Chapter 3

Prospect of Contract Farming

- Experiences in Developed and Developing Economies and the Current Situation in China-

This chapter provides a selective review of empirical research on the contract farming, poverty impact of high-value agriculture, and modern marketing methods. The focus of this chapter is to review what types of contract arrangements have worked or not worked under various circumstances and to explore the common findings from the developed and developing countries' experiences. What can we learn from the experiences in contract farming schemes in developing countries as well as developed countries? What role can the government play for successful contact farming? Are there any patterns in contract farming models according to the commodity type, the farmer scale, or land size? What are the modern marketing methods found in high value agriculture commodities? This chapter aims to provide some answers to these questions. The empirical research reviewed is mainly from the experience in developing countries, focusing on the poverty impact in Asia, Africa, and Latin America, along with some from the developed countries.

Contract farming has been studied since 1970s, with the early empirical research being mostly descriptive. For example, case studies in Africa have focused on the historical and political context of contract farming, conflicts between farmers and the contracting firms, and the imbalance of power between the two parties, among others. As more data at the farmer level were collected, more rigorous studies began to emerge. There are studies that have skeptical views as well as those that discuss the benefits of contract farming for farmers. This chapter examines both of these views in detail. The chapter is organized into six sections. The first section provides some background as to the importance of contract farming in vertical coordination. The second section reviews the empirical research of qualitative studies. The third section assesses the studies that used more rigorous econometric analysis. The fifth section discusses the preliminary results from the firm survey of the pork industry conducted in 2008 in Henan province and Jilin province in China. The sixth section provides the concluding remarks.

1. Background and Vertical Coordination of the Value Chain

The changes in food and agricultural markets (the so-called industrialization of agriculture) have influenced the need for higher levels of managed coordination in agriculture commodity value chains. “This has resulted in the introduction of different forms of vertical integration and alliances, which have become a dominant feature of agricultural supply chains” (Kirsten and Sartorius, 2002). Allied to these changes is a worldwide increase in consumer demand for differentiated agricultural products that are relatively labor intensive (Rhodes, 1993; Royer, 1995; Pasour, 1998). These consumer demands, together with food safety issues (particularly more of a concern in fresh food products), have led to major concerns for developing countries. Fresh food products, which include fresh meat, seafood, vegetables, and fruits, account for half the value of total food and agricultural exports from developing countries (Unneveher, 2000).

In many developed countries, agricultural production used to be an industry dominated by family-based small-scale farms or firms. However, this has changed rapidly to larger firms that are more tightly aligned across the production and distribution value chain (Boehlje, 2000). Additionally, the trend of market-oriented reforms, following multilateral trade liberalization and especially structural adjustment programs in developing countries, has led to the increased integration of world markets (Reardon & Barrett, 2000). Contract farming has taken a role in bringing farmers and large firms closer. Contract farming is a type of agricultural production based on "those contractual arrangements between farmers and companies, whether oral or written, specifying one or more conditions of production and/or marketing of an agricultural product" (Ewell, 1963:3). Contract farming takes different forms according to what conditions of production and/or marketing it specifies (Ewell, 1963:5-6; Wilson, 1986:50).

The role of contract farming in developing countries has been a topic of interest and some controversy, existing at least since the 1970s (Morrisey, 1974; Glover, 1984; Minot, 1986). Critics of contract farming argue that large agribusiness firms use contracts to take advantage of cheap labor and transfer production risk to farmers. Another concern is that because companies tend to prefer to work with medium- and large-scale growers, smallholders will be marginalized, exacerbating rural inequality (Little and Watts, 1994; Singh, 2002). Others are less pessimistic, seeing contract farming as a means to incorporate small farmers into growing markets for processed goods and export commodities. Because the contracts often involve the provision of seed, fertilizer, and technical assistance on credit and a guaranteed price at harvest, this form of vertical coordination simultaneously solves a number of constraints on small-farm productivity, including access to inputs, credit, and risk. In this view,

contract farming is an institutional solution to the problems of market failure in the provision of credit and agricultural inputs (Grosh, 1994; Key and Rungsten, 1999).

Contract farming often involves a large-scale buyer, such as an exporter or a food processor that needs to ensure a steady supply of raw materials meeting certain quality standards. Meeting certain quality standards for a buyer becomes critical especially when a buyer wishes to export to countries with strict quality and safety standards. As such, contracting is rare for basic staple foods produced for local consumption and more common for industrial crops (e.g. sugarcane, tobacco, and tea), poultry, dairy, and horticulture, particularly when destined for high-income consumers willing to pay a premium for quality and food safety (Minot, 1986; Jaffee and Morton, 1994).

There are few estimates of the prevalence of contract farming and no estimates of trends over time, but changes in global agricultural markets provide some hints. First, rapid income growth, particularly in Asia, is shifting consumption away from staple grains and toward high-value commodities such as meat, fish, dairy, and horticulture and toward processed foods (Minot and Roy, 2006). Second, income growth, urbanization, and foreign investment are driving a consolidation in retail food outlets, the supermarket revolution (Reardon et al, 2003). Third, lower trade barriers and improved communication technology are expanding trade linkages, connecting small farmers in developing countries with high-income consumers in developing country cities and in industrialized countries. The growth in high-value agriculture, supermarkets, processing, and export-oriented agriculture suggest that the importance of contract farming is growing.

2. Review of Studies on Contract Farming – Qualitative Analyses

Various forms of contract farming have been found in the developed countries as far back as the 1880s. Methods of this type of farming were employed by United States multinationals in Central America at the beginning of the 20th century and by the Japanese to secure sugar production in Taiwan from 1885 (Runsten & Key, 1996). From the 1930’s to 1950’s, contracting was used increasingly in many food and fiber sectors. The fruit and vegetable canning sectors expanded in the United States and Europe (Little & Watts, 1994; Clapp, 1994) and merchants in Europe and North America entered into seed production contracts with growers in Australia, Britain, Canada, France, Holland, Hungary, and the United States (Watts, 1994). From the late 1950s, Mexican growers increasingly supplied the American markets with fruit and vegetables under contract and in the period 1960–80, there was a significant increase in contracting

for vegetables, fruit, nuts, and seed crops (Watts, 1994; Kilmer, 1986). By the late 20th century, contract farming was widespread across Western Europe, the United States, and Japan (Rehber, 1998). Contract farming has also spread rapidly in Asia, Latin America and Africa.

The way farmers comprehend contract farming, such as how their relationship with companies is defined, differs across cultures (Singh, 2005). Asano-Tamanoi (1988) compares the different perceptions of contract farming by closely examining the relationships between various actors related to contract farming in Japan and Spain.

The benefits of contract farming to the farming community at large also depend on government policies for agricultural development (Singh 2005). Therefore, some studies emphasize the important role of the state in encouraging or discouraging the agribusiness firms and in protecting the producers in contract situations (Christensen, 1992; Grosh, 1994; Benziger, 1996).

A case study by Asano-Tamanoi (1988) in Mino in Japan, found that a long-term isolated peasant-merchant relationship did not emerge. Several factors prevented the parties from directly contracting. “First, peasants tried to organize themselves into groups in buying or selling certain products vis-à-vis specific merchants; and second, the government, in order to increase the direct control of the agricultural sector, tried to block the penetration and spread of the power of private merchants in the local villages. The merging of these two forces from "below" and "above," then, resulted in the establishment of an agricultural cooperative in 1900, which could partially succeed in supplanting merchant capital on the local scene” (Asano-Tamari 1988). Government policy in Japan in the 1980’s was organized in such a way that farmers and firms could contract through intermediary organizations, such as cooperatives, but not directly. This policy aimed also to protect individual farmers since firms would have more say and bargaining power in negotiations for contracts. By creating a cooperative to serve as an intermediary or negotiator, voices of farmers could be heard as a collective force.

Minot (1986) found that farmers generally benefit from contract farming because it provides them with inputs on credit, technical assistance, and often a guaranteed price, allowing them to produce a higher-value commodity than would otherwise be possible. At the same time, contract farming should not be considered a broad-based strategy for rural development because it is only cost-effective when large-scale buyers, such as processors or exporters, need to introduce a new crop, to obtain special product characteristics, to stagger the harvest over the year, or to control some aspect of the production methods. Contract farming is typically used to organize production of perishable, high-value commodities for a quality-sensitive market. However, cases in

which buyers or farmers violate the terms of the contract are common and a good number of contract farming schemes fail for one reason or another (Minot, 1986).

Contract farming is often seen as a way to reduce costs of cultivation by firms and by farmers. This is because it can provide access to better inputs and more efficient production methods for farmers as Minot (1986) has also discussed. The increasing cost of cultivation was the reason for the emergence of contract farming in Japan and Spain in the 1950s (Asano-Tamanoi, 1988) and in the Indian Punjab in the early 1990s (Singh, 2000). Other studies provide a more skeptical view of the benefits of contract farming. Little and Watts (1994) compiled a set of seven case studies of contract farming in sub-Saharan Africa. The case studies focused on the historical and political context of contract farming, conflicts between farmers and the contracting firms, the imbalance of power between the two parties, intra-household tensions over the division of labor and the allocation of new revenues, and the increasing rural inequality as contract farmers grow wealthy enough to hire farm laborers.

Little (1994: 221) reviewed some case studies and concluded that, “incomes from contract farming increased for a moderate (30-40%) to a high (50-60%) proportion of participants.” However, this income was not enough to live on and farmers had to rely on other farm and non-farm income. In addition, he surmised that contract farming often exacerbates income inequality by favoring middle- to large-scale growers. In several cases, households lost land that was appropriated for government-run contract farming schemes.

In a review of the experience of contract farming in Africa in the early 1990s, Porter and Phillips-Howard (1997) concluded that farmers were generally better off as a result of their participation in contract farming, in spite of a number of social problems that arose in the communities. Similarly, Singh (2002) identified a series of problems associated with contract vegetable production in the Punjab state in India. Singh concluded that the contract farming done by multi-national corporations is with relatively larger farmers and its arrangement is biased against the contract farmers. The issues identified are imbalanced power between farmers and companies, violation of the terms of the agreements, social differentiation, and lack of environmental sustainability. Nonetheless, his surveys revealed that most farmers saw incomes rise and were satisfied with the contract arrangement.

Singh (2005) also reviewed cases where many of the studies found contracts inequitable, short-term, and ambiguous. However, he concluded that, “it is not the contract per se which is harmful but how it is practiced in a given context”. His review introduced the situations where contract farming brought benefits. For example, apart

from providing farmers more reliable incomes, contract farming generated employment especially for women, provided new farming skills, and did away with the patron–client relationship between large and small producers (Singh 2005, Glover and Kusterer 1990, Fulton and Clark 1996). However, "the contracts were biased and enforced strictly, firms provided poor extension service, over-priced their services, passed on the risk to the producers, offered low prices of produce, favored larger farmers, delayed payments, did not provide compensation for natural calamity loss, and did not explain the pricing method (Singh 2005)" (Glover and Kusterer 1990; Grosh 1994; Singh 2002). The firms tend to move on to new growers and lands after exhausting the natural potential of the local resources, particularly land and water, or when productivity declines due to some other reason (Torres 1997). Other cases of contract farming faced many problems like undue quality declines on produce by firms, delayed deliveries at the factory, delayed payments, low prices, and pest attacks on the crops (Rangi and Sidhu, 2000; Singh, 2002; Dileep et. al., 2002; and Satish, 2003).

2.1 Key Factors for Success

Major conditions and key factors for successful contract farming interlocking agribusiness firms and small producers include,

1. Increased competition for procurement instead of monopsony;
2. Guaranteed market for farmer produce and effective repayment mechanism;
3. Market information for farmers to effectively bargain with companies;
4. Large volumes of transactions through groups of farmers for lowering transaction costs;
5. Co-operation among genuine agribusiness firms in the area; and
6. No alternative source of raw material for firms (Kirsten and Sartorius, 2002).

Further, for success of company-farmer partnership schemes, it is important that the company is able to successfully market its products so that farmers do not suffer from lack of markets (Baumann, 2000; Haque, 2000). Building the relationships of trust with farmers through company reputation rather than marketing gimmicks is crucial. This requires mutual respect, fair and transparent negotiation processes, realistic assessment of benefits, long term commitments, equitable sharing of risk, and sound business plans (Mayers and Vermeulen, 2002). Marketing extension is also required in terms of better product planning at the farmer level, provision of market information, securing and accessing markets for farmers, provision of alternative markets, and market orientation regarding improved marketing practices at the farmer level (Patnaik, 2003). However,

guaranteed market pricing mechanisms may not work for all cases since comparisons must be made with other famers' options and depending on farmers' incentives.

2.2 Participation in Contact Farming

A number of studies have examined the proportion of contract farmers that are smallholders, as an indicator of the pro-poor impact of contracting. Guo et al (2005) used data from farm-level surveys in China covering several products to estimate the likelihood of participating in a contract farming scheme as a function of household characteristics, crop mix, and farm size. The results indicated that small farmers are less likely to participate in contract farming than larger farmers.

Similarly, Runsten and Key (1996) looked at contract farming by the tomato processing industry in Mexico. Multi-national agro-processors from the United States first contracted with large growers, but then also involved the small growers. Part of the reason was that as a lucrative market for fresh tomatoes developed, firms found it increasingly difficult to enforce contracts they had with larger growers.

A few studies give examples of buyers shifting from small to large-scale farmers or the reverse. One example cited in World Bank (2006), was an exporter in Thailand that started producing its own horticultural products on company land and later shifted to smallholder contract production. Minot and Ngigi (2004) described the evolution of several contract farming schemes in Kenya, including one (Del Monte pineapple) that gave up on contract production and others that have shifted from large to small-scale production. In Senegal, green bean exporters switched from small-scale contract production to large-scale production (Maertens, 2006). These findings confirm that the comparative advantage of smallholders is not a static concept, but can change as farmers and buyers experiment and learn from their experience. It also implies that public policy may be able to play a role in supporting the participation of small farmers in these supply chains (Miyata and Minot, 2007).

3. Evidence of Contact Farming on Farm Income

Other studies provide more direct evidence in the form of income or gross margin comparisons. For example, Birthal et al (2005) compared the gross margins of poultry, dairy, and vegetable contract farmers with independent farmers producing the same commodities. The gross margins for contract dairy farmers were almost double that of independent dairy farmers, largely because contract growers had lower production and marketing costs. The gross margin for contract vegetable growers was 79% greater than

that of independent vegetable growers' income, and for poultry, the gross margin of contract farmers was 13% higher. Although they do not use regression analysis to control for other factors, they show that contract farmers had higher gross margins for small-, medium-, and large-scale farmers. A logit analysis of participation in the contract farming schemes indicates that farm size and education are not significant predictors, implying that small farmers are not excluded from contracting.

A few studies of contract farming take into account that contract farmers are generally not a random sample of the population; they may differ from the population in ways that also affect income. For example, if farmers that sign up for contract schemes are more hard-working or more skilled than others, the difference in income between contract farmers and other farmers will reflect both the effect of contracting and the effect of those characteristics. This bias can be corrected using a Heckman selection regression model or an instrumental variables model.

Warning and Key (2002) study contract farming in peanuts in Senegal. NOVASEN, a private company, contracted 32,000 growers and produced approximately 40,000 tons of peanuts annually. The authors estimated gross profits using a two-step Heckman procedure to control for selection bias. They found that the increase in gross agricultural revenues associated with contracting was statistically significant and large, equal to about 55% of the average revenue of non-contract farmers. Various measures of assets were not significant predictors of participation in the contract farming scheme, suggesting that contractors were typical rural households.

Another study, carried out in Indonesia by Simmons et al (2005), examined contract growers of poultry, seed maize, and seed rice. They also used a Heckman model to control for selection bias. The poultry contracts and seed maize contracts resulted in improved returns to capital, while no significant impact was found in the case of seed rice. Contract seed growers were more likely to be large farmers, compared to independent growers, but contract poultry production tended to be smaller than independent poultry growers. They concluded that the contracts increase income and welfare, reducing absolute poverty.

Ramaswami et al (2006) re-analyzed the poultry survey data from the above-cited study by Birthal et al (2005), except that they used an instrumental variable regression analysis to control for selection bias. They found that average gross margins were similar between contract growers and others, but the regression analysis indicated significant gains from contracting. The explanation is that contract growers are less experienced and have less access to credit than other growers. Thus, they gain more from the management assistance and the credit provided by the firm than would more

capable farmers who already have access to credit. The incomes of contract farmers are significantly higher than they would have been without the contract, but only slightly higher than the incomes of the more-skilled independent growers. In addition, the authors also showed that the variability of gross margins across production cycles was much lower for contract growers than for independent growers, revealing another benefit of contracting.

Miyata and Minot (2007) studied the participation of contract farming in green onions and apples in Shandong province in China. They used logit, OLS, and treatment effect regression models to compare the results. A treatment effect regression model is used to control for selection bias. Using survey data collected from 162 apple and green onion farmers and from four contracting firms, they showed that contract farmers do not have larger farms nor are they more educated than independent growers. They used a Heckman selection model to control for possible selection bias and found that contract farmers' income was significantly higher than independent farmers, after controlling for household size and composition, farm size, farm assets, and other characteristics. Similar to the study by Ramaswami et al (2006), the incomes of contract farmers seem to be significantly higher than they would have been without the contract after controlling for possible selection biases in the regression analysis.

Miyata and Minot (2007) also examined the contractual arrangements between the contract farmers and the contracting firms. They found that all firms have multiple production sources of firm-own farms, contract farmers, and from spot markets. The proportion of production coming from contract farmers varied widely across firms depending on whether each firm has their own farm. They also found that some firms took two steps in selecting the contract farmers. For example, an apple firm would first choose the city or town and its vicinity within a certain distance from their firm that is well known for high quality soil, which grows higher quality apples. They would then contact the potential villages that the firm is interested in contracting with. The firm would choose the villages where village heads or leaders are cooperative and interested, as well as where location and soil quality met the firm's standard. Within each village, the village head or an equivalent leader would take the responsibility of distributing all seed and fertilizers and also collecting the harvest. As a result, the location of contract farmers naturally is close to village head's farmland. This way, the village head can monitor the contracting farms and is also able to distribute the inputs easily to all the contract farmers. Through this field observation, the distance to the village head's farmland was identified as a potential instrument to control for selection bias. The treatment effect regression results show the significant role distance to the village head's

farmland plays.

Apart from the above-mentioned works, there are also various empirical studies of contracting by livestock farmers, which is the focus of this research. Many of the hog and broiler industry cases argue that risk reduction is a major incentive for contracting (Johnson and Foster, 1994; Knoeber and Thurman, 1995; Martin, 1997; Parcel and Langemeir, 1997). Among such studies, Key (2005) estimated the non-pecuniary net benefits of farming independently compared to farming under a production contract, paying particular attention to the importance of risk reduction in the decision to contract or remain independent in the U.S. hog industry. The benefits to growers from contracting, such as risk reduction, may be overestimated if the non-pecuniary benefits enjoyed by independent producers are not accounted for. An example of a non-pecuniary benefit could include the right to make management decisions and own the commodity produced. Various economists have measured the value that workers place on attributes of their jobs. An agricultural study by Gillespie and Eidman (1998) surveyed 20 hog farmers to elicit utility functions and preferences for various contract structures and then used this information to estimate an autonomy premium.

Key (2005) developed a new method that used information on actual returns to contract and independent feeder-to-finish hog production. “First, information from a national survey of 477 feeder-to-finish hog producers and 10 years of monthly price data are used to estimate the mean and coefficient of variation of net returns from independent hog production. Second, a treatment effects model is applied to the same national survey to estimate how much of the difference in per unit income between contract and independent operations can be attributed to contracting. For a given level of risk aversion, the estimated variation in contract and noncontract income is used to compute the risk premium—the amount a representative grower would pay for the risk-reducing benefits of a contract. Finally, the autonomy premium—the non-pecuniary net benefits from independent production—is estimated as the sum of the expected difference in contract and noncontract income and the risk premium” (Key, 2005: 118). Results showed that growers have strongly prefer autonomy, with moderately risk-averse growers being willing to pay more for the attributes of independent production than they would for the risk-reducing benefits of a contract.

3.1 Conditions for successful Contract farming

Coordination, *Motivation*, and *Transaction Costs* are three pillars of a contract arrangement. Therefore, it is important to consider contract design as a multi-criterion

decision problem (Singh, 2005). Singh (2005) summarized the basic rules for contract design:

1. Coordinating to minimize production costs which means using price signals or instructions or both;
2. Balancing decentralization and centralization in farm decisions which impact problems like moral hazard and hold-up;
3. Minimizing or sharing risk and uncertainty;
4. Reducing the costs of pre- and post-contractual opportunism (adverse selection and moral hazard) by various mechanisms for allocating contracts and monitoring. Moral hazard costs could be reduced through having one party bear part of the cost, social pressures, incentive structures, or group contracts/incentives. Adverse selection could be mitigated by rationing, or offering a contract suited only for some 'good' farmers; having a 'menu of contracts' for screening farmers so that they reveal their true type by choosing certain contracts; having group contracts; and creating individual risk rating/information collection processes before contract is signed;
5. Encouraging group or co-operative action among producers to lower costs and ensure better compliance;
6. Motivating long term contracts to reduce hold-up problems;
7. Balancing pros and cons of the renegotiation of contracts over time;
8. Reducing direct costs of contracting; and
9. Using transparent contracts (Bogetoft and Olesen, 2002).

Contract arrangements that have failed previously have missed at least one of these rules. Though these rules are useful as a checklist for keeping the contract relationship balanced between firms and farmers, realizing every item in a timely manner is not an easy task.

Under a condition of surplus labor in agriculture, the firm's opportunity cost related to breaking contract conditions is small. This implies that for most developing economies, enforcement of contracts becomes a more critical issue in implementing contract farming than in the developed economies where labor in agriculture or farmers are scarce. From this perspective, contract farming is most effective after an agricultural labor surplus has disappeared.

4. Evidence of Hog industry in Jilin and Henan province, China

This section summarizes some of the preliminary findings from the firm survey, focusing on the questions related to procurement sources of hogs, whether hog firms contract with farmers directly, and their experience in contract farming (as other sections have discussed findings on pricing behavior by firms and other topics in detail).

4.1 Characteristics of Surveyed Hog Firms

The summary of basic characteristics of the surveyed hog firms is shown in Table 4-1. These firms in Jilin province are relatively new and are of smaller scale compared to those in Henan province. The average firm inception year in Henan is 1992, ranging from 1954 to 2007, while average starting year in Jilin is 2000, ranging from 1985 to 2008. The oldest firm in Henan is 30 years older than that in Jilin. Some firms in Henan might have started on a small scale, but have developed and expanded their business over the years. This may be partly the reason why the firms in Henan are larger than those in Jilin. For example, the average firm assets in 2007 in Jilin province were RMB 3,310 (US$ 479.7[1]), while in Henan they averaged RMB 7,259 (US$ 1052.0). Total average sales in 2007 in Jilin province were RMB 2,649, compared to RMB 28,321 in Henan province.

Firms in Henan province were also shown to handle more than three times of volume of pork in average compared to Jilin. By looking at the sales share, we found a general tendency in Henan province that sales earmarked for export, supermarkets, branded name outlets, and wholesalers were higher. These customers tend to require higher quality produce while the share of wet market sales, where quality requirements are the lowest, was higher in Jilin province.

Table 4-1 Basic Characteristics of Firms in Jilin and Henan

[1] Exchange rate at the time of survey in June, 2008. USD1=approximately 6.9RMB Yuan (June 2008 average) (Source: International Financial Statistics, IMF, http://www.imfstatistics.org/imf/)

	Jilin		Henan		All	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Firm start year	2000.7	5	1992.4	16	1996.5	13
Asset in 2007 (RMB Yuan)	3310	12383	7259	42328	5304	31299
Profit in 2007 (RMB Yuan)	48	328	1247	8928	650	6346
Sale in 2007 (RMB Yuan)	2649	11412	28321	214265	15608	152628
Total Sales 2007 (RMB Yuan)	2536	10381	9804	36026	6223	26858
Raising hogs share (%)	1.4	8.7	0.8	6.2	1.1	7.5
Volume of Pork (tons)	2301	8292	7023	23605	4638	17736
Sales share (%)						
Export sale (%)	0.02	0.20	0.04	0.39	0.03	0.31
Supermarket sale (%)	3.97	11.50	6.21	16.33	5.10	14.16
Restaurant sale (%)	2.15	10.20	1.84	6.76	1.99	8.62
Brand outlet sale (%)	3.53	14.39	4.46	15.22	4.00	14.79
Wholesaler sale (%)	21.92	29.35	41.12	42.97	31.57	37.98
Wetmarket sale (%)	68.00	36.39	48.38	44.57	58.09	41.80
Observations	103		105		208	

(Source) CAAS-IDE Jilin Henan Hog Industry Survey
(Note) Date not quoted is in 2008.

Table 4-2 shows the procurement sources of hogs in Jilin and in Henan. The major source in Jilin is through a middleman, averaging 70%, and independent farmers, averaging 15%. In Henan, average procurement sources ranged from middleman at 42% to a firm's own farm at 13%. The wide variety of procurement sources in Henan-based firms' portfolios may reflect the long years of experience to reduce risk. Firms would prefer to have backup and diversified sources for obtaining hogs so that even if one source fails to provide enough hogs, or could not provide the agreed upon volume, firms can continue to operate. Also, as the local market developed, firms in Henan province pursued ways to secure stable and high quality sources of hogs. As a result, firms diversified their procurement sources, learning from previous endeavors.

Table 4-2 Procurement Sources of Hogs (%)

	Jilin		Henan		All	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Firm's own farm	1.03	4.47	2.71	12.88	1.87	9.65
Contract	3.43	15.49	9.71	22.84	6.57	19.72
Firm's procurement team	3.48	16.26	27.25	37.17	15.36	31.00
Middleman	70.29	41.24	48.58	42.03	59.43	42.94
Independent farmers	15.22	33.11	11.36	26.78	13.30	30.11
Other	6.56	23.73	0.43	2.19	3.51	17.13

(Source) CAAS-IDE Jilin Henan Hog Industry Survey
(Note) 204 observations (valid answers)

4.2 Relationships with Contract Farmers

Out of 208 firms, 36 firms had some type of contractual arrangements with farmers, including informal, or oral, contracts. Table 4-3 shows the forms of contracts carried out by the surveyed firms. Nearly half of the contracts were signed directly by farmers and about one-third were informal oral contracts. Four firms had contracts signed by cooperative farmers and three firms had contracts where farmers signed but negotiation took place through cooperatives. The surveyed firms had mostly direct contracts, either in a written or oral format, rather than via cooperatives.

Table 4-3 Type of contract with farmers

Farmer signed the contract (no coop involved)	18	46.2%
Oral contract	13	33.3%
Cooperative Farmers signed the contract	4	10.3%
Farmer signed, but negotiation via cooperatives	3	7.7%
Other	1	2.6%
	39	100.0%

(Source) CAAS-IDE Jilin Henan Hog Industry Survey
(Note: multiple answers)

Out of 41 responses from those firms who had contractual arrangements with farmers, more than 60% of firms employ market prices rather than guaranteed, pre-fixed pricing (Table 4-4). This may be due to the fact that pork prices have been fluctuating relatively highly and firms prefer to reflect the market price since the price of meat has been following an upward trend in conjuncture with oil, feed, transportation and other input costs.

Table 4-4 Price agreement with farmers

Market price at the procurement timing	15	36.6%
Fixed price upon signing the contract	13	31.7%
Market price plus premium	10	24.4%
Guaranteed price	1	2.4%
Other	2	4.9%
Total	41	100%

(Source) CAAS-IDE Jilin Henan Hog Industry Survey
(Note: multiple answers. Contracted firms are 36.)

5. Concluding Remarks

In this chapter we have found that there are many pros and cons embedded in contract farming experiences. Early studies discussed the imbalanced power and historical and political context in contract farming between farmers and firms, finding various problems that made the sustainability of contract arrangements difficult. Some studies provided evidence that contract farming actually benefits small farmers through enabling them to participate in modern market chains. Farmers benefit by receiving inputs on credit, technical assistance, and often a guaranteed price, allowing them to produce a higher-value commodity than would otherwise be possible. Several studies also provided evidence of contract farming benefiting farmers' income by using a Heckman model or a treatment effect model to control for possible biases.

However, cases in which buyers or farmers violate the terms of the contract are common and a good number of contract farming schemes fail for one reason or another. By examining empirical studies, we were able to list in this chapter the key factors and conditions for success. Although the application of these conditions has yet to be seen in empirical studies, these conditions should be reviewed and revised carefully depending on each commodity, industry, and market situation.

The preliminary results from the hog industry firm survey in the Jilin and Henan provinces showed that contract farming is more prevalent in regions where the hog industry has a long history of experiences and is larger in scale. As we saw in other studies, firms in the Chinese hog industry also try to secure procurement sources in order to reduce risk by diversifying their sources and obtaining hogs not only from the firms' own farms, but also by organizing a special firm procurement team and contracting with middleman, independent farmers, and others.

The contract type and price arrangement information obtained through the survey were also summarized in this chapter. Types included written and oral contracts and also some involvement of cooperatives acting between firms and farmers in either signing the contract or in negotiating the terms. Further analysis using the firm survey data is the next task to further understand and detail how and why these differences in contract types arise.

Reference

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