Marketing Cooperatives' Equity Sources: An Empirical Study

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Introduction

Cooperatives (co-ops) have long been criticized for their capital constraints (e.g., Cook, 1995; Karantinis and Nilsson, 2007). The latter occurs because agribusiness co-ops have traditionally adhered to exclusive members' ownership in the form of direct investments or retained patronage refunds (Knoeber & Baumer, 1989). However, many marketing co-ops, in order to successfully adapt to the industrialization of agricultural and food markets, have relaxed their traditional finance principle (Cook and Chaddad, 2004). The extent to which co-ops relax this definitional principle influences the formation of their equity type and sources, ranging from a traditional (e.g., general reserves) to a more individualized, IOF-like (investor-owned firm) (Kalogeras, *et al.* 2007; Benos *et al.,* 2009). That is, numerous co-ops in the US and EU allow for individualized equity shares, invite non-member parties to partially finance their operations, and publicly list parts of their equity stock (Kalogeras, *et al.* 2009; Bijman and van Bekkum, 2005). A question that arises is what actually drives the decision of member-patrons to invest in a marketing co-op's equity structure that is formed either using traditional funding sources (e.g., general reserves) or more individualized ones (e.g., individual certificates and loans).

The objective of this paper is to examine what drives the decision of members regarding the co-op's funding sources and the diversity in members' attitudes and perceptions that may drive this decision. We examine empirically the drivers of members' decisions regarding the formation of the equity structure of two marketing co-op by following advances in economics, decision analysis, and agribusiness co-ops' literature. To the best of our knowledge, this is the first empirical study that examines the drivers (attitudes and perceptions) of members for different sources of marketing co-ops' equity.

After this introductory statement, we introduce our conceptual model. Next, we present our research design and results of the field studies. A concluding discussion ensues.

Conceptual Model

Recent research argued that the decisions of market participants (e.g., individual consumers, investors) can be better understood by decoupling their risk behavior into the separate components of *attitude* and *perception*. Such an approach makes possible more robust conceptualizations and predictions of individual market participants' contracting decisions (e.g., MacCrimmon & Wehrung, 1990; Weber & Milliman, 1997; Pennings & Wansink, 2004). Particularly, Pennings and Wansink (2004) propose a new framework for examining risk behavior as consisting of two dimensions that play a crucial role in how individual market participants make decisions in a risky situation: a) the content of risk; and b) the chance of exposure to the risk content. These two dimensions are strongly linked to the two fundamental drivers of an individual's decision-making behavior under risk: risk attitude and risk perception. *Risk attitude* (*RA*) is formed by one's predisposition to the content of the risk in a specific market situation and reflects an individual decision maker's interpretation of this risk content in a consistent way. *Risk perception* (*RP*) is related to second dimension, i.e., the likelihood of one's exposure to the content of the risk. It may be formed on the basis of the individual decision maker's own assessment of the chance to be exposed to the risk content associated with a particular market condition or inherent in a investment-related risky situation.

Based on the seminal works of Arrow (1971) and Pratt (1964), Pennings *et al.,* (2002) Pennings & Wansink (2004), and Pennacchi (2008; pp. 11–14), risk-taking behavior can be decoupled into the separate components of risk attitude, risk perception, and their interaction. In Pratt and Arrow's work, risk management, reflected in the risk premium π is a function of risk attitude (risk aversion r), the situation (base wealth W) and perceived risk (with a mean of $\bar{\varepsilon}$ and variance σ^2 of source of additional wealth ε). In their analysis, risk management is determined by the statement that the risk premium leaves the decision-maker indifferent

between holding the perceived risky asset or holding its mean value minus the risk premium. That is, $EU(W+\varepsilon)=EU(W+\varepsilon-\pi)$, where EU is the expected utility. In the expected utility model this translates into:

$$EU(W+\varepsilon) = \int U(W+\varepsilon)f(\varepsilon)d\varepsilon = U\left(W + \int \varepsilon f(\varepsilon)d\varepsilon - \pi\right)$$

(1)

where: $U(.)$ is the von Neuman-Morgenstern utility function and $f(.)$ the probability density function of additional wealth ε. By taking Taylor series approximation around W, the behavioral equation is approximately equivalent to:

$$EU(W+\varepsilon) = U(W)+U'(W)\int \varepsilon f(\varepsilon)d\varepsilon + \frac{1}{2}U''(W)\int \varepsilon^2 f(\varepsilon)d\varepsilon$$
$$= U(W)+U'(W)\left\{\int \varepsilon f(\varepsilon)d\varepsilon - \pi\right\}$$

(2)

For simplicity, assume that $\varepsilon = 0$, then, solving for the behavioral risk premium, we obtain:

$$\pi = \frac{1}{2}\int \varepsilon^2 f(\varepsilon)d\varepsilon \frac{-U''(W)}{U'(W)}$$

(3)

which can be written as:

$$\pi = \frac{1}{2}\sigma^2 r(W),$$

(4)

where: $r(W) = -U''(W)/U'(W)$ is the Pratt-Arrow coefficient of absolute risk aversion. From (1) to (4), it follows that risk management behavior depends on the interaction of perceived risk and risk aversion. The right hand side of expression (4) for the behavioral risk premium equals the interaction risk aversion (i.e., risk attitude: RA) and risk perception (RP), that is $RA \times RP = \sigma^2 r(W)$. The interaction for RA and RP (*INTER*) reflects that relatively risk-averse decision makers may engage in behavior that reduces risk, and that this becomes more prominent as a decision maker perceives relatively more risk (Pennings & Smidts, 2000).

Based on this risk approach (i.e., decoupling risk-taking behavior into the separate components of risk attitudes, risk perception, and their interaction), we hypothesize that the

decision-making behavior of individual co-op members (i.e., the decision whether co-op's equity may be funded through general reserves or individualized equity certificates/loans) is driven by *RA*, *RP* and *INTER*. Further, we recognize that average attitudes, perceptions and preferences may mask critical relationships when studying and analyzing agribusinesses' structures and producers' economic behavior (Pennings & Leuthold, 2000). For instance, one might expect that not all members necessarily have the same attitudes and perceptions because of differences in their own firm's characteristics and decision environment (Staatz, 1987; Kalogeras *et al.,* 2009). Here, we expand the literature by identifying the heterogeneity in members' attitudes and perceptions that are hypothesized to drive their decision regarding the co-op's equity funding source. We account for factors related to members' business size, market-orientation and innovativeness.

Research Design

To address our objectives and examine empirically our research hypotheses, we conducted field studies with 225 members of two marketing co-operatives: one involved in horticulture and the other in dairy production. Thirty members of the horticultural co-op participated in two focus group discussions (fifteen in each) and 120 members participated in the final field study. We conducted in-depth interviews with twelve members of the dairy co-op, while 63 members participated in the final field study. Interviews were made on an individual basis at members' companies/farms using a computerized data gathering instrument. The risk attitude, risk perception, market-orientation as well as innovativeness were measured by using validated semantic scales (Pennings and Smidts, 2000; Kalogeras *et al.,* 2009; see Appendix). We analyzed the data by combining a binary logistic model (dependent variable: decision to invest in a co-op funded through either general reserves or individualized equity titles;

explanatory variables: RA, RP and INTER) with a generalized mixture model (for a detailed description of the optimization procedure see Wedel and Kamakura, 1998).

Results *(in progress)*

The reliability measure, which ranges between 0 and 1 with higher values indicating superior reliability (Hair et al., 1998) is above 0.70 for all examined constructs.

The research and modeling framework provide clear results: First, all risk variables (*RA, RP, INTER*) influence significantly, although in varied ways, the decision of co-op members. Second, our results reveal the magnitude and influence of the risk variables vary within our samples. That is, we identified two segments of members with similar *RAs* and *RPs* for each type of co-op. These results show that large-sized members are more market-oriented, innovative, and risk-seeking. This member segment is in favor of a more individualized equity structure. Yet, small-sized members are less market-oriented, innovative and more risk-averse. These members rather pursue participation in a co-op equity structure formed through the mechanism of general reserves.

Conclusions (*in progress*)

The results indicate that the "large versus small" cost efficiency argument is indeed an important dimension of member preferences for co-op structure and behavior, but our findings also support the recent work identifying the importance of risk attitudes and perceptions (e.g., Smidts, 1990; Pennings & Leuthold, 2000; Pennings and Wansink, 2004, Kalogeras, 2010) and are consistent with the presence and importance of managing membership's risk in co-op literature (e.g., Buccola & Subaei, 1985; Zusman, 1992). Knowledge of the existence of member-segments and an understanding of their preferences may be useful also to co-op policy makers to better evaluate efforts by member-subgroups who may strive to influence the

make-up and implementation of co-op equity policies. Acquiring such crucial information, conflicting situations that undermine marketing co-op's success in the market may be prevented and continuous development and improvement of services that better balance member demands may be achieved. Developing a taxonomy of member attitudes and perceptions by co-op type (e.g., supply vs. marketing co-ops) and the factors that affect these perceptions and attributes will permit a richer understanding of the formation of co-ops' equity structures.

Appendix

Individual members were asked to indicate their agreement with each item of risk attitude, risk-perception, market-orientation, and innovativeness constructs (adapted from Pennings and Smidts, 2000; Pennings & Leuthold, 2000; Kalogeras et al., 2009) on a 7-point Likert scale ranging from "strongly disagree" (1) to "strongly agree" (7):

Risk Attitude Scale:

Construct reliability: 0.71

I am willing to take higher financial risk to realize higher profit.

I am willing to take large financial risks.

I am willing to take large financial risks when selling my products to realize higher than average sales.

I like to 'play it safe' in general.

Prior to calculation, the range of responses to 4) was inverted so that the most pronounced risk-averse response assumed a value of (1).

Risk Perception Scale

Construct reliability: 0.75

I am able to predict the prices of my products

The vegetable (or dairy) market is not risky at all

I am exposed to a large amount of risk when I am selling vegetables/milk.

Market-orientation Scale

Construct reliability: 0.77

I think that it is important to understand the market wishes of my customers

I think that it is important to understand how my customers evaluate my products

I adapt to changes in the marketplace

I track the market prices of the products that I produce

Innovativeness Scale

Construct reliability: 0.71

I invest into new technologies before others members do so.

I like to experiment with new ways of doing things.

I take chances than other members do.

I generally like trying out new ideas at my enterprise.

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