cleaning up of the irrigation channel. They admit that this is not the real purpose of a cooperative, but it had to be done mainly because other investors and farmer-producers were reluctant to remain members and share the costs of public services.

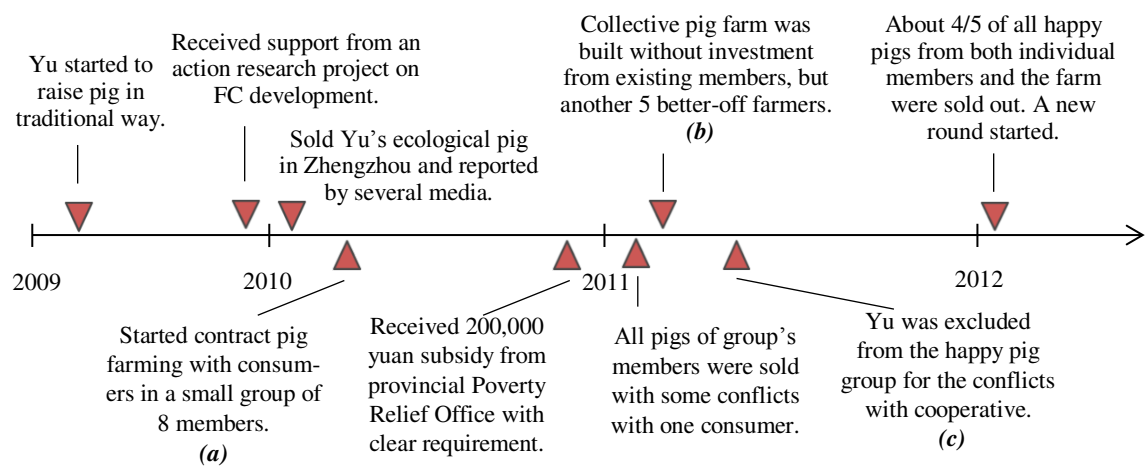
### **5.4.3. Case two: the Happy Pig Raising group**

“Happy Pig” is the name given by the cooperative to pigs raised without processed feed, but with vegetables, maize, bran and other natural feed in traditional way. It was first adopted by Yu Qiangmin in 2009. Before the Chinese New Year of 2010 Yu sold his ecological pigs at twice the market price in Zhengzhou under coordination of Dr. Li and financial support of a cooperative support project. A small-scale happy pig raising group with eight members was formed under the Hongmin Cooperative in spring of 2010 following the idea of “contract farming with consumers”. Dr Li gave a lot help in searching and coordinating with consumers. 50 pigs were sold in 2011 at twice the market price, although there was a problem in delivering pork to one big buyer.

At the end of 2011, the happy pig project received 200,000 yuan from the provincial Poverty Relief Office with the clear requirement that the cooperative should build a collective pig farm with the money. Moreover, the subsidy would be allocated when the farm had been built. Only one of the group members who

was village committee member joined in the collective farm and another five better-off farmers invested in the farm, so the collective farm and individual small farms coexisted in the group. During the process of communicating with consumers for the reservation of pigs, Yu Qiangmin and Yan Binqi had a serious conflict over one buyer's intention that she would only cooperate with Yu Qiangmin individually and bypass the cooperative. Consequently, Yu Qiangmin was excluded from the group because of the conflict. Pig sales were not as good as expected by the members and 59 pigs (about 4/5 of the total number) were sold as ecological pigs. In the new production round of 2012, all 12 members both from the collective farm and the individual farms were still in the group.

Key events of the association described above are indicated in figure 5.2. Three key bricolage moments are identified in these events.



**Figure 5.2** Time line of critical events in the Happy Pig Raising group

#### 5.4.3.2. Integration of farmers' innovation practice, “community support agricultural” development and external support in cooperative development (a)

Yu Qiangmin, who firstly used the traditional and ecological method again in pig raising, was quite confident of himself:

*“My relatives in Zhengzhou like the vegetables and meat which are produced in a traditional way for our own consumption. In the last two years, the price of pork has not been stable. Last year I decided to raise pigs in the traditional way and planned to sell them through my relatives. The pigs grow slower in this way, but cost less and may get a higher price.”*  
[Yu Qiangmin, Hongmin, 2<sup>nd</sup> August 2010]

Dr. Li got to know about Yu's innovation by chance and she became quite interested because it was in line with the food safety issue in hazard-free rice. Coincidentally she was invited to join an action research project about FC development coordinated by two national research institutes. She there upon informed Yan and Yu about the opportunity to promote this kind of production through this project. Yu agreed to receive support from project and involve other pig farmers into the project.

Based on the success of selling the ecological pork in Zhengzhou and project support, the cooperative decided to carry out pig contract farming with consumers. In spring 2010, the cooperative started to mobilize pig farmers in the village to join the project. This task was assigned to Yang Youxia, a village committee member, to visit all pig farmers in the village individually. In the end, only five small farmers of the same clan of Yang Youxia took part in the project. Then a Happy Pig Raising group was formed under the cooperative with eight members - five farmers mentioned above, two village committee members and Yu Qiangmin. Yu was elected as the group leader. The members agreed on the raising technologies and variety of pigs to use.

#### **5.4.3.3. Conflict between the “scaling up model” promoted by government and individual small-scale farming (b)**

The subsidy promised by the provincial Poverty Relief Office in 2010 was an emergent event. Yan Binqi recalled:

*“Dr. Li and I went to the Poverty Relief Office just to borrow a meeting room for a workshop with consumers in Zhengzhou about the Happy Pig. The official thought we came there for support and provided 200,000 yuan. We did not expected that, but you cannot refuse such offer.” [Yan Binqi, Hongmin, 20 June 2011]*

When submitting a proposal for project money, the cooperative was required to build a collective pig farm and the fund would be allocated when the farm was built. In spring 2011, the cooperative informed group members that everyone was asked to invest 20,000 yuan to build the farm collectively. But none of the group members joined. The reason commonly given was that they already had a place for their pigs and that it was too costly to construct a new one. Yang Youshan, a group member in his 60s, said:

*“I do not understand what is going on. The money should be divided to individual farmers if it is for poverty alleviation. We do not have money to build a pig farm. Now you only give the money after you built the pig farm.”*

*The meaning [of poverty alleviation] is changed.” [Yang Youshan, Hongmin, 18 June 2011]*

Yang Youpeng, another group member, in his 40s added:

*“They asked me to invest in the pig farm. None of us invested. 20,000 yuan is not a small amount. I have two children in university, and not even having enough money for their education. And pigs are living creatures and need to be looked after carefully. The collective farm does not pay as much attention as you yourself.” [Yang Youpeng, Hongmin, 15 June 2011]*

Yan still wanted to build the farm, so he persuaded two other village committee members (Yang Youxia and Zhang Hainan), and one of his school mates from high school in another village to invest in the farm, and Yang Youxia persuaded a friend of his in the village. When the time for the new round of production and marketing came, the cooperative asked every farmer member to take no more than five pigs. But most of group members, except the village committee members, bought more than five piglets. Yan Binqi explained the reason to limit the number of pigs:

*“I am worried that marketing this year will give us an unpleasant surprise. We lost the big buyer, Lin (for details see sub-section c). So I decided that every farmer-member should take only five pigs and not expand to non-members. I refused many farmers who wanted to join. It is better to displease them now than when they cannot sell the pigs. Many of them have more than five now. I know they think we can sell out all the pigs because we are building a large scale farm.” [Yan Binqi, Hongmin, 20 June 2011]*

Considering the large scale of the pig farm, small-scale members questioned the marketing rules. It was agreed that the pig farm would be counted as one collective actor in the marketing, and that orders from consumers would be allocated equally among members. But group members had a different opinion from Yan. Yang Youshan stated:

*“It was said that every member can have five pigs and individual members have priority to sell. I have eight “happy pigs” this year and want to see whether I receive orders for them. They are good pigs and easy to be sold.” [Yang Youshan, Hongmin, 18 June 2011]*

Jia Aihong, a female farmer whose husband does off-farm work and is not involved in agricultural activities, said:

*“They did not inform me in advance, otherwise I would not have bought so many (twelve). Everyone wants to buy more. Last year we had not enough when the consumers came.” [Jia Aihong, Hongmin, 15 June 2011]*

#### **5.4.3.4. Excluding Yu Qiangmin from the group in response to an intervention from a buyer (c)**

In the interview with Yu Qiangmin, he mentioned why he was excluded from the group:

*“One important reason he (Yan Binqi) kicked me out is that he wants to pocket the 200,000 project money. I will not allow this if I am still the group leader.” [Yan Binqi, Hongmin, 20 June 2011]*

But Yan Binqi said he was angry with Yu Qiangmin for two reasons. One was his irresponsible words in the communication with one big buyer who ordered 10 pigs in 2010. When the pork was delivered to the buyer before the Chinese New Year in 2011, some of the meat was smelly when the vacuum bag was opened. Yan and Yu were called to go to Zhengzhou to check out the problem. Yan recalled:

*“What Yu said was very irresponsible. He told Lin that the problem was because farmers used processed feed without further investigation. According to our discussion afterwards, it appeared to be because we packaged the meat when it was still warm.” [Yan Binqi, Hongmin, 20 June 2011]*

Another more critical event is their interaction with Mei Xinhua, a buyer who believes in ecological farming and runs a small business of relevant products with a small group of loyal consumers. In 2010, she ordered one pig from the cooperative and sold it to the consumers in small quantities in early 2011 before the Chinese New Year. In 2011, she would like to cooperate with Yu Qiangmin individually instead of the cooperative:

*“In 2010, I ordered a pig from Yu Qiangmin. When it was time to slaughter it, Yu told me that the one I ordered was still small and that he had a bigger one. I agreed to take the bigger one based on trust. But the cooperative was unhappy about Yu that he should not have sold me a pig that*

*was not listed with the group. This year, I planned to order organic wheat as well as pigs from Yu because I knew he has enough manure from pigs for crops. The cooperative was unhappy with this and said Yu did not follow the cooperative's rules. Yan said the cooperative would not cooperate with me if I cooperated with an individual farmer." [Mei Xinhua, Zhengzhou, 12 June 2011]*

Yan was also very angry with Mei Xinhua:

*"Mei Xinhua is just a businessman, not in the line of the cooperation. She gave us 12 yuan/kg for organic rice last year while our price for others was 16 yuan/kg. I sold rice to her for that price considering she was really promoting ecological production and just starting her business. Now she just wants to keep contact with an individual farmer. I am really angry about this. The cooperative spent 12,000 on Yu Qiangmin in 2010 for selling his pigs, but now he wants to sell aside cooperative and not pay the commission. Is this fair?" [Yan Binqi, Hongmin, 20 June 2011]*

After Yu was excluded from the group, Yang Youshan was elected as the leader by the members. The group kept on with regular meetings.

## **5.5 Analysis and Discussion**

### **5.5.1. The FC as a set of blended institutions**

From the bricolage shown in the critical events presented in the previous section we can conclude, in line with the viewpoints of Long (2001) and Wolf (1990), that the FC is an on-going structuration process rather than a final product or a fixed model such as described in the cooperative chart. Neither does the process fully fit into the rational design model (Ostrom, 1994), but it is rather made up by the FC's actions responding to opportunities and challenges that came up in the critical events. In the first place, it is clearly illustrated in the events that opportunities embedded in the wider market and government structure, are always accompanied by challenges to the existing institutions of the farmer cooperative (Giddens, 1984), like the preconditions to obtain governmental project funding, and consumers' expectations. As a collective actor made up by small-scale farmers, Hongmin FC's capacity to mobilize financial and human resources equally from all members is still limited though the cooperative is expected to pool resources from its members (Esman and Uphoff, 1984). Following a "do with whatever is at hand" principle, the cooperative's absorption of external resources and taking

up of opportunities is an example of bricolage to carry on with the business without careful calculation of costs implied in using them (Baker and Nelson, 2005). To deal with consequent challenges from the structure, the cooperative picks up elements from different institutional stocks to complement and reshape the cooperative institutions. Some elements, like mobilizing farmers through family group relations and influential people, do not endanger cooperative institutions. Others, like the appointment of a village committee treasurer as association chairman, privatizing business in Beijing, do jeopardize the cooperative principles. However, the overall takeover of the cooperative by a few village cadres which is clearly against the principle clarified at the beginning does not happen overnight, but in an incremental way through bricolage in a series of sequential critical events.

The results of bricolage in critical events, resonating with earlier observations by several authors (Bijman and Hu, 2011; Guo, 2001; Hu et al., 2005), show that the case of the farmer cooperative in Hongmin FC is a hybrid form of different institutional arrangements, including formal cooperative, joint-stock company, contract-farming and village committee. Different orders of worth and values are implied in these institutional arrangements and expressed through reflexive narratives of different actors involved (Nuijten, 1992; Thévenot, 2007): researchers and MOA's emphasis on members' participation, the provincial Poverty Alleviation Office's attention to technical efficiency, farmers' focus on the cooperative's economic function, leaders' appreciation of family relationships and influential elites in mobilizing farmers to join in, and village cadres' obligation to public services. The hybrid form of the cooperative at a certain moment accommodates different orders of worth and values to enrol different actors into its project (Long, 2001).

### **5.5.2. Exercising agency of leaders and members with different access to resources**

The above discussion illustrates that members of the FC have different interests while we recognize it as a collective actor who exercises agency at an organizational level. However, the agency of the cooperative as a collective actor does not come from an assumed shared objective, but from the enrolment of different actors, including external actors, leaders and farmers into each other's projects to form a network (Long, 2001; Long and Van der Ploeg, 1994b). So the bricolage at the organizational level is a compromise between different actors and the FC is actively given shape by their dynamic interactions and the power relations implied.

Firstly, pre-existing social, political and economic structures shape the participation and benefit sharing for different farmers, despite the fact that participa-

tion and investment in the FC are voluntary and open to all farmers (Clever, 2007). Our case shows that village elites actively engage in collective action, including project initiation, investment and management of the FC, despite the fact that this violates the cooperative principles, and that it results in elite-capture of the FC at a later stage. This can be explained along two dimensions. In one dimension, access to considerable financial resources determines their greater participation in the cooperative's activities and decision-making in the first place and it gives more room for actors to engage in bricolage at the individual level (Wong, 2010). The coexistence of three types of members in the Hazard-free Rice Association and the collective and individual farms in the Happy Pig Raising group indicate that elites who are generally in a better economic position can catch the opportunities opened up by the new institutions more easily than other farmers.

The other dimension is their multiple identities which help them to access to different social networks, and in turn provide a richer repertoire in institutional bricolage (Clever, 2002, 2007). For example, Zhen Baode's agronomist's title and his working experience as a public extension agent legitimate his position as the Association's chairman although he is also treasurer of the village committee. Yang Youxia who is from a larger family group successfully mobilizes farmers to join in the Happy Pig Raising more through family relationships than through his position in the cooperative and the village committee. But at the same time, the economic elites and innovative farmers without access to other types of networks are excluded or disadvantaged in these kinds of bricolage moments. Moreover, the different orders of worth implied in the multiple identities give wider support for their participation and dominance in the cooperative. For example, village cadres always refer to their role as a public service provider instead of economic reasons as their motivation to carry on with the business in difficult times. Dr. Li also mentioned the importance of the strategic use of "fame" to motivate economic elites to join in collective action when reflecting on her action in the field.

Secondly, ordinary farmers find their own way to participate or not in FC activities though their agency is relatively limited compared to elites. The most common counter action taken by farmers is to disconnect themselves from the network of the cooperative. Easy access to mass markets and non-farm income decrease farmers' dependence on the elites' network (Wong, 2010) and access to these alternative networks increases the difficulty for the cooperative to lock farmers into their project (Callon, 1999). More than 65 percent of the non-members interviewed mainly rely on off-farm income (accounting more than half of their total family income) while this is the case for only 40 percent of FC members. Other social factors, like farmers' perceptions on public affairs and village cadres, and family group relationships also influence farmers' decision to be-



come a FC member. The explanations of two interviewees for not participating in the cooperative are good examples:

*“I am running a very small business, trading dogs and rabbits... We never take part in activities of the cooperative, neither do the families around this area. You do not know the village cadres. They just do things with their mouth for fame and project money, and never get them done.” (In the village, the families of one clan always live in the same area.) [Zhou Jianshe, Hongmin, 28 July 2012]*

*“My husband started to do off-farm work more than ten years ago and earns more in the last two years... Our family is a credit cooperative member, but never joined in hazard-free rice production. It is easy to sell rice and wheat because there are traders coming to the village.” [Jin Sufen, Hongmin, 26 July 2012]*

In both cases it is clear that enough profit is the key motivation for farmers to participate in the cooperative and its projects. In case one, the benefit from the cooperative for the members does not have an obvious influence on their income:

*“Yes, the association paid us 0.1 yuan/kg higher after the harvest. But the market price increased later. So there was no difference at the end.” [Wang Danfeng, Hongmin, 27 March 2010]*

In case 2, small farmers choose to stay in the pig raising group even when they faced unfavourable institutional changes and difficulty to interest more consumers, because they see the potential to expand their business. On one hand, they formally negotiate for marketing rules for equal access to consumers as the collective pig farm to protect themselves by referring to the cooperative principles of the group. On the other hand, everyone have more pigs than required by the leader with the opportunistic idea of an increased market demand, doubting the leader's motivation to restrict their production.

Several important contributions to the literature on cooperatives and networks can be identified here. Firstly as an externally introduced institution, the farmer cooperative cannot fully draw on stocked social capital in the village to build the necessary network. This is consistent with Falk and Kilpatrick's (2000) observation that social capital which links actors together is produced in contextual interactions. Although we can conclude that always the same group of people initiate collective action as observed by Limnirankul (2007) for farmer cooperatives in Thailand, it is important to note that relations between these farmers and the ex-

tension of their networks to other farmers are negotiated and renegotiated in different projects. Also, it is important to note that for the different types of networks mobilized in the organizing process, the boundary between modern and traditional, formal and informal is blurred.

Moreover, the takeover of cooperative activities by village cadres does not mean they are in control of the dynamic power relations embedded in diversified networks (Fritzen, 2007; Nuijten, 2003). The cadres develop a high level of autonomy in decision-making by manipulating their social networks which means others are disadvantaged in or excluded from the cooperative (Wilshusen, 2009). At the same time, the access to alternative networks gives farmers the freedom to choose to participate, leave or stay in the FC. So the power of the cadres and the authority of their leadership position is limited by the scale and stability of the network they build through cooperative activities.

### **5.5.3. Bricolage in the farmers' cooperative, wider structures and social networks**

While from section 5.2 it has become clear that the FC is an organizing process resulting from leaders' and farmers' active and creative actions, the case also demonstrates that the FC's projects also depend on how the FC as an actor acquires access to and takes opportunities in a wider social-economic environment and power field, which is unavoidably constrained by the societal structure (Long, 2001).

In the critical events described in the cases, Dr. Li whose name is repeatedly mentioned by the farmers, is a pivotal actor and mediator (Olivier de Sardan, 2005) who bridges the FC to external networks. On the one hand, she assists the FC to break through the constraints of existing networks by providing alternative network access (Klerkx et al., 2010). In the rapidly developing supermarket sector in China, their direct source of food products from producers still accounts for a small proportion, and farmers are linked to supermarkets by various kinds of middlemen who occupy specific nodes along the market chains (Huang et al., 2007). Failures met by farmer cooperative of Hongmin in looking for buyers of hazard-free rice illustrates the difficulty to bypass the middlemen and build a new network by the farmers themselves. Through Dr. Li's interaction with academic circles, the general public and the media, a new network is formed around Hongmin's hazard-free rice project which helps the FC to access consumers and enter the supermarket. At the same time, Dr. Li also links Hongmin to government agencies at higher levels. The town government which is directly responsible for the public services to vast rural areas, is characterized by a lack of financial re-

sources and accountability, especially after agricultural tax was abolished in 2006 (Tao and Qin, 2007). Direct linkages to governments at county level, provincial level and even national level increase the chance to receive financial resources as the case showed.

On the other hand, Dr. Li also fills the “structural gap” between the rural and the external world, bridges between networks that were separated before (Granovetter, 2005). The Chinese rural-urban dualism that lasted for about 50 years does not only increase the economic gap between rural and urban residents, but it also hinders direct communication between them (Yang and Cai, 2003). At the same time, consumers who are concerned about food safety and the social aspects of food production are only just emerging in recent years are not yet well organized at the moment. Dr. Li therefore embodies a crucial information channel between farmers and consumers by mobilizing a consumer network around herself and linking it to the FC. More importantly, she also facilitates the communication process to reach agreements to create and sustain long-term direct relations between producers and consumers.

However, the FC is not passively involved in these networks building activities, but itself an active actor identifying Dr. Li as its “network plug” to wider networks, as described by Dr. Li:

*“Many people regard me as the driver of Hongmin cooperative development. Actually, I am driven by them (the farmers) in many situations... They presented the proposal of hazard-free rice project to guests invited to the cooperative training (in 2004) without informing me in advance... When they met problem in marketing the rice (in 2005), it is them who proposed to explore the market in Beijing and they even did not consult me on the practicability beforehand... I just help when they need me.”*  
[Dr. Li, L county, 08 April 2012]

The FC thus discovers and grasps the opportunities embedded in the structure through networking and enrolling other actors into their project. But its agency and the choices available in the critical events through bricolage are constrained by the structure of markets and government policies. Regarding the structure of the market, the FC is heavily influenced by the unfavourable regulations of the supermarket to small-scale farmers and the lack of firmly established interacting mechanisms with consumers. The Hongmin FC manages to adopt new technologies, enforce certification regulations and obtain access to a supermarket which are difficult for individual small farmers (Hu and Xia, 2007). But it still cannot make profit from the business for lack of both financial and human capitals to constantly attract new consumers and interact with supermarkets. This has resulted in the

conflict between the leaders of the Hazard-free Rice Association and Yan and Zhen's takeover of the business in Beijing. It also indirectly caused tension between the investors who left the association and the ones who are still in or joined later. This process is similar to the common "horizon problem" in the long term development of cooperatives (Borgen, 2004). As newcomers gain benefit based on the contribution and experience of old members who left, some investors who left earlier are indignant about – its development and the fact that they are excluded from the cooperative at that moment. The negative side of the bounded social capital generated in the FC and the distrust implied in the "hijacking" of the cooperative' hamper the potential cooperation in other fields both in the village and of the cooperative.

In the development of alternative food networks like the rice and pig contract farming with consumers, FC's relations with consumers is constantly negotiated and both the FC and the consumers have to learn about each other's interests and adjust their actions (Marsden et al., 2000). The FC can act upon the consumers' expectations in different ways: either by positively integrating demands into the cooperative's institutions, like renting land from non-members, linking the paddy fields to each other; or negatively by refusing their demands to defend the organization as a cooperative, like terminating the cooperation with Mei Xinhua and excluding Yu Qiangmin from the pig raising group. But the farmers' cooperative cannot ignore the influence of the consumers and has to engage in bricolage accordingly. Coincidentally, these institutional bricolage in FC development is consistent with the hijacking of the cooperative by village cadres, increasing the tension between cooperative leaders and villagers, both members and non-members.

Concerning the structure provided by government policies, these are too generic and the FC always has to engage in bricolage to integrate them into its specific institutional setting (Hebinck and van der Ploeg, 1997; Long, 2001). The clear operational instructions and requirements coming with government funding do not consider the economic inequalities and diversified livelihoods of rural households that lead to unintended outcomes. For example, the co-existence of the collective pig farm and individual small-farmers raising pigs was a result of the government's favour for large-scale farms, and it has reinforced the inequality and the tensions between leaders and members of the pig raising project. Sometimes the policies intending to promote equal participation and benefit sharing result in unfavourable situations because of interference of external developments in the social and economic domains. For instance, the 69 farmers who invested in the hazard-free rice project to match with the government funding did not get their investments back because of their losing of money in the marketing process. Such interaction does not only depart from the original objective, but it also leads to distrust between leaders and members as shown in the interview:

*“I invested 160 yuan for eight mu in the Hazard-free Rice Association. The money should have been paid back when the association dissolved. Also the money given by the government disappeared. This had a very bad influence on the village.” [Geng Youqun, Hongmin, 22 June 2012]*

Following the above argumentation and considering the institutional environment around FC development as a whole, the inconsistency and incompatibility of the expectations of different institutions at FC level partly account for the uncertain outcomes in the incremental bricolage process. A metaphor frequently used by Chinese - thousands of threads above, one needle below- vividly illustrates the difficulties faced by the FC. Originally the “thousands of threads” refer to policies with diversified objectives and orientations from different government agencies which are often not consistent with each other; the “needle” refers to the policy implementation unit at the local level who is driven into different directions by different sectors and department levels. As observed by Tong (2008) the neglecting of cooperative principles indicated in the cooperative law by provincial Poverty Alleviation Office clearly shows such inconsistency of policy. Moreover, other institutions, like the markets extensively discussed in this paper, also take the organizing process of the FC to different directions other than the FC was supposed to be. Because when FC excises its agency to bring together elements from different networks and structures, it has to do the work creatively with limited resources at hand, instead of following the pre-designed cooperative principles.

## 5.6 Conclusions

By focusing on the everyday practices of the FC in critical events, this article provides insights on the dynamic institutional bricolage process. It becomes clear that FC principles are blended with other institutional arrangements through the creative action of its leaders and members to catch the opportunities and respond to the challenges from the social and economic developments at the same time. The current institution of FC is the product of compromised orders of worth and values of different actors involved, not only the farmers, but also the government agencies, researchers, and consumers. Within the FC, elite capture does not necessarily mean elite control, because the leaders’ power and authority are limited by the scale and stability of the networks built through the cooperative’s projects, as shown in the cases. In the interaction with the external world the FC is able to access opportunities and resources embedded in structures by actively mobilising actors who can span the boundaries and plug it to external networks in close cooperation with one mediating actor (Dr. Li) who is crucial link to external networks.

However, network building cannot fully tackle the constraints imposed by the structures.

It is important to note that FC is an organizing process constructed in an incremental way through a series of critical events and the ad hoc combination of chances, networks and materials we call bricolage. Though relying on existing social capital and networks, the relations between leaders and members, the FC and the external actors negotiate and renegotiate how to carry out specific projects which creates dynamic conditions that cannot be forced or planned. So the bricolage at FC level needs time to merge the different elements brought in through the negotiations. Moving forward too fast and being subject to strong external influences leave limited room for the FC to fully absorb these elements, which may have unexpected and undesirable effects on the development process of the farmer cooperative.



# Chapter 6

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## Discussion and Conclusion





## **6.1 Introduction**

The farmer cooperative sector in China has experienced rapid development in the past two decades, especially after the implementation of the Farmer Cooperative Law in 2007. Farmer cooperatives (FCs) are considered important to mediate between farmers and the actors in the wider social and economic environment and provide relevant services to improve farmers' performance in production and marketing and enhance rural development (Rondot and Collion, 2001). This thesis is an empirical study that investigates how farmer cooperatives operate in actual practice to coordinate farmers and mediate with external actors, and how they provide services to enhance agricultural and rural development.

This thesis adopts an actor-oriented approach to investigate the dynamics in the intermediation processes. It contributes to the understanding of FCs by looking them as an organizing process shaped by the creative actions of farmers and other actors, instead of an organizational form with predetermined functions and organizational structures. On the one hand, it illustrates the FCs' agency implied in their everyday practices and interactions with various external actors to grasp opportunities from government policies, new technologies and emerging markets. On the other hand, it demonstrates how their actions are constrained by the wider structure of the agricultural innovation system, food system and government structures.

Two methodological approaches were used to provide the overview of FC development in China and carry out in-depth investigations. Chapter 2 used two sets of data covering a large number of FCs from different regions of the country to provide an overview of farmer cooperative development in terms of the types of service provided and the categories distinguished by the law and formal regulations. Chapters 3, 4 and 5 employ a case-study approach to empirically investigate different aspects of the dynamic intermediation and organizing processes in which FCs engage to help farmers optimize their practices in agricultural production and marketing. Four cases were selected as examples of the diversity of FCs identified in chapter 2. Section 6.2 provides an overview of the main findings from the empirical chapters. Section 6.3 discusses the cross-cutting issues emerging from the findings from the different chapters. Section 6.4 briefly explores the implications of the findings for government policies. Section 6.5 concludes the thesis with suggestions for further research on this topic.

## 6.2 Main findings of the chapters

Chapter 2 examined the services provided by FCs from three aspects: agricultural innovation promotion, food value chain participation and collective resource management. Based on the intermediation functions provided to, and support received from, rural communities, four types of FCs were distinguished. The first type is the specialized technology provider mainly involved in providing technical services to improve farming practice. The second type is the credit service cooperative that has just emerged recently to open up the rural financial market under new government policies. The third type is the commodity-based FC, which focuses on improving the productivity and quality of specific products to increase the income of member farmers who are involved in the production of these specific products. The fourth type is the community-based FC, which tries to promote agricultural and rural development in the community as a whole (sometimes also among non-FC members).

By tracing the FC development policies from the early 1990s, we demonstrate that organizations from the public, private and civil sectors are actively involved in FC promotion, with different focuses. MOA is the main administrative department in charge of guiding and supporting FC development. One of its important functions is to coordinate other departments, such as the Ministry of Finance and the Ministry of Commerce, to make supportive policies such as tax reduction and marketing channel formation. *China Association for Science and Technology* (CAST) aims to promote FCs that concentrate on agricultural technology improvement. The *Supply and Marketing Cooperative System* (SMCS) and the *dragon head firms* play an important role in facilitating FCs to take part in marketing activities. At the same time, other national and international organizations are also involved in FC promotion. Our findings show that the diverse actors from the different sectors involved in FC promotion relate differently to the various categories of farmer cooperatives. Government agencies engage mainly in the promotion of specialized technology providers and commodity-based FCs, whereas private companies are more active in commodity-based FC development. Research institutes and NGOs appear to be less engaged in commodity-based FC development but are more active in the promotion of other types of FCs. This difference might result from the actors' different perceptions of FCs' roles and functions in agricultural and rural development and their own interests.

Chapter 3 focuses on FCs' functions in agricultural innovation systems, i.e. their role as innovation intermediaries. We find that the FCs studied fulfil both classical knowledge intermediation and broader innovation intermediation functions. They mainly aim to improve quality as a way to raise product price, thereby

increasing members' income. Concerning knowledge intermediation, they are active in generating contextual and integrated knowledge for agricultural production through the participation of farmer experts and forging connections with external knowledge providers. Regarding innovation intermediation, FCs try to make the technical, economic and social dimensions of farming practice more compatible by building linkages with external actors from different domains and creating more favourable conditions for members to adopt new technologies. However, FCs do not appear to become a systemic intermediary that coordinates "many-to-many-to-many" relations and builds horizontal networks between all the relevant actors, but, rather, focus on bilateral relations with different actors.

As innovation intermediary, the selected FCs gain influence from their liaison position between, and accountability to, different actors. Our findings show that FCs' current positioning in innovation systems affects their functioning as innovation intermediary in two ways. On the one hand, they cannot act as neutral actors in the system because of their representative position as a membership organization for farmers. Tensions are likely to arise when FC and other actors' interests start to diverge and the stakes represented by FCs become more dominant. Internally, it also becomes a problem when leaders' interests conflict with those of members. On the other hand, because of their local orientation and small scale, they do not have enough clout to develop durable relationships with knowledge providers and commercial partners.

Chapter 4 shifts the focus to the FCs' intermediation roles in quality food marketing and tries to understand the difficulties experienced in sustaining partnerships with actors in the market. The findings from our cases indicate that FCs focus on both quality improvement at farm level and quality coordination at food supply chain level. FCs make a contribution to these two aspects by establishing various linkages with other chain actors and integrating new values – e.g. food safety, fair trade – into the food supply chains to construct the justification of quality in the interactions. The cases show that the room for FCs to engage in quality construction depends on their political-economic position within the chains. At the same time, intermediating with more types of actors helps the FCs to participate in or initiate a new type of food supply chain and gain a better political-economic position, thereby having more power in negotiations about benefit sharing along the chain. However, the outcomes of FCs' role in chain participation do not necessarily relate positively with the intermediation roles that they fulfil because the production scale and number of farmers involved are also important, along with the ability of FCs and their members to generate profit from their marketing activities. Furthermore, the absence of other chain actors – e.g. retailers and consumers – in quality construction makes it more difficult to reach consensus

between chain actors and align a large number of consumers. The FCs' own lack of capacities and resources further leads to ineffectiveness in quality coordination.

The dynamics of the FCs' intermediation processes in agricultural production and marketing reveal that their functioning as intermediary relates to their capacities to pool resources and consolidate their membership. Chapter 5 demonstrates that each FC's agency and capacities as a collective actor depends on the enrolment of the different actors in its projects, including FC leaders, members and external actors. So the FC adjusts its institutional arrangements all the time to attract and involve different actors into its projects because they all have their own interests and emphasize different values, such as efficiency, equity or profitability. Within the FC, leaders and members' participation in FC activities and management differs and depends largely on the rural communities' pre-existing social, economic and political structures. The leaders' active role results from the fact that they have better access to financial resources and social networks. Mediating with external actors –researchers, government organizations at different levels, supermarkets and (urban) consumers – the FC is forced to constantly adjust its institutional arrangements, such as the rules relating to shareholding and dividend distribution, because they bring in different interests and orders of worth, like the scaling-up valued by the industrial order, or the competitive price mechanism valued by the market order. At the same time, the outcomes of intermediation, such as the success or failure of new technologies or marketing efforts, reshapes the structure of the farmer cooperative because they have different impacts on the livelihoods of both leaders and members depending on their different initial resource endowments.

### **6.3 Cross-cutting issues from the chapters**

The empirical chapters focus on different functions and aspects of the intermediation practices performed by various types of FCs. This section synthesizes the findings from the four in-depth cases and the findings in chapter 2, and discusses some cross-cutting observations and issues that arise from the comparison of cases and the linking of different aspects studied.

#### **6.3.1. Diverse functions and importance of community-based FCs**

It has been demonstrated that most of the FCs belong to the commodity-based FC type because this FC type is promoted by government. Although both commodity-based and community-based FCs supply multiple services, community-based FCs engage more in collective resource management, which is neglected

in current FCs policies. Table 6.1 summarizes the different services provided by the FC cases discussed in chapters 3 to 5 based on the four types of key items identified in chapter 2. It is shown that the technical and marketing services promoted by government policies are provided in all the cases. Beside these two functions, two FCs are engaged in collective resource management, and one of them provides credit services within the cooperative. This phenomenon fits experiences from FC development in other Asian countries and regions, including Japan, South Korea and Taiwan. First, collective resource management is crucial for small-scale farming systems in the Asian region, especially for China whose average farming size was only 0.58 ha in 2007 (Deng et al., 2010). In Japan and Taiwan, FCs are actively engaged in infrastructure development and management that cannot be afforded or managed by individuals – e.g. irrigation system, warehousing, transportation, improvement of production conditions for small farmers (Hong, 2004; Rajaratne, 2007). The involvement of the two case FCs in irrigation system management helps to remove relevant constraints experienced by farmers in agricultural production, because irrigation systems in most rural areas have deteriorated through lack of appropriate collective management since the rural reform in 1980s and constrain the stability of agricultural production (He, 2012; Yang, 2007). At the same time, the FCs also take responsibility for other public services, such as lighting and roads, to improve the wellbeing of rural communities after the withdrawal of government from public affairs in rural areas.

Second, the multiple services are interdependent and can enhance one another's functioning. On the one hand, the expenditures on collective resource management in the two cases are funded by revenue from the FCs' marketing activities rather than by raising funds from the members. This is consistent with the findings from those Asian countries and regions whose FC systems provide public services, like farmer education and community activities, with revenue from marketing and financial services (Hong, 2004; Klinedinst and Sato, 1994; Lin, 2006). On the other hand, in line with the experiences in those countries and regions (Choi, 2006; Rajaratne, 2007), FCs' engagement in collective resource management and public services helps to improve farmers and FCs' performance in production and marketing. To take Taoyuan as an example, unified land management under the FC is the precondition for organic production and certification in a situation where land is divided into small plots.

**Table 6.1** Summary of diverse functions of the farmer cooperatives studied

	Funong (chapter 3)	Tianli (chapters 3 and 4)	Hongmin (chapters 3, 4 and 5)	Taoyuan (chapter 4)
	Example of technical service provider	Example of commodity-based FC	Example of community-based FC	Both commodity- and community-based FC
Technical services	Developed a series of organic greenhouse vegetable technologies in interactions with research institutions (bacteria fertilizer) and local experiment (herb-based pesticide), and provides a whole range of inputs and technical support to members.	Invited experts from local extension system to give technical training on hazard-free technology; developed “bagging technology” for greenhouse vegetable production and provides bags to participants.	Invited experts from extension system to give technical training on hazard-free rice production and provided relevant input and technical support by farmer agronomists in the FC. Adopted traditional method in ecological pig raising by developing consensus among members.	Received whole range of support from the contracted export company on organic production technologies, including training, input supply and daily support. The FC is well skilled in organic production in long-term cooperation with the company.
Market access	Did not engage in marketing at the beginning; later started to coordinate members’ transactions with export company; then tried to build close relations with another export company, but not well established yet.	Targeted supermarkets as market for quality food from the beginning and entered into two local supermarkets with the “bagged vegetables”, but the cooperative did not last long.	Regarded the hazard-free certification system as an opportunity in rice market and entered a supermarket chain in Beijing, but the cooperation did not go smoothly. Tried “contracting with consumers” in both hazard-free rice and ecological pig (happy pig). The pig project is continuing on a small scale.	Started organic vegetable production promoted by the export company and kept the contract relations for 17 years; the scale of production increased as the company expanded. The FC explored alternative markets because of increasing tension over price paid by the company.
Collective resource management	Not engaged in collective resource management.	Not engaged in collective resource management.	Took care of the public lighting and hired two people to clean the main streets in the village with revenue from rice marketing. Involved in irrigation system management at times.	Took care of the road, irrigation system and other public services in the village with revenue from vegetable marketing.

Credit service	Not engaged in credit service.	Not engaged in credit service.	Organized credit cooperation under the cooperative to provide micro-finance to members.	Not engaged in credit service.
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Source: this research

It is worth noting here that the two cases that provide collective resource management – one of which also provides credit services – are both classified as community-based FCs. The findings from this study show that community-based FCs have the advantage of providing public services because of their community-orientation and the geographic nature of agricultural infrastructure development, such as the irrigation and transportation systems. However, the importance of community-based FCs is not fully recognized by the current government policies, which focus on commodity-based FCs (see also 6.3.5). The experiences of other Asian countries and regions show that a combination of community- and commodity-based approaches can be an option to harness the advantages of the two. For example, the FC system in South Korea includes both commodity cooperatives and regional agricultural cooperatives. Commodity cooperatives organize farmers specializing in one product and provide corresponding technical, processing and marketing services. Regional cooperatives organize farmers on a geographic basis and provide all kinds of support services, such as credit, input supply and farmer education (Choi, 2006; Hong, 2004).

### 6.3.2. Grassroots initiatives in FC development

Existing studies on FCs in China have demonstrated that FC development from the 1990s is dominated by government policy (Deng et al., 2010; Zhang et al., 2007). This thesis also shows the dominance of government in terms of the wide coverage of technical and marketing services in FCs. However, on closer investigation, several kinds of grassroots initiatives in FC development can be found and have great potential to advance FCs' performance of different functions.

First, some services provided by FCs emerge from the needs arising in farmers' daily practice that are not covered by government policies at the time. A relevant example is the development and formalization of credit services provided by cooperatives. As discussed in chapters 2 and 5, the credit cooperative was formally recognized by the government in 2007 although it had been in operation since the early 2000s in different places, e.g. the Credit Cooperatives in Lishu County, Jilin Province, and the credit cooperation within Hongmin Cooperative.

Second, the measures taken by the FCs to provide services to members are more diverse in terms of the source of knowledge and the linkages built with dif-



ferent actors than government policy would suggest. Mainstream policies to promote agricultural production and marketing follow the ideas of introducing newly developed technologies and linking farmers to supermarkets and large companies which represent the emerging agri-food market<sup>1</sup>. The cases show that, although FCs value the externally introduced technologies and the marketing relations with supermarkets and large companies, some of them find alternative ways to deal with similar situations and problems, such as the increased dependence of farmers on input and output markets, the more stringent food safety standards demanded by consumers and the changing agri-food system structure. For example, Funong developed the herb-based pesticide for organic production; Tianli developed the “bagging technology” for greenhouse vegetable production; and Hongmin initiated the “contract farming with consumers” marketing model and the “happy pig” idea.

Our findings also indicate that, besides government agencies, different actors from the private sector and civil society play active roles in the initiation of new functions and approaches to provide services. Experts from commercial banks and researchers have played crucial roles in providing relevant knowledge and practical support to start credit cooperation in the Lishu County and Hongmin cases. Researchers, social activists and other social organizations help the FCs to develop new ideas in production and marketing, such as “contracting with consumers”, and establish new relations to realize these ideas. At the same time, private companies are also actively involved in FC establishment and in introducing new technology and marketing opportunities. This phenomenon fits the point made by Long (2001) that the implementation of government policies is a dynamic process and negotiated in the interactions between all kinds of actors involved.

### **6.3.3. Dynamics in FCs’ organizational structure building and the influence of leadership**

The findings in chapter 5 fit the argument made by Chaddad (2012) that FCs’ organizational structure is a hybrid of different institutions, such as market and hierarchy forms. However, this study shows that FC organizational structure building in China is facing a more complex situation entailing a lot of challenges for FCs to balance the different institutions within the organization and comply with commonly agreed cooperative principles.

In the Hongmin and Taoyuan cases, village committees have engaged in the development of the cooperative from the beginning, and village leaders are leaders also in the FCs’ daily operation. This situation has to do with the institutional ar-

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<sup>1</sup> For example, on the official website of China farmers’ cooperatives (<http://www.cfc.agri.gov.cn>), there is a special column linking FCs with supermarkets (*nong chao dui jie*, 农超对接).

rangement at village level after rural reform whereby the village committee is responsible for the development of the collective economy and for providing public services, and it has the right to resource allocation and management within the community. However, within this system, the village leaders are not always motivated to take their responsibility because of constraints in room for manoeuvre and limited incentives from the system (Pieke, 2004). At the same time, many village committees face difficulties in providing basic public services because of a lack of resources, especially since agricultural tax was abolished from 2005 onwards (Tao and Qin, 2007). The FC provides a new organizational form that is recognized by government agencies and the market, and opens up new opportunities for income generation for village leaders themselves and revenue generation for public services. So the FCs involving village leaders tend to have a community orientation and provide public services with the profits from FC activities (Zhao and Develtere, 2010); and they usually fall into the community-based FC category. The risk in this type of FC lies in the dominance of hierarchical rules because the village committee usually receives financial resources from local government for daily operation and partly fulfils the local government's public administration functions. They can easily lose their legitimacy as intermediary in their members' eyes if they cannot effectively represent farmers when the interests of local government conflict with those of the farmers (Klerkx and Leeuwis, 2009b).

In the Tianli and Funong cases, the FCs were initiated by rural elites with more experience in agricultural technology development and product marketing. The motivation for the elites to initiate a FC lies mainly in lower barriers to enter the market as a legal entity, such as the relatively loose check on the amount and source of registered capital reported, the low minimum number of members (five) and preferential policies provided by the government to stimulate FC development, such as tax reduction, provision of start-up funds and other incentives. The first one is important for some rural elites who have relatively better access to various resources than ordinary farmers, but are still in a weak position when compared to other players in the market. The FC model is an easier choice for them to start what is essentially a business venture in disguise. The Tianli and Funong cases are examples of this. Their access to external networks and richer experience make it easier for the FCs to start their business. However the differentiation between elites and ordinary farmers leads to their divergent attitudes about FC development and risk in marketing activities. This further results in the leaders' dominance in shareholding and decision making about cooperative management and daily operation (Pan, 2011). At the same time, the elites' income comes mainly from other relevant services, such as input supply and agri-products marketing, rather than from farming. In the long run, this kind of FC runs the risk of the leaders using the FC as a vehicle to reach personal objectives because of the lack of participation by

the ordinary members and because the relation between leaders and members is dominated by market rules and organized as contract farming (Xiong, 2009).

#### **6.3.4. FC development faces new challenges in current social, economic, technical and political context**

Chapter 2 shows that FCs in China emerged in 1980s after rural reform and their development was accelerated from the late 1990s. In the last three decades, agriculture development in China and at international level has experienced radical changes in various aspects. As a new sector, FCs in China are facing challenges that are different from those experienced by FCs in other countries and regions who had successful experiences in their initial stage.

First, FCs in China have to compete or collaborate with powerful players from the beginning, such as the large input suppliers or buyers, whereas the FCs in Europe and North America gradually grew with the development of other players in the market and even became powerful players themselves. The FCs in these countries experienced a period of mergers to enlarge their operational scale and strengthen their capacities to deal with the increase in competitiveness in the agri-products market (Mauget and Declerck, 1996). In their evolution with the market and competition with private companies, FCs showed their advantages with better performance and became major players in, for example, the dairy sector in the Netherlands (Frenken and van der Steege, 2006). In contrast, the FCs discussed in this thesis have to deal right from the start with supermarkets and export companies and are always at a disadvantage in expressing their interests since these large players lead the concentration of the food supply chain and excise their power to control other chain actors. Furthermore, the FCs in those other countries experienced the change from spot market to well-coordinated food supply chain over a period of more than 60 years (USDA, 2002). In contrast, the farmers and FCs in China have confronted the radical changes from planned economy to market economy, from locally organized spot market to a nationalized food supply system over a period of about 30 years. The FCs have not been well prepared as locally organized organizations.

Second, the Chinese government avoids taking a totally top-down approach in FC promotion in this new wave of the FC movement although it has played a dominant role in this process. However, Asian countries with successful experiences in FC development all adopted a top-down approach at the initial stage to develop a national FC system with local organizations at community level and a federation at national level. The systems reformed themselves to adjust to the opening up of the market as the countries' economy developed. The federation

system channelled the resources from government to rural communities to stimulate agricultural and rural development (Hong, 2004; Lin, 2006; Nonaka, 2006). The current situation in China results partly from the unfavourable memory about the Chinese cooperative movement<sup>1</sup> in 1950s which led to a serious decrease in productivity. The federal FC system also has the potential to conflict with the existing administration system. As discussed in chapter 2, government departments in agriculture, technology development and market management are all involved in FC-relevant policymaking and implementation and have their own interests. It is difficult to coordinate their interests and have compatible policies (Tong, 2008). At village level, it might also cause tensions between the FCs and the village committees if the FCs were not initiated by the village leaders because of their new roles in public services.

### **6.3.5. The FCs' limited clout and recognition to play intermediary roles**

This study demonstrates that FCs provide their services to members by mediating with many kinds of actors and building networks as summarized in table 6.2. Their intermediation activities have had certain successes in forging linkages with external actors from different domains to generate and provide technical and marketing knowledge and connect farmers to different types of food supply chains. However, the final outcomes in terms of gaining higher income from marketing and assisting broad-based rural development are mixed and not positive in many situations because of their limited clout and limited recognition from other actors about their intermediary roles.

Mainstream understanding of agriculture and FC development in China is still dominated by the idea of modernization, like the focus on advanced technologies and integration of farmers into modern supply chains. This linear model is considered as simplistic and as neglecting the dynamics of agricultural production and rural communities (Long and van der Ploeg, 1994a). Because of the increasing dependence of farming on external inputs and the market and external effects of this dependence, the solutions to newly emerging problems, such as food safety and environment sustainability, depend on collective action of actors from different domains and need innovations covering technical, social and organizational

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<sup>1</sup> This cooperative movement is the top-down, Chinese government-led effort to change the private ownership-based individual farming system into a collective ownership-based collective farming system when the People's Republic of China was established in 1949–1950s. Initially, the movement was voluntary and followed commonly agreed rules. Later, it went in the direction of collective farming and a planned economy, and participation became compulsory in a total departure from the commonly agreed voluntary cooperative principles.

dimensions (Leeuwis and van den Ban, 2004). It is argued that intermediary roles are important to promote sustainable innovation by fostering horizontal and vertical networks and linking all relevant actors together in interactive dialogue at system level (Howells, 2006; Smits and Kuhlmann, 2004). Our study shows that FCs maintain only bilateral relations with actors from different domains and manage to link to directly relevant actors, but fail to extend their connections with actors at a further remove, such as consumers in the food supply chain. This results partly from the lack of recognition by key actors, such as government agencies and market actors, and partly from the FCs' limited capacities.

This study's findings show that government at different levels does not fully recognize the FCs' diverse functions and their local initiatives to promote agricultural and rural development. Hence, FCs do not have enough room to manoeuvre for their own interests and to make good use of resources provided by government. In the European context, Wiskerke et al. (2003) and van der Ploeg (2010b) have demonstrated that FCs can creatively combine farmers' daily practice and government regulations to maintain productivity and sustainability concurrently if they are given enough room to express their demands and negotiate with government. In the present research, the FCs' functions, such as collective resource management, have not been integrated into existing FC policies, and the boundary of service provision via village committees is not clearly identified. In their local initiatives, the FCs actively engage in promoting products that help to improve food safety, but they do not receive sufficient technical support from public extension agencies to meet their demands for technology improvement. Supports from public agencies, such as research institutes or extension services, are based on personal relations rather than on an institutionalized system that responds to local demands (table 6.2, item 2). In the Hongmin case, local government's exclusive policy, focusing on production scale, goes against the initial idea of benefitting small farmers and strengthens inequity within the community rather than promoting equity through broad member participation.

At the same time, most actors from the private sector and consumers are not active in building long-term relationships with FCs and working towards the solutions to problems in agriculture. As shown in table 6.2 (item 3), the FCs themselves took the initiative to build the relationship with supermarkets or companies to market their products as being of higher quality in the first three cases. Those buyers do not participate and invest in quality improvement at farm level and quality coordination at supply chain level to integrate new values in food. Only in the Taoyuan case did the export company play the main role in helping the FC to improve food safety in production, but it restricts the FC's participation in chain

coordination. As regards consumers, they have no role in the upgrading of the food supply chain in our cases, although their concerns about food safety have increased dramatically in recent years (Ortega et al., 2011; Xu and Wu, 2010).

Most FCs in China, like those investigated in this study, have limited access to resources because of their local orientation and small scale. Unlike the powerful players described by Beverland (2007) and Ponte and Gibbon (2005), they are not strong enough to drive the formation and development of the innovation network and the food supply chain. Three decades after rural reform, agricultural and rural areas are characterized by human and financial capital outflow to urban areas and non-agricultural sectors (Huang et al., 2006; Zhu and Luo, 2010). On the one hand, this results in FCs finding it difficult to pool members’ resources to invest in collectively owned fixed assets and production- and marketing-relevant services. On the other hand, the FCs have difficulty recruiting members with a capacity for organization management and interaction with external actors. It has been shown that human capacity can substitute financial capital to some extent in the development of short food supply chains to mobilize consumers with new values (Brunori and Marescotti, 2007). It was the lack of relevant capacities that decreased the effectiveness of the “happy pig” project in the Hongmin case.

**Table 6.2** Summary of case FCs’ relations with different external actors

	Funong (chapter 3)	Tianli (chapters 3 and 4)	Hongmin (chapters 3, 4 and 5)	Taoyuan (chapter 4)
1. Support and recognition from government	Recognized as an outstanding FC by the county government.	Recognized as an outstanding FC by the county government. Received financial support from local government for the hazard-free certification application.	Recognized as an outstanding FC by the county government and received financial support from the local government. Received funds from MOA for hazard-free rice production project.	Recognized as an outstanding FC by county and regional government. Received financial support from local government for FC development.
2. Relations with knowledge providers	Established relations with academic institutions through long-term personal interaction of FC leaders.	FC leader mobilized personal relations to gain local public extension agency support.	Gained access to local and other regions’ public extension agencies through support of researcher and its active attitude.	Received technical support and input services from the export company.

3. Relations with market actors and consumers	<p>Linked with buyers after advantage of products recognized in market.</p> <p>Recognized by an export company to coordinate the organic vegetable production of farmers, with the cooperation under trial.</p>	<p>Two local supermarket chains valued the FC's "bagged vegetable" for improving the quality, but did not regard "civic value" as core of product quality and did not invest in promotion of the value or relevant products. The cooperation lasted for five months.</p>	<p>Supermarket accepted hazard-free rice to improve its image in food quality and social responsibility, but still subordinated "civic value" and "domestic value" to "market and industry value". The cooperation lasted more than one year.</p> <p>Attracted some individual consumers with the idea of food safety, but did not align them well because of ineffective communication.</p>	<p>Kept stable relation with the export company for about 17 years. The company highly value the "civic value" (food safety) in food and the "domestic value" (long-term relation) to produce the quality. However, tension over the farm-gate price has risen because same price paid although the market price was going up.</p> <p>The FC started to search for alternative markets but had difficulty selling the products as organic.</p>
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4. External support from other sources	<p>Received financial support from a national FC support project coordinated by research institutes and funded by an international development organization.</p>	-	<p>Received financial support from the same national FC support project as Funong.</p> <p>Constantly got support from Dr. Li and volunteers in processes to organize activities.</p>	-
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5. Capacity building	<p>Participated in several training sessions organized by local government for FC leaders and private entrepreneurs.</p> <p>Joined in several workshops organized by the FC support project.</p>	<p>Participated in several training sessions organized by local government for FC leaders and private entrepreneurs.</p> <p>Joined in several workshops organized by the FC support project.</p>	<p>Organized several training sessions and workshops on cooperative management and credit cooperation with Dr. Li's support. The FC developed management rules based on these activities.</p>	<p>The FC developed a system of financial and technical management structure with the company, and kept clear records on FC activities and finance in its intensive interactions with the export company.</p>
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Source: this research

### **6.3.6. Broader academic contribution**

This thesis has adopted the actor-oriented approach in the research process. Instead of focusing on the formal rules and normative understanding of farmer cooperative principles, we “concentrate on delineating actors’ everyday organising and symbolising practices and the interlocking of their “projects” (Long, 2001,p56). Their “projects” refers to the social strategies developed by social actors, both individually and collectively, to cope with problematic situations they meet.

Adopting this approach has helped to elucidate FC development in its specific context. A first important insight is that in everyday practice the farmer cooperative is an emergent form in terms of its organizational structure and functions served in the sphere of technical support and marketing. It is not always organized around a shared vision among members as assumed by some researchers (Bijman and Ton, 2008), but emerges from the interaction, practical strategies and constructed discourse of several kinds of actors with different interests. Second, the emergent FC form is shaped not only by the internal actors, also by the external actors directly or indirectly involved in the FC’s establishment and daily operation. The thesis has demonstrated that the actions taken and decisions made by a FC are its strategies to respond to the opportunities and challenges from the environment and interventions from outside. The thesis also shows that the outcomes of the intervention do not always comply with the original objective, and that interventions are translated and appropriated by active agents to suit their purposes. Given the functioning of FCs in service provision, FCs have to gain support from external actors for knowledge and from alliances with other actors in the food supply chain to realize effective coordination. Hence, a FC needs to be seen as a dynamic process in practice that evolves with the changing environment, and should not be confused with the formal structures and blueprints defined by cooperative principles or policy recipes. This means that we should be careful in translating to the Chinese context experiences where FC membership brought broad-based development in other countries (USDA, 2002).

The actor-oriented approach also enriches our understanding of innovation intermediaries by focusing on intermediation processes as well as outcomes. Our study shows that the demand for intermediation in innovation process emerges from the daily practice of knowledge users as well as coming from higher levels (Smits and Kuhlmann, 2004; van Lente et al., 2003). Local organizations, like the FCs in this study, have taken the initiative to play intermediary roles in supporting innovation and tried to create synergies between technical, market and policy dimensions of innovation. However, the FCs were not able to fully fulfil the intermediary roles discussed by Klerkx et al. (2009), especially at the systemic level.



This can be understood from three aspects. First, different from developed countries where technical services are moving in a demand-driven direction (Klerkx et al., 2006; Rivera, 2011), the public extension system in China is still dominated by a top-down approach and cannot appropriately respond to demand at local level. Second, actors from the private and civil sectors do not actively respond and participate in the FCs' innovation initiatives. In developed countries, we see that participation by these actors has resulted from the pressure provided by a long-term social movement in support of a sustainable food system and the actions taken by these actors to put their ideas into practice (Barham, 2002; Klerkx et al., 2010). This does not seem to be happening in China yet. Third, the FCs' local orientation and representative position have constrained their functioning as intermediaries at higher levels because of their limited clout (see chapter 3). Hence, we can conclude that the functioning of intermediaries depends on the recognition of intermediary roles and innovation objectives by both the organization itself and other actors, and on the actual capacities of intermediaries to take action.

## **6.4 Policy implications of the findings from this research**

The findings from this study indicate that FCs in China have the potential to contribute to agricultural and rural development in different ways; but the lack of recognition by other actors and their weak capacities constrain their functioning as intermediaries to connect farmers in the rural communities to the wider environment. Existing experiences show that external support, especially government support, is crucial for FCs to access resources and build their capacities (Rondot and Collion, 2001). This section briefly discusses the policy implications of this study's findings.

### **6.4.1. Recognize FCs' multiple functions and the importance of community-based cooperatives**

The multi-functionality of agriculture has been recognized at international level and integrated into agricultural and rural policies in the EU (Bjørkhaug and Richards, 2008). This is more urgent for China because of the dramatic degradation of nature resources, such as water, fertile land and biodiversity, and the serious environmental problems caused by overuse of chemical fertilizers and pesticides (Li, 2012; Qiu et al., 2008; Sanders, 2006). It has been shown that effective and integrated policies could reverse this trend and promote sustainable development in China (Li, 2012; Sanders, 2006). This study shows FCs' potential to provide multiple services to balance the productivity and profitability of agricultural

production and sustainability through diverse services. Meanwhile, they can play the intermediary role to represent farmers' interests and introduce policies and new knowledge into rural communities. The wide coverage of technical and marketing services partly reflects government's strong influence on the functions performed by FCs. It is reasonable to expect that recognition of FCs' diverse functions by government could motivate more FCs to engage in relevant activities and improve their performance for better access to relevant resources.

Among the different types of FCs, policies need to pay more attention to the community-based cooperative which can better fill the vacuum of collective resource and public affair management left by the withdrawal of government and the phenomenon of most village committees becoming dysfunctional (Kung et al., 2009). Agricultural development after the 1980s' rural reform is mainly achieved by small-scale farmers, and the access of these farmers to public services is crucial for agricultural and rural development in the future (Huang et al., 2012). The successful experience of other Asian countries shows the advantage of territorially based FCs in providing access to a large number of small-scale farmers because of the geographic and cultural connections (Choi, 2006; Lin, 2006; Rajaratne, 2007). Also, territorially based FCs can include all the farmers in the system to avoid the exclusion of some farmers from the specialized FCs and provide a foundation to promote broad-based development. A combination of commodity- and community-based FC systems as in South Korea and Japan could be an option to address efficiency and equity concurrently.

#### **6.4.2. The importance of facilitating FCs' capacity building in practice**

In the past two decades, strong government intervention has accelerated the establishment of FCs all over the county (Deng et al., 2010; MOA, 2011). As shown in table 6.2 (items 1 and 5), the major support that FCs receive from government is funding for agricultural or FC development projects. Financial support helps FCs access the financial resources that could not be effectively mobilized internally. However, the current funding mechanism follows the principle of "award as subsidy" (*yi jiang dai bu*, 以奖代补), which means that the subsidy goes to the well-functioning FCs recognized by government as outstanding. This might disadvantage the FCs with limited access to resources and in the initial stage of development. Furthermore, it leads to the existence of a large number of non-functioning FCs because most of these FCs were established only to attract government funding (Pan, 2011).

However, financial support alone cannot effectively remove the constraint of another scarce resource – human capital. Besides the general measures provided by government, FCs need contextual and specialized support to better solve the problems they experience in the service provision process. Hence, for FCs both at the initial stage and better functioning ones, it is important to facilitate their capacity building rather than leave them to compete for government resources. In addition to the general training given by government (table 6.2, item 5), FCs have to accumulate experience in practice with contextual facilitation and guidance. Some actors from the private sector, such as export companies, can take the role of facilitating FCs' daily operation (Henson et al., 2005). The public extension system also may be wise to redirect its services to give specific and contextual support to FCs in relation to multiple issues besides technology development, such as market participation and natural resource management.

What is also implied in capacity building is that more attention needs to be devoted to facilitating organizational structure building and development instead the services actually provided. The FC is a new phenomenon in China, and this implies new organizational values and rules. The deviation of FCs' organizational structure from usual cooperative models results partly from their lack of knowledge and operational experience of cooperative rules, as shown in the cases. Farmers in the Hongmin case have a better understanding than others of FCs and a broader participation in the training they received from researchers and research institutes about the management of FC. Without the appropriate mechanism of cost and benefit sharing under broad farmer participation, the FCs would lose their relevance in relation to promoting equity in rural development. Only when farmers fully understand the cooperative principles and at the same time the FCs can provide effective services to farmers can farmers activity participate in FC management and benefit from the FC development movement.

### **6.4.3. Potential state–society partnership in FC development**

Besides the government agencies at different administration levels, different actors – private companies, researchers and research institutes, international organizations, local NGOs and even consumers – have taken part in promoting this wave of the FC movement. It has been demonstrated that a pluralistic extension system, consisting of actors from the public, private and civil sectors, is needed to support small-scale farmers in an environment with high unpredictability (Christoplos, 2010); and FCs are an important part of this pluralistic system and need support from other actors (Hellin, 2012; Krisjanson et al., 2009). The role of private companies in connecting farmers to the outside world is recognized by government through the “dragon head firms” project and linked to FC develop-

ment by the “contracting farming with farmers through farmer cooperatives” model. Further recognition is needed for these actors to make further contributions in this process. On the one hand, government could integrate their activities and experiences into existing public policies and support measures. The research institutes and NGOs are more active in promoting community-based FCs and credit cooperatives; and they also accumulate rich experience in FC capacity building through a participatory approach in their intervention activities. Cooperation with them could improve government’s support in capacity building and provide resources for the research institutes and NGOs to broaden their experience and explore new potentials for FCs. On the other hand, government could act to bring all kinds of actors together to develop an agreed agenda for FC development and FCs’ role in agricultural and rural development. Actors from different domains mainly operate separately to set their own agenda for FC development as implied in their focuses on different types of FCs. These separated relations cannot help to solve the challenges faced by society as a whole, such as food safety and sustainability. Because of FCs’ local orientation and limited capacities to develop a common vision between these actors, government might take up the role to build horizontal networks with these actors and strengthen FCs’ capacities as intermediary in this process.

#### **6.4.4. A need for a federation system to support FCs at local level**

We have deduced that the FCs in China are generally operating on a small scale and working or competing with large players in both the technical and the market domain. The experiences from both US and Asian countries and regions indicate that a federation system can strengthen the individual FCs’ capacities and powers to optimize their performance (Choi, 2006; Lin, 2006; Nonaka, 2006; USDA, 2002). This can be understood from three aspects based on the investigation in this thesis. First, federation organization can provide more farmer-oriented technologies based on the FCs’ vision of market demand than other knowledge providers. In the cases discussed in the empirical chapters, the difficulty of getting appropriate technical support is one of the constraints that militate against their entering the higher quality food market. Elsewhere, a federative organization is found to have advantages in negotiating with knowledge providers and monitoring R&D processes for its member FCs (Ton and Jansen, 2007). Second, a federation system can increase member FCs’ power in cooperation with other market players and gain recognition from consumers and market players through collective actions. A federation system organized around commodities can further strengthen the FCs’ bargaining power by increasing the trading volume. It is also deduced that in a federation organization members can be coordinated to develop a collec-

tive brand that embodies the new quality attributes demanded by consumers (Kontogeorgos, 2012). Third, a federation system can help to channel resources from government at different levels and distribute them to different services to balance development in the short and long run. For example, education of the young generations and resource management are services that will ensure the sustainability of agricultural and rural development (Hong, 2004; Lin, 2006).

#### **6.4.5. The need to support further research**

As discussed in section 6.3.4, the context for FC development in contemporary China is very different from the experiences in North America, Europe and other Asian countries because of the different social and political contexts and dramatic changes in the agricultural sector in recent decades. So, further research is needed to understand how this new institutional arrangement embeds and functions in this social, economic, technical and political system. Some concrete questions that are interesting to investigate are listed below.

First, it would be useful to systematically investigate the existing diversity in FC support projects and approaches and compare their effectiveness. As mentioned in the empirical chapters, research institutes and NGOs have actively engaged in FC promotion with different approaches and focuses than government policies. Generally, they pay more attention to the diverse functions of FCs and try to help FCs to synthesize these functions to promote more broad-based development. This can be seen from their engagement in community-based FC promotion. Further research should closely examine these projects' plan making, support measures and the outcomes of the support, such as farmer participation, impact on their farming practices and livelihoods, and farmers' evaluation of their support. This could help to develop new policies to support FC development. Second, action research concentrating both on the intervention and research on the intervention could be undertaken to follow up the new policy design, implementation and outcomes. This could provide more up-dated and detailed information to respond in a timely way to feedback from the field and adjust government policies. Third, it is meaningful to include organizational perspectives in all kinds of research about agricultural and rural development. As mentioned by Leeuwis and van den Ban (2004), organizational innovation is an indispensable part of promoting sustainable development. A farmer cooperative is a special kind of organizational form that could explore the innate impetus of rural communities. Studying the organizational aspects of sustainable innovation could help to elucidate the full picture of innovation challenges and opportunities and lead to the development of a systemic understanding of FCs' functions in agricultural and rural development.

## 6.5 Conclusions

This thesis aimed to understand farmer cooperatives' role as intermediary organizations to stimulate agricultural and rural development, especially in linking farmers to innovation systems and the food market, in the changing social, economic and political context of China. By adopting an actor-oriented perspective, we contribute to FC studies by examining the daily interactions between farmer cooperatives and external actors and the organizing processes of the cooperatives to provide services to members, instead of just evaluating the outcomes of these processes.

The dissertation has demonstrated that the FCs' contributions to agricultural and rural development lie in their intermediary roles to connect farmers to diverse actors from different domains to create synergy between different dimensions of farming practice, such as access to natural resources, input, credit, infrastructure, up-dated and contextual knowledge and technology, and output markets. The services provided by FCs to make these contributions go beyond the technical and market aspects promoted by government policies, and they emerge from the needs and practice at local level. Our cases show that three of these services are quite important to deal with several urgent problems in agricultural development, even society as a whole. The first one is developing and providing synthesized and contextual knowledge to meet farmers' demands in production. The second is engaging in quality improvement at farm level and quality coordination at food supply chain level to improve food quality, especially food safety. The third one is becoming involved in collective resource management to fill the vacuum of natural resource management and public services provision in this realm.

This study further investigated the constraints encountered by FCs that hindered their functioning as intermediary in multiple domains. It is shown that they tend to have limited clout; this results in part from insufficient recognition from external actors, especially government, and the constraints they face on the level of capacities. Government at different levels focuses mainly on the technical and market functions of FCs, but neglects their other functions and the systemic nature of agricultural and rural development. At the same time, the capacities of FCs are not strong enough to break through the technical, market and credit constraints experienced by individual farmers, because they usually operate on a small scale, have a local orientation and often have a weak relation with their members. This is more serious when they are operating in a competitive environment filled with large players.

This study also examined FCs' internal dynamics that influence their functioning as FCs and their service provision to members. The findings have shown

that a FC is not a consolidated organization in which all members share a common vision, but a network of actors, both from inside and outside, who enrol in one another's projects with their own objectives and interests. The difference in knowledge and resource endowment between the rural elite and ordinary farmers results in their different extent of participation and investment, and as well as in differential benefits from FC operations. The interventions of external actors with their different interests and operating rules affect the stability of the FCs' organizational structure. Hence, many FCs as shown in our cases deviate from the commonly agreed cooperative rules and have difficulty reaching the goal of promoting broad-based development in the long run.

On the basis of the findings in this study and experiences from other countries, we have listed several policy implications to enhance FCs' functioning as intermediary and make full use of FCs to promote agricultural and rural development. The most important thing is to recognize the systemic nature of rural and agricultural development, and hence to promote FCs' diverse functions by forming partnerships with actors from different domains. Strengthening FCs' capacities by capacity building activities and establishing a federation system are other important ways to improve their performance.

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## Summary

The farmer cooperative sector in China has experienced rapid development in the past two decades, in particular after the implementation of the Farmer Cooperative Law in 2007. Farmer cooperatives (FCs) are considered important to mediate between farmers and other actors in the wider social, economic and political environment. FCs also can provide relevant services to improve production and marketing and enhance agricultural and rural development. This thesis, based on in-depth empirical research, investigates how Chinese farmer cooperatives coordinate production and marketing activities of farmers and act as intermediaries in relation to external actors. Central to the research are both the processes and outcomes of intermediation.

Chapter 1 introduces the changing context of agricultural and rural development in China and analyses the emergence of FCs as a response to the challenges in this context. It then describes the current diversity of FCs. It draws attention to the knowledge gap concerning the dynamic processes underway in the country and the important roles FCs play. This thesis aims to contribute to filling this gap by answering the following research questions:

- How can the diversity of farmer cooperatives be characterized, based on the types and scope of services they provide to members and rural communities?
- What are the intermediation functions that farmer cooperatives perform in the agricultural innovation system to build linkages with other actors, provide technical services and enhance farmers' farming and marketing practices?
- What roles do farmer cooperatives play as intermediary organizations participating in quality improvement and quality coordination in food supply chains, and helping farmers to access the quality food market?
- How are farmer cooperatives shaped institutionally by the everyday interactions of farmers within the cooperative and with external actors, and how does this influence their functioning as intermediary organizations?

Chapter 2, "The landscape of farmer cooperatives in China: Functions and diversity in a changing environment," presents and analyses the national survey data of 173 FCs and case studies of 28 FCs. The aim is to explore the diversity of FCs in China based on the types of services provided and their connections with rural communities. The chapter examines the services provided by FCs in relation to the following three aspects: promotion of agricultural innovations, food value

chain participation, and collective resource management. Combining the intermediation functions that are provided by FCs and the support they receive from rural communities, four types of FCs can be distinguished. The first type is called *specialized technology provider* and mainly provides technical services to improve farming practices. The second type is named *credit service cooperative*. This type recently emerged as a consequence of the opening up of the rural financial market under new governmental policies. The third type can be termed *commodity-based FC*. It focuses on improving productivity and quality of specific products with the aim to increase the income of member farmers who are involved in the production of these specific products. The fourth type is called *community-based FC*. A community-based FC has close relationships with rural village committees and tries to promote agricultural and rural development in the community as a whole.

By tracing the FC development policies from the early 1990s onward, this chapter demonstrates that organizations from public, private and civil sectors are actively promoting FCs in a variety of ways. The *Ministry of Agriculture* (MOA) is the main administrative agency in charge of guiding and supporting the development of FCs. One of its important functions is to coordinate other agencies, such as the *Ministry of Finance* and the *Ministry of Commerce*, to develop supportive policies, such as tax reduction and marketing channel formation. The *China Association for Science and Technology* (CAST) aims to promote FCs that concentrate on agricultural technology improvement. The *Supply and Marketing Cooperative System* (SMCS) and the *dragon head firms* play an important role in facilitating FCs to take part in marketing activities. At the same time, other national and international organizations are also involved in FC promotion. Research findings show that these diverse actors relate differently to the various types of farmer cooperatives. Government agencies mainly engage in the promotion of specialized technology providers and commodity-based FCs, while private companies are more active in commodity-based FC development. Research institutes and NGOs appear to be less engaged in commodity-based FC development, but seem to be more active in the promotion of other types of FCs. These differences likely result from the different interests and perceptions these agencies have of the roles and functions of FCs in agricultural and rural development.

Chapter 3, “Functions and limitations of farmer cooperatives as innovation intermediaries: findings from China,” presents findings of three cases and adopts the innovation journey analysis, which focuses on the important events in innovation processes and the innovation intermediation functions that are served by FCs. The FCs studied play roles in both “classical” knowledge intermediation and broader innovation intermediation. Regarding the innovation intermediation, they

define the innovation objective: improving quality as a way to raise product price, thereby increasing the income of members. FCs try to make the technical, economic and social dimensions of farming practice more compatible by building links with external actors from different domains and thus create more favourable conditions for members to adopt new technologies. They also take up the knowledge intermediation function to provide technical support to farmers, such as generating contextual and integrated knowledge for agricultural production through participation of farmer experts and forging connections with external knowledge providers.

FCs do not play the intermediation roles at system level, i.e., they have difficulties to build "many-to-many-to-many" relations and to build a horizontal network between all the relevant actors. Instead, they focus on bilateral relations with different actors. As innovation intermediaries the FCs are supposed to gain influence from their liaison position between and accountability to different actors. However, findings show that a FC cannot act as a neutral actor in the system due to its representative position as a membership organization of farmers. Tensions are likely to arise when the interests of FCs and others start to diverge and when the involvement of FCs in production and marketing processes becomes stronger. Internally, growth of FCs frequently leads to conflicts between leaders and members. In addition, FCs often do not have enough clout to develop durable relationships with knowledge providers and commercial partners because of their local orientation and small scale.

Chapter 4, "Participation in quality food supply chains: outcomes and challenges for farmer cooperatives in China," presents an in-depth case study of three FCs that occupy different positions in the food supply chains in terms of their distance to consumers. The chapter explores the FCs' intermediation roles in quality food marketing and tries to understand the difficulties they encounter to sustain partnerships with actors in the market. Findings indicate that FCs establish various linkages with other chain actors in diverse ways. Generally, the FCs studied engage in both quality improvement at the farm level and quality coordination at the food supply chain level. This involves integrating new values – for instance, related to food safety or fair trade – in the food supply chains and contributes to new constellations of the social construction of quality. The case studies demonstrate that the room for FCs to engage in quality construction depends on their political-economic positions within the chains. At the same time, intermediation with more types of actors helps the FCs to participate in or initiate a new type of food supply chain and strengthen their political-economic position. This empowers FCs in the negotiations about benefit sharing along the chain. However, the outcomes



of FCs' role in chain participation do not only depend on the types of actors they link with as intermediaries, but also on the number of actors (notably consumers) they attract into the chain. The number of consumers largely determines the production scale and how many farmers can benefit from chain involvement. The outcomes for FCs are not all positive. They often lack capacity and resources to be strong players in the chains. Besides, they playing field is uneven due to the weak participation of other chain actors in quality construction, such as retailers and consumers.

Chapter 5, "Hybrid institutions: unexpected outcomes of farmer cooperative development in China," presents an in-depth analysis of one FC: Hongmin. The chapter addresses the internal dynamic institutional process of constructing a farmer cooperative and shows how this process influences the functioning of a FC. The case reveals that the functioning of a FC as intermediary depends on its capacity to pool resources and consolidate membership. The chapter demonstrates that FC's agency as a collective actor is shaped by the enrolment of the different actors including FC leaders, members and external actors, in its projects. In order to attract and involve different actors, the FC continuously has to adjust its institutional arrangements to accommodate different interests and values, notably efficiency, equity and profitability. This leads to an unstable organizational structure and hinders sustainability of the FC.

Chapter 6 brings the findings from the empirical chapters together and draws conclusions. The chapter discusses several cross-cutting issues. First, FCs serve diverse functions. Some of these functions are not paid attention to by existing policies, but do have potential to promote sustainable agricultural and rural development. Examples of these neglected functions relate to resource management and quality coordination. The thesis shows that community-based FCs have the advantage to provide services that are territory-based. Second, new functions such as the development of contextual knowledge and public service provision of FCs emerge from the need of agricultural and rural development at the local level. In practice, it appears that most functions are supported by actors other than the government, including NGOs, international organizations and research institutes. Third, the functioning of a FC is a dynamic organizing process shaped and reshaped constantly by different actors and oscillating between market and hierarchical forms. Fourth, FCs in China emerge and develop in a context of radical economic, technical and political changes giving rise to major challenges. Fifth, the diverse functions and their significance are not well recognized by the government and other actors. Hence, FCs do not have adequate clout in the interac-

tions with these actors. Sixth, this study contributes to theories related to the functioning of FCs as well as the functioning of innovation intermediaries through the use of an actor-oriented perspective and by paying attention to the daily operations of the FCs.

Several policy implications are presented after the discussion of the cross-cutting issues. First, it is useful to recognize FCs' multi-functionality in agricultural and rural development and open up room for community-based FCs in policy support. Second, paying attention to capacity building can help FCs to meet the challenges posed by the changing environment. Third, the government can develop partnerships with actors from private and civil sectors to support FCs' diverse functions and capacity building. Fourth, establishing federation systems could help to strengthen FCs at local level and build more sustainable relations with stronger players.

## Samenvatting

De boeren coöperatieve beweging in China is heel snel gegroeid gedurende de laatste twintig jaar, voornamelijk na de goedkeuring en uitvoering van de wet betreffende Boeren Coöperaties in 2007. In de wetenschappelijke literatuur worden boeren coöperaties gezien als belangrijke schakels tussen boeren en andere actoren opererend op sociaaleconomisch, politiek en milieu gebied. Ze worden ook beschouwd als een effectief middel om de landbouw productie en commercialisering van landbouw produkten te verbeteren en aldus bij te dragen aan landbouw en rurale ontwikkeling. Deze doctoraalscriptie onderzoekt, gebaseerd op uitgebreid veldwerk uitgevoerd in China, op welke manieren Chinese boeren coöperaties deze functies vervullen en tot welke concrete resultaten dit leidt.

Hoofdstuk 1 geeft een overzicht van de recente verandering die plaats hebben gevonden in de Chinese landbouw en plattelandontwikkeling. Het hoofdstuk analyseert ook hoe boeren coöperaties ontstaan zijn temidden van deze veranderingen als een reactie op een aantal belangrijke problemen die (kleinschalige) boeren ondervinden. Hoewel een groot en divers aantal boeren coöperaties zijn opgericht, ontbreekt het aan gedetailleerd onderzoek met betrekking tot hun functioneren en resultaten.

Dit proefschrift heeft als doel om deze onderzoekslacune te verkleinen en onze kennis omgaande de boeren coöperatieve processen te vergroten. De belangrijkste onderzoeksvragen zijn:

1. Op welke manier kan de diversiteit aan boeren coöperaties het best worden gekarakteriseerd met betrekking tot de types en reikwijdte van de diensten die ze verlenen aan leden en boerengemeenschappen?
2. Welke bemiddelingsfuncties vervullen boeren coöperaties als onderdeel van landbouw innovatie systemen met het oog op het verbeteren van technische ondersteuning op het gebied van landbouw en commercialisering van landbouw produkten?
3. Welke rollen spelen landbouw coöperaties in de bemiddelingsprocessen die leiden tot betere toegang van boeren tot kwaliteitsmarkten, kwaliteitsverbetering van de landbouw productie en betere coördinatie van de kwaliteit in de gehele voedsel keten?
4. Wat zijn de belangrijkste waarden, normen en spelregels die het alledaagse functioneren van boeren coöperaties bepalen zowel intern als extern? Hoe beïnvloedt de institutionele omgeving de resultaten voortkomend uit de bemiddelingsfunctie die coöperaties spelen?

Hoofdstuk 2, getiteld "Het landschap van boeren coöperaties in China: functies en diversiteit in een veranderende omgeving," analyseert de data van een nationale enquête betreffende 173 boeren coöperaties plus 28 geselecteerde case studies van boeren coöperaties. Het hoofdstuk behandelt de diversiteit aan coöperaties gebaseerd op het type service geleverd (promotie van landbouw innovaties; participatie in voedselketens; en collectief beheer van natuurlijke hulpbronnen) en het karakter van de opgebouwde relaties met boerengemeenschappen. Gebaseerd zowel op het soort bemiddeling dat coöperaties realiseren en op het soort steun dat ze van boerengemeenschappen ontvangen, kunnen vier typen boeren coöperaties onderscheiden worden in China: 1) gespecialiseerde technologie leveranciers, 2) krediet coöperaties (van zeer recente aard), 3) coöperaties gericht op de productie en verkoop van marktgoederen (commodity-based), en 4) coöperaties gebaseerd en gericht op gemeenschappelijke akties (community-based). Deze laatste coöperaties onderhouden nauwe banden met de dorpscomités en hebben als doel het promoveren van landbouw and plattelandsontwikkeling in ruime zin.

Hoofdstuk 3, "Functies en limieten van Chinese boeren coöperaties als innovatie bemiddelaars," is gebaseerd op drie gedetailleerde case studies met als focus een analyse van de cruciale momenten in de innovatie processen waarin de coöperaties zijn opgenomen en de rol die ze als bemiddelaar spelen. De case studies tonen aan dat boeren coöperaties zowel een rol spelen in "klassieke" en bredere innovatie bemiddeling. Coöperaties zijn soms de motor van kwaliteitsverbetering in de landbouw productie door het aangaan van relaties met andere actoren uit diverse sectoren. Via deze relaties verkrijgen boeren toegang tot nieuwe kennis en technologieën. De case studies tonen echter ook aan dat de coöperaties vooral bilaterale relaties opbouwen in plaats van meer systeemgerichte connecties die tot duurzamere innovatie zouden kunnen leiden. Van belang is verder de bevinding dat wanneer de invloed van boeren coöperaties toeneemt, de spanningen ook vaak toenemen, zowel binnen de coöperatie als tussen de coöperatie en andere actoren. Succes leidt aldus tot fricties tussen de leiders van de coöperaties en de gewone leden. In de relaties met andere actoren hebben coöperaties het vaak niet gemakkelijk vanwege de kleine schaal waarop ze opereren en het gebrek aan ervaring.

Hoofdstuk 4, "Participatie in de sociale constructie van kwaliteit in voedselketens: resultaten en struikelblokken voor Chinese boeren coöperaties," geeft een gedetailleerd beeld van de successen en moeilijkheden die drie zeer verschillende coöperaties ondervinden om als bemiddelaar te opereren in de sociale constructie van produkt kwaliteit. De bevindingen tonen aan dat het opbouwen en onderhouden van stabiele relaties met andere actoren gecompliceerd is en onderhevig aan vooruit en achteruitgang. Dit wordt deels veroorzaakt doordat

coöperaties twee belangrijke taken tegelijk moeten uitvoeren: kwaliteitsverbetering op het niveau van het boerenbedrijf (bijvoorbeeld op het gebied van produkt veiligheid) en verbetering van de coördinatie in de voedselketen (bijvoorbeeld om de fair trade markt binnen te dringen). Hoeveel speelruimte de coöperaties binnen de ketens hebben, is afhankelijk van hun opgebouwde politiek-economische macht. Die macht en de voordelen die er uit voortvloeien hangen niet alleen af van het type actoren waarmee coöperaties banden opbouwen, maar ook van het aantal actoren, vooral met betrekking tot consumenten. Hoe meer consumenten, hoe groter de schaal waarop coöperaties kunnen opereren.

Hoofdstuk 5, "Hybride instituties: onverwachte resultaten van boeren coöperatieve ontwikkeling in China," behandelt in zijn geheel één case studie: Hongmin. De analyse geeft een gedetailleerd beeld van het institutionele ontwikkelingsproces van de coöperatie en van de resultaten die eruit voortkomen. Succes is duidelijk verbonden aan de capaciteit van de Hongmin coöperatie om hulpbronnen te bundelen en lidmaatschap stabiel te houden. Een dynamieke coöperatie wordt gekenmerkt door een constant aanpassingsvermogen aan wisselende belangen, perspectieven en doelstellingen van de leden, zoals efficiëntie, gelijkheid en winstbejag.

Hoofdstuk 6 bevat de conclusies. De volgende transversale thema's komen aan bod: 1) Hoewel in de praktijk Chinese boeren coöperaties verschillende functies vervullen (naast economische ook sociale, politieke en ecologische), is er op beleidsniveau weinig aandacht voor deze multi-functionaliteit. Voorbeelden van functies die beter ondersteund zouden kunnen worden, zijn produkt kwaliteitsverbetering en beheer van natuurlijke hulpbronnen. 2) De genoemde multi-functionaliteit die ook nieuwe functies omvat zoals het leveren van publieke diensten en het verspreiden van zeer specifieke kennis, is een direct antwoord op de lokale behoefte aan landbouw- en rurale ontwikkeling. Wat opvalt is dat het uitvoeren van dit soort nieuwe functies niet door de overheid wordt gesteund, maar door andere actoren zoals internationale en nationale onderzoeksinstituten en non-gouvernementele organisaties. 3) Coöperatieve ontwikkeling is een zeer dynamisch proces onderhevig aan de acties en reacties van vele actoren en in beweging tussen markt- en hiërarchische verhoudingen. 4) In een context van radicale maatschappijveranderingen is het niet gemakkelijk om boeren coöperaties op te zetten en te ontwikkelen. 5) Boeren coöperaties ontvangen weinig herkenning en waardering in China en dit maakt het moeilijk om als volwaardige spelers mee te doen aan ontwikkelingsprocessen. 6) De gedetailleerde empirische bevindingen dragen bij aan theoretische verdieping met betrekking tot coöperatie ontwikkeling en innovatie theorie.

Het hoofdstuk besluit met een aantal beleidsaanbevelingen. Ten eerste, de multi-functionaliteit van boeren coöperaties stimuleert landbouw- en rurale ontwikkeling en verdient daarom overheidssteun. Ten tweede, goed georganiseerde training en begeleiding van coöperaties kunnen boeren bijstaan om problemen op te lossen die voortkomen uit de snelle maatschappijveranderingen. Ten derde, de overheid kan bijdragen aan de versterking van boeren coöperaties door samen met het bedrijfsleven en maatschappelijke organisaties te werken aan ondersteuning. Ten vierde, boeren coöperaties zouden zich kunnen groeperen in federaties en aldus sterkere banden kunnen opbouwen met andere actoren.

## 摘要

在过去 20 年，特别是 2007 年《农民专业合作社法》颁布以后，中国农民专业合作社得到了迅猛发展。农民专业合作社被认为是联系农民与他们所在社会、经济和政治环境中相关行动者的桥梁和纽带。他们能为农户提供多方位的服务，改善他们农业生产和市场销售状况，为农业和农村发展做出贡献。本论文为实证研究，意在研究农民专业合作社是如何协调农户之间以及农户与外部行动者之间关系，并提供相应服务。研究从协调过程本身和结果两个方面进行考察。

论文第一章首先介绍了中国不断变化的农业和农村发展环境，政府和农民将合作社作为应对挑战途径之一。接下来本章展示了合作社在实践中的多样性，以及合作社研究对合作社发展动态过程关注不足的问题。因此，本论文以理解合作社在实践中的动态组织过程为目标，具体的研究问题如下：

- 如何根据合作社提供服务的内容和范围，以及他们与农村社区的关系来考察合作社的多样性？
- 在农业创新系统中，合作社发挥了哪些中介组织功能以建立与其他行动者的联系为农户提供技术服务，改善他们的农业生产和市场销售状况？
- 在帮助农户进入优质食品市场的过程中，合作社扮演了那些中介组织的角色来改善农产品质量，并在食品供应链中协调质量管理？
- 合作社内农户间的互动以及农户与外部行动者的互动是如何影响合作社制度建立和变迁的？以及合作社制度变迁何如影响合作社作为中介组织的功能发挥？

论文第二章题为“中国农民专业合作社的功能与多样性-变迁环境中发展现状探讨”。本章通过展示合作社提供服务的类型以及他们与农户社区的关系分析当前合作社发展的多样性。我们从以下三个方面考察了合作社提供的服务：促进农村创新，促进农户参与食品价值链，集体资源管理。结合他们从农村社区获得的支持，我们将合作社分为四类。第一类为专业技术合作社，主要为社员提供技术服务以改善他们生产状况。第二类是资金互助合作社，是在政府出台政策允许合作社进入农村金融市场后出现的新类型。第三类是产品型合作社，将生产同类产品的农户连结起来，致力于改善产品的产量和质量，提高农户收入。第四类为社区型合作社，通常与所在农村社区关系紧密，致力于从社区层面推动农业和农村发展。

本章回顾了从二十世纪九十年代以来政府的合作社发展政策，展示了来自公共部门、私人部门和公民社会的各类组织参与到合作社发展的情况。他们各自不同的关注点与利益驱动。农业部是指导和支持合作社发展的主管部门，他的一

个重要功能是协调不同政府部门，例如财政部和商务部，来制定税收减免、市场渠道建设等支持政策。科协主要集中发展以提供农业技术服务为主的合作社。供销合作系统和农业龙头企业在协助合作社参与市场销售中起到了重要作用。同时，其他的全国性和国际组织也参与到合作社发展中。

第三章题为“合作社作为农业创新中介的功能和局限性：来自中国的发现”，以三个合作社的案例研究为基础，采用了创新进程分析方法来考察创新过程的重要事件。本章从创新中介的视角考察了合作社在农业创新系统中的功能。我们发现合作社起到了“传统”的知识中介和内容更为广泛的创新中介的作用。从创新中介的角度，合作社建立了创新目标—提高产品质量以提高产品价格，改善社员的收入。为了实现目标，合作社与各个外部行动者建立联系，改善农户采用新农业技术的环境，以提高农业生产种技术、经济和社会各个方面的契合性。他们也承担起知识中介的功能为农户提供技术支持，例如通过加强农民技术员的参与、建立与外部知识提供者的联系来提供因地制宜和综合性的农业技术。

研究发现合作社在农业创新系统层面起到的中介功能有限，没有在所有创新行动者间建立多对多的联系，促进相互间的交流。合作社只是与不同的行动者建立了一对一的联系。作为创新中介，合作社的影响来自于他在不同行动者中的联络位置和责任。但是一方面研究显示合作社作为会员制组织要为成员代言，很难成为中立的行动者。另一方面，合作社规模小、立足社区，没有足够的影响力来与知识提供者和商业伙伴建立长期联系。

第四章题为“参与高品质食品供应链：中国合作社取得的进展与面临的挑战”。本章探索了合作社在帮助农户进入高品质食品市场中的中介作用，分析了他们在维持与市场行动者稳定关系中遇到的挑战。研究表明合作社与食品链中行动者建立了多方位的联系，参与到食品链多个环节的运作，并以不同方式参与食品链管理。总的来说，案例中合作社参与到生产环节中产品质量改进和食品链中食品质量的协调管理。通过与不同行动者的互动，合作社引入新的价值元素，例如食品安全和公平贸易，来构建新的食品质量判定标准。研究案例表明合作社参与食品质量标准构建的空间大小取决于食品链中的政治经济关系。同时，建立与多个不同类型行动者的联系有助于合作社参与到更多的食品链环节，或是建立新类型的食品链，以增强合作社与农户在食品链中协商利益分配的权力。但是合作社参与食品链运作的产出不仅取决于他们联系行动者的类型，还取决于参与食品链的行动者（特别是消费者）的数量。食品链中行动者参与质量构建的不足以及合作社自身能力和资源的匮乏是目前合作社参与和建立高品质食品链中存在的主要问题。



第五章题为“混合型制度：中国农民专业合作社发展的意外结果”，对一个案例合作社的发展过程进行了深入的案例分析。本章分析了合作社发展过程中制度的动态变迁过程，以及这一过程是如何影响合作社功能发挥。合作社在农业发展和市场销售中活跃的协调过程反映了他们作为中介组织的功能发挥与他们聚集资源和巩固社员基础的能力密切相关。作为一个集体行动者，合作社的能动性和能力取决于不同行动者在合作社项目中的参与，包括领导、社员和外部行动者。为了吸引不同的行动者，合作社不断调整制度安排来适应不同行动者的利益和价值观，例如效率、公平性和获益性。由于农村社区内部的复杂关系，外部的频繁干预和合作社行为意外结果都导致了合作社制度的不稳定。

合作社领导人和社员在合作社行动和管理中参与度差别大，主要是由于农村社区现有的社会、经济和政治结构。领导人的积极参与是因为他们能有效获取金融和社会网络等资源。在与外部行动者的互动中，外部行动者带入不同的利益和价值观，例如政府重视的扩大规模、市场运作中重视的价格机制。这些都迫使合作社不断调整制度安排，例如改变社员入股和利益分享的原则。同时合作社行动的结果也不断重塑合作社的结构，例如合作社引入新技术和市场渠道的失败或成功。

第六章整合了实证研究章节的研究发现，并进行了总结。第一，合作社发挥了多重功能。其中一些功能有助于推动农业和农村的可持续发展，但是还没有得到政府政策的重视。资源管理和食品质量改进和构建都属于这类功能。论文显示社区型合作社由于其地缘性特点能更好地提供此类功能。第二，合作社的一些功能是为了满足农业和农村发展需要在实践中产生的，例如开发地方性知识和提供公共服务。目前，这些功能多得到了政府之外的一些组织的支持，例如NGO，国际组织和研究机构。第三，合作社的功能发挥是一个动态的组织过程，由不同的行动者不断塑造。第四，中国农民专业合作社是在一个经济、技术和政治环境快速变迁的环境中产生的，这对合作社从基层发展提出了巨大挑战。第五，合作社多样化的功能和重要性没有得到政府和其他行动者的充分认识。因此，合作社在与这些行动者的互动中没有足够的影响力。第六，本研究对合作社和创新中介功能发挥的相关理论有所贡献。主要是由于本研究采用了行动者为导向的视角，关注合作社在提供服务和协调关系过程中的日常运作。

本研究的发现对政策制定有所启发。首先，认可合作社在农业和农村发展中的多功能性，加大对社区型合作社的支持力度。其次，关注合作社的能力建设有助于合作社应对来自快速变迁环境的挑战。第三，政府可与来自私人部门和公民社会的行动者建立合作，支持合作社的能力建设和多功能发挥。第四，建立合作联社有助于增强合作社在基层的影响力，与其他行动者建立长期稳定联系。



## **About the author**

### ***Curriculum Vitae***

Huan Yang was born in Enshi, Hubei province, China, 18<sup>th</sup> of November 1983. She spent the first 18 years in her hometown until she went to China Agricultural University for undergraduate study in 2001. She studied Rural Development and Management in College of Humanity and Development (COHD) and obtained her bachelor degree in 2005. She went on the study in COHD for a two years' program about Rural Development and obtained the master degree in 2007. For the connection developed during her master thesis fieldwork, she found the opportunity to work in Participatory Action Research team in Centre for Chinese Agricultural Policy, Chinese Academy of Sciences. During the one year working experience, she gained more experiences and knowledge about the farmer-oriented agricultural and rural research. In 2008, she she started her PhD study under the supervision of the Knowledge, Technology and Innovation group and Rural Development Sociology group in Wageningen University. From 2008 to 2013, she conducted the PhD research on the topic of farmer cooperatives as intermediaries for agricultural and rural development in China, by taking the actor-oriented perspective and looking at the dynamic organizing processes of farmer cooperatives.

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Huan Yang, Cees Leeuwis, Rico Lie, Yiching, song (forthcoming), The landscape of Farmer Cooperatives in China – Functions and Diversity in a Changing Environment. (Accepted by Rural China)

Huan Yang, Laurens Klerkx, Cees Leeuwis (forthcoming), Functions and Limitations of Farmer Cooperative as Innovation Intermediaries: Findings from China. (submitted to Agricultural Systems)

Huan Yang, Ronnie Vernooy, Cees Leeuwis (forthcoming), Participation in quality coordination in food supply chains: actions and outcomes for farmer cooperatives in China. (submitted to Agriculture and Human Values)

Huan Yang, Leontine Visser (forthcoming), Hybrid Institutions: Unexpected Outcomes of Farmer Cooperative in China. (submitted to Journal of Agrarian Change)

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**Completed Training and Supervision Plan**



Wageningen School  
of Social Sciences

<b>Name of the course</b>	<b>Department/ Institute</b>	<b>Year</b>	<b>ECTS (=28 hrs)</b>
<b>I. General</b>			
CERES orientation programme	CERES, Utrecht	2009	5
CERES presentation tutorials	CERES, Utrecht	2009	5.5
<b>II. Research Methods and Techniques and Domain Specific Theories</b>			
Introduction to Communication and Innovation Studies (COM 22804)	WUR	2008	4
Sociological Theories of Rural Transformation (RDS 30306)	WUR	2008	6
Communication and Policy-making ( COM 20306)	WUR	2009	6
Rural institutions and Economic Development (DEC course)	WUR	2009	6
Experiment! A workshop on experimental methods in social science and inter-disciplinary research	WGS	2009	1.5
Research Methodology I: From Topic To Proposal	WGS	2009	4
Methods, Techniques and Data Analysis for Field Research (RDS 21306)	WUR	2009	4
Contemporary Agri-food Studies	WASS	2011	6
<b>III. Academic Skills</b>			
Project and time Management	WGS	2012	1.5
<b>IV. Presentations of research results</b>			
Do farmers cooperate in cooperatives? – Experience from emerging farmer cooperatives in China	CERES summer school,	2012	1
Attempts of farmer cooperatives in china to penetrate into downstream of market chain: linking to supermarket or connecting to consumers?	XIII World Congress of Rural Sociology , Lisbon Portugal	2012	1
Do farmers cooperate in cooperatives? – Experience from emerging farmer cooperatives in China	XIII World Congress of Rural Sociology , Lisbon Portugal	2012	1
<b>TOTAL</b>			<b>52.5</b>

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