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Cooperative membership and farmers' choice of marketing channels – Evidence from apple farmers in Shaanxi and Shandong Provinces, China☆

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ABSTRACT

Cooperatives are established to improve farmers' production conditions, to increase their bargaining power and to enable them to benefit from modern value chains. In China, farmers are members of a cooperative for multiple reasons. Little is known on whether and how cooperative membership affects farmers' choice of marketing channels. This paper examines determinants of farmers' choice of marketing channels, especially how cooperative membership impacts upon this choice. Our analysis is based on survey data collected in 2015 among 625 apple growing farm households in the provinces Shaanxi and Shandong. We employ endogenous switching probit models to deal with potential endogeneity of membership in estimating the determinants of marketing channel choices. We find that cooperative membership has a positive impact on selling to wholesalers and a negative impact on selling to small dealers, but no significant impact on selling to the cooperative itself. As products sold through cooperatives generally comply with relatively stringent food quality and safety standards, these results imply that policies promoting cooperative members to sell their products through cooperatives are likely to have a significant impact on food quality and food safety in China.

1. Introduction

Recent structural changes in agro-food markets are characterised by increasing public concern about food quality and food safety in both developed and developing countries. Demand for better quality food and for stricter safety standards is growing, mainly due to the increasing purchasing power of consumers (Narrod et al., 2009). These changes can be both opportunities and challenges to smallholder farmers. On the one hand, the changes allow farmers to benefit from opportunities arising from export markets, local supermarkets and new processing firms (Bijman, 2016). On the other hand, these new markets in turn require compliance with higher production and food safety standards and the stronger coordination of sequential activities in the value chain (Abebe et al., 2013). The high costs of compliance with these standards can exclude smallholder farmers from these new markets.

Cooperatives can facilitate smallholder farmers to access markets and strengthen their economic position. Firstly, cooperatives enable farmers to bargain collectively with both sellers of inputs and buyers of farm products (Bijman and Iliopoulos, 2014). Secondly, cooperatives can support the information flow between farmers and the market and thus help farmers to meet the specific requirements of high-value added food markets (Wollni and Zeller, 2007). In addition, cooperatives can help realize food traceability (Moustier et al., 2010), thereby contributing to food safety.

The Chinese land tenure reform in the late 1970s turned the farm household into the basic unit of agricultural production. The land reform provided most farmers with an adequate basis for their livelihoods. However, the reform also resulted in land fragmentation and small-scale agriculture, which have become an obstacle to develop modern agriculture (Tan et al., 2008). Like smallholder farmers in other developing countries, Chinese farmers often have difficulties in accessing high-value agricultural markets. Having realised that cooperatives can facilitate smallholders to meet market requirements, the Chinese government began promoting the development of cooperatives at the beginning of the 21st century (Jia

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et al., 2012). The promulgation of the Chinese law on Specialised Farmers Cooperatives in 2006 has been a milestone in the development of Chinese cooperatives. By October 2015, over 40% of farm households had become members of at least one cooperative.[1]

Research on agricultural cooperatives has focussed on two main issues. One issue is the relationship between the cooperative and its members, such as the determinants of cooperative membership (Fischer and Qaim, 2012; La Ferrara, 2002), the relationship between farmers' preferences and the functions of the cooperative (Cechin et al., 2013; Kalogeras et al., 2009), and the effect of cooperatives on farmers' market participation (Barrett, 2008; Hellin et al., 2009). The other issue is the impact of cooperatives on agricultural production, the adoption of agricultural technology, and farmers' welfare (Abebaw and Haile, 2013; Chagwiza et al., 2016).

Limited literature is available on whether or not, and to what extent, the development of cooperatives affects farmers' choice of marketing channels. Milford (2014) and Mujawamariya et al. (2013) analyse the reasons for producers' choice of different marketing outlets by comparing production costs and transaction costs involved in dealing with different buyers with different production requirements, respectively. Both studies do not examine the impact of cooperative membership on the choice of marketing channels. Jia et al. (2012) analyse the main marketing channels of cooperatives in China and find that cooperatives mainly sell products to wholesale markets and facilitate farmers' access to markets by bridging farmers and government-driven agribusiness. Since they use the cooperative as the unit of analysis, they do not examine farmers' motivations for joining cooperatives, nor the impact of membership on farmers' choice of marketing channel. Insights into such choices by farmers are important to evaluate recent policies in China that aim at stimulating farmers' involvement in high-value food chains through promoting their participation in cooperatives. The objective of this paper is therefore to examine the determinants of cooperative membership for farmers and the effect of membership and other factors on farmers' choices of marketing channels.

We focus our analysis on apple farmers in the two main apple producing areas in China. China is the world's leading producer of apples, producing roughly 55% of the total apple output in 2015 (Frederick et al., 2015). Apples are the fruit crop with the largest acreage and the highest production value in China, and have been the dominant income source for farmers in the two main apple production regions – the Bohai Gulf area and the Loess Plateau area (Wang and Huo, 2014). The empirical analysis is based on an extensive field survey of 625 apple farm households in Shaanxi Province located in the Loess Plateau and Shandong Province in the Bohai Gulf. We employ an endogenous switching probit model to estimate the determinants of each marketing channel taking into account the potential endogeneity of the membership decision.

2. Theoretical framework

Arguments for the existence of cooperatives can be found both in neoclassical economics and in transaction cost economics. Sexton (1990) posits the competitive yardstick effect of cooperatives, which means that cooperatives have a competition enhancing effect in oligopolistic markets. It was found that the degree of yardstick effect is determined by membership, market structure and the resulting volume of deliveries (Hoffman and Royer, 1997). However, neoclassical economics provides little insight in how to structure transaction relationships. Transaction cost economics offers a better framework to analyse the transaction attributes and the governance structures (Sykuta and Cook, 2001).

2.1. Transaction cost theory

Transaction costs arise due to attributes of the transaction as well as characteristics of the human actors involved in the transaction. Williamson (2005) assumes that transaction costs are caused by bounded rationality and opportunism of human behaviours and attributes of a transaction, especially uncertainty, frequency[2] and asset specificity (Williamson, 1979). The choice of cooperatives as an institutional arrangement results from increasing asset specificity and transaction uncertainties (Ménard, 2007). In addition, Key et al. (2000) argue that transactions between farmers and buyers are closely related to farmers' assets for production and their geographical location. For example, due to the small size of the farm, economies of scale cannot be realised by smallholders; they thus face higher external transaction costs in obtaining inputs and financial services.

2.1.1. Production-specific assets

We define production-specific assets as both physical and human investments that are specialised and unique to a product. Physical production asset specificity consists of land, machinery, buildings and is closely related to the specialisation of the farm. Human asset specificity arises from "learning by doing" (Williamson, 1998). Skill acquisition requires time, energy and money. Acquired skills, especially job-specific skills, are not easy to transfer across jobs. Human asset specificity in this sense is a sunk cost, which leads to a high probability of being locked in.

2.1.2. Geographical location

Geographical conditions limit the size and distribution of farms. Small farms usually face high transaction costs because economies of scale in transacting cannot be realised. Smallholders have higher unit costs of procuring inputs, obtaining credit and other financial services, getting agronomic and market information, and marketing products (Wiggins et al., 2010). In addition, adverse geography generally co-occur with poor roads, leading to high transportation costs.

2.1.3. Transaction uncertainty

Transactions are subject to both behavioural and environmental uncertainty. Behavioural uncertainty comes from the opportunistic inclinations of the transacting parties (John and Weitz, 1988), while environmental uncertainty results from the inability to specify the exact conditions of the future exchange. Uncertainties lead to transaction costs. Direct ex ante transaction costs arising from behavioural uncertainty and information asymmetry include the costs of screening and selecting partners. Direct ex post transaction costs are related to the processes put in place to measure a partner's performance (Standifird and Marshall, 2000).

2.2. Farmers' choices

We distinguish between two choices farmers can make. The first choice is about membership of a cooperative, while the second choice is about marketing channel. We assume that farmers make these decisions on the basis of the costs and benefits related to each choice. However, it is impossible to measure all the costs and benefits of both decisions (Masten et al., 1991). It is particularly difficult to measure accurately the transaction costs associated with the marketing process. Transaction costs thus are mainly assessed in a comparative manner (Verhaegen and Van Huylenbroeck, 2001). We adopt the empirical approach proposed by Williamson (1991), which means we focus on the transaction characteristics in order to estimate the determinants of farmers' membership and marketing channel choice.

[1] Translated by authors from the news report entitled "1.47 million cooperatives including 40% of farm households nationwide". The original text is written in Chinese and was released on January 1, 2016; it can be found at: http://politics.people.com.cn/n1/2016/0111/c1001-28035566.html.

[2] In our empirical analysis we use cross-section data on marketing channels used by apples producers in the year 2014. We therefore disregard transaction frequencies in the remainder of this paper.