111 EAAE-IAAE Seminar 'Small Farms: decline or persistence'

University of Kent, Canterbury, UK

26th-27th June 2009

Collective action of small farmers:

A case study of Ruoheng farmer watermelon cooperative in China

Zuhui Huang (China Academy for Rural Development, Zhejiang University, 268 Kai-Xuan Road, Hangzhou, Zhejiang, China. Email Address: zhhuang@zju.edu.cn.)

Qiao Liang (China Academy for Rural Development, Zhejiang University, 268 Kai-Xuan Road, Hangzhou, Zhejiang, China. Email Address: liangqiao2323@126.com)

G.W.J. Hendrikse (Rotterdam School of Management, Erasmus University, PO Box 1738 Office T8-56, 3000 DR Rotterdam, The Netherlands, ghendrikse@rsm.nl.)

Abstract: Watermelon production investments, incomes and the access to markets between members of a cooperative and individual small farmers are compared. The results of the case study regarding members of a watermelon cooperative and five individual small farmers in Zhejiang province in China indicate that members of the cooperative are prone to produce food of higher quality, have obvious advantage in accessing modern food supply chains over individual small farmers, and subsequently gain a significantly higher return or income than individual small farmers.

Key words: farmer cooperative, benefit, income

1 INTRODUCTION

The product supply chain in China is undergoing transformation in both structure and management (Hu and Reardon, 2004). At present, the product circulation system in China is diversified. It includes not only the traditional production-supply-marketing system constituting of small farm households, peddlers, processing enterprises, wholesalers and retailers, but also new retailers such as synthesized supermarkets and specialized fruit supermarkets. Small-scale farmers are hardly capable of dealing with these dynamic markets. There are imbalances between sellers and buyers regarding the distribution of benefits and risk sharing in the product value chain in China. Farmers receive hardly a reasonable share compared to the risk they shoulder, due to their weak bargaining power.

Not only in China, but also in most of the countries, especially developing countries, the prospects for smallholders are being challenged. The changing production methods, increased concentration in the supply chain, low world prices and more open markets to international competition are threatening to small farmers (Hazell and Poulton et al. 2006).

Responding to the perceived challenges, farmer cooperatives were established to help small farmers. There is a substantial literature about the benefits and necessities of the development of organizations that help farmers to face large markets (Staatz, 1987; Zusman and Rausser, 1994; Valentinov, 2007). As an organization of small farmers, farmer cooperatives can be regarded as an extension of individual family farms, which makes it possible to combine the advantages of family based farms with the external economies of scale in purchasing, marketing, and bargaining (Valentinov, 2007). Following the World Development Report (2002), "producers' organizations amplify the political voice of smallholder producers, reduce the costs of marketing of input and outputs, and create opportunities for producers to get more involved in value-adding activities". Zusman and Rausser (1994) point out that under market failure, collective action yields efficiency improvements over uncoordinated private action. However, Stockbridge (2003) concludes that the transaction costs of doing business with third parties are replaced in part by the transaction costs of organizing themselves together.

Based on these theoretical arguments, we investigate the claim that small farmers who market through a cooperative or who are members of a cooperative gain relatively higher returns than individual farmers from empirical evidence. The main objectives of the study are to:

1) determine differences in the investment and returns between farmers joining a cooperative and individual small farmers.

2) identify the key factors contributing to advantages of a cooperative over individual

farmers.

3) address what can be done to make improvement in cooperatives to gain more value added for farmers.

The article is organized as follow. Section 2 reviews the literature about small farmers and farmer cooperatives and concludes proposition. Section 3 is dedicated to methodology. Results of the data analysis are presented in section 4. Finally, conclusions and some further research tips are formulated in section 5.

2 THEORETICAL FRAMEWORK

Advantages and disadvantages of small farmers are discussed (2.1). Then the role of farmer cooperatives as a response to the dilemma and challenge that small farmers are facing is reviewed and a proposition is formulated (2.2).

2.1 Advantages and dilemmas of small farmers

A number of definitions have been proposed to describe both small farmers and small farms. Farms of less than 2 hectares are deemed as small farms (Hazell, 2006). Small farms also have been defined as household units that make most management decisions, control most of the farm labors supply, and normally much of the capital as well (Devendra, 1993). Correspondingly, the World Bank (2003) refers to smallholders as those with a low asset base, operating less than 2 hectares of cropland. Narayanan and Gulati (2002) characterize a smallholder as a farmer practicing a mix of commercial and subsistence production or whose family provides the majority of labor and the farm provides the principal source of income. Wapenham (1979) regards a small farmer as an agricultural producer controlling no more land than he can farm without the permanent employment of non-family labor. Adams and Coward (1972) defines a small farmer as one who had very little access to political power, productive assets, and/or income streams within society. Heidhues and Bruntrup (2003) point out small-scale farmers often correlate with poor-resource, low-income or low technology farming.

Valentinov (2007) point out that small scale family farming is still dominating in agriculture production. One of the advantages supporting small farms is family management and family operation, which is derived from the specific characteristics of agricultural production. These characteristics include the significant dependence of production on nature, high asset specificity, inelastic demand for agricultural products and inputs, and the special role of land as a production factor (Valentinov, 2007). A high dependence on nature makes the supervision cost of hired labors especially high (Pollak, 1985), which favors the family-based mode in agricultural production, as well as small farms.

Another point regarding the advantage and disadvantage of small farmers lies in the economies of scale. Economies of scale are defined by a production function which exhibits a more than proportional increase in output for a given increase in magnitude of all input (Johnson and Ruttan, 1994). Two types of economies of scale are identified, i.e. internal economies of scale and external economies of scale (Johnson and Ruttan, 1994). Internal economies of scale are related to the agricultural production process, while external economies of scale are observed in terms of access to inputs, credits, services, storage facilities, marketing, and distribution opportunities. The consensus of researchers on the question of whether internal economies of scale exist in agriculture is that, except under very specific circumstances, they do not. On the one hand, empirical studies (Garcia, Sonka, and Yoo, 1982; Peterson and Kislev, 1991; Jaforullah and Devlin, 1996) typically find the nonexistence of production scale economies in agriculture. On the other hand, Valentinov (2007) regards the first disadvantage of small size farms lies in the inability to realize the external economies of scale. Small scale producers generally lack the power and negotiation capacity in their relationship with either upstream or downstream agents (Bienabe, 2004). Since upstream input suppliers and downstream processing or marketing firms have significantly larger sizes than individual small farmers, small farmers lack 'countervailing power' (Bonus, 1986; Staatz, 1987) to realize bargaining power balance or external economies of scale. Staatz (1987) argues that farmers face significant risks of their trading partners exercising opportunistic expropriation of quasi-rents on their specific assets.

2.2 Cooperatives as response to small farmers' dilemma

Due to the dilemma between the efficiency of family-base agricultural production and the limitation in external economies of scale, a new institutional arrangement or government structure is pursued. Staatz (1987) argues that cooperatives allow their members to capture many of the advantages of large-scale marketing, input production, and strategic planning while still permitting farmers to make most of their farm-level decisions themselves. He regards a commonly cited advantage of farmer cooperatives as their ability to reduce the variability of farmers' incomes through the pooling of grower returns and expenses across products, time, and space, i.e. pooling leads to some reduction in risk.

Valentinov (2007) proposes that cooperatives overcome the disadvantages of small farmers' low market power and less market access by marketing, purchasing, and bargaining. Successful market access development can be reached through collective actions by organized small farmers together. A cooperative can increase returns to members in two ways: through improving the efficiency of distribution system and through political action (Staatz, 1987). The political way is especially important in areas of agricultural production where public involvement is large. The advantage in distribution efficiency is usually referred to the reduction of transaction costs in decision, negotiation and contracting, etc, as well as the reduction of transportation

costs. Some more persuasive evidence is derived. Sexton (1990) analyses the effect of farmer cooperatives in an oligopsonistic and spatial market model and finds that the presence of a cooperative makes farmers better off compared to a market of only individual farmers. He put emphasis on the yardstick effect of farmer cooperatives and argues that cooperatives likely cause farmers to perform better than they otherwise would. Following the point of Sexton (1990), Tennbakk (1992) establishes a duopoly market model not only including the farmers' surplus but also taking into consideration the consumers' surplus. He argues that the total production, consumers' surplus, as well as total market welfare are all greater in the cooperative duopoly market than in the private duopoly market. And the presence of cooperative does make members better off, but at the expense of non-member farmers' being worse off. Regardless of farmers' being better off or worse off compared with the situation without presence of cooperatives, we definitely see a favored benefits of members over non-members from the above review. This is summarized in our proposition.

Proposition: cooperatives can help Members achieve higher profits than individual farmers.

3 METHODS

Firstly measurements of factors related to proposition are chosen (3.1). Then watermelon production in the Zhejiang province in China, and especially the selected case cooperative, as well as data information, are introduced and specified (3.1). Finally hypotheses are formulated based on the proposition and cases selected (3.3).

3.1 Measurements

According to the proposition mentioned above, what we try to measure are benefits or advantages of cooperatives over individual farmers. On the one hand, sale channels will be looked into to find out if there are substantial differences between the cooperative and individual farmers. The market access advantage is emphasized by many researchers (Staatz, 1987; Bienabe, 2004; Valentinov, 2007). On the other hand, net economical profits of the two groups will be compared. As cooperatives are jointly owned by members and members hold the residual claim rights, profit of the cooperative is taken as the joint profits of all the members and is compared with that of farmers.

Let Π_c and Π_f be the net profits per mu (1mu = 667m2 or 0.0667ha, or 1 hectare = 15mu) of the cooperative and individual farmers respectively. And $\Pi_i = p_i a_i - c_i$, where p_i is the price per kg, a_i is the average production area of each farmer, and c_i is the average production and packing costs of each farmer. 'i' is denoted to either

cooperative or individual farmer.

3.2 Case selection and introduction

Watermelon is a cosmopolitan fruit and it ranks five in the top ten of world biggest fruits. China has the largest growing area and gross output of watermelon in the world. Zhejiang is one of the biggest provinces in the production of watermelon in China. According to the statistical data, the total area of watermelon in Zhejiang was 95,280 hectare in 2006, compared with 84,410 hectare in 2005. And the gross output was 2.90 million tons, compared with 2.56 million tons in 2005 (Data source: Zhejiang Statistical Yearbook 2007).

Wenling is a city famous for watermelon production. It is called 'hometown of greenhouse watermelon in China', due to its nice climate and soil condition of southeast littoral, as well as advanced greenhouse techniques. Ruoheng watermelon cooperative was selected as case cooperative as it covers a biggest melon growing areas and has a largest membership among all the watermelon cooperatives in Zhejiang province.

Ruoheng farmer watermelon cooperative was established in July 2001, and was registered with a capital of Y522,000. The farming area and share of each member is decided on the basis of the member's technical level of production and management. A member has to pay Y1,000 for each share, with a maximum share of 10%. The registered brand "Yulin" is maintained by strict standards in production, quality inspection, packaging, marketing, delivery and traceability.

The production bases of the cooperative are not limited in local provinces, but extended to other provinces of different climates to grow watermelons in different seasons. Up to the end of 2008, the cooperative has had 19 production bases, with a total area of 20,070 mu (1 mu = 667m^2 or 0.0667ha, or 1 hectare = 15 mu), and 352 members. The locations of the production bases vary from west to east and from north to very south. Watermelons of different bases are picked and delivered to markets at different times of the year because of the different climates and other natural conditions, which ensures year round supply of watermelon.

The decision-making mechanism of the cooperative is based on "one member, one vote". The cooperative offers fixed wages and bonus to the members and temporary labor forces every month. Each of the cooperative members gets Y1000 per month as a fixed wage which can also be viewed as the labour cost of the cooperative, compared to a common firm. Besides, they take the financial system of twice returning according to the transaction volumes and the shares as well. At the end of the year, expanding fund and risk fund are firstly deducted from the net profit. The profit remained will be distributed to members according to their contributions and shares. The "contribution" refers to the watermelon output of each member or the

volume of internal transaction between the cooperative and members. The expanding fund is used to invest in new production bases, while the risk fund is to be reserved for natural disaster and accidental costs, such as typhoon, which happens quite often in summer season in the southeast of China.

3.3 Hypotheses

Two hypotheses are formulated based on the proposition and measurements.

Hypothesis 1: The watermelon cooperative has access to more diversified marketing channels than individual farmers.

Hypothesis 2: Members of the cooperative gain higher profits than individual farmers.

3.4 Data collection and description

Semi-structure interviews were conducted with the cooperative manager, as well as individual melon farmers, using a questionnaire that covered all the basic information, including data regarding personal information, production areas, costs, prices and sale channels, etc. Semi-structure interview is chosen out of structured, semi-structured and unstructured interview because of its advantages in enabling interviewees to probe deeply, to solicit expansive responses, and thereby uncover previously hidden detail (Burgess, 1982). Five individual melon farmers who didn't join the cooperative were selected randomly in Wenling city to be interviewed as a comparison group to the cooperative.

According to the interviews, both cooperative members and individual farmers are full-time growers of watermelon. The costs and benefits of the cooperative and individual farmers are described in Table 1.

Table 1, Data regarding watermelon production and sale of the cooperative and individual farmers (Y/mu)

Items	The cooperative	Individual farmers[1]
Seeds/seedlings	45	270
Fertilizer and pesticide	1,100	1,470
Machine costs	250	100
Packing costs	1,500	0
Cost of labor		350
Cost of land rent	900	900
Output (kilogram)	4,000	5,000
Sale price (Y/kg)	3.0	1.2
Average production area per farmer (mu)	5	10
Sale channels	Synthesized supermarkets: 50%; Specialized fruit supermarkets: 30%; Franchised stores: 10%; Restaurants: 10%.	Wholesalers: 95%; Others (retail): 5%.

Data source: field investigation updated in 2008.

The cooperative purchases all the seeds and let members grow saplings themselves, while individual farmers buy tree seedlings directly. It on the one hand saves seeds expense for members and on the other hand contributes to uniform production standardization.

Packing costs only occur to the cooperative because watermelons of the cooperative are sorted firstly and then packed with mesh bags and paper bags, while watermelons of individual farmers are sold without any package.

Both members of the cooperative and individual farmers rent lands to grow watermelon, rather than use their own lands. That's because watermelon can not be grown in the same farmland in a continuous year. Farmland that has been used to grow watermelon has to be sown with other crops for more than three years to recover the soil fertility before it can be used again to grow watermelon. Farmers keep looking for new land for the melon production every year around.

4 RESULTS AND DISCUSSION

Results regarding the hypotheses are presented (4.1). And some key factors contributing to the results are discussed (4.2).

---

[1] Data of individual farmers are averaged data of the five interviewed individual farmers.

4.1 Results

Data in Table 1 is simplified and coded in Table 2.

Table 2, Costs and profits of the two groups

Items	Members	Individual farmers
Production and packing Costs (Y)	3,795	3,090
Sale price (Y/kg)	3.0	1.2
Output (kg/mu)	4,000	5,000
Profits (Y/mu)	12,000	6,000
Net profits (Y/mu)	8,205	2,910
Sale channels/Customers	Supermarkets: 80%; Franchised stores: 10%; Restaurants: 10%.	Wholesalers: 95%; Others (retail): 5%.

Data source: field investigation updated in 2008.

According to Table 2, we see a significant difference in general production and packing costs between the cooperative members and individual farmers. Members of the cooperative have a 22.8% higher investment in production and packing than individual farmers. The main disparity in costs comes from packing and machinery. Packing costs of members include package material such as labels, net bags and paper boxes. But hardly any packing costs occur to individual farmer, i.e. farmers' watermelons are sold without package. Besides, farmer cooperatives are more likely to utilize machinery technology than individual farmers, due to the collection action effect both in finance and utilization. An obvious result is drawn that members of the cooperative have a higher investment level than individual farmers.

Substantially different sale channels of watermelons are observed between the cooperative and individual farmers, which is a good reflection of the co-existence of supply chains, i.e. the modern supply chain characterized by supermarkets and the traditional supply chain based on the wholesale markets. The supermarkets that the cooperatives transact with include synthesized supermarkets and specialized fruit supermarkets. Individual farmers neither have the countervailing power to negotiate with supermarkets, nor can they meet the private standards of supermarkets, like continuous and stable supply of products. The marketing channels described confirm our hypothesis that the cooperative has more access to diversified markets.

Both the general profits and the net profits imply an obvious difference between members and individual farmers. More striking difference is observed in sale prices, which are Y3.0 per kg and Y1.2 per kg respectively. The sale price difference can be explained by several reasons. High quality is one of the key factors contributing to high price. Higher quality of the cooperative's watermelon is derived from the

uniform production standard and high investment in packing. Secondly, brand effect and reputation account for another important reason. "Yulin" is now a well-known brand for its favorable taste, as well as nice appearance. Thirdly, the direct delivery from the cooperative to supermarkets and franchising retail stores tends to gain a higher price than that through wholesalers. In other words, the cooperative helps to internalize some profits from other stages of supply chains. We conclude the confirmation of the hypothesis that members of the cooperative do gain significantly higher profits than individual farmers.

4.2 Discussion

The above stated results on the one hand have confirmed the benefits of the cooperative over small scale farmers in big markets; on the other hand induce the interests in pursuing the reasons that contribute to the farmer cooperative's advantage. We try to find out reasons through looking at some attributes of the cooperative.

Firstly, a quasi-membership or restricted membership system is applied in the Ruoheng cooperative while most cooperatives in China are still applying the open membership policy. Farmer cooperatives can be distinguished into two main types: traditional cooperatives and new generation cooperatives (Cook and Iliopoulos, 2000). New generation cooperatives contain a series of improvements compared to traditional ones (Cook and Iliopoulos, 2000; Chaddad and Cook, 2002), such as closed membership, more clearly defined property rights, and more defensive purpose, etc., which help them to be more propitious to the modern markets and to the object of income increment. Valentinov (2007) thinks that open membership leads to the free-rider problem and the horizon problem, i.e. members can capture benefits from their investment only over the horizons of their expected membership, which causes short-term investment and/or underinvestment. Besides, with the system of quasi-members or close membership, the Ruoheng cooperative tends to ensure relatively homogenous membership, which is especially important in reducing the decision costs of a cooperative (Bienabe and Coronel, et al., 2004).

Secondly, the Ruoheng watermelon cooperative has realized large volume supplies and year-round stable delivery of fresh watermelon by growing in different climate areas around China, which is never possible for small individual farmers. The rising of supermarkets and the consequent procurement and distribution centers in the supply chain brings big effects on wholesale markets and retail markets, as well as on producers (Hu and Reardon, et al., 2004). They also find that the supermarket revolution is spreading faster in China than anywhere else in the world. Supermarket chains impose private standards of quality and safety on producers. One of the requirements formulated by supermarkets is that farmers have to be able to produce on a regular basis and to deliver a large quantity of goods at a consistent rate (Hu and Reardon, et al., 2004). Farmers can hardly ensure a volume and consistent deliver of fresh products individually. Ruoheng watermelon cooperative leads the way in

realizing consistent deliver by growing in different season areas.

Thirdly, support and guidance from governments externalizes a quantity of costs for Ruoheng cooperative. Zhejiang is the most developed province in the development of farmer cooperatives and legislations. "Rules of Farmer Professional Cooperatives of Zhejiang Province" was implemented on Jan. 1st, 2005, which was the first formal law of farmer cooperatives in China. The national "law of farmer cooperatives of China" was put into practice on Jan. 1st, 2007. There are a series of measures provided by governments of city levels and provincial level in Zhejiang province to help farmer cooperatives in foundation, production techniques, marketing and subsidies as well. The support from governments, to a great extent, impels cooperatives to keep going and improving.

5 CONCLUSION AND FURTHER RESEARCHES

The case study tests the proposition that farmers who join together in a cooperative to take collective actions are prone to have more opportunities and possibilities to gain access to modern supply chains and acquire higher income returns than individual small farmers. Farmers acting collectively are no longer a mere price recipient. They establish countervailing power to negotiate with other parties in markets. Farmer cooperatives can not only reduce transaction costs and gain larger value added through their collective action, but also keep the economy residuals within the agriculture, consequently to form a self-accumulating and developing ability for the agricultural sector.

Looking at the robustness of the testing result, there is not only an increasing body of theoretical supports which are reviewed in the theory part (Bonus, 1986; Staatz, 1987; Sexton, 1990; Valentinov, 2007), but also a quantity of empirical evidence (D'Haese, et al, 2005; Huang et al, 2008). D'Haese, et al (2005) use data of a sample of 70 dairy farms and find that cooperative membership contributes to increased input, increased yield, better market access, and increase in income. Huang et al (2008) also prove the role of farmer cooperatives in helping farmers in transaction cost reduction, and value added gaining, based on a sample of 60 pear farmers.

There are several directions for future research. First, this case study is limited by the size of the sample, which consists of one case cooperative and five individual farmers. More cases of farmer cooperatives and individual farmers have to be included for further testing and analysis. Then regression analysis can be adopted if the size of the sample is big enough. Second, the study is focused on a specific product. Testing can be extended to contain different products, like cereals, vegetables, fruits and livestock. Third, in spite of the benefits in joining in a cooperative, why there are still large quantities of small farmers sticking to individual production and marketing? Are there any other specific reasons for the co-existence of cooperatives and individual farmers?

REFERENCES

Adams D. and E.W. Coward (1972), Small farmer development strategies: agricultural development council, New York.

Bienabe E., C. Coronel, J.F. Le Cop and L. Liagre (2004), Linking smallholder farmers to markets: Lessons learned from literature and analytical review of selected projects, Report for the World Bank.

Bingen J., A. Serrani, and J. Howard (2003), Linking farmer to market: different approaches to human capital development, Food Policy, 28: 405-419.

Bonus H. (1986), The cooperative association as a business enterprise: A study in the economics of transactions, Journal of Institutional and Theoretical Economics, 142: 310-339.

Burgess R.G. (1982), Field research: a sourcebook and field manual, Allen and Unwin, London.

Chaddad F.R. and M.L. Cook (2002), An ownership rights typology of cooperative models, Department of Agricultural Economics Working Paper.

Cook M.L. and I. Constantin (1999), Beginning to Inform the Theory of the Cooperative Firm: Emergence of the New Generation Cooperative, The Finnish Journal of Business Economics, 4, 525-535.

Cook M.L. and C. Iliopoulos (2000), Ill-defined property rights in collective action: the case of U.S. Agricultural cooperative, Institutions, contracts and organizations: perspectives from new institutional economics, ed. Claude Menard, Edward Elgar Publishing Lid., London, U.K..

Devendra C. (1993), Sustainable animal production from small farm systems in South-East Asia, Food and Agriculture Organization of the United Nations Rome.

D'Haese M., G.N. Francesconi, and R. Ruben (2005), Network management for dairy productivity and quality in Ethiopia, Conference Volume of 92nd EAAE Seminar, Gottingen, Wageningen Academic Publisher.

Dul J. and T. Hark (2008), Case study methodology in business research, Published by Elsevier Ltd., 2008.

Garcia P., S.T. Sonka, and M.S. Yoo, Farm size, tenure, and economic efficiency in a sample of illinois grain farms, American Journal of Agricultural Economics, 1982(64:1), 119-123

Gereffi G., (1999), International trade and industrial upgrading in the apparel commodity chain [J]. Journal of International Economics, 48: 37-70.

Hazell P., Poulton C., Wiggins S. and Dorward A. (2006), The future of small farms: synthesis paper, Based on Research Workshop organized by IFPRI, ODI and Imperial College, Wye.

Heidhues F. and M. Bruntrup (2003), Subsistence agriculture in development: its role in processes of structural change, Studies on the Agricultural and Food Sector in Central and Eastern Europe, Vol. 22.

Huang Z., J. Zhang, and K. Chen, (2008), China pear value chain, Chinese Rural Economy, Vol. 7.

Hu Dinghuan, T. Reardon and S. Rozelle (2004), The emergence of supermarkets with Chinese Characteristics: Challenges and Opportunities for China's Agricultural Development, Development Policy Review, Volume 22, Issue 5, 557-586.

Jaforullah, M and Devlin, N.J. 1996, Technical efficiency in the New Zealand dairy industry: a frontier production function approach, New Zealand Economic Papers, 1996(30),1-7

Jin B. and H. Guan (2005), Analysis of the formation mechanism of industry centralization, Social Science Transaction of Shanxi Altitude School, 3: 53-55.

Johnson N. and V. Ruttan (1994), Why are farms so small?, World Development, 22(5): 691-706.

Litchfield J., N. McCulloch and L.A. Winters (2003), Agricultural trade liberalization and proved dynamics in three developing countries, American Journal of Agricultural Economics, 12: 1285-1291.

Narayanan S. and A. Gulati (2002), Globalization and the smallholders: a review if issues in Ukraine, In Aktyal'ni pytannia ahrarnoi polityky, 2002-2003, Agricultural Policy for Human Development Project, Kiev.

Peterson W. and Y. Kislev (1991), Economies of scale in agriculture: A reexamination of the evidence, Staff paper, Department of Agricultural and Applied Economics, University of Minnesota.

Pollak R. (1985), A transaction cost approach to families and household, Journal of Economics Literature, 23: 581-608.

Sexton R.J. (1990), Imperfect competition in agricultural markets and the role of

cooperatives: A spatial analysis, American Agriculture Economics Association, Vol. 72, No. 3: 709-720.

Staatz J.M. (1987), Farmers' incentive to take collective action via cooperatives: a transaction cost approach, Cooperative Theory: New Approaches. J. Royer, ed., pp. 87-107. Washington DC: U.S. Department of Agriculture, ACS Service Report No.18.

Stockbridge M. (2003), Farmer organization for market access: learning from success, Literature Review. London: Wye College.

Tennbakk B. (1992), The case of cooperative mixed duopoly, Working paper, University of California.

Valentinov V. (2007), Why are cooperatives important in agricultural economics perspective, Journal of Istitutional Economics, 3(1): 55-69.

Voos C., N. Tsikriktsis N. and M. Frohlich (2002), Case research in operations management, International Journal of Operations & Production Management, 22(2), 195-219.

Wapenham W.A. (1979), The big problem of the small farmer, ILACQ Symposium Arnhem, The Netherlands.

Weatherspoon D.D. and T. Reardon (2003), The rise of supermarkets in Africa: Implications for agrifood system and the rural poor, Development Policy Review, 2: 333-335.

World Bank (2002), From action to impact: the Africa region's rural strategy, World Development Report, the World Bank, Washington, DC.

World Bank (2003), Reaching the rural poor: a renewed strategy for rural development, Washington, D.C.

Zhejiang Statistical Yearbook 2007, China Statistic Press.

Zusman P. and G.C. Rausser (1994), Interorganizational influence and optimality of collective action, Journal of Economic Behavior and Organization, 24: 1-17.