Rural COOPERATIVES

USDA Rural Development

Cooperative Information Report 65

The Nature of the Cooperative

A reprint of 10 articles
by K. Charles Ling

USDA United States Department of Agriculture

These 10 collected articles by USDA Rural Development agricultural economist Charles Ling were originally printed in *Rural Cooperatives* magazine to examine the nature of cooperatives and their place in our free-market economy. "Essential Economic Roles of Farmer Cooperatives" (Published in the Nov./Dec. 2013 issue) summarizes the essence of this work. "What Cooperatives Are (and Aren't)" (Nov./Dec. 2009) and "What Cooperatives Do" (March/April 2010), explain the economic structure of cooperatives and their role in the marketplace. Together, they examine the economic theory of cooperation as advanced, respectively, by Ivan V. Emelianoff and Edwin G. Nourse. These writings constitute a comprehensive framework for understanding cooperatives. The fourth article, "Dairy Cooperatives: What They Are and What They Do" (March/April 2011) looks at dairy cooperative practices to illustrate how well the theory fits reality, and vice versa. "How Co-ops Do It" (Nov./Dec. 2011) analyzes marketing operations of dairy cooperatives as a means of understanding the economics of co-op marketing. The sixth article, "The Nature of Cooperatives" (Jan./Feb. 2012), attempts to show how cooperatives relate to other market participants through their roles in transaction governance. The seventh article, "Capital Ideas" (May/June 2012), discusses how cooperatives raise equity capital. The eighth article, "The Many Faces of Cooperatives" (Nov./Dec. 2012), shows the variation on the uniqueness of the cooperative business model that constitutes a continuum onto which each type of cooperative falls and is whereby analyzed. The last two articles (Jan./Feb. and Mar./Apr. 2013) exemplify the analysis.

Topics discussed here are examined in greater detail in the following research reports:

Co-op Theory, Practice and Financing: A Dairy Cooperative Case Study (USDA RBS Research Report 221, April 2011);
The Nature of the Cooperative: A Dairy Cooperative Case Study (USDA RBS Research Report 224, April 2012).

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Essential economic roles *of farmer co-ops*

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Editor's note: *This article focuses on the core points of the author's presentation, "Farmer Cooperatives and Value Creation: the Example of Dairy Farmers in the United States," delivered at the 5th meeting of the Organization for Economic Cooperation and Development (OECD) Food Chain Analysis Network, Oct. 30-31, 2013, in Paris. It is also a concise summary of a recently completed study into the nature of the cooperative, as reported in two recent research reports available from USDA Rural Development (RR 221 and 224) and a series of nine articles that have appeared in* Rural Cooperatives *magazine.*

This summary addresses four salient points:

1. *Economic structure of cooperatives — what are cooperatives?*
2. *Market performance of cooperatives — what do cooperatives do?*
3. *Transaction governance roles of cooperatives — how do cooperatives interact with other market participants?*
4. *Variations on the cooperative business model.*

Economic structure of cooperatives — what are co-ops?

In his 1942 book, *Economic Theory of Cooperation: Economic Structure of Cooperative Organizations*, Ivan V. Emelianoff said that for economic analysis of cooperatives, the economic structure of cooperative organizations should be clearly defined, and the definition should be free from the encumbrance of sociological, legal, technical, social-philosophical and ethical considerations.

His definition: "Cooperative organizations represent the aggregates of economic units."

"Aggregate" is commonly defined as: "Any total or whole considered with reference to its constituent parts; an assemblage or group of distinct particulars massed together."

As defined by Emelianoff: "An economic unit, or economic individual, is an economic body admittedly complete and sufficiently integrated for individual existence and independent (in conditions of an exchange economy — interdependent) economic functioning."

This economic definition of cooperatives seems to be simple, yet it is very robust. What naturally flows from this definition are what people often call "cooperative principles," such as: members own, members control, members use, and members benefit from the cooperative.

Following Emelianoff's definition, these are the characteristics of cooperatives:

- A cooperative is an agency owned and controlled by members and through which they conduct their business.
- Each member-farm fully retains its economic individuality and independence.
- The board of directors is elected from among member-farmers.
- Proportionality and service at-cost are two basic working principles.
- Members provide advances (i.e., equity capital) for financing the cooperative.
- Patronage refunds are returned to members who have been underpaid or overcharged.
- Dividend on capital, if any, is interest payment for using members' capital.
- The cooperative is neither a horizontal integration of its members nor a vertical integration between the cooperative and its members. "It is a third mode of organizing coordination." (*Shaffer*)

Market performance of cooperatives — what do cooperatives do?

The first academic paper on the theory of cooperation, "Economic Philosophy of Co-operation," by Edwin G. Nourse, was published in 1922 in the *American Economic Review*. His ideas still have relevance to the reality of market performance of cooperatives today.

Several examples from the paper illustrate how farmers organized in agricultural cooperatives can jointly perform certain market functions efficiently — functions which usually cannot be satisfactorily carried out alone by individual farmers. These include:

- *Cooperation to gain market access* for producers who otherwise do not have a market outlet.
- *Local and regional coordination* of cooperatives to compete with private competitors that have grown to great sizes.
- *Formation of region-wide associations* of

growers, often in horticultural regions, to assemble, process and distribute their products.

These examples show how cooperatives are organized and grow to enable farmers to exercise countervailing power and compete. Although Nourse did not directly use the term "countervailing power" (the term was coined later, by Galbraith in 1956), he did state that the keynote of the philosophy of cooperation was for agriculture to have a type of organization of the size that has an effective bargaining position in dealing with commercial organizations.

Another term in the cooperative lexicon that is attributable to Nourse is "competitive yardstick," following his "brief remark" in 1945, in which he said the place for the agricultural cooperative in the nation's business "is primarily that of 'pilot plant' and 'yardstick' operation. Its objective is not to supersede other forms of business, but to see that they are kept truly competitive."

This is the summary of Nourse's ideas regarding the roles cooperatives play in the marketplace:

- Cooperatives are organized for efficiently carrying out specific business functions.
- Cooperatives can be of any size and geographical scope that allows them to function efficiently in the marketplace.
- Cooperatives afford farmers the organizational sizes for exercising countervailing power.
- Cooperatives are pro-market; they let the market supply-and-demand price be the guidance for producers.
- Cooperatives are a means for farmers to promote and maintain competition — as the competitive yardstick of efficient operations.
- In those fields where the market has become truly competitive and farmers can be well served by other firms, cooperatives may want to cede the field and assume only a stand-by position (to preserve members' capital, time and efforts for use on the farm), while maintaining the legal institutions and organizational capacity to step in if there is a relapse of market inadequacy.

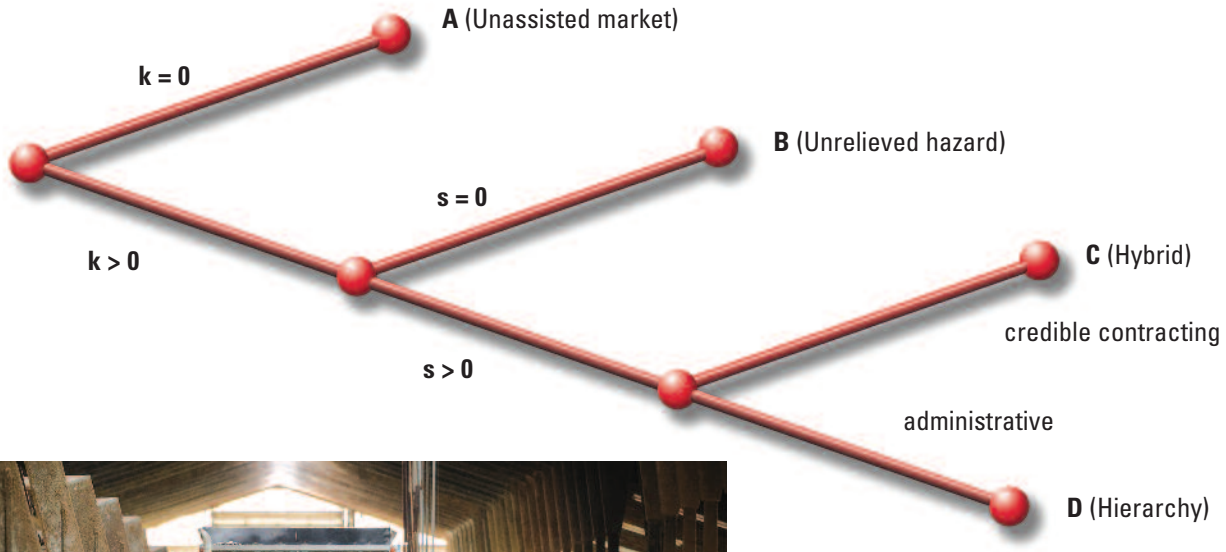
[Author's note: Whether the market could ever be truly competitive is debatable.]

Transaction governance roles of cooperatives — how do cooperatives interact with other market participants?

Cooperatives interact with other market participants through their roles in transaction governance, or "in aligning incentives and crafting

Figure 1 — A simple contractual schema

Adapted from *Williamson*, 2005, Figure 1: Simple Contractual Schema.



"Each member farm fully retains its economic individuality and independence," according to the co-op attributes outlined by economist Ivan V. Emelianoff. Seen here is the Hepler Homestead dairy farm, near Pitman, Pa., a member of the Dairylea Cooperative. Photo by Mitch Wojnarowicz, courtesy Dairylea

governance structures that are better attuned to their exchange needs." (*Williamson*, 2002, p. 172).

In marketing milk and milk products (for example), farmers and their cooperatives may engage in the following transaction scenarios.

Scenario I. In a subsistence agricultural economy, farm production in excess of family consumption may be sold off farm. There could be many sellers and buyers. The transactions are incidental to subsistence farming, do not require specific assets, and primarily belong to a bygone era.

Scenario II. Commercial milk production requires capital investment in specialized assets that cannot be easily employed for alternative uses. Asset specificity, product perishability and market volatility cause uncertainty and pose hazards to the investment of dairy farmers. They are vulnerable when dealing with a small number of milk buyers (processors). They may organize cooperatives to gain countervailing power. However, contracts that spell out the terms of trade as legal rules may not relieve the hazard. It is impossible to foresee and encompass all contingencies in a contract due to human limitations; relying on courts for relief is time-consuming and costly.

Scenario III. Cooperatives are organizations of farmers and have comparative advantages of working closely with members for assembling milk, providing field services and performing farm-related functions. Many processors have chosen to rely on cooperatives for milk supplies that are tailored to their requirements for volume, quality, composition and/or delivery schedule. Under such an arrangement, the transactions are assisted with what is called credible contracting and supported by inter-firm contractual safeguards. Instead of a set of legal rules with court enforcement, the contract here is a framework or a set of guidelines for interactions between the firms. Discrepancies in performance are resolved through amicable consultation or negotiation or by arbitration.

Scenario IV. In addition to selling members' milk, it may be necessary for a dairy cooperative to forward-integrate into processing dairy products to balance milk supply or to generate higher margins from the market for members' milk. These processing enterprises are under the cooperative's hierarchical administrative control .

The roles of a cooperative in the above scenarios fit with the analysis of the roles of a firm in transaction governance that constitute the core of transaction-cost economics (*Williamson*, *2010*, *2007*, *2005* and *2002*). The four scenarios correspond to the four transaction modes in table 1 that is adapted from Williamson's Simple Contractual Schema (figure 1).

The transaction governance structure Mode A is the unassisted market. The governance structure Mode B is the market where asset specificity exposes transacting parties to uncertainties and, without safeguards, to unrelieved contractual hazards to their investments. Mode C is where the market is assisted with credible contracting. All successive production stages are integrated under hierarchical control in transaction governance Mode D.

The attributes of a market mode are high-incentive intensity, little administrative control, and a legal-rules contract regime. On the other hand, attributes of hierarchy are low-incentive intensity (where pricing for the successive stages is at cost-plus), considerable administrative control (by

Table 1 — Transaction governance modes and attributes

Transaction governance mode	Asset specificity (k)	Investment hazard safeguard (s)	Incentive intensity	Administrative control	Contract law regime
A: Unassisted market	0	0	High	Little	Competitive norm
B: Unrelieved hazard	>	0	<	>	Legal rules contract regime
C: Hybrid (Credible contracting)	>	>	<	>	Credible contracting
D: Hierarchy (Administrative)	>	>	Low (pricing for successive stages is cost plus)	Considerable (by fiat)	Internal implicit contract law (Forbearance)

Source: Adapted from *Williamson*, 2005, Figure 1: Simple Contractual Schema.
Note: ">" indicates a mode having a higher intensity of the particular attribute than the mode above it.
"<" indicates a mode having a lower intensity of the particular attribute than the mode above it.

Table 2 — Variations on the cooperative business model

Types of cooperatives	Structure	Organization	Governance	Source of equity	Operation
Dairy cooperatives[1]	Aggregates of economic units	Centralized member organizations	Member-governed	Members	Members' exclusive marketing agent—unique economics
Agricultural marketing cooperatives	Aggregates of economic units	Mostly centralized member organizations; some are federated	Member-governed	Members	Unique economics if exclusive marketing agent; otherwise, like other firms
New-generation cooperatives	Aggregates of economic units	Centralized member organizations	Member-governed	Members; tied to delivery rights	Business volume defined by delivery rights
Purchasing cooperatives[2]	Aggregates of economic units	Local (retail) cooperatives are centralized; many federated with other locals; federated cooperatives may have direct members	Member-governed	Members	Sourcing supplies or services for sale to members and patrons
Affordable Care Act CO-OPs[3]	Aggregates of economic units (health insurance subscribers)	Organized by sponsors; then become local (in-State) centralized member organizations	Initially formation board; then member-governed	Sponsors and supporters; accumulated surpluses	Operations are the same as other insurance issuers in the relevant markets; must meet CO-OP Program standards and requirements
Multi-stakeholder cooperatives[4]	Aggregates of economic units	Centralized member organization	Member-governed	Members	A framework for multi-party, multi-stage credible contracting among members
Farm production cooperatives	Aggregates of economic units that are not independent in production operation	Centralized member organization	Member-governed	Members	A vertical integration between members and the cooperative in production
Cooperatives with non-patronage members	Mixture of patron and non-patron members	Defined by state laws	Defined by state laws	Defined by state law	Defined by state laws; most likely member-patrons' business

[1]Separately listed and used as the standard bearers of traditional cooperative business model.
[2]Include farm supply cooperatives, utility cooperatives, service cooperatives, consumer cooperatives, credit unions, etc.
[3]Qualified Nonprofit Health Insurance Issuers under the Consumer Operated and Oriented Plan (CO-OP) Program.
[4]Defined as cooperatives having, for example, farmers, final customers and intermediaries in the supply chain as members.

fiat) and forbearance is the implicit contract law of internal organization (the parties must resolve their differences internally).

Cooperatives are transaction governance structures, as are non-cooperative firms. Depending on the lines of business, transactions can occur under all possible governance modes. Cooperatives adapt to various governance modes for economizing on the transaction cost.

For entering into credible contractual relationships with buyers, the cooperative's functions of providing market access and exercising countervailing power put its members, collectively through the cooperative, on a relatively more equal footing with buyers. This should make credible contractual relationships between sellers and buyers more attainable and stable.

Furthermore, as its members' collective marketing agency, the cooperative serves as a single transaction entity for credible contracting with buyers. Therefore, it introduces order and eliminates conflicts among members who would otherwise be competing individually for customers. All these should contribute to lower the transaction cost.

A cooperative does not own the assets for producing the milk that the cooperative markets for its members; the assets and the investment hazard associated with asset specificity belong to member-farms. By pooling members' milk in its marketing efforts, the cooperative, in essence, also pools members' investment hazard.

As a result, each member's share of the hazard conceivably is less than if they individually market their products. The fact that asset specificity and the associated investment hazard belong to individual members reaffirms the cooperative's unique economic structure of being an aggregate of its member-farms.

Variations on the cooperative business model

Cooperative organizations represent the aggregates of economic units. The intrinsic cooperative structure entails the uniqueness of the cooperative's organization, governance, equity financing and operation. Different commodities have their own characteristics and different types of cooperatives have their own special attributes.

Laying out each type of cooperative (or each cooperative) in the format of table 2 (page 23) provides a compre-hensive view of their similarities and differences. Most variations occur in the area of operation, where the cooperative's commodities, lines of business and transaction governance modes determine how it operates.

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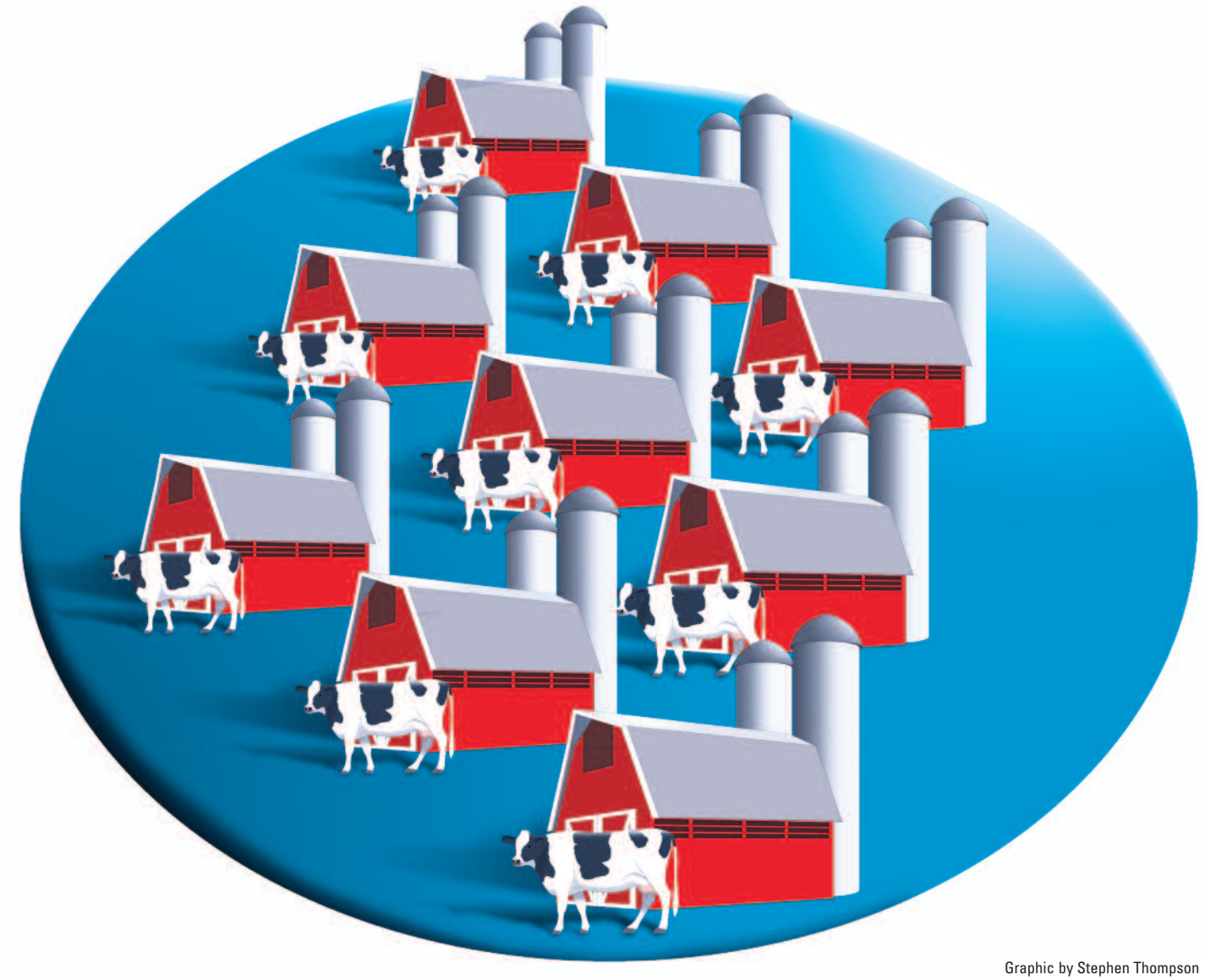
***Rural Cooperatives* : Expand your members' horizons**

What Cooperatives Are (and Aren't)

Economist says co-ops represent the aggregates of economic units



Graphic by Stephen Thompson

By Charles Ling, Ag Economist
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Many factors are converging to bring new attention to the cooperative business model. Discussions about a possible role for co-ops as part of national health-care reform and an explosion of interest in local foods, farmers markets and community-supported agriculture and fisheries — which often employ co-op business models — have added to this attention.

During the past 10 or 15 years, we've also seen many experiments with variations on the traditional co-op business model, as have occurred with some new-generation processing co-ops and producer-owned limited liability companies (LLCs), including those involved in renewable energy production. As such, it is timely to take a fresh look at what a cooperative is and how it differs from an investor-owned business.

Emelianoff's definition

A concise definition of a cooperative by Ivan V. Emelianoff — in explaining the economic structure of cooperative

associations about 70 years ago — remains refreshingly clear and applicable today. His work marked the beginning of a new era in the development and evolution of cooperative theory. The narrative of ideas presented in this article is primarily drawn from Emelianoff's book, and will hopefully shed light on the nature of cooperatives.

In *Economic Theory of Cooperation*, Emelianoff carefully reviewed the worldwide literature on cooperative theory from the late 19th century until 1939. He came to the conclusion that for economic analysis of cooperatives, the economic structure of cooperative organizations should be clearly defined, and that the definition should be free from the encumbrance of sociological, legal, technical, social-philosophical and ethical considerations.

Against this backdrop, Emelianoff established this definition: "Cooperative organizations represent the aggregates of economic units." While that is more "bare bones" than many definitions of cooperative, it crystallizes the essence of what cooperatives should have in common.

"Aggregate" is commonly defined as: "Any total or whole considered with reference to its constituent parts; an assemblage or group of distinct particulars massed together." Further, as defined by Emelianoff: "An economic unit, or economic individual, is an economic body admittedly complete and sufficiently integrated for individual existence and independent (in conditions of an exchange economy — interdependent) economic functioning."

Co-ops as aggregates of farms

In the agricultural context, farms are such economic units. The nature of cooperative associations as aggregates of member-farms is clearly discernible in the embryonic forms of such associations. For example, a buying club of farmers may want to purchase certain goods together, such as fertilizer.

The buying club would have someone take orders from member-farmers and place orders with a vendor, as well as perform other related chores. If the vendor requires a deposit, members may advance money to the buying club for the deposit requirement in proportion to their respective buying volume.

There may be an elected committee to facilitate decision-making if the number of members is large. Members may each have one vote if their purchasing volumes are about the same. Otherwise, some form of proportional voting may be adopted to conciliate large-volume members.

When the fertilizer (for example) is delivered, members pay the balance of their obligations. After the transactions have been completed, payment to the vendor and other expenses are subtracted from the sum of money paid by members. Any surplus is returned to members in proportion to the volume of fertilizer they have purchased.

This buying service is conducted at cost; every aspect of a member's transaction through the buying club is in proportion to their patronage (buying) volume. The buying club may be disbanded after fulfilling its joint-buying purpose.

This scenario shows that the buying club represents the aggregate of its member-farms, through which they purchase fertilizer. If the buying club metamorphoses into a permanent purchasing cooperative association, the picture may look more complicated. However, the underlying nature of the cooperative as an aggregate of member-farms remains the same.

Making it permanent

In this new scenario, the person who manages buying orders and other chores will be the manager of the cooperative (usually a hired professional). The committee of members becomes the board of directors. Advanced payments by members to the cooperative become equity capital for financing the operation and for carrying inventories and owning facilities.

Year-end surplus is returned to members as refunds in proportion to patronage volume, but a portion may be retained as revolving capital. The principles of proportionality and service at-cost remain intact, but their practices may be less evident because the operation has become more complex.

Although the above example is based on purchasing cooperatives, the same line of reasoning also applies to marketing cooperatives. The difference between purchasing and marketing cooperatives is: instead of procuring goods, a marketing cooperative markets products produced by member-farms.

In either case, the member-farms coordinate their activities through the cooperative, but each fully retains its economic individuality and independence.

A cooperative may be described as a center of member-patrons' coordinated activities, or as an agency owned and controlled by members through which they conduct their business. In this respect, it is identical with the special departments or branches of single member-farms.

For example, a dairy cooperative is the collective marketing arm of its member dairy farms; a farm supply cooperative is their supply purchasing department; and a livestock-genetics cooperative is the breeding service branch for its members. As some would say: a cooperative is an off-farm extension of the farming business.

Characteristics of co-ops

Being aggregates of member-farms, cooperative associations have these characteristics in common:

a) The equity capital of a cooperative is the sum of advances needed for financing anticipated transactions of individual members of the cooperative; it is not the same as the entrepreneurial capital of an investor-owned corporation.

b) The member-owners of a cooperative are independent farmers who have chosen to coordinate certain activities via a cooperative. They are not the same as the stockholders of an investor-owned corporation, who are a diverse set of shareholders joined solely by common investment.

c) The surplus or deficit of a cooperative is the account payable to, or receivable from, the member-patrons of the cooperative on their current transactions; this is not the same as the profit or loss of an investor-owned corporation.

d) The sum for patronage refunds to members is the sum either underpaid (overcharged) to the members, or — in case of a deficit — overpaid (undercharged) to members on their transactions through the marketing (or purchasing) cooperative; the sum for patronage refunds is not the profit of the cooperative or its income.

e) The dividend on capital, if any, does not represent a profit or any income of the cooperative; it is the interest payment for using capital advanced by members. By contrast, investor-owned corporations pay dividends to shareholders out of earnings.

f) All the economic functions of a cooperative are ultimately the economic functions of the member-farms performed through the cooperative as their collective branch or collective department. Therefore, all economic services of cooperative associations are performed at cost.

Emelianoff emphasizes: "None of such traits can be unreservedly used as an unerring test of a truly cooperative organization, since these traits only indirectly disclose the economic character of the cooperative aggregate….The only comprehensive and indisputable test of the cooperative character of organizations is their aggregate structure."

Unique aspects of co-ops

The unique aspects of cooperative character, however, are often not readily apparent. There are many reasons for this, some examples being:

- Cooperatives only reflect the characters and aspirations of their membership, which are diverse and manifest the diversity of the population, the geographical regions and the commodities involved. Such differences directly, or indirectly, have a certain bearing on the character of an association and its cooperative ideals. The variability of the external characteristics of cooperatives is kaleidoscopic and infinite. Differences in their external and superficial features obscure cooperatives' ultimate economic character of being aggregates of their member-farms.
- Most cooperatives are incorporated. The legal vestments of incorporated cooperative associations also cloak their economic structure as aggregates of member-farms to such a degree that they are often mistaken to be the same as investor-owned corporations. This is one of the principal sources of confusion in understanding cooperative organizations.
- A lack of distinction between the concept of an investor-owned corporation as a profit-seeking economic unit and the concept of a cooperative as an agency of its member farms is another factor that confuses many. Use of common accounting terminology for both business models adds to this confusion. As the above list of co-op characteristics shows, such conventional terms as "profit," "capital," "shareholders," "dividends," etc., should be used with reservations when describing cooperatives.
- In governance, a cooperative board of directors — including its board election rules, composition, function, responsibilities and interaction with management — is not the same as the board of an investor-owned corporation (especially the publicly traded ones). Consequently, the role of the top manager of a cooperative is also somewhat different from that of an investor-owned corporation (even if they have the same title).

Emelianoff's conclusion that cooperative organizations represent the aggregates of associated economic units provides a clear insight into how cooperatives organize and function. This insight is not limited to agricultural cooperatives.

A unique mode of organizing coordination

In a paper dealing with the issue of economic coordination some 45 years later, James Shaffer echoed (though without citing) Emelianoff's definition of cooperatives as aggregates of member-farms. Because member-farms are independent entities, represent independent profit centers and act independently, except that they jointly own the cooperative, the cooperative association is neither a horizontal integration of its member-farms nor a vertical integration between member-farms and the cooperative. He asserted that "the cooperative is a third mode of organizing coordination."

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What Cooperatives Do

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Editor's note: This article is a sequel to "What Cooperatives Are (and Aren't)," *Rural Cooperatives*, Volume 76, Number 6, November/December 2009.

The year 2012 has been declared by the United Nations General Assembly as the International Year of Cooperatives in order to highlight the contribution of cooperatives to socio-economic development worldwide. That same year also will be the 90th anniversary of the publication of "Economic Philosophy of Co-operation," the first academic paper on the theory of cooperation, published in the *American Economic Review (Nourse, 1922; Hess)*. The piece was written by Edwin G. Nourse, who later became the first chairman of the Council of Economic Advisers, Executive Office of the President, 1946-49.

This may be an opportune time to review Nourse's ideas on cooperation and see if they have relevance to the reality of the market performance of cooperatives today and, therefore, if they deserve to be relearned.

Nourse's primary focus, along with the oft-quoted "brief remarks" he made years later (Nourse, 1945), was on the role agricultural cooperatives played in the marketplace. This arose from his observation that the attempt to apply the cooperative form of organization to economic needs and problems in agriculture was critically important.

Purposes of cooperation

The following examples are taken from Nourse's paper to illustrate how farmers organize cooperatives to perform various market functions jointly and efficiently in various market situations — functions that cannot be satisfactorily carried out alone by individual farmers:

1) *Cooperation for market access* — An example is a small fruit-producing area far from any large market. The product is perishable, hence both risk and marketing expense are high. Volume is not large enough to attract a private distributor. Facing this situation, producers have the option of organizing a cooperative association to market their products. These cooperatives have frequently demonstrated the ability to achieve successful results where private outside entrepreneurship fails to perform.

2) *Local to regional coordination* — A local cooperative creamery may initially be effective in meeting the competition of other small, private creamery operations. However, when competing creameries have grown to be entities of great size, the competition must be met by a distributing organization of equal scope. This will often be achieved through federation of the cooperative creameries across a region which may embrace an entire state, several states or parts of a state.

3) *Region-wide associations* — In many instances, growers in horticultural regions have organized and integrated highly efficient businesses that serve producers across an entire production region by assembling, processing and

distributing their products. These agencies have eliminated wasteful competition both at the local shipping point and at the central markets. Further-more, they are the instruments of the producer and owner of the goods, and hence are likely to be more aggressive in the effort to reduce expense and wastage in the handling process and to improve quality and enlarge outlets.

idea that a means must be found for giving agriculture a type of organization whose productive and bargaining units respectively will expand in step with the growing needs of the agricultural techniques (and its accompanying capital demands) and of the size requisite to an effective bargaining position in contact with the units of commercial organization with which they must deal."

1) "It is to make the most economical and efficient market channel by which whatever volume of product farmers see fit to produce gains access to the attention and the purchasing power of all who might use such a product. (For supply-buying co-ops, most economical access to the best sources of the goods they need.) Thus, a true supply-and-demand price is allowed (and aided) to express itself for the guidance of producers."

Market access, countervailing power and yardstick roles enhance economic efficiency

(*Author's note:* Cooperative organizations covering entire production regions have been most prevalent in California because of the characteristics of the state's economic geography. This type of cooperative organization was called "the California plan" and was promoted on a national scale in the 1920s by Aaron Sapiro, with varying degree of successes and failures (*Sapiro; Larsen, et al*).)

Countervailing power

The above examples show how cooperatives are organized and grow to enable farmers to exercise "counter-vailing power" in the market-place, although the term was not coined until the 1950s when economist John Kenneth Galbraith cited the type of cooperatives made famous by Sapiro as an example for his explanation.

Nourse certainly recognized the importance of countervailing power if cooperatives are to have a strong market position. As he stated: "Possibly the keynote of the philosophy lies in the

Pro-market

Nourse said that the theoretical implication of agricultural cooperation "is preeminently that of functional reorganization rather than comprehensive economic regeneration." In other words, the farmer takes the essential facts of the market as given and, working together with other producers through the cooperative, seeks to be in the most effective market position to compete. Thus, the distinctive economic philosophy of this business form is viewed "as a means to improve the lot of both farmer and consumer by improving the efficiency of the economic machine."

Cooperatives enable farmers to effectively compete in the marketplace and garner market signals that put them in a position of prompt and sensitive response to the reaction of the consuming public and guide their farming business decisions. According to Nourse, the cooperative objective is twofold (*Nourse, 1945*):

2) "It aims to reflect these market conditions back most promptly and fully to producers in ways that will both guide and, so far as possible, assist them in changing their methods so as to continue production and to prosper or to shift to more suitable lines of production."

Competitive yardstick

In Nourse's view, the cooperative is a means for promoting and maintaining competition in the marketplace. The supply-demand-price dynamic "provides a powerful stimulus to the association to devise further economies of method which will enable them to maintain the level of net returns to the grower. Such competition also spurs the private agency to outdo the cooperative in its efficiency in order to hold its business."

He used the term "yardstick" years

"The cooperative is a means for promoting and maintaining competition in the marketplace…Its objective is not to supersede other forms of business, but to see that they are kept truly competitive."

later (Nourse, 1945), when he said the place for the agricultural cooperative in the nation's business "is primarily that of 'pilot plant' and 'yardstick' operation. Its objective is not to supersede other forms of business but to see that they are kept truly competitive."

The cooperative is to "occupy certain strategic points, and there to set a plane or pace of competition which will assure for the farmer efficient service at true long-run cost." When such services (manufacturing, distributing, transporting, financing, etc.) are furnished efficiently and economically (which means in a truly competitive manner), "there is no occasion for the farmer to occupy the field and divert some of his capital and some of his managerial time and effort to these tasks and away from his main enterprise of farm production."

Farmers should remain vigilant. Nourse cautioned: "It is of the upmost importance, however, that farmers shall have both the legal institutions and the organizational 'know-how' to step into these fields when and to the extent that service is inadequate or unduly high in cost. It is important also that they remain in each of these fields with an organization sufficiently large to attain high efficiency so that farmers shall be protected against any subsequent lapse in the quality of service or temptation to profiteer in charges by the noncooperative service agencies.

"But it is just as important that the cooperatives recognize when they have in fact attained their real objective by demonstrating a superior method of processing or distribution or by breaking a monopolistic bottleneck, and that they should then be content merely to maintain 'stand-by' capacity or a 'yardstick' operational position rather than try to occupy the whole field or a dominating position within it. In some cases, they may be well advised in entirely terminating operations once they have stimulated regular commercial or manufacturing agencies to competition amongst themselves."

Nourse's economic philosophy of cooperation may be summed up in a nutshell: Cooperatives make it feasible for farmers to jointly market their products. The cooperative may evolve to a scale large enough to effectively bargain with other market participants and/or to avail itself of scale economies in processing and marketing operations. Subject to the same market disciplines and supply-demand-price dynamics as any business, the presence of the cooperative challenges other market participants to operate efficiently and thus strengthens the competitive market mechanism. When the market for members' products has become truly competitive, the cooperative may want to assume only a stand-by position but maintain the legal institutions and organizational capacity to reenter the field, if necessary. Table 1 summarizes all these points in the left column.

Examples in real life show that Nourse's ideas on cooperatives are still very relevant today. Consider dairy cooperatives, which as a group are the most prominent U.S. agricultural marketing cooperatives. A point-by-point comparison of dairy cooperative practices to Nourse's theory is summarized on the right column of table 1. It shows that market performance of dairy cooperatives coincides with the basic principles posited by Nourse's economic philosophy of cooperation.

With current renewed interest in the cooperative form of doing business, it may be worthwhile for the new generation of cooperators to relearn Nourse's ideas and fully understand the roles cooperatives play in the marketplace.

Editors note: More details on cooperative theory and practice using dairy cooperatives as a case study will be available in a forthcoming research report from the Cooperative Programs office of USDA Rural Development. ■

Table 1 — Comparison of Nourse's cooperative theory and dairy cooperative practice

Economic philosophy of cooperation	Market performance of dairy cooperatives
Cooperatives are organized for efficiently carrying out specific business functions.	49,675 dairy farmers in 155 cooperatives marketed 83 percent of U.S. milk in 2007.
Cooperatives can be of any size (and can be local, regional or national in scope) that allows them to function efficiently in the marketplace.	The smallest local cooperative has a few members marketing less than 1 million pounds of milk per year; the largest one has more than 10,000 members in the 48 contiguous states and markets tens of billions of pounds of milk.
Cooperatives afford farmers the organizational sizes for exercising countervailing power.	Collective bargaining for better prices and terms of trade is the exercise of countervailing power.
Cooperatives are pro-market; they let the market supply-and-demand price be the guidance for producers.	Dairy cooperatives and their member-farmers are subject to the disciplines of the market in a free economy.
Cooperatives are a means for farmers to promote and maintain competition — as the competitive yardstick.	To be competitive, processors must match the effectiveness and efficiency of dairy cooperatives.
In those fields where the market has become truly competitive and farmers can be well served by other firms, cooperatives may want to cede the field and assume only a stand-by position (to preserve members' capital, time and efforts for use on the farm), while maintaining the legal institutions and organizational capacity to step in if there is a relapse of market inadequacy.	Dairy cooperatives have comparative advantages in procuring milk and have major shares in making hard products (71 percent of butter, 96 percent of nonfat and skim milk powder, and 26 percent of cheese — the latter decreased from 34 percent in 2002). Their shares are less significant in sectors that are capital-, technology- and service-intensive and that carry high product and market risks (7 percent of fluid milk, 4 percent of ice cream, 11 percent of yogurt, 14 percent of sour cream. Their share of cheese has also declined in recent years). However, dairy cooperatives have the wherewithal to take up the slack if the market fails to perform well.

Note: Data from "Marketing Operations of Dairy Cooperatives, 2007," USDA/RD Research Report No. 218, 2009.

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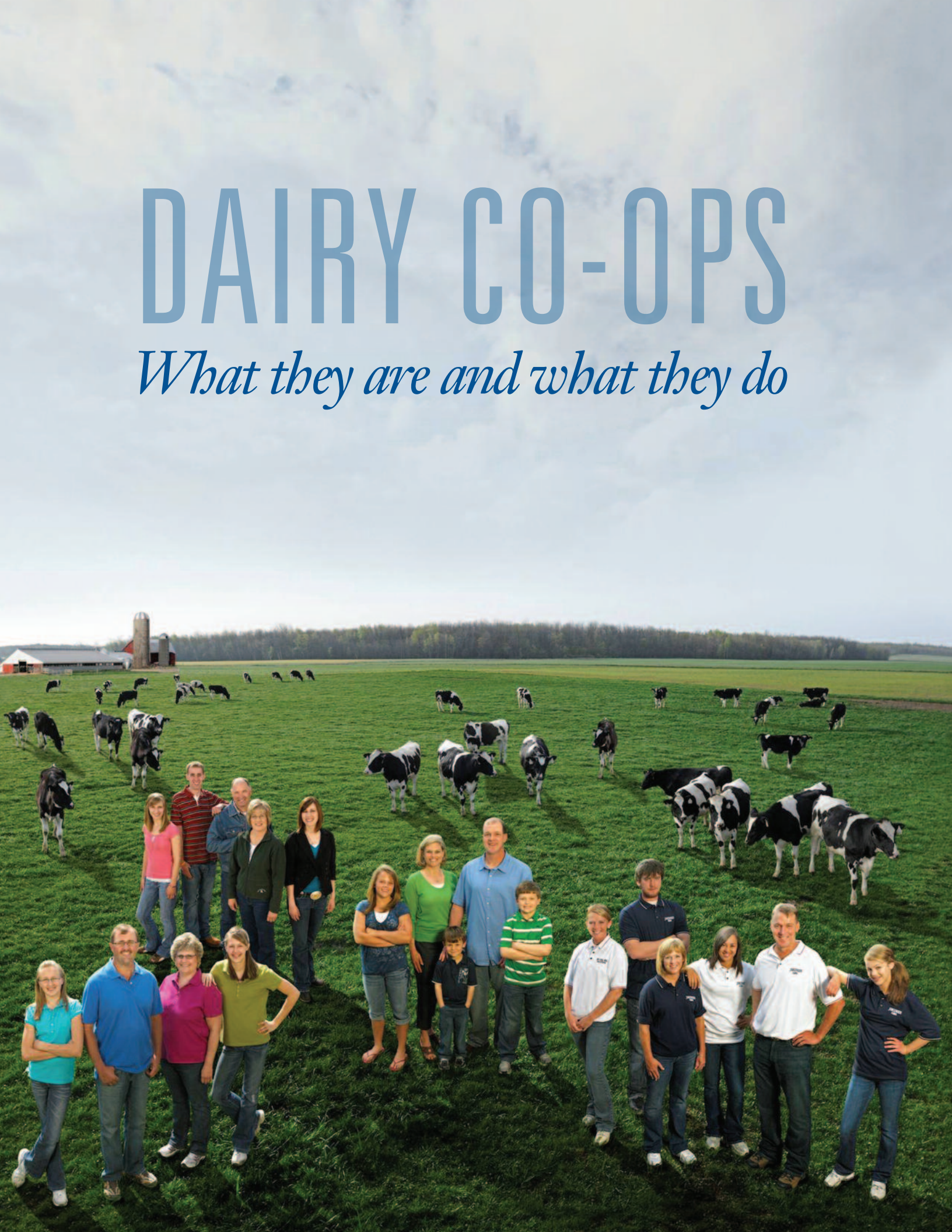
DAIRY CO-OPS

What they are and what they do



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Editor's note: *Two previous articles in Rural Cooperatives — "What Cooperatives Are (and Aren't)" (Nov./Dec. 2009) and "What Cooperatives Do," (March/April 2010) — explain the economic structure of cooperatives and their role in the marketplace. Together, these two narratives examine the economic theory of cooperation as advanced, respectively, by Ivan V. Emelianoff and Edwin G. Nourse. These writings constitute a comprehensive framework for understanding cooperatives (summarized in tables 1 and 2, left column). This third article examines dairy cooperative practices to illustrate how well the theory fits the reality, and vice versa. It is excerpted from the author's research report: "Co-op Theory, Practice and Financing," available from USDA.*

Dairy cooperatives, as a group, represent the most prominent of all agricultural marketing co-op sectors. Co-op milk and dairy product sales represented 42 percent of total commodity marketing by all U.S. agricultural cooperatives in 2007 (*Deville, et al.*). Dairy cooperatives account for a majority of milk sold in the United States, especially at the first-handler level and in the manufacture of "hard" dairy products (butter, cheese and milk powders).

In 2007, there were 155 dairy cooperatives in the nation owned by 49,675 member-producers, or 84 percent of the nation's licensed dairy farms. They delivered 152.5 billion pounds of milk, or 83 percent of all milk marketed (*Ling*).

Cooperatives marketed 71 percent of the nation's butter, 96 percent of nonfat and skim milk powders, 26 percent of natural cheese and 42 percent of dry whey products. Their shares of "soft" and cultured products were less significant: 4 percent of ice cream, 13 percent of ice cream mix, 11 percent of yogurt and 14 percent of sour cream. Co-ops processed 7 percent of the nation's packaged fluid milk products in 2007.

Mission and functions

There is no mystery as to why so many dairy farmers organize in cooperatives: they seek to jointly and efficiently market their milk far better than they could as individuals. Milk is a "flow" product (cows are milked twice or thrice daily) and is highly perishable; it must be picked up from the farm and delivered to the market (milk plants) soon after it is produced. By working together through their cooperatives, farmers strive for better control over the movement of the milk through the marketing channel and to attain higher value for their milk.

The functions and services the farmers demand of their respective cooperatives vary, depending on the specific market situation the members of a cooperative face and their particular needs. Dairy cooperatives may be charged by members with the responsibility of performing one or more (or all) of the following marketing functions:

- Provide an assured market; typically there is a written, or tacit, agreement between a member and the cooperative that the cooperative is the exclusive marketing agent of the member's milk.
- Negotiate milk pay price and terms of trade with milk buyers (investors-owned processors).
- Collect and ensure payment from milk buyers.
- Check weights and tests; this helps to ensure that the milk payment a member receives is accurate and commensurate with the quantity and quality of the milk delivered to milk buyers.
- Arrange for milk hauling; milk obviously must be picked up from the farm in a timely fashion and delivered to the plant of first-receipt. This can be performed by the cooperative's own haulers, by contract haulers or by haulers retained by members. The cooperative may also be responsible for setting or negotiating hauling rates.
- Provide field services; cooperatives typically have field service personnel to assist with on-farm production problems and regulatory and inspection issues for the farm to achieve quality-milk production.
- Disseminate market information about the situation and outlook of the milk market; this is provided to members for use in making dairy farming business decisions.
- Other marketing-related services that help members deal with all the minutiae related to producing and marketing quality milk.

In addition, dairy farmers may ask their cooperative to leverage its group strength to procure various other services to help sustain their farming operations and farm life. Some of the services may include providing:

- Insurance products, such as disaster insurance for the

These MMPA family farm members were featured in a "June Is Dairy Month" ad produced with Kroger grocery stores, one of the co-op's major customers. Kroger wanted to emphasize to shoppers that milk in the dairy case came from home-state farms. Photo courtesy Kroger and MMPA

farm, health and/or life insurance (for farmers and their families and farm employees) and farm workers' compensation.

- Retirement programs.
- Risk management services to deal with market uncertainties.
- Farm business consulting services, such as farm expansion feasibility studies and business plans.
- Operating capital and facility capital financing.
- Financial planning services.
- Livestock marketing services (mainly for culled cows and calves).
- Other services that may help members' farming operations.

Organization

Dairy cooperatives can be of any size (and can be local, regional or national in scope), depending on whatever scale the membership considers to be the most appropriate for marketing their milk.

A small local cooperative may have a few member-farms and market less than 1 million pounds of milk a year. A regional co-op may have hundreds or thousands of members in more than one state and handle millions, or even billions, of pounds of milk. The nation's largest dairy cooperative has about 10,000 member-farms in all of the 48 contiguous states who deliver tens of billions of pounds of milk annually to their co-op.

All dairy cooperatives are known to be centralized organizations with direct membership. A limited number may have other dairy cooperatives as association members, but the practice is usually for accommodating the fact that the cooperative is the marketing agent of all or part of the milk, dairy products or services of these association members.

Dairy cooperatives operating in the same market may form marketing agencies in-common to rationalize milk hauling and shipment for reducing transportation costs, to share market information, or to collectively bargain with buyers for higher prices for milk or dairy products marketed.

Governance

Members of dairy cooperatives exercise ownership and business controls through a board of directors that is elected from among member-farmers. Candidates for the board are typically nominated by a committee of elected members who are not directors. Elections of the directors are usually done at the annual membership meeting.

If a cooperative is large, in terms of membership or geographical area, members may be grouped into districts (or areas/regions/divisions/locals). Directors then may be nominated from the district and elected at the cooperative's annual meeting. Districts are usually drawn such that members in the same district are more or less homogeneous. Voting at the district level is typically by one member/one vote. The number of directors each district is entitled to may be different due to proportionality considerations based on milk volume. Some boards may have at-large members.

In a large cooperative, a delegate body elected by members may be needed to channel information and make decisions on behalf of the membership. The delegate body may be empowered to represent the membership in all decisions, except for matters that specifically require votes by the entire membership.

A limited number of dairy cooperatives have non-member directors, typically in the states where they are required by law. Non-member directors usually play an advisory, non-voting role on the board.

An executive committee of elected officers and selected board members may be constituted to facilitate decision-making when the board is not in session. The board may also appoint several committees to carry out specific board functions, such as audit, finance, membership and marketing committees.

The board controls the cooperative's business on behalf of members and makes major decisions; it also sets the policy and determines the overall direction of the cooperative. Management carries out the co-op's day-to-day operations. Another very important function of cooperative board members is serving as a conduit of communication between the management and the rank-and-file members.

Operations

Dairy cooperatives perform various marketing functions to carry out the most important task of providing an assured market for members' milk. They may engage in one or more of these activities:

- **Bargaining** — Find a market for members' milk and bargain/negotiate with milk buyers for milk prices and terms of trade.
- **Fluid processing** — Own or retain plant capacity to process some or all member milk into fluid products. Fluid plants may also process soft and cultured products.
- **Niche marketing** — Own or retain plant capacity to process some or all member milk into specialty (niche) products.
- **Making hard products** — Own or retain plant capacity to manufacture hard dairy products (such as cheese). Manufacturing plants also provide a home for milk when it is in excess of market demand and transform the milk into storable products for further processing or later distribution.

Of the 155 U.S. dairy cooperatives, 108 may be classified as bargaining cooperatives because bargaining is their only, or main, marketing activity. Four co-ops are fluid processing operations that do business primarily in processing and distributing fluid products. Another 19 of these businesses are niche marketing cooperatives. The remaining 24 may be called diversified cooperatives, having bargaining and one or more processing/manufacturing functions as their main operations.

Besides assuring a market for members' milk, dairy

Table 1 – Comparison of Theory and Dairy Cooperative Practice: *What Cooperatives Are*

Theory: Economic Structure of Cooperatives	Economic Structure of Dairy Cooperatives
Cooperative organizations represent the aggregates of economic units.	A dairy cooperative is the aggregate of dairy member-farms.
A cooperative is an agency owned and controlled by members through which they conduct their business.	A dairy cooperative is owned, controlled and used by members as the milk marketing arm of their dairy farming business.
Each member-farm fully retains its economic individuality and independence.	Member dairy farms are independent economic units, each making its own business decisions.
The board of directors is elected from among member-farmers.	Directors are members; they may have non-member directors who usually are non-voting advisors and may be mandated by state laws.
Proportionality and service at-cost are two basic principles.	These principles are applied in every facet of operations that relate to member business.
Members provide advances (i.e., equity capital) for financing the cooperative.	Almost all equities are member capital; ownership of a fraction (a portion of preferred stock) is not discernable from the financial statements.
Patronage refunds are returned to members who have been underpaid or overcharged.	Patronage refunds are net savings returned to members.
Dividend on capital, if any, is interest payment for using members' capital.	Dividends, if paid, are usually on preferred stock, and typically at less than 8 percent.
Being an aggregate of member-farms, the cooperative is neither a horizontal integration of its members nor a vertical integration between the cooperative and its members. It is a third mode of organizing coordination.	There may be some degree of coordination among members as they voluntarily and collectively adapt to market situations. However, this is not the same as vertical or horizontal integration.

cooperatives may also perform some or all of the other milk marketing functions listed in the mission and functions section above. In addition, they may procure farm supplies or provide other services for members.

Dairy cooperatives also provide services to milk buyers in accordance with the terms of trade negotiated, such as delivering milk on schedule, maintaining quality control and related laboratory services, preconditioning or standardizing milk and/or fulfilling full-supply contracts.

Market performance

A cooperative affords dairy farmers the organizational size that is necessary for exercising countervailing power to effectively bargain and deal with milk buyers and other market participants.

The dairy industry has evolved in a way that dairy cooperatives and processors have developed a high degree of bilateral dependency.

Because dairy cooperatives are organizations of farmers, they have the comparative advantages of working closely with members for assembling milk, providing field services and performing farm-related functions. It is these advantages that accord them the predominant market share at the first-handler level.

In additon to this dominance in milk procurement, co-ops have the responsibility of balancing milk supply. Many dairy cooperatives maintain plant capacity to manufacture reserve and surplus milk into storable products such as butter, milk powders and cheese. Consequently, they have major market shares of these hard products. Like a reservoir, these cooperative plants absorb milk in excess of demand and provide supplemental milk to the market when it is needed.

Many processors rely on dairy cooperatives for milk supplies that are tailored to their requirements for volume, quality, composition and delivery schedule, so they can focus their attention on the sectors where they are dominant: making fluid, cultured and soft products (and lately cheese) and further processing and packaging dairy products for the consumer market. These sectors tend to be capital-, technology- and service-intensive and are exposed to high product and market risks.

Farmers, who are generally risk-averse and have many

demands on their financial resources on the farm, probably prefer to stay out of these sectors rather than compete head-on with processors (their milk customers), as long as the market performs well and their farming business can be sustained.

Still, there are a substantial number of dairy cooperatives operating in these sectors, although as a whole their market share is not high. The upshot is that though dairy cooperatives are generally less active in these sectors, they have the size, organization and wherewithal to enter the market if the situation calls for it.

Financing

Based on the complete financial data of 94 dairy cooperatives for the fiscal year ending in 2007, total assets of these cooperatives were $12 billion (or $8.41 per hundredweight/cwt of milk). Current assets accounted for 60.4 percent ($7.3 billion or $5.08/cwt) and fixed and other assets accounted for the other 39.6 percent ($4.8 billion or $3.34/cwt). These 94 businesses represented 61 percent of all dairy cooperatives and marketed 142.9 billion pounds of milk, or 94 percent of cooperative milk volume (*Ling, table 12*).

Total liabilities of these co-ops were $8.7 billion. Of this amount, 72.3 percent were current liabilities ($6.3 billion or $4.40/cwt) while 27.7 percent ($2.4 billion or $1.69/cwt) were long-term debts. Equities, the balance of assets and liabilities, were $3.3 billion ($2.32/cwt).

Dairy cooperatives typically pay members for their milk twice a month. A large proportion of the current assets and the current liabilities are for such pending periodic cash payments to members.

This is a unique characteristic of the balance sheet of dairy cooperatives. Therefore, it is important to focus on the ratio of long-term debts to equity in evaluating financial strength, which was 72.6 percent for the 94 cooperatives.

Equities can be grouped into four categories: common stock, preferred stock, retained earnings and allocated equities.

Common stock — In 2007, common stock only accounted for 0.1 percent of total equities. This is because common stock of cooperatives is usually issued for witnessing membership and carries minimal nominal value.

Preferred stock — Preferred stock, as reported, was 7 percent of total equities. A substantial portion of the preferred stock was issued by some cooperatives to members for witnessing retained patronage refunds or for witnessing members' additional investment in the cooperative and may be considered as allocated equities. It is not clear who holds the remaining preferred stock (probably representing less than 5 percent of total equities); the holders could be non-members as well as members.

Retained earnings — Retained earnings could be earnings derived from non-member businesses, but may also include allocated equities that some cooperatives choose not to separately specify in the financial reports, retained net savings that are going to be allocated later, or earnings that are difficult to attribute to specific member transactions.

Therefore, retained earnings that are not likely to be subject to allocations (or considered by some to be "permanent" equity) should be less than the reported 10.8 percent of total equities. In any case, retained earnings belong to the cooperative and therefore are owned by members.

In most cases, non-member businesses of dairy cooperatives are incidental to the dairy operation. These may include:

- Processing into storable products other firms' surplus (distressed) milk that needs to find a home.
- Sales of goods sourced from other firms in dairy stores or other sales outlets.
- Sales of dairy or farm supplies that may include customers who are non-members.

In a limited number of cases, retained earnings are profits from investment activities that may or may not be related to the core business of serving members' marketing and farming needs.

Allocated equities — The 94 cooperatives reported that 82.1 percent of their equities ($1.91/cwt) were allocated to members. Allocated equities are members' capital from one or more of these sources:

Retained patronage refunds — Retained patronage refunds are net savings that are allocated to members based on patronage but are retained to finance the cooperative's operations after a cash portion has been paid to members. Members must treat the entire patronage refund (retained as well as cash payment) as income for tax purposes. Cooperatives usually revolve retained patronage back to members after a certain period of time.

Capital retains — Some cooperatives use capital retains to finance the operations or, more often, for special projects such as building new plants. Money is withheld from milk payment at a certain rate per hundredweight of milk. Members must treat capital retains as income for tax purposes. Capital retains are also revolved back to members after a certain period of time.

Base capital plan — Some larger diversified dairy cooperatives have adopted base capital plans to establish a more stable equity pool. Under such a plan, a target base capital level is established at a rate per hundredweight of milk marketed during a representative period. The base capital may be funded by retained patronage and/or capital retains, or by other means of member contribution. Once a member attains the prescribed base capital level, future patronage earnings allocated to the member are paid in cash.

Members provide almost all equity capital. Counting common stock, preferred stock (that are issued to members), retained earnings and allocated equities, almost all equities (probably more than 95 percent) of dairy cooperatives are supplied and owned by members.

Theory and reality fit

Considering all of the above, it is clear that the economic structure and market performance of dairy cooperatives are in full accord with the economic theory of cooperation as expounded by Emelianoff and Nourse. Dairy cooperatives' mission, functions, organization, governance, operations, market performance, financing, etc., all conform to the theoretical prescriptions, as tables 1 and 2 show. Cooperation as practiced by dairy farmers in marketing milk is an enduring business model that is in full agreement with the economic theory of what cooperatives are and what cooperatives do.

The dairy market has seen some extreme highs and lows in the past few years. While co-ops tend to be a stabilizing influence on ag markets, they cannot prevent such market shifts. Still, the cooperative form of a business remains the overwhelming choice of dairy farmers for marketing, processing and many related services. ■

Table 2 – Comparison of Theory and Dairy Cooperative Practice: ***What Cooperatives Do***

Theory: Market Performance of Cooperatives	Market Performance of Dairy Cooperatives
Cooperatives are organized for efficiently carrying out specific business functions.	49,675 dairy farmers in 155 cooperatives marketed 83 percent of U.S. milk in 2007.
Cooperatives can be of any size (and can be local, regional or national in scope) that allows them to function efficiently in the marketplace.	The smallest local cooperative has a few members marketing less than 1 million pounds of milk per year; the largest one has about 10,000 members in the 48 contiguous states and markets tens of billions of pounds of milk.
Cooperatives afford farmers the organizational size for exercising countervailing power.	Dairy cooperatives may grow, or have grown, to the size necessary for effectively bargaining with milk buyers for better prices and terms of trade.
Cooperatives are pro-market; they let the market supply-and-demand price be the guidance for producers.	Dairy cooperatives and their member-farmers are subject to the disciplines of the market in a free economy.
Cooperatives are a means for farmers to promote and maintain competition; they serve as a "competitive yardstick."	To be competitive, processors must match the effectiveness and efficiency of dairy cooperatives.
In those fields where the market has become truly competitive and farmers can be well served by other firms, cooperatives may want to cede the field and assume only a stand-by position (to preserve members' capital, time and efforts for use on the farm), while maintaining the legal institutions and organizational capacity to step in if there is a relapse of market inadequacy.	Dairy cooperatives have comparative advantages in procuring milk and have major shares in making hard products (71 percent of butter, 96 percent of nonfat and skim milk powder, and 26 percent of cheese, although the latter decreased from 34 percent in 2002). Their shares are less significant in sectors that are capital-, technology- and service-intensive and that carry high product and market risks (7 percent of fluid milk, 4 percent of ice cream, 11 percent of yogurt, 14 percent of sour cream. Their share of cheese has also declined in recent years). However, dairy cooperatives have the wherewithal to take up the slack if the market fails to perform well.

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How co-ops do it

Dairy co-ops are a prime example of the economics of co-op marketing

Photos courtesy Darigold

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Note: *This article is a sequel to "What Cooperatives Are (and Aren't)," "What Cooperatives Do," and "Dairy Co-ops: What They Are and What They Do," Rural Cooperatives, Volume 76, Number 6, November/December 2009; Volume 77, Number 2, March/April 2010; and Volume 78, Number 2, March/April 2011, respectively. Past issues are posted on the USDA Rural Development website: www.rurdev.usda.gov.*

In our free-market economy, the cooperative is a unique business model in that it is an aggregate of individual economic units. In the agricultural sector, a cooperative is an aggregate of member-farms.

Using the dairy sector as an example for this article, the cooperative takes whatever milk volume is produced by members and then acts as their exclusive marketing agent. Members' farming operations are not under the cooperative's administrative control, and the cooperative cannot dictate how members operate their dairy farms.

This operating mode entails its own unique economics that comprises the following elements:

- When milk price goes up or down, the milk volume a farm may produce depends on the financial objective of the farm: whether it wants to attain maximum total profit (minimum loss in a loss situation), maximum total revenue (up to the break-even point), or minimum average cost.

- Production input cost changes do not change a farm's rated capacity, but instead shift the farm's cost curves straight up or down. The milk volume that the farm produces, again, depends on the financial objective of the farm. (Cost curves refer to a typical, simple diagram showing how milk production costs vary in relation to production volume. See figure 1.)
- Depending on how farmers respond to milk price and input cost changes, the milk volume the cooperative has to handle may continually fluctuate.
- Likewise, milk production is a biological process and is subject to daily and seasonal fluctuations.
- The seasonality of milk production generally does not match the seasonality of fluid milk demand. This mismatch requires cooperatives that supply milk to the fluid market to balance seasonal supply with seasonal demand and handle the inevitable seasonal surplus milk volume at a substantial supply-balancing cost.

A fuller explanation of the unique economics of dairy cooperative operation is facilitated by the focusing on a model dairy farm.

Model dairy farm

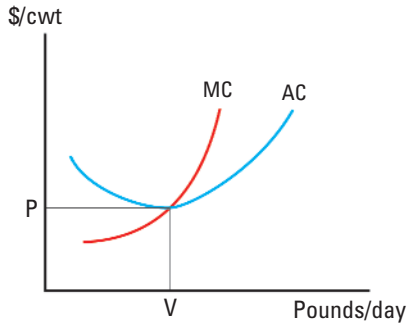
A farm is constructed with its dairying infrastructure to accommodate a dairy herd of a certain size. It has a rated capacity of producing a certain number of pounds of milk per day. When the farm produces milk at the capacity volume, the average cost of milk production per hundredweight (cwt) should be at a minimum. If milk price for the month is the same as the minimum average cost, then the farm's milk production for the month is at capacity and the farm is said to be in "equilibrium."

Milk price variation

If milk price is lower than the minimum average cost, the farm will incur a loss for every cwt of milk it produces. According to textbook optimization theory, the farm would minimize its total losses by producing milk at a volume where milk price (marginal revenue) equals marginal cost.

However, although marginal cost is a useful concept, its "real-life calculation" has many complications and, therefore, it is not readily available for practical day-to-day operational decision-making (This also applies to other concepts related to marginal productivity). For such decisions, the time-honored business practice is to use average cost in the profit-and-loss estimation.

Figure 1: Average cost (AC) and marginal cost (MC) vs. milk production volume



In the present case, it is very likely that the dairy farm will still strive to attain the lowest average cost by producing milk up to its rated capacity, even though doing so would incur a higher loss. So, depending on which cost concept a farmer uses, milk volume produced by the dairy farm may be somewhere between the two amounts just mentioned.

When milk price is higher than the minimum average cost, the farm will enjoy a profit. The farmer may decide to attain the lowest average cost by producing at its rated capacity. Or, the farmer may want to achieve maximum total profit by producing a milk volume where milk price (marginal revenue) equals marginal cost, if the latter is actually known.

Alternatively, the farmer may strive for maximum total revenue and increase its production up to the volume where the farm will break even. Thus, when milk price is higher than the minimum average cost, the amount of milk produced by the dairy farm may be somewhere in the range framed by the three possible milk volumes just given.

Replicating the model dairy farm ten, a hundred or even a thousand times, depending on the size of a cooperative, the aggregate milk volume produced by its members is certain to fluctuate. The cooperative may know with certainty the aggregate volume of members' rated capacity, which would logically be the basis for planning its milk handling capacity.

However, the uncertain volume of actual delivery means on some days the cooperative will have slack capacity, while on other days it may have to scramble to make sure every drop of milk has a home. Also in response to the fluctuating volume, milk hauling may have to be rerouted for most economical coordination.

It should be noted that because a cooperative is formed to market whatever the aggregate volume of milk produced by its members, it does not have its own milk production functions, milk production cost curves or milk supply curves.

Milk production input cost variation

Suppose milk price remains the same as the minimum average cost given at the rated capacity volume, but the cost of production input, such as feed or fuel, has increased. Because the infrastructure and the size of the dairy herd do not change, the rated capacity of the farm will stay the same.

However, the average cost curve and its associated marginal cost curve will shift upward. The farm will suffer a loss, and it may want to minimize its total losses by producing milk at a volume where milk price (marginal

revenue) equals marginal cost.

Short of knowing the marginal cost, it is very likely that the dairy farm will work to attain the lowest average cost by still producing milk at its rated capacity. When production input cost increases, milk volume produced by the dairy farm may be somewhere between the two milk volumes just referred to.

On the other hand, if production input cost decreases, the average cost curve and the associated marginal cost curve will shift downward and the farm will reap a profit. The farm may still decide to produce milk at its rated capacity. Or it may increase its production up to the break-even point that will return the highest total revenue.

Alternatively, the farm may want to achieve maximum total profit by producing at the milk volume where milk price (marginal revenue) meets marginal cost. When production input cost decreases, milk volume produced by the dairy farm may be somewhere in the range framed by the three volumes just articulated.

Again, the aggregate volume of member milk faced by the cooperative is rather uncertain, depending on how members make their day-to-day production decisions in reaction to production input cost changes.

The discussion thus far shows the challenges a dairy cooperative faces in handling fluctuating milk volume when either milk price or production input cost changes. When both price and cost changes are considered at the same time, the picture is even more complicated.

Still, this is a highly simplified scenario. In real life, not every farm is like the model dairy farm; in fact, no two farms are alike. They are not likely to be of the same size and make the same production decision. That means the volume variation may be even more uncertain than what has been described. In addition, the seasonality of milk production further aggravates milk volume uncertainties.

Table 1 Indices of seasonality of producer milk deliveries and fluid demand

Month	Producer milk deliveries	Fluid demand
	----------*Percent*----------	
January	100.1	101.9
February	101.8	100.6
March	103.7	100.9
April	105.4	98.2
May	106.0	98.1
June	103.4	94.0
July	97.8	94.2
August	97.0	98.1
September	96.3	105.2
October	95.4	104.6
November	95.0	102.8
December	98.1	101.4
Annual average	100.0	100.0

Source: Ling, K. Charles. *Cost of Balancing Milk Supplies: Northeast Regional Market*, U.S. Department of Agriculture, RBS Research Report No. 188, October 2001.

Note: Different regions of the country may experience different seasonality, and seasonality may change over time.

Seasonal production variation

Milk production is affected by a cow's physiological condition, which is subject to seasonal changes. The seasonal nature of milk production is best portrayed by the index of seasonality, such as shown in table 1, which is based on milk deliveries to the Northeast regional market and documented in an earlier USDA research report. The table shows that the first six months of the year is a period of higher-than-average milk deliveries, with May being the peak.

The index of 106 indicates that May is 6 percent higher than annual average daily deliveries. Milk deliveries decline sharply from June to July and stay relatively low throughout summer and fall. Deliveries are usually lowest in November.

With an index of 95, November is 5 percent below annual average daily deliveries. Deliveries recover in December and increase steadily through winter and spring. The drop from May to November is 11 percentage points.

Seasonality of milk production, in essence, shifts a farm's cost curves downward to the right during a seasonally high production month or upward to the left during a seasonally low production month. During a seasonally high production month (seasonality index is more than 100), since the same infrastructure and the same herd size will produce more milk, the farm's capacity should be higher than originally rated.

Also because the same fixed cost is spread over a higher milk volume, the average cost of producing milk should be lower. The combined effect would shift the cost curves rightward and downward.

On the other hand, during a seasonally low production month (seasonality index is less than 100), since

Table 2 An example of a cooperative's milk in excess of demand by fluid milk and manufacturing processors[1]

Month	Member milk deliveries	To fluid milk processors	To manufacturing processors	Co-op milk in excess of sales
	----------*Million pounds/day*----------			
January	10.0	4.1	2.5	3.4
February	10.2	4.0	2.5	3.7
March	10.4	4.0	2.5	3.8
April	10.5	3.9	2.5	4.1
May	10.6	3.9	2.5	4.2
June	10.3	3.8	2.5	4.1
July	9.8	3.8	2.5	3.5
August	9.7	3.9	2.5	3.3
September	9.6	4.2	2.5	2.9
October	9.5	4.2	2.5	2.9
November	9.5	4.1	2.5	2.9
December	9.8	4.1	2.5	3.3
Annual average	10.0	4.0	2.5	3.5

[1]Items may not add to totals due to rounding.

the same infrastructure and herd size will produce less milk, the farm's capacity should be less than originally rated. And because the same fixed cost is spread over a smaller milk volume, the average cost of producing milk should be higher. The combined effect would shift the cost curves leftward and upward.

The net effect of shifting seasonal capacity and cost curves means that the members' milk volume the cooperative has to handle will fluctuate seasonally throughout the year. This further compounds the challenges of marketing members' milk.

Seasonal demand variation

On the milk demand side, seasonal variation is mainly caused by fluid (beverage) uses. This is because the milk volume required by fluid processing plants is directly and instantaneously derived from consumers' demand of fluid products, which is highly seasonal. Manufacturing plants that make storable products such as cheese are different. They tend to maintain a throughput volume at or near plant capacity in order to achieve least-cost operations.

The example in table 1 shows that fluid demand is highest in September and maintains a higher-than-average, though declining, level through fall and winter until March; fluid demand is lower-than-average from April through August. The peak in September (seasonality index = 105) is 5 percent above annual average daily consumption.

The lowest fluid consumption month is June, with an index of 94, or 6 percent below the annual daily average. The June low is a drop of 11 percentage points compared with the September peak.

Thus, seasonality of fluid demand usually runs counter to the seasonality of milk production. Fluid demand tends to be high during those months when milk production is low, and tends to be low when milk production is high. The mismatch of supply and demand is a major challenge the cooperative has to handle, as shown in the following example.

Suppose that on an annual daily average basis, the cooperative's members deliver 10 million pounds of milk a day, and the cooperative markets 4 million pounds to fluid milk processors and a constant 2.5 million pounds to dairy product manufacturing processors.

Suppose further that milk production and fluid demand follow the seasonal patterns given in table 1. In May, the cooperative's members will produce 10.6 million pounds of milk a day, while fluid plants will use 3.9 million pounds and the manufacturing processors will

use 2.5 million pounds. The cooperative will have 4.2 million pounds of milk a day in excess of demand by fluid plants and manufacturing processors (table 2).

On the other extreme, the same calculation will show that the daily excess volume will be 2.9 million pounds in the fall months (September through November); a reduction of 1.3 million pounds a day from May.

If the cooperative has its own manufacturing plants to use a constant volume of 2.9 million pounds of milk a day, then the cooperative still needs to have facilities to handle a seasonal surplus of 1.3 million pounds of milk a day in May. During other months, the seasonal surplus balancing facilities will be under-utilized and will run dry in the fall months, resulting in costly plant operations.

If a cooperative does not have enough surplus balancing capacity (or in the case of bargaining cooperatives that do not have any plant capacity), there are two ways for them to dispose of surplus milk. They can sell the surplus milk in the spot market, usually at a price discount, or they can pay a "tolling fee" to have the milk manufactured into storable dairy products at plants owned by others.

The price discount and the tolling fee are charges for defraying the costs of owning and operating surplus handling plant facilities.

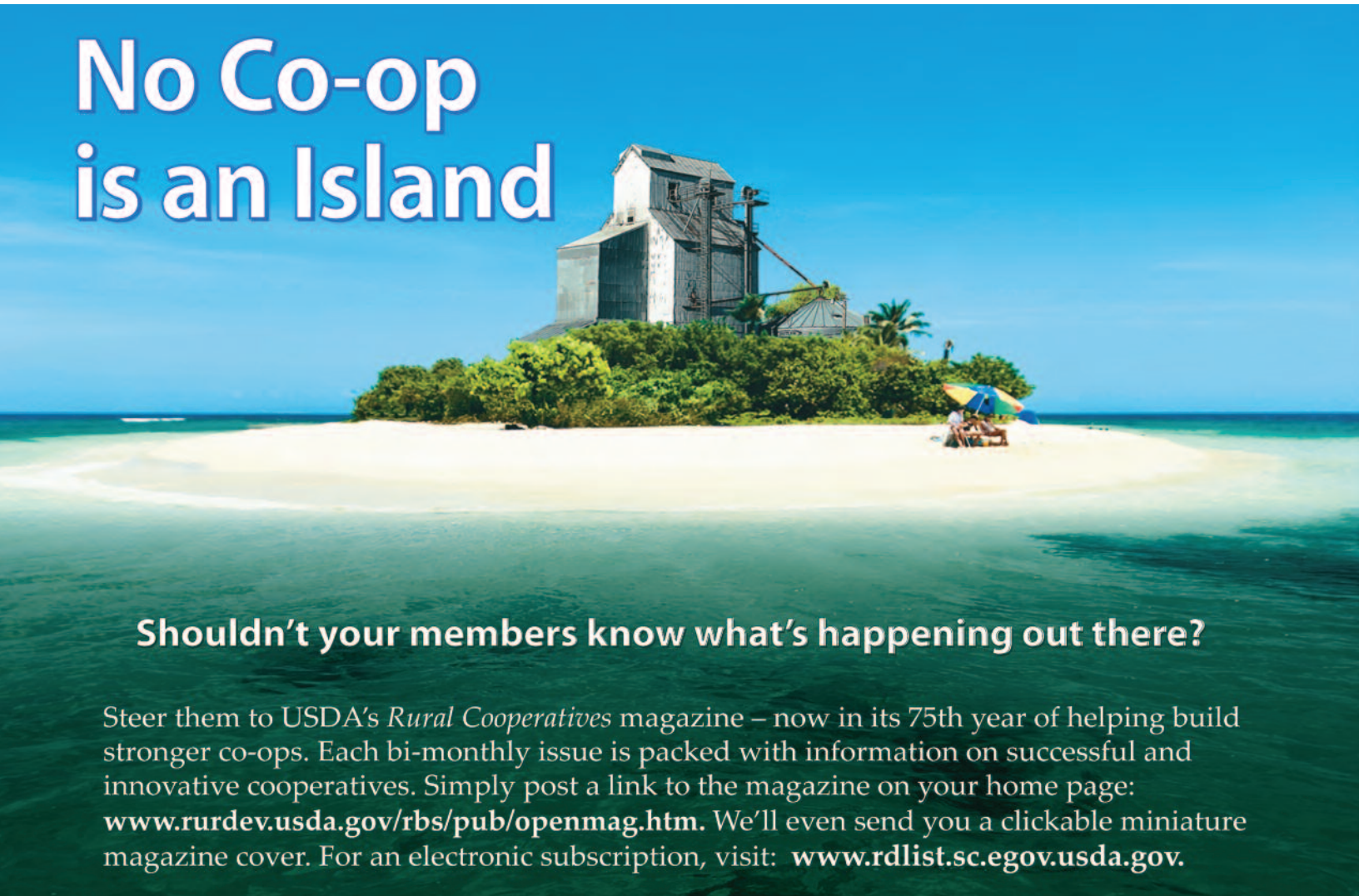
Other marketing cooperatives

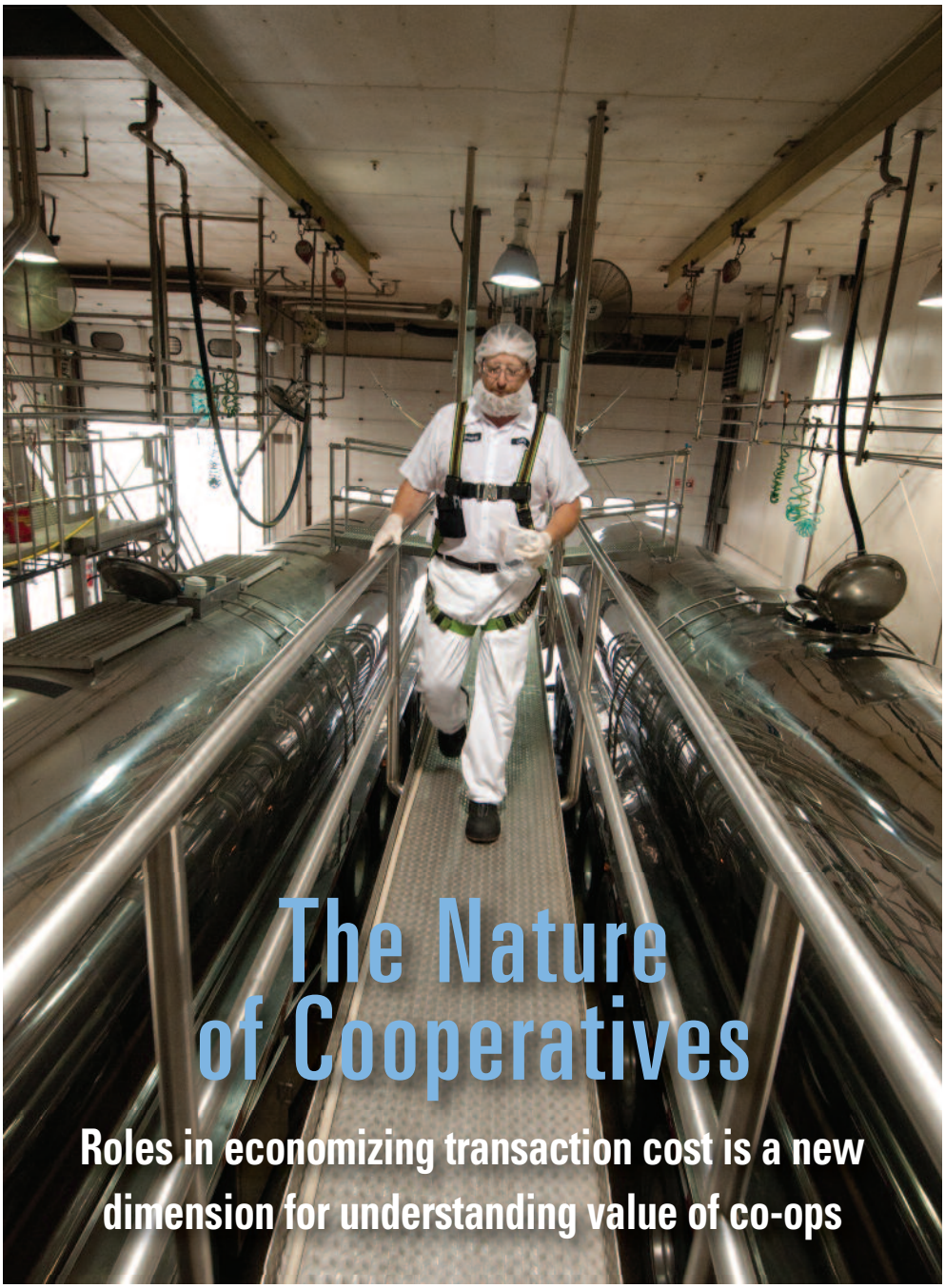
The unique economics of cooperative marketing operation is applicable in the situation where the cooperative is the exclusive marketing agent of the milk produced by members. Other agricultural commodities (such as fruits, vegetables, nuts, poultry, sugar, etc.) that exclusively rely on the cooperative to market members' products would have unique economics of cooperative operation similar to that of dairy cooperatives.

However, they differ from milk in some important aspects. The main difference is that milk is a "flow" product — day in and day out — while other farm commodities are harvested in lumps toward the end of the growing season of several weeks or months.

In the analysis of the economics of cooperative marketing of milk, the unit of time used is on a per day basis. The same analysis of other commodities has to use a unit of time that is appropriate for a particular commodity.

Some producers of commodities that are storable and have a long marketing season (such as grains and oilseeds) may view the cooperative as but one of multiple outlets and market through it only if the cooperative offers the best terms and services among all alternatives. In such a case, the cooperative may still maintain its uniqueness in its cooperative structure, organization, governance and equity financing. Its marketing operation, however, is not different from other marketing firms (firms other than cooperatives). ■





The Nature of Cooperatives

Roles in economizing transaction cost is a new dimension for understanding value of co-ops

A worker prepares to pull milk samples from co-op tankers. The samples are checked before a tanker is cleared for unloading. USDA photo by Lance Cheung

By K. Charles Ling, Ag Economist
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Editor's note: *This completes a series of five articles that examine the characteristics that make agricultural cooperative businesses unique and valuable in our economy. The previous articles in the series were: "What Cooperatives Are (and Aren't)" (November/December 2009 issue); "What Cooperatives Do" (March/April 2010); "Dairy Co-ops: What They Are and What They Do" (March/April 2011); and "How Co-ops Do It: Dairy Co-ops Are a Prime Example of the Economics of Co-op Marketing," (November/December 2011). Past issues of* Rural Cooperatives *are posted on the USDA Rural Development website: www.rurdev.usda.gov. Hard copies can be obtained by e-mailing requests to: coopinfo@wdc.usda.gov, or by calling (202) 720-8381.*

This series of articles has attempted to clarify the nature of the cooperative business model in our free-market economy by explaining the cooperative's unique economic structure as an aggregate of independent economic units (member-farms). Co-ops are organized to achieve a common goal(s) using organization, governance, equity financing, operations and economics that are unique to cooperatives. Cooperatives have been shown to be pro-market, helping farmers gain market access and exercise countervailing market power, and serving as a competitive yardstick for their industry.

This article attempts to show how cooperatives relate to other market participants through their roles in transaction governance, or "in aligning incentives and crafting governance structures that are better attuned to their exchange needs" (*Williamson, 2002*, p. 172).

As it has been in some of the previous articles, the dairy industry will again be used as an example to demonstrate the role of the co-op. In marketing milk and milk products, farmers and their cooperatives may engage in the following transaction scenarios.

Scenario I. — In a subsistence agricultural economy, farm production in excess of family consumption may be sold off farm. For example, a farm family may have one or two cows for producing milk to satisfy the family's food needs. If there is surplus milk, it may be sold to neighbors (food safety regulations permitting). The transactions are incidental to subsistence farming, do not require specific assets, and are primarily operations of a bygone era in the United States.

Scenario II. — Commercial milk production requires substantial capital investment in specialized assets: milk cows; barns, milking parlors and other buildings; machinery and equipment; skilled labor and management, etc. Most of these assets are specifically for producing milk and cannot be easily employed for alternative uses. Furthermore, milk is a "flow" product and is highly perishable. Its market is inherently volatile due to daily, as well as seasonal, variations of milk production and fluid milk demand. Supply and demand variations are not coordinated.

Asset specificity, high product perishability and market volatility make dairy farmers vulnerable when dealing with milk buyers (usually dairy food processors). There are many dairy farmers, but a small number of milk processors. Processors also must deal with "asset specificity" — they own dairy plants that are capital- and technology-intensive and require large size to take advantage of the economies of scale. But they are in a dominant bargaining position *vis-a-vis* individual dairy farmers.

Farmers organize cooperatives to gain bargaining and countervailing power. However, asset specificity still causes uncertainty and poses hazards to the investment of the dairy farmers and the processors if there is no credible contractual safeguard. Contracts that spell out the terms of trade as legal rules may be formulated in an effort to relieve the hazard.

But it is impossible to foresee and encompass all contingencies in a contract, due to human limitations. Relying on courts for relief is time-consuming and costly. This is a scenario of transaction without credible contracting, and the transaction does not have safeguards to relieve the investment hazard and protect the investment.

Scenario III. — For a highly perishable commodity such as milk, it is vitally important for both producers and processors to work together to make sure milk flow is smooth and without interruption. Producers need to have an assured outlet for the milk once it is produced, while processors require a steady supply of fresh milk to manufacture high-quality dairy products and efficiently utilize plant capacity.

The dairy industry has evolved in such a way that many dairy cooperatives and processors have developed a high degree of bilateral dependency. Because dairy cooperatives are organizations of farmers, they have the comparative advantages of working closely with members for assembling milk, providing field services and performing farm-related functions (84 percent of U.S. dairy farmers marketed milk through cooperatives in 2007, the year of USDA's latest dairy cooperatives survey).

Many processors rely on dairy cooperatives for milk supplies that are tailored to their requirements for volume, quality, composition and/or delivery schedule, so they can focus their attention on processing and packaging dairy products. Under such an arrangement, the transactions between cooperatives and processors are assisted with what is called credible contracting and supported by inter-firm contractual safeguards. Instead of a set of legal rules with court enforcement, the contract here is a framework or a set of guidelines for interactions between the firms.

Discrepancies in performance are resolved through amicable consultation or negotiations or by arbitration. The court is only used as a last resort remedy.

Scenario IV. — Besides selling members' milk to buyers (processors), it may be necessary for a dairy cooperative to forward-integrate into processing some or all of its members' milk into various dairy products. Being marketers of members' milk, many cooperatives have to maintain plant capacity to balance milk supply and manufacture reserve and surplus milk into storable products. Otherwise, the surplus milk will be at the mercy of the market and lead to depressed milk prices. In order to generate higher margins from the market for members' milk, some cooperatives also may choose to integrate into processing fluid products or specialty dairy products, or further processing hard products. These processing enterprises are under the cooperative's hierarchical administrative control.

Transaction governance structures

The roles of a cooperative in the above scenarios fit with the analysis of the roles of a firm in transaction governance that constitute the core of transaction-cost economics (*Williamson, 2010, 2007, 2005, and 2002*).

In Scenario I, transactions between numerous suppliers and buyers are for an undifferentiated product. The product is made with a general purpose technology and does not require assets that are specific for its production (asset specificity is zero). Transaction governance is accomplished through market competition. The transaction governance mode is unassisted market.

When the product uses special purpose technology that requires specific assets for its production, as described in Scenario II, asset specificity is greater than zero. Asset specificity causes uncertainty and poses hazards to the investments of the suppliers and the buyers. Contracts that are formulated as legal rules may provide no safeguards to protect against investment hazards. Here, transaction governance is still the market, and the transaction governance mode is unrelieved contractual hazard.

In Scenario III, firms seek out reputable, trustworthy counterparts to reduce investment hazards. Such transactions give rise to bilateral dependencies, and the parties have

incentives to promote a continuous, long-term relationship, thus safeguarding specific investments. Transactions are supported by inter-firm contractual safeguards; the contract here is a set of guidelines for mutual adaptations. The transaction governance mode is credible contracting, a hybrid mode between (unrelieved hazard) market and full integration.

Successive, technologically separable stages are brought under unified ownership and vertically integrated and controlled in Scenario IV. In this scenario, the transaction governance mode is hierarchical administrative control. This mode occurs when a higher degree of asset specificity and added uncertainty pose greater needs for cooperation in mutual adaptations between successive stages.

The transaction governance modes are summarized in table 1. Each mode in the table represents a generic mode of governance, and each generic mode of governance embodies its own internally consistent attributes of incentive intensity (reward for effort), administrative control, and contract law regime – and, therefore, has its own strengths and weaknesses.

The governance structure Mode A is the unassisted market. The governance structure Mode B is the market where asset specificity exposes transacting parties to uncertainties and, without safeguards, to unrelieved contractual hazards to their investments. Mode C is where the market is assisted with credible contracting. All successive production stages are integrated under hierarchical control in transaction governance Mode D.

The attributes of a market mode are high incentive intensity, little administrative control, and a legal rules contract regime. On the other hand, attributes of hierarchy are low incentive intensity (where pricing for the successive stages is cost-plus), considerable administrative control (by fiat), and forbearance is the implicit contract law of internal organization (the parties must resolve their differences internally).

Table 1 Transaction governance modes and attributes

Transaction governance mode	Asset specificity	Investment hazard safeguard	Incentive intensity	Admin. control	Contract law regime
A: Unassisted market	0	0	High	Little	Competitive norm
B: Unrelieved hazard	>	0	<	>	Legal rules contract regime
C: Hybrid (Credible contracting)	>	>	<	>	Credible contracting
D: Hierarchy (Administrative)	>	>	Low (Pricing for successive stages is cost-plus)	Considerable (by fiat)	Internal implicit contract law (Forbearance)

Source: Adopted from *Williamson, 2005,* Figure 1: Simple Contractual Schema.
Note: ">" indicates a mode having a higher intensity of the particular attribute than the mode above it.
"<" indicates a mode having a lower intensity of the particular attribute than the mode above it.

Transaction governance in practice

Dairy cooperatives may be classified into one of four categories, based on the main marketing function(s) they perform (table 2). Their transaction governance roles depend on their lines of business.

All four categories of dairy cooperatives may have joint ventures with other cooperatives or firms to process and market certain dairy products. The cooperative supplies dairy inputs and the partner(s) provide technical or marketing know-how to the joint venture.

This is one way of bringing product processing under the cooperative's partial control. In this case, transaction governance mode may be viewed to fall somewhere between Mode C and Mode D.

Conclusions

Cooperatives are transaction governance structures, as are non-cooperative firms. Depending on the lines of business of a cooperative or other type of a firm, transactions can occur under all possible governance modes. Cooperatives adapt to various governance modes for economizing on the transaction cost, just as other firms do.

For entering into credible contractual relationships with buyers (processors), the cooperative's functions of providing market access and exercising countervailing power put its members, collectively through the cooperative, on a relatively more equal footing with buyers. This should make credible contractual relationships between sellers and buyers more attainable and stable.

Furthermore, as its members' collective marketing agency,

Table 2 Category of dairy cooperatives by marketing function(s) and their transaction governance roles

Category of cooperatives	Main function	Dimension	Transaction governance mode
Bargaining	Negotiate with milk buyers for milk prices and terms of trade; a few may operate milk handling facilities but not milk plants.	108 cooperatives (out of 155 U.S. total, or 70 percent). Together handled 23 percent of the 155.8 billion pounds U.S. cooperative milk volume, but few handled more than 1 billion pounds of milk each.	Regular milk sale is usually Mode C (hybrid); may be Mode B (unrelieved hazard) for spot milk sales.
Niche marketing	Own or retain plant capacity to process members' milk into specialty/niche products.	19 cooperatives. Most handled less than 50 million pounds of milk each. Together handled less than 1 percent of U.S. cooperative milk volume.	Product processing stages are Mode D (hierarchy); wholesale distribution of products is usually Mode C and may be Mode B; and retail sales are usually Mode B.
Fluid processing	Own or retain plant capacity to process members' milk into fluid products. May also process soft and cultured products.	Four cooperatives. Milk volume processed was moderate. Together handled less than 1 percent of U.S. cooperative milk volume.	Product processing stages are Mode D; wholesale distribution of products is usually Mode C.
Diversified	Perform bargaining and all or most other marketing functions. As a group, sold 53 percent of milk to other handlers (bargaining), while manufactured the remaining 47 percent into various products.	24 cooperatives. Three out of four cooperatives in this group handled 1 billion or more pounds of milk and none handled less than 50 million pounds. Together handled 75 percent of the U.S. cooperative milk volume.	Bargaining function is usually Mode C; product manufacturing and further processing stages are Mode D; wholesale distribution of products is usually Mode C and may be Mode B; and spot milk sales may be Mode B.

Table source: All dairy cooperative statistics cited are 2007 data, the year of USDA Cooperative Programs' most recent dairy survey.

the cooperative serves as a single transaction entity for credible contracting with buyers. It also introduces order and eliminates conflicts among members who would otherwise be competing individually for customers. As a result, transaction costs should be reduced.

A cooperative does not own the assets for producing the milk (for example) that the cooperative markets for its members; the assets and the investment hazard associated with asset specificity belong to member-farms. By pooling members' milk in its marketing efforts, the cooperative, in essence, also pools the investment hazard. As a result, each member's share of the hazard conceivably is less than if they individually market their products. The fact that asset specificity and the associated investment hazard belong to individual members reaffirms the cooperative's unique economic structure of being an aggregate of its member-farms.

These analyses show how cooperatives relate to other market participants through their roles in transaction governance and will hopefully broaden understanding of the cooperative's place in the market economy. Together with the earlier work on cooperative basics, they should clarify the nature of the cooperative.

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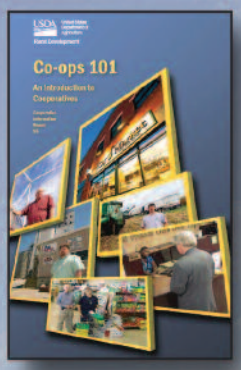

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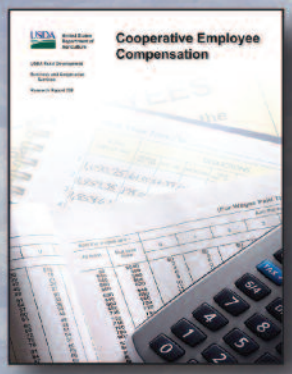

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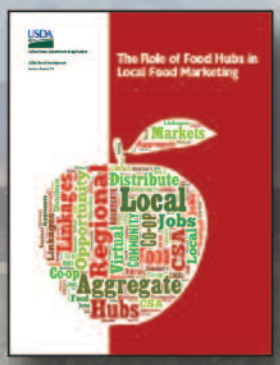

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Lessons offered by dairy co-ops shed light on important equity capital issues

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A cooperative faces many challenges in sourcing and maintaining an adequate level of capital for financing its operations. Being a cooperative, its equity capital is provided by members and is therefore dependent on members' willingness to support the cooperative's undertakings.

Members' equity retained by the cooperative represents a substantial sum of their money and competes with the capital needed for operating their farms. Most members therefore prefer to have as little of their equity retained by the co-op as possible, and for a short equity-revolving period. Co-ops use a variety of means to redeem member equity in ways that meet both the needs of the co-op and its members.

When a cooperative's business is doing well, some members may perceive that its market valuation is higher than the book value and want to have access to the gain. This may stoke the pressure to "sell off" the cooperative or convert it to a public corporation.

To overcome these challenges and shore up an adequate equity level, alternative capital financing methods have been used by some cooperatives. These methods include: issuing preferred stock; accumulating (unallocated) retained earnings; capitalization using a "new-generation" cooperative model; and allowing non-member capital to be invested in cooperatives (which usually requires a change in state co-op laws).

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Equity financing issues:

FAQs

The experience of dairy cooperatives can serve as an example for answering some frequently asked questions (FAQs) regarding cooperative equity financing, including the following, grouped by specific financing alternatives.

Member equities

Question: Cooperative equities are furnished by members and therefore are limited. How does a cooperative gain access to capital without incurring long-term debt, without selling off the cooperative, or without going public in these situations:

- When the cooperative needs more capital?
- When members agitate to gain access to the perceived high market value of the business?
- When pressure mounts to shorten the equity-revolving period?

Answer: Members organize or join a cooperative to market their farm production. They should provide the cooperative with capital at a level that is commensurate with the functions they want the cooperative to perform and the benefits they want to derive from it.

If market value of the cooperative is higher than the book value, it means the cooperative's earnings and potential future earnings are higher than can be expected, given its level of equity capital. Members gain access to this higher earning ability by receiving higher pay prices, premiums and patronage refunds. Selling off the cooperative to gain the value of the business is tantamount to "killing the goose that lays the golden egg."

Eventually, it is up to members to decide if they want the cooperative to be viable or if they prefer other alternatives.

Preferred Stock

Question: What effects might issuing preferred stock have on a cooperative's practice?

Answer: Preferred stock may specify nearly any conceivable right for shareholders. What effects preferred stock may have on a cooperative's practice depend on what rights are specified. Preferred stock that pays dividends and has preference in assets over common stock in the event of the dissolution of the cooperative — the most common type of preferred stock — probably would not have any impact. If the preferred stock confers certain voting rights, the effect would depend on what specific issues the preferred stockholders are entitled to vote on.

Retained earnings

Question: Many cooperatives expand non-member businesses to accumulate retained earnings as permanent equity. What might be the long-term effects of this practice on governance?

Answer: Cooperatives may have non-member business for various reasons. In any case, retained earnings belong to the cooperative and thus are jointly owned by members. Disposition of retained earnings is at the discretion of the board of directors.

However, a marketing cooperative would not be conforming to the Capper-Volstead Act requirements if its non-member business were to exceed 50 percent of total sales. Moreover, by accumulating permanent capital, the cooperative may actually increase incentives for members to sell off the cooperative or convert it to a public corporation.

New-generation cooperatives

Question: Are new-generation cooperatives the answer to co-op financing issues?

Answer: A new-generation cooperative requires members to pay equity up front to acquire the delivery rights. While this attribute may address the issue of raising capital, the cooperative model introduces new issues, mainly relating to delivery rights and property rights *(Torgerson)*.

Furthermore, many new-generation cooperatives are organized for business opportunities that resemble venture-capital investment. They tend to process one product or a narrow range of products. This presents additional risks as compared with a cooperative that is organized to market members' product(s) through a variety of marketing channels.

Outside (non-member) capital

Question: What changes in governance, organizational structure and practice may be brought about by the new cooperative laws enacted by some states that allow outside equity capital?

Answer: There is a large variation regarding voting power and earning distribution, etc., among the few state laws that allow cooperatives to have investors. Differences in governance and earning distribution rules will influence cooperative organizational structure and practice differently. It is better to analyze them on a case-by-case basis. Furthermore, not every cooperative newly incorporated under these state laws has outside (non-member) investors. ■

Bags of dehydrated milk powder fill a co-op warehouse. USDA photos by Lance Cheung

This article focuses on the equity financing practices of dairy cooperatives in the hope that it can help all types of co-ops better understand capital financing issues.

Dairy co-op equity capital

Just as for any other type of business, dairy cooperatives require an adequate level of capital to market members' milk. Besides bargaining (negotiating for milk prices and terms of trade), co-ops may have diversified operations, including: owning and operating milk-handling facilities, performing value-added processing, and/or providing milk marketing-related and other member services. Member equities are the source of capital to support these operations.

The four basic categories of dairy cooperative equity are:

- **Common stock** — Common stock of cooperatives is usually issued to prove membership, although it typically has only nominal value. Based on the complete financial data of 94 dairy cooperatives for the fiscal year ending in 2007, common stock only accounted for 0.1 percent of total equities. (All numbers cited in this article are 2007 data, the year of USDA Cooperative Programs most recent dairy survey *(Ling, 2009)*. The survey is done every five years; new statistics will be available after data collection on dairy cooperatives' 2012 operations is completed.)
- **Preferred stock** — Some dairy cooperatives issue preferred stock, mostly to members to document retained patronage refunds or their additional investment in the cooperative. Preferred stock owned by members may be considered as allocated equities. In 2007, preferred stock was reported to be 7 percent of total equities.
- **Retained earnings** — Retained earnings can be derived from non-member businesses which, in most cases, are incidental to a cooperative's dairy operation. Retained earnings may also include allocated equities that are not separately specified in the financial reports, net savings that are yet to be allocated, or earnings that are difficult to attribute to specific member transactions. Therefore, retained earnings that are not likely to be subject to allocation (or considered by some to be "permanent" equity) should be less than the 10.8 percent of total equities reported for 2007. In any case, retained earnings belong to the cooperative and thus are owned by members.
- **Allocated equities** — The 94 cooperatives surveyed reported that 82.1 percent of their equities were allocated to members. Allocated equities are members' capital from one or more of these sources:

Retained patronage refunds — Retained patronage refunds are net savings that are allocated to members based on patronage, but which are retained to finance the cooperative's operations after a cash portion has been paid to members.

Capital retains — Some cooperatives use capital retains to finance the operations or, more often, for special projects, such as building new plants. Money is withheld from milk payment at a certain rate per hundredweight of milk.

Members must treat patronage refunds (both cash and retained) and capital retains as income for tax purposes. Cooperatives usually revolve retained patronage refunds and capital retains back to members after a certain period of time.

Base capital plan — Some larger dairy cooperatives with diversified operations have adopted base capital plans to establish a more stable equity pool. Under such a plan, a target base capital level is set at a rate per hundredweight of milk marketed during a representative period. The base capital may be funded by retained patronage refunds and/or capital retains, or by other means of member contribution.

Once a member attains the prescribed base capital level, future patronage earnings allocated to the member are paid in cash.

In summary, almost all equity capital of dairy cooperatives is supplied and owned by members, including: common stock, preferred stock, retained earnings and allocated equities. By obtaining equity financing internally from members, cooperatives do not incur the cost of soliciting investment capital in the capital market.

Member loyalty is key

For an average member-producer delivering 3.1 million pounds of milk in 2007, total allocated equity retained by the cooperative was estimated at $59,000 per member ($1.91/cwt), quite a large sum of capital committed by individual members. (Because retained equities also include those yet to be revolved back to retired members and inactive (former) members, equities actually retained for active members should be somewhat less than this estimated amount).

Members must treat retained capital, when allocated, as income for tax purposes and pay taxes out of their own funds. Although the retains are revolved back to members as permitted by the cooperative's earnings after a few years, the present value of the retained capital is diminished because taxes on them have to be paid upfront and the revolving funds to be received in the future are discounted.

Members' perceptions and attitudes towards retained equities may vary with their respective membership status — active members, retired members or inactive (former) members — even though they all usually receive the revolved equities on the same revolving schedule, which is determined by the board of directors. These perceptions may include:

Active members — Active members may realize the necessity to adequately capitalize the cooperative's operations to ensure that their milk is effectively and efficiently marketed. Still, retained equities compete with capital needed for members' dairy farming operations, which is very substantial because of the type of inputs used and assets owned.

Members are usually supportive of a co-op's need for financing if the capital requirement is for the cooperative to carry out basic milk marketing functions. A cooperative may face some dissension if it attempts to invest in what some members consider to be extraneous businesses, unless they are convinced that the new ventures will:

- solidify the market for members' milk, or
- help market members' milk, or
- add value to members' milk, and
- benefit members the most among all available alternatives of investing the capital.

Retired members — Retired members may be content with receiving retained equities that are revolved on a steady, regular basis. They may consider such payments as something akin to retirement annuities. However, some may express dissatisfaction that no dividend is paid on the retained equities and the cooperative uses their capital free of charge — especially if the revolving period is long. If equity revolving becomes erratic — usually due to the cooperative encountering certain financial difficulties — they may become disgruntled.

Inactive (former) members — Inactive members may be farmers who have discontinued membership in the cooperative and made other milk marketing arrangements, or who have exited from dairy farming and transitioned into other farming enterprises or have discontinued farming

altogether. Conceivably, they are the least satisfied with equities being retained, because they may need the capital for use in other endeavors. As their loyalty to the cooperative has waned or becomes nonexistent, they may deem it meaningless to have the retained equity sitting idly (from their perspective) in the cooperative.

Equity financing alternatives

Some dairy cooperatives have tried alternative financing methods to leverage members' capital. Examples include: structuring subsidiaries as public stock corporations or as limited liability companies, entering into joint ventures with other firms, or organizing as a new-generation cooperative. A few have issued preferred stock, mostly to members.

Public stock corporation — There is one known case of a dairy cooperative converting its fluid business subsidiary into a publicly traded stock company. The idea was to use investor financing and stock as tools for expansion and growth, while members maintained the majority ownership of the business. However, in less than three years, the cooperative bought back all outstanding stock from minority shareholders.

It can be difficult for a cooperative to operate a public stock corporation subsidiary because there are fundamental conflicts between benefits for member-producers and investors' focus on returns on investment. In the dairy business, the conflict between producer milk pay price and profit for investors may be difficult to reconcile. Furthermore, with investor capital, the subsidiary and even the cooperative may lose Capper-Volstead status in inter-state commerce.

Preferred stock — A cooperative may issue preferred stock to raise more funds from members or to tap non-member capital. The most common type of preferred stock pays dividend and has preference in assets over common stock in the event of the dissolution of the cooperative. Some preferred stock may be considered as equity capital while others may look more like debt capital, depending on how the rights of the shareholders are specified.

Limited liability company (LLC) — An LLC is a state-approved, unincorporated association, just like a partnership except that it protects its owners and agents from personal liability for debts and other obligations of the LLC. Earnings pass through to the owners (there are no non-qualified retains) and enjoy single-tax treatment. An LLC may operate on a cooperative basis or it may allocate earnings and assign votes among its owners any way they want. Some producers believe that an LLC provides greater flexibility for tapping investor capital. However, the combination of producers and investors in an LLC would result in the same conflicting benefit issues as in a publicly traded subsidiary operated by a cooperative.

Joint venture — An LLC may be a useful model for established cooperatives to form joint ventures with other cooperatives or firms. On the marketing side, a joint venture LLC may be used by a cooperative and its partner to develop and market certain dairy products. The cooperative supplies dairy inputs and the partner provides technical or marketing know-how to the LLC.

The joint-venture partners share the financing and the risk of the business activities of the LLC. This organizational model reduces the cooperative's capital requirement and risk exposure, while a market outlet for milk is secured. Many recent joint ventures formed by cooperatives with other business entities are organized as LLCs.

New-generation cooperative — Interest in the new-generation cooperative model surged in the 1980s and 1990s, largely in response to the market condition prevailing during that time. It was believed that this form of cooperative organization would solve the problem of depressed farm income by engaging in value-added processing.

However, the attributes of the new-generation cooperative model also have created some problems, mainly related to delivery-right and property-right issues *(Torgerson)*. After the turn of the 21st century, interest in forming new-generation cooperatives has cooled down substantially.

A distinct feature of the new-generation cooperative is its equity financing method. It is unique even among cooperatives:

- It requires significant equity investment as a prerequisite to membership and delivery rights to ensure that an adequate level of capital is raised.
- The delivery right is in the form of equity shares that can be sold to other eligible producers at prices agreed to by the buyer and the seller, subject to the approval of the board of directors to satisfy members' desire of having the freedom to "cash in" on the hoped-for increases in the value of the cooperative.

Only one dairy cooperative is known to have been organized using the new-generation model. In 1995, a cooperative in South Dakota was established to make specialty cheese. But its remote location, the investment needed to renovate its plant and the skill required to make and market specialty cheese posed major problems. The new-generation model proved no help. It suffered the same fate as the struggling cooperative it was formed to replace and ceased operation four years later.

Purpose and Means

Dairy cooperatives are prime examples of the traditional model of a cooperative that is owned, controlled, financed and used by members. Focusing on the business of marketing members' milk, dairy cooperatives benefit members by enhancing returns to their milk production efforts; members supply equity capital needed for the cooperative to carry out its function as their collective milk marketing arm.

The cohesiveness between member purposes and cooperative functions makes dairy cooperatives, as a group, perhaps the most prominent agricultural marketing cooperatives. This is because milk is highly perishable and its

daily production must have an assured, ready market.

Most dairy farmers (84 percent of U.S. total in 2007) rely on marketing services provided by their cooperatives. It is for this reason that equity capital financing, in general, is not a contentious issue for dairy cooperatives if the funds are used for the core business of marketing members' milk. Dairy cooperatives are seldom used as a vehicle for investing in ventures that are unrelated to member business *(Ling, 2011)*.

The close bond between producers and their dairy cooperatives may or may not be replicated in other agricultural commodity sectors, depending on the characteristics of the commodity and its market. Because no two commodities are the same, the needs of respective producers in marketing them also vary.

Cooperatives may be more essential to producers of commodities that have to be marketed shortly after being produced (such as vegetables, fruits and, of course, milk), or that have no ready market outlet other than the cooperative, than they are to producers of commodities that are storable and have a longer marketing season (such as grains and oil seeds) or that have multiple market outlets.

It stands to reason that raising or retaining equity capital is more challenging for a cooperative that is regarded by its members as but one of the competing market outlets for their products than for a cooperative that is indispensible to members.

It can be even more challenging for a farm supply cooperative that has to compete with other supply stores in the local market. There are hundreds, or even thousands, of supply items, and it is unlikely that the cooperative can be the best-value provider of every piece of merchandise. "Cherry-picking" by members in making purchases is inevitable. However, it is difficult to raise equity capital from members in this circumstance. (A food cooperative competing with other stores may encounter the same issue.)

Regional farm supply cooperatives may have economies of scale in product sourcing or in operating manufacturing facilities, especially for major supply items such as seeds, feed, fertilizer, chemicals, and petroleum products. They could pass along cost-savings derived from scale economies to members and thus better meet competition.

However, operating upstream manufacturing plants has its own risks (such as volatile raw material prices) that require the cooperative to have ample capital to cushion the shocks. The challenge for these cooperatives is to have a solid and broad membership base that sees the value of supporting the cooperatives with adequate equity capital.

All these factors point to the fact that the cooperative capital financing issue is really a reflection of a certain gap, or disconnect, between member purposes and cooperative functions. If this gap is narrow, it tends to be less of an issue; if the gap is wide, it becomes a more serious issue.

The solution to the issue lies in assessing what members want the cooperative to do and whether they are willing to finance it with equity capital in the amount commensurate with the benefits they expect to receive from a cooperative that operates for members' best interests. In some cases, members may have to decide whether the cooperative is the most suitable business model for what they want to accomplish.

In recent years, the cooperative model has gained new attention from social entrepreneurs and economic development practitioners. Being owned, controlled and used by members for mutual benefits, cooperatives are an appealing tool to empower people to work toward their own economic destiny. They can be adapted to be community-based organizations to serve economic opportunity-deprived or service-deprived areas.

Because such cooperative organizations are formed to address public policy or social issues, it is appropriate to have initial capital funding assistance from public or philanthropic sources. Over the long term, however, they must be self-sustainable in order to be economically viable. Some exemplary precedents are rural electric cooperatives and the Farm Credit System.

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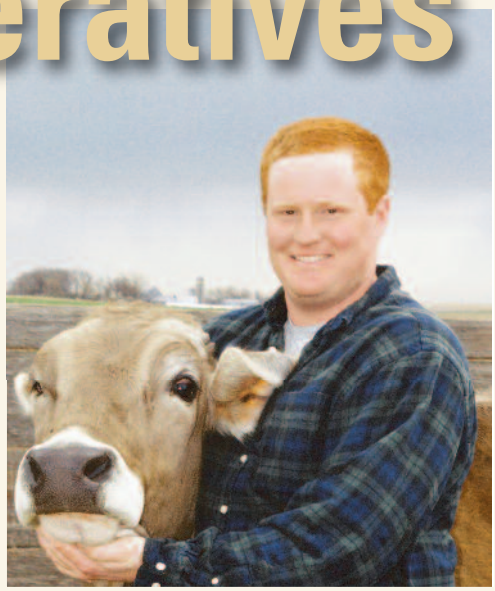
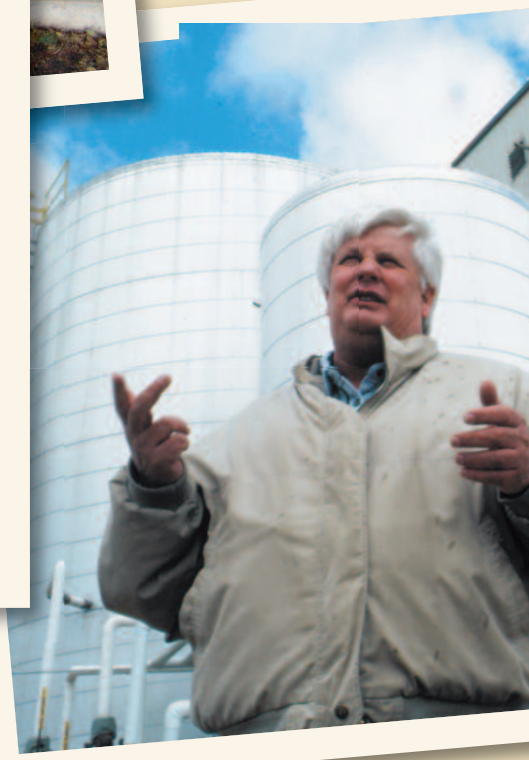
The Many Faces of Cooperatives





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Cooperatives are a model of business that are owned, controlled and used by members and that accrue benefits to members. Outwardly, cooperatives may seem to be all alike, except in the products (commodities, supplies or services) handled or provided. In reality, the cooperative business model has many variations.

This article briefly describes dairy cooperatives to showcase the cooperative business model; other types of cooperatives are then shown to be variations of the model. Dairy cooperatives have been previously demonstrated to exemplify the attributes that are prescribed by classic cooperative theories.

Uniqueness of cooperative model

Cooperative organizations represent the aggregates of economic units (Emelianoff). In the agricultural sector, cooperative associations are aggregates of member-farms. The intrinsic cooperative structure entails the uniqueness of the cooperative's organization, governance, equity financing and operation.

Unique cooperative structure — Dairy cooperatives represent aggregates of dairy farms, organized to market milk produced by members. Members' farming operations are not under the cooperative's administrative control. Therefore, the cooperative is neither a horizontal integration of its member-farms nor a vertical integration between member-farms and the cooperative. It is a third mode of organizing coordination (Shaffer).

Unique cooperative organization — Cooperatives are business organizations of member-patrons. They can be of any size and can be local, regional or national in scope. All dairy cooperatives in the United States are known to be centralized organizations with direct members.

Unique cooperative governance — Members of dairy cooperatives exercise ownership and business controls through a board of directors that is elected from among member-farmers. The board makes major decisions, sets the policy and determines the overall direction of the cooperative for the management to follow in its day-to-day operations. Effective communication with members to foster sound governance is emphasized.

Unique cooperative equity financing — Equity for dairy cooperatives is supplied and owned by members. It can be grouped into four categories (percentages are averages as reported by 94 cooperatives (*Ling*, 2009)): common stock (0.1 percent of total equities) is for witnessing membership and carries nominal value; preferred stock (7 percent) is mostly for witnessing retained patronage refunds; retained earnings (10.8 percent) could be earnings from incidental non-member businesses and net savings yet to be allocated; and allocated equities (82.1 percent) include retained patronage refunds, capital retains and/or base capital.

Unique cooperative operation — Being an aggregate of member-farms usually requires the cooperative to be the exclusive marketing agent of members' milk. This operating mode entails its own unique economics that comprises the following elements: (1) the milk volume the cooperative has to handle continually fluctuates; (2) the cooperative does not have its own milk production functions, milk production cost curves, or milk supply curves; and (3) the mismatch between seasonal milk supply and demand requires cooperatives to handle the inevitable seasonal surplus milk volume at a substantial supply-balancing cost.

Cooperative roles in transaction governance

In marketing members' milk, dairy cooperatives interact with other market participants to bring about mutual adaptation so that transactions can take place in the most economical and mutually advantageous way; the transactions are under all possible governance modes listed in table 1.

Spot milk sales and retail dairy product sales are most likely under transaction governance Mode B — where a competitive market without credible contractual safeguards may expose members' investments to unrelieved hazards. Regular milk marketing is usually conducted under the credible contracting mode (Mode C) in order to stabilize the

relations between the cooperative and the milk buyers (processors) and to protect members' investments. If a dairy cooperative forward-integrates into processing dairy products, the processing enterprises are under the cooperative's hierarchical administrative control (Mode D). Most wholesale dairy product sales are under credible contracting, but some may be under Mode B (unrelieved hazards).

Variations on the cooperative model

Different commodities have their own characteristics, and different types of cooperatives have their own special features. They all represent variations on the cooperative business model.

Marketing cooperatives — Marketing cooperatives share the uniqueness of dairy cooperatives in structure, organization, governance and equity financing that stems from their being aggregates of member-farms. The unique economics of dairy cooperative operation is applicable in the situation where the cooperative is the exclusive marketing agent of the milk produced by members.

Other agricultural commodities (such as fruits, vegetables, nuts, poultry, sugar, etc.) that exclusively rely on a cooperative to market members' products would have unique cooperative operations similar to that of dairy cooperatives. However, they differ from dairy cooperatives in some important aspects.

For example, milk is produced every day while other farm commodities are harvested in concentrated time spans of several weeks or months toward the end of the growing season. In the economic analysis of the supply and demand situation of milk marketing operation, the unit of time used is per-day (cwt/day). The same analysis of other commodities has to use a unit of time that is appropriate for a particular commodity.

Some producers of commodities that are storable and have a long marketing season (such as grains and oilseeds) may view the cooperative as but one of multiple outlets and market through it only if the cooperative offers the best terms and services among all alternatives. In such a case, the cooperative may still maintain its uniqueness in its cooperative structure, organization, governance and equity financing. Its marketing operation, however, is not different from other (non-cooperative) marketing firms.

New-generation cooperatives — Many new-generation cooperatives were formed in the 1980s and 1990s in the belief that this form of cooperative organization would solve the problem of depressed farm income by engaging in value-added processing and capturing processor margins.

A distinct feature of the new-generation cooperative is its equity financing method. It is unique even among cooperatives:

- It requires significant equity investment as a prerequisite to membership and delivery rights to ensure that an adequate level of capital is raised.
- The delivery right is in the form of equity shares that can be sold to other eligible producers at prices agreed to by the buyer and the seller, subject to the approval of the board of directors — to satisfy members' desire of having the freedom to cash in on the hoped-for increases in the value of the cooperative.

A new-generation cooperative is organized to market members' commodities through its main function of value-added processing. By bringing processing functions under internal administrative control, the cooperative's transaction governance mode is Mode D (table 1). For wholesale distribution of finished products, transaction governance is usually Mode C (credible contracting) but some may be Mode B (unrelieved hazard).

The delivery right is instituted to ensure that the capacity of the processing plant is fully utilized. A member delivers to the cooperative according to the volume conferred by such right, which may be more or less than the volume the member produces. Under such terms, the cooperative is not an exclusive marketing agent of members' total production.

Though the cooperative is still an aggregate jointly owned and operated by members to process and market their farm production, the volume the cooperative handles is predetermined. This should minimize the cooperative's volume variation uncertainties.

Purchasing cooperatives — Farm supply cooperatives are organized to procure production supplies and services for sales (mainly) to members. Many also handle farm and home items, such as heating oil, lawn and garden supplies and equipment, and food. Most supply sales to farmers are at the retail level by local cooperatives that are centralized organizations with direct members.

Many local cooperatives also federate with other cooperatives to form regional cooperatives to achieve economies of scale in sourcing major supply items, such as

Table 1 **Transaction governance modes and attributes**

Transaction governance mode	Asset specificity	Investment hazard safeguard	Incentive intensity	Administrative control	Contract law regime
A: Unassisted market	0	0	High	Little	Competitive norm
B: Unrelieved hazard	>	0	<	>	Legal rules contract regime
C: Hybrid (Credible contracting)	>	>	<	>	Credible contracting
D: Hierarchy (Administrative)	>	>	Low (Pricing for successive stages is cost plus)	Considerable (by fiat)	Internal implicit contract law (Forbearance)

Source: Adopted from Williamson, 2005, Figure 1: Simple Contractual Schema.
Note: ">" indicates a mode having a higher intensity of the particular attribute than the mode above it.
"<" indicates a mode having a lower intensity of the particular attribute than the mode above it.

seed, feed, fertilizer and petroleum products. Some federated cooperatives also have individual farmers as members and are, therefore, a hybrid organization of centralized and federated forms.

Many supply cooperatives also market members' crop and livestock production, just as marketing cooperatives may also have supply and service businesses. Supply cooperatives share marketing cooperatives' unique structure, organization, governance and equity financing. However, their operations are unique in their own way, because supply cooperatives' main business of procuring supplies for members operates on the buying side of market transaction. Transaction governance mode for sourcing products is most likely under credible contracting (Mode C).

Here, they serve as focal points for credible contracting with suppliers and economizing on transaction costs on behalf of individual members. If they integrate upstream and bring the business of producing supply items under the cooperative's administrative control, then the mode of transaction governance for this part of the operation is Mode D.

Their transaction governance mode in selling products to members depends on the degree of member loyalty. If members are loyal patrons, or if the cooperative is the only

store in the relevant market area, the cooperative would resemble a buying club. Utility cooperatives and many service cooperatives are also in this category.

If member loyalty is low, then the cooperative would operate as any other firm in selling supplies, although it may still maintain its uniqueness in its cooperative structure, organization, governance and equity financing.

Consumer cooperatives and credit unions are similar to supply cooperatives, except that consumer cooperatives' main business is in consumer products: foods, groceries, etc., while the business of credit unions is satisfying members' credit needs. There are many more types of purchasing cooperatives.

Local-food cooperatives — In recent years, consumers have shown increasing interest in locally produced food. Because production of locally marketed food is more likely to occur on small farms located in rural regions near metropolitan areas, local-food cooperatives may have a limited geographical scope. However, they should be classified as marketing cooperatives.

Multi-stakeholder cooperatives — Along with local food demand, some multi-stakeholder cooperatives have been formed that comprise everyone who has a stake in the local food chain, including farmers, processors, distributors, truckers, buyers, etc.

On the surface, this brings together the successive stages of the transaction into the organization and appears to be Mode D transaction governance. In reality, members are economic units that independently operate their respective business. The importance of their stakes in the cooperative to their economic well-being may vary widely.

By organizing all stakeholders in the successive stages of the supply chain under one roof, the cooperative becomes a framework for mutual adaptation and for multi-party, multi-stage credible contracting among members (Mode C) only when they deal with each other in attending to the cooperative's business of moving products from farmer-members to buyer-members. The durability of the cooperative is dependent on the stability of the collective credible contracting relationships.

Farm production cooperatives — Several farmers can form a co-op and pool resources to operate a farm. This is one way of organizing and managing inputs for production at a larger scale than the members could as individuals.

The structure, organization, governance and financing may be the same as a cooperative. Its operation, however, needs to have overall coordination for it to be a coherent and efficient production entity. Management oversight and administrative control over members' participation in the farming operation is necessary, although the management and administrative rules may be determined by members themselves.

Members cannot make farming decisions independent of the farm, and they do not represent independent profit centers. In essence, the production operation is a vertical integration between producer-members and the cooperative.

Cooperatives with non-patronage members — Some states have enacted new cooperative laws in recent years that allow cooperatives to have non-patron members (investors) as well as patron members. These laws vary from reserving the voting power only for member-patrons to setting a minimum level of voting power for member-patrons. Requirements regarding earning distribution between patron members and non-patron members also differ substantially.

Differences in governance and earning distribution rules and the type of non-patron members involved (for example, for-profit investors, nonprofit economic development organizations, community supporters, etc.) will cause the cooperative's structure, organization, governance, equity financing and operation to deviate in various ways from the uniqueness of the cooperative model that was described earlier in the article. These organizations have to be analyzed case by case because of the variety of state laws.

Conclusions

Variations on the uniqueness of the cooperative business model are summarized in table 2, using dairy cooperatives as the reference "point" for the model.

Laying out each type of cooperatives (or, for that matter, each cooperative) in the format of table 2 provides a comprehensive view of their respective structure, organization, governance, equity, and operation, and their similarities and differences from one another:

- **Structure:** Cooperatives are aggregates of economic units. However, the economic units can come in many "stripes." Also, the coordination between the economic units (members) and the cooperative and between members through the cooperative can vary substantially.
- **Organization:** Cooperatives are organized by members to serve some specific purposes, and the purposes can be very different from one cooperative to another. Cooperatives may have different sizes and geographical scopes. They may be centralized, federated or hybrid organizations.
- **Governance:** The directors of cooperative boards are supposed to be elected from among members, although different cooperatives may have different election procedures. Each cooperative may also see the responsibilities of the board and the roles of management somewhat differently. The degree of transparency and accountability of the board and management to membership may also vary.
- **Equity:** The composition (categories) of the equities, the proportion of equities that is owned by members, the rights that are bestowed on equity ownership and the mechanisms that are employed to ensure that ownership is in the hands of current members can vary among cooperatives.

Table 2 Variations on the uniqueness of the cooperative business model

Type of cooperatives	Structure	Organization	Governance	Source of equity	Operation
Dairy cooperatives[1]	Aggregates of economic units	Centralized member organizations	Member- governed	Members	Members' exclusive marketing agent unique economics
Marketing cooperatives[2]	Aggregates of economic units	Mostly centralized member organizations; some are federated	Member- governed	Members	Unique economics if exclusive marketing agent; otherwise, like other firms
New-generation cooperatives	Aggregates of economic units	Centralized member organizations	Member- governed	Members; tied to delivery rights	Business volume defined by delivery rights
Purchasing cooperatives[3]	Aggregates of economic units	Local (retail) cooperatives are centralized; many federated with other locals; federated cooperatives may have direct members	Member- governed	Members	Sourcing supplies or services for sale to members and patrons
Multi-stakeholder cooperatives[4]	Aggregates of economic units	Centralized member organization	Member- governed	Members	A framework for multi-party, multi-stage credible contracting among members
Farm production cooperatives	Aggregates of economic units that are not independent in production operation	Centralized member organization	Member- governed	Members	A vertical integration between members and the cooperative in production
Cooperatives with non-patronage members	Mixture of patron and non-patron members	Defined by state laws	Defined by state laws	Defined by state laws	Defined by state laws; most likely member-patrons' business

[1] Separately listed due to dairy cooperatives' role in explaining the cooperative business model.
[2] Include local-food cooperatives.
[3] Include farm supply cooperatives, utility cooperatives, service cooperatives, consumer cooperatives, credit unions, etc.
[4] As defined in this article.

- **Operation:** The products handled or provided by various cooperatives are very different and, therefore, the cooperatives' operations can vary widely. They source their products differently, prepare the products for the market differently, and adapt to their respective market differently. The variety of cooperative operations can be discerned through the lens of transaction governance (the transaction cost economics approach advanced by Williamson and schematically adopted in table 1). ■

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The Co-op Nature of (the Affordable Care Act) CO-OPs

By Charles Ling, Ag Economist
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The Affordable Care Act (section 1322) created the Consumer Operated and Oriented Plan Program (CO-OP Program) to foster the creation of new, consumer-governed, private, nonprofit health insurance issuers (referred to as CO-OPs). These CO-OPs will promote integrated care and improve health plan accountability.

Through the loans authorized by the Act, the goal of the Program is to create at least one new CO-OP in every state to enhance competition in the Affordable Insurance Exchanges (also established under the Act) and provide additional plan choices in the individual and small group markets. The Program is administered by the U.S. Department of Health and Human Services (HHS). The statute and the rules and regulations implementing the Program can be found at http://www.healthcare.gov/law/features/choices/co-op/.

The Program-qualified CO-OPs are supposedly modeled on existing health insurance cooperatives and other business cooperatives. The acronym "CO-OP" (note: all letters capitalized) has the same spelling as "co-op," the abbreviation of the term "cooperative" in common usage.

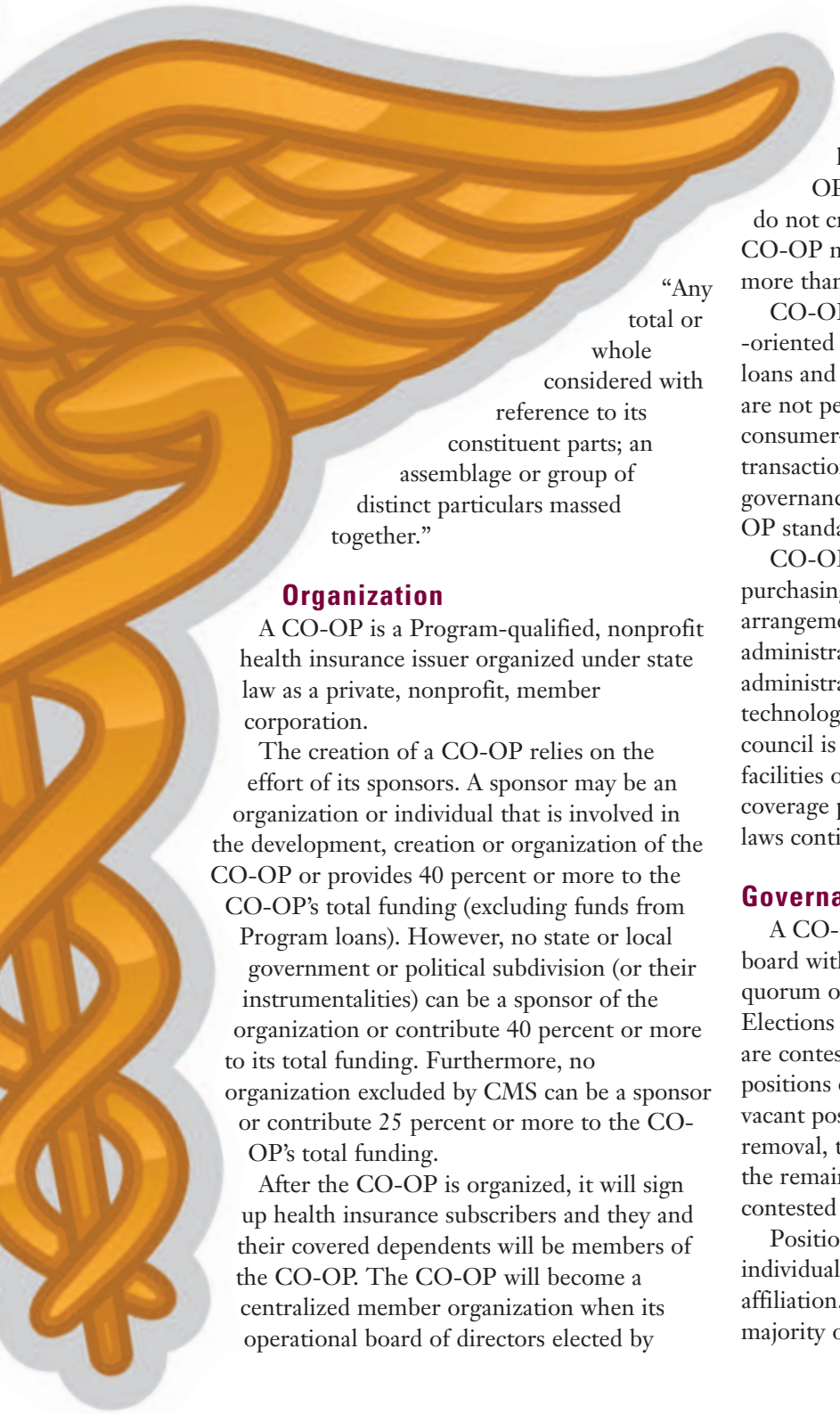
There is strong interest in the co-op community (and doubtless outside of it as well) to see where these new health CO-OPs lay in the continuum of cooperative business model variations *(Ling)*. Based on the Program's CO-OP standards and related requirements, this article looks into the structure, organization, governance, equity financing, and operation of the CO-OPs to shed some light on their similarities with and differences from other types of cooperatives. The economic analysis is through the lens of industrial organization, taking the law and regulations governing the Program as given. It is not intended to be an interpretation of the Program, which is under the purview of HHS Centers for Medicare and Medicaid Services (CMS).

Economic structure

A CO-OP is an organization of health insurance policy subscribers who are individuals or individuals with dependants. All insurance-covered persons are counted as members of the CO-OP.

The CO-OP makes decisions regarding how to maintain and improve the quality of health care delivered to members, while keeping insurance premiums affordable. Subscribers are free to choose whether to join a particular CO-OP, or how — and how much — they may use the services provided by the CO-OP as members.

Therefore, the CO-OP fits the economic definition that a cooperative is an aggregate of economic units, which are capable of independent economic functioning *(Emelianoff)*. It is also useful to note that a dictionary defines aggregate as:



"Any total or whole considered with reference to its constituent parts; an assemblage or group of distinct particulars massed together."

Organization

A CO-OP is a Program-qualified, nonprofit health insurance issuer organized under state law as a private, nonprofit, member corporation.

The creation of a CO-OP relies on the effort of its sponsors. A sponsor may be an organization or individual that is involved in the development, creation or organization of the CO-OP or provides 40 percent or more to the CO-OP's total funding (excluding funds from Program loans). However, no state or local government or political subdivision (or their instrumentalities) can be a sponsor of the organization or contribute 40 percent or more to its total funding. Furthermore, no organization excluded by CMS can be a sponsor or contribute 25 percent or more to the CO-OP's total funding.

After the CO-OP is organized, it will sign up health insurance subscribers and they and their covered dependents will be members of the CO-OP. The CO-OP will become a centralized member organization when its operational board of directors elected by members is in place.

The CO-OP Program has the goal of having at least one CO-OP in each state and gives priority to CO-OPs that offer qualified health plans on a state-wide basis. Therefore, CO-OPs are most likely local (in-state) organizations that do not cross state lines. When circumstances warrant it, a CO-OP may cover more than one state. States may have more than one CO-OP if Program funds are available.

CO-OPs are to remain nonprofit, consumer-operated and -oriented insurance issuers after they have received Program loans and even after they have fully repaid their loans. They are not permitted to convert or sell to a for-profit or non-consumer-operated entity at any time, undertake any transaction that would result in the CO-OP implementing a governance structure that does not meet the stipulated CO-OP standards, or do things to harm its consumer orientation.

CO-OPs may join together to establish a private purchasing council to enter into collective purchasing arrangements for items and services that increase administrative and other cost efficiencies, including claims administration, administrative services, health information technology and actuarial services. But the private purchasing council is not allowed to set payment rates for health care facilities or providers participating in health insurance coverage provided by the CO-OPs. Further, the antitrust laws continue to apply to any private purchasing council.

Governance

A CO-OP is required to be governed by an operational board with all of its directors elected by a majority vote of a quorum of the CO-OP's members who are age 18 or older. Elections of the directors on the CO-OP's operational board are contested: the total number of candidates for vacant positions on the operational board exceeds the number of vacant positions. In the case of resignation, death, or removal, the CO-OP may fill vacant director positions for the remainder of the relevant term without conducting a contested election.

Positions on the board of directors may be designated for individuals with specialized expertise, experience or affiliation. But the designated directors cannot constitute a majority of the operational board.

No government (federal, state, local, political subdivision or instrumentality) representative or representative of an organization excluded by CMS can be a board member.

The majority of the voting directors on the operational board must be members of the CO-OP (not counting designated directors who are also members). Each director has one vote unless he or she is a non-voting director.

However, in the initial stage of forming the CO-OP and before it has begun accepting enrollment of insurance subscribers and has an election by the members of the organization to the board of directors, a formation board is to steer its development. The first elected directors of the organization's operational board must be elected no later than one year after the effective date on which the organization provides coverage to its first member; the entire operational board must be elected no later than two years after the same date.

> CO-OPs are forbidden to ever convert or sell to for-profit or non-consumer operated entities.

Equity financing

The initial funding of a CO-OP is supplied by its sponsors and supporters. To help overcome the difficulty of obtaining adequate capitalization for start-up costs and state insurance reserve requirements, CO-OPs may borrow two kinds of low-interest loans offered by the CO-OP Program specifically for these critical activities:

- Start-up loan to provide assistance in meeting the costs of establishing a CO-OP. The repayment period of the loan is five years following each drawdown of loan funds.
- Solvency loan in meeting state insurer solvency and reserve requirements. The repayment period of the loan is 15 years following each drawdown of loan funds.

A CO-OP may borrow joint start-up and solvency loans, or only borrow a solvency loan. By receiving the loans, the CO-OP must adhere to the standards and fulfill all requirements established by the CO-OP Program. It must meet the required CO-OP standards no later than five years following initial drawdown of the start-up loan or three years following the initial drawdown of the solvency loan.

Net savings or surplus funds (revenue in excess of expenses or "profit") of the CO-OP must be used to lower premiums, to improve benefits or for other programs intended to improve the quality of health care delivered to its members. In addition, net savings may be used to conduct marketing, repay Program loans, and meet state solvency requirements. They may also be used to provide for enrollment growth, financial stability and stable coverage for members.

CO-OPs are forbidden to ever convert or sell to for-profit or non-consumer operated entities.

Operations

CO-OPs develop healthcare provider networks to provide services that meet members' healthcare needs. They have to compete for health insurance subscribers in the relevant markets. Therefore, their operations are the same as any other health insurance issuers in the relevant markets.

CO-OPs are required to meet certain standards and requirements for the issuance of health insurance plans to achieve Program objectives.

For example:

- At least two-thirds of qualified health insurance policies or contracts for health insurance coverage issued by a CO-OP in each state in which it is licensed must be in the individual and small group markets.
- In every market where the CO-OP operates, it must offer a qualified health plan at the Silver Level (defined as the level of coverage that is equivalent to 70 percent of the full actuarial value of benefits provided) and at the Gold Level (equivalent to 80 percent of full benefits).
- Meet certification requirements in order to participate in the Affordable Insurance Exchanges.

The incentive (trade-off) for CO-OPs to meet these and other plan standards and requirements is the privilege to use start-up loans and solvency loans at below-market interest rates to achieve the goals of the organizations.

Conclusions

The impetus for creating CO-OPs is by Congressional mandate to address certain public policy healthcare issues. A major portion of initial funding of CO-OPs is low-interest government loans to help overcome the difficulty of obtaining adequate capitalization. Legislative mandates effected with government loans have precedents such as the initial organizations of rural electric cooperatives and the Farm Credit System. As exemplified by these precedents, CO-OPs must be self-sustainable in order to be economically viable over the long term.

To ensure the CO-OPs created under the Program are viable, sustainable and stable, and to make certain they can repay the loans and thereby protect federal investment in the Program, they are required to meet CO-OP standards and health plan standards and fulfill many other requirements. As a result, CO-OPs are somewhat unique in the spectrum of cooperative business model variations as shown in table 1 (adopted and modified from *Ling*, table 2). ■

Table 1 — Variations on the cooperative business model

Type of cooperatives	Structure	Organization	Governance	Source of equity	Operation
Dairy cooperatives[1]	Aggregates of economic units	Centralized member organizations	Member-governed	Members	Members' exclusive market agent — unique economics
Agricultural marketing cooperatives	Aggregates of economic units	Mostly centralized member organizations; some are federated	Member-governed	Members	Unique economics if exclusive marketing agent; otherwise, like other firms
New-generation cooperatives	Aggregates of economic units	Centralized member organizations	Member-governed	Members; tied to delivery rights	Business volume defined by delivery rights
Purchasing cooperatives[2]	Aggregates of economic units	Local (retail) cooperatives are centralized; many federated with other locals; federated cooperatives may have direct members	Member-governed	Members	Sourcing supplies or services for sale to members and patrons
Affordable Care Act CO-OPs[3]	Aggregates of economic units (health insurance subscribers)	Organized by sponsors; then become local (in-state) centralized member organization	Initially formation board; then member-governed	Sponsors and supporters; accumulated surpluses	Operations are the same as other insurance issuers in the relevant markets; must meet CO-OP Program standards and requirements
Multi-stakeholder cooperatives[4]	Aggregates of economic units	Centralized member organization	Member-governed	Members	A framework for multi-party, multi-stage credible contracting among members
Farm production cooperatives	Aggregates of economic units that are not independent in production operation	Centralized member organization	Member-governed	Members	A vertical integration between members and the cooperative in production
Cooperatives with non-patronage members	Mixture of patron and non-patron members	Defined by state laws	Defined by state laws	Defined by state laws	Defined by state laws; most likely member-patrons' business

[1] Separately listed and used as the standard bearers of traditional cooperative business model.
[2] Include farm supply cooperatives, utility cooperatives, service cooperatives, consumer cooperatives, credit unions, etc.
[3] Qualified Nonprofit Health Insurance Issuers under the Consumer Operated and Oriented Plan (CO-OP) Program.
[4] Defined as cooperatives having, for example, farmers, final customers and intermediaries in the supply chain as members.

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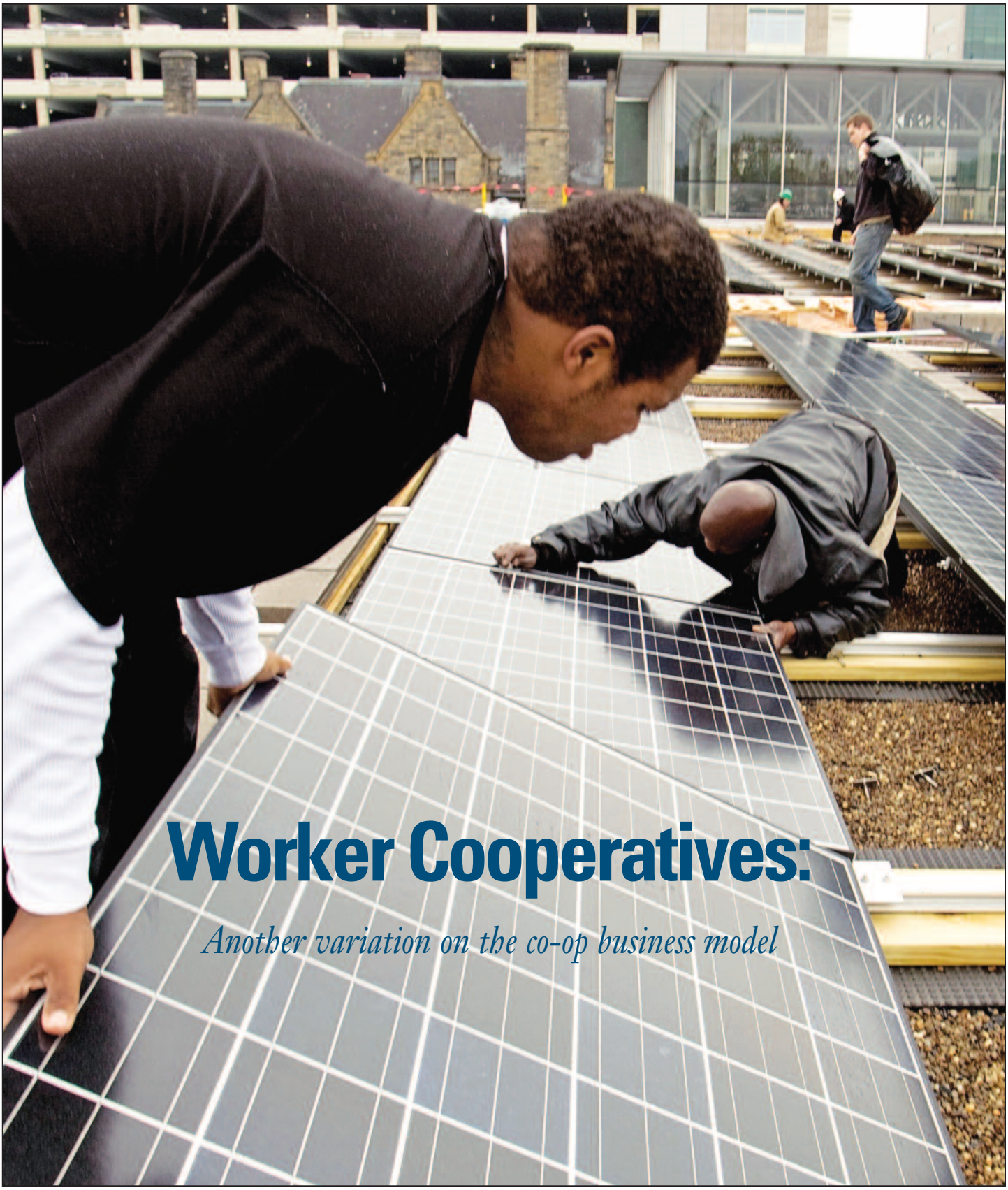

Worker Cooperatives:

Another variation on the co-op business model

Members of worker-owned co-ops democratically own, govern and manage their businesses. This solar-power co-op and a commercial laundry co-op (facing page) are both part of the Evergreen family of worker co-ops in Cleveland, Ohio.

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A worker cooperative is organized by worker-members to pool their labor and other resources together for the business of producing certain goods and (or) services for the market. It is a business entity that is democratically owned, financed, governed and managed by its worker-members and accrues to them the benefits of their labor and efforts. This category of cooperatives represents yet another variation on the cooperative business model.

Economic structure

The economic structure of a cooperative is defined as representing an aggregate of economic units. It is neither a vertical nor a horizontal integration between the cooperative and its constituent economic units, but a third mode of coordination. However, a worker cooperative is integrated with its member-workers in at least one aspect: its production operation. That's because the labor of worker-members is a factor of producing its goods and services.

The production operation needs to have overall coordination for the cooperative to be a coherent and efficient production entity. Management oversight and administrative control over members' work is necessary, although the management and administrative rules may be determined by worker-members themselves.

Organization

The basic form of a worker cooperative is a centralized organization with all its workers as direct members.

Governance

Governance is exercised directly by worker-members or indirectly through the board of directors (and other designated bodies of representatives) who are democratically elected from among worker-members. In a worker cooperative, governance usually extends into managing every aspect of the cooperative's operation — beyond the usual domain of overseeing corporate affairs, making policies and setting guidelines.

Equity capital

Like all other cooperatives, worker-members should furnish the cooperative's equity capital. In some cases, initial capital funding assistance may come from economic development agencies or social entrepreneurs to help meet shortfalls. For long-term economic viability, however, a cooperative must be self-sustaining. One way of accumulating worker capital over time is by retaining a portion of year-end net savings (earnings or profits) after distribution to members, based on the value of labor contribution to the cooperative's business or on other agreed-upon criteria.

Operation

Worker-members democratically own, govern and manage the cooperative and are meant to have total control over the operation of the business. They integrate their skill and labor with the cooperative's production process. In addition, the membership must possess entrepreneurship, managerial ability, technological knowhow and knowledge of the market in order to help manage a successful cooperative.

Entrepreneurship is the ability of perceiving business opportunities and setting out to organize capital, labor and other inputs to produce goods and services to exploit opportunities. Such ability is essential not only for starting a cooperative or other business, but also for adapting to a potential changing market environment once the business is running. Entrepreneurship also entails shouldering the risk of business gains or losses and success or failure.

Management is responsible for smooth and efficient operations in order to carry out the cooperative's business plan. In a worker cooperative, manager(s) are democratically selected and management decisions and administrative rules are democratically determined, from the ground up. This is in contrast to most other firms, where administrative control is usually by fiat and workers have little say about management.

Worker-members may know all the technical processes of their industry, but technology advances over time. To stay

A worker-member plays the dual role of being a worker and an entrepreneur.

competitive, worker-members have to keep abreast of technology development and have sufficient alacrity in changing production processes.

Foremost in marketing, the cooperative must ascertain consumers' tastes and preferences and their changing nature so that products produced can meet consumers' expectation and satisfy their needs and wants. Knowledge of the market also includes knowing competitors' strengths and weaknesses.

Worker-members democratically own, govern and manage the co-op and are meant to have total control over the business.

Special attributes

The equity of a worker cooperative is provided by member-workers. Therefore, the cooperative's ability to raise capital is constrained by members' financial resources. If there is not an adequate level of equity to strengthen the balance sheet, it would also be difficult to obtain debt capital.

The manager of a worker cooperative is usually democratically promoted from among worker-members and is, therefore, one among equals. This could cause management to be ineffective if the manager is not accorded adequate authority to manage.

Because worker-members play the dual role of being a worker and an entrepreneur, their rewards should be twofold: (1) a wage income for supplying production labor; and (2) a distribution of the cooperative's net savings for being a part-owner who participates in managing the cooperative's business.

By organizing the worker cooperative, worker-members may expect to have a higher wage income compared to their counterparts in the competing firms. However, to make this possible, the productivity of the worker-members would have to be higher than their counterpart workers. As for rewarding their capital investment and management time as part-owners, the level of net savings is dependent on the profitability of the cooperative.

With workers as members, if the cooperative's business is below its capacity, the likely solution is to have a shared reduction of working hours instead of laying-off workers, as is the common practice of non-cooperative firms. If the cooperative's business expands beyond its capacity, new worker-members would have to be recruited. To build teamwork, many worker cooperatives hire new employees for a trial period or apprenticeship before offering them membership.

Issues may arise from these attributes from time to time, but they should not be difficult to resolve when the cooperative is small with a limited number of employees and its business lines are relatively simple. (The vast majority of worker cooperatives in the United States are small businesses, having fewer than a dozen employees on average *(United States Federation of Worker Cooperatives; Deller, et al)*.)

Business model modifications

When a cooperative's business thrives and grows in its scale and complexity, it may have to make some modifications to its basic business model. For example:

- The cooperative may have to obtain capital infusion from outside its membership if the financial resources of its members are not sufficient to finance its expansion. Members' ownership stake, along with their voice in governance, may then be diluted.
- The cooperative may have to hire management expertise from outside its membership. This may entail changes in the dynamism of member-management relations, especially if the new manager is not a member and seeks to exert management authority.
- If the cooperative has to hire a large number of new workers to staff a fast-expanding business, it may have to waive membership requirement of the new recruits, especially if competing in a tight labor market. Convincing the uninitiated to be worker-members and assume the dual role of being a worker and an entrepreneur may be a time-consuming process.

In the United States, modifications to the basic worker-cooperative business model may take the form of worker-owned businesses organized as Employee Stock Ownership Plans (ESOPs).

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