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Decision-Making in Cooperatives with Diverse Member Interests

Abstract

Agricultural producers establish and support a cooperative when it provides benefits they would not obtain by individual actions. Cooperatives are distinguished from other types of organized ventures in that owners are the primary users of services, who benefit in proportion to use.

Members of a cooperative typically have diverse economic interests. These may encompass size, type and location of farm enterprises, and length of membership. Maintaining cohesiveness for building incentives to cooperate is becoming more complex as more variations in production practices and technology become available, new forms of business relationships are developed, and as consumer preferences continue to become more diverse and demanding.

The objectives of this research are: first, examine the role of member consensus and policy consistency in a cooperative; second, examine member consensus and policy in a strategic framework of competition, where competitors offer individualized terms to selective producers that are difficult for cooperatives to match; and third, develop a game theory analysis for situations where cooperatives need to attract large-scale producers.

Keywords: cooperatives, cooperate, members, consensus, decision-making, diverse interests, conflict, strategy, strategic decisions, game theory, long-range planning.

Decision-Making in Cooperatives With Diverse Member Interests

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RBS Research Report 155

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Introduction

Agricultural producers have an incentive to form and support a cooperative when it provides benefits they would not obtain by acting independently. Cooperatives can prosper when producer interests and goals are accomplished more effectively with cooperation than with more individualistic methods of transacting for services.

The term "incentive for cooperation" is used in this report instead of terms such as "common goals" or "commonality of interests." The emphasis throughout is on the role of individual incentives in making cooperation possible, as well as resulting in conflicting interests that coexist with those of cooperation.

In a context of individual incentives, organizational cooperation is a process of long-range planning to develop business projects and services where benefits increase with more uniform quality and regularity in operations. Programs must be implemented that minimize member incentives for individualized dealings. This process involves converting potential conflict situations into those where incentives to cooperate are dominant.

A clear direction and a timely process of decision-making are key ingredients for any successful business. The more diverse the production enterprises and the services members need, the greater the challenge for a cooperative to retain those key ingredients. While cooperatives have been highly successful in U.S. agriculture, the complexity of group coordination with diverse producer interests is a perennial, and possibly, an increasing challenge today.

Competitive adjustment for a cooperative arises not only in promoting efficient business performance, but also in ensuring that such performance is created by and focused on cooperation. Members assume responsibilities for the latter through consensus governance of their cooperative. Such governance tends to adopt consistency in policies for guiding economic relations and dealings with members. This tendency for consistency in policy and procedure makes the handling of diverse member interests more challenging for cooperatives than for business entities where each transaction is private and distinct from all other individual deals they make.

This report examines how consensus governance andconsistent policy are generally applied by cooperatives. It also considers their strategic implications for coordinating members with diverse interests, when operating in competitive industries. The first section gives an overview of diverse economic interests, "Diverse Agricultural Producers."

The next section, "Membership Consensus in a Business," examines how producers are only willing to form or belong to a cooperative when there is a general consensus on certain major decisions. The most basic decision is that a cooperative should deal consistently with members and avoid individual favoritism. Membership consensus sets cooperatives apart from many of their competitors. This creates special strategic considerations.

The way competing firms react to the situation of relative uniformity in cooperative dealings with members is examined in the section "Consistent Policy." It considers some of the consequences of competing in markets with substantial opportunities or demands for individualized dealing, as compared with markets that reward uniformity in product or service quality control.

The issue of attracting large-scale producers to cooperatives is also addressed. Many cooperative leaders and economists advocate major policy changes to accommodate the interests of large producers and establish consistency of standards for equitable dealings. A game-theoretic analysis highlights strategic decisions in trying to create incentives for large producers to join cooperatives. Potential drawbacks to member cohesiveness from approaching this objective with a policy of more differentiated member treatment are also discussed.

Decision-making with diverse member interests is an important issue, but is only one of many that cooperatives confront. This report focuses on a single problem and ignores important considerations, such as

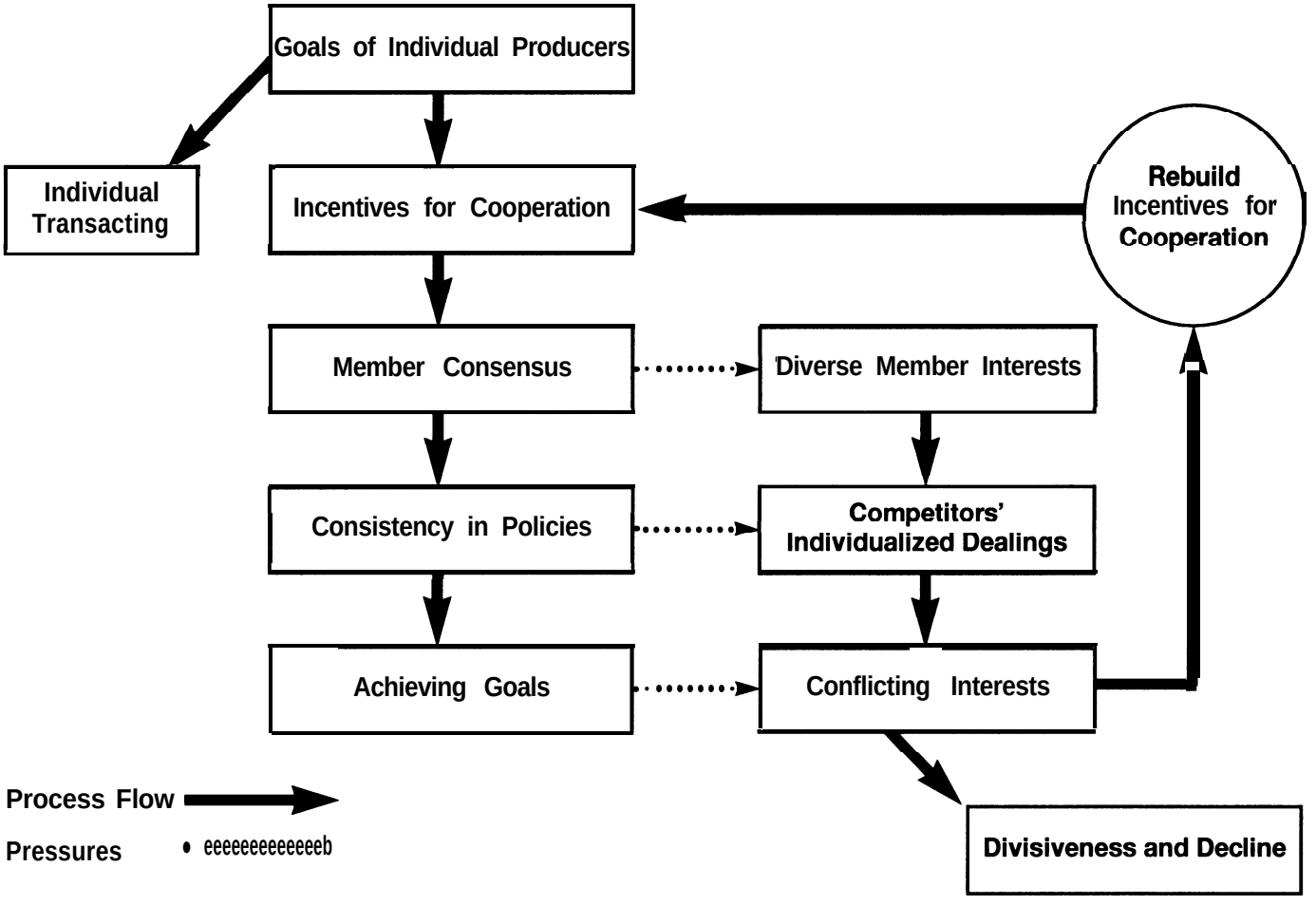
the potential divergence of interests between management and members. The focus throughout is that management is trying to maintain as large of a cohesive membership as possible. Consideration of efficient membership size is also not examined. Much cooperative theory has addressed the issue of membership size. However, this report assumes increasing returns and benefits to all members by expanding, or at least not shrinking, the membership in a cooperative.

A situation of an expanding membership when average returns are constant or decreasing is often handled in economic analysis by identifying gains from differentiating the terms of membership and dealings when members have different costs associated with providing services. That type of differentiation policy is discussed in this report in terms of effects on consensus decisions and organizational cohesiveness, but no technical analysis of "how-to" methods for efficient differentiation policy is provided.

Three basic strategies for cooperatives are examined in this report. The first is a strategy of business development and definition, where cooperatives can define their essential business around services that do not involve substantial incentives for individual terms in transactions. A second strategy is to use more distinctly cooperative marketing and service programs, and to have them linked to value-added ventures. This approach can have advantages in situations where risks to and weaknesses of cooperatives are exposed when they are replicating some of the methods and operations of investor-owned firms. A third strategy emphasizes long-term planning for building performance attributes of cooperatives that attract and retain members.

This report views handling of diverse member interests in a strategic framework, as described by the influence diagram in Figure 1. The process is initiated by the goals of each individual producer. When pro-

Figure 1- **Strategic Framework of Cooperatives and Diverse Member Interests**



ducers do not recognize incentives or interests from working with other producers in a cooperative, they follow the option of individual transacting.

Figure 1 follows the process of cooperation, where achieving incentives for membership requires consensus decisions and consistency in policies and procedures for member dealings. These requirements or characteristics of cooperatives coexist with pressures, indicated by the horizontally dotted arrows, from diverse member interests and from competitors, who may offer slightly different terms to make individual deals.

If conflicting interests arise from these pressures, an organization will need to resolve them by rebuilding incentives to cooperate. This can be a continuous process of redesigning services and their delivery to rebuild incentives to cooperate. The continuous nature of this process is depicted by the circular flow of arrows in Figure 1.

When cooperatives neglect strategic planning and rebuilding incentives, relationships gradually deteriorate into divisiveness. In summary, the pressures coming from within and outside an organization either get resolved in a kind of circular and continuous process, or they move a cooperative into eventual decline. The strategic framework of Figure 1 is applied throughout the report.

Diverse Agricultural Producers

American agriculture produces a wide variety of foods and fiber on predominantly family-owned farms and ranches. The American farm population has always been highly diverse and independent, originally consisting of immigrant producers from many countries. Early cooperatives often formed around different immigrant populations.[1]

Market instability in the late 19th century led to increased political organization by farmers. Gradually more relationships and organizations were formed across ethnic and local lines. Paralleling these political movements, the growth of a modern agribusiness economy created an overriding need for the efficiencies and the market power of large cooperatives. Members from broader geographic regions, encompassing localities with different ethnic populations, were unified by common economic needs for efficient services and for coordinated marketing.

Many cooperatives prospered from the volume and size economies of a larger membership, but there was also recognition that the more ethnically homogeneous cooperatives of the past possessed certain advantages.[2] Those advocating a local basis for cooperation, versus industry-wide contracting with producers, also stressed the importance of minimizing diverse economic interests for effective cooperation.3 The reduced local concentration of the farm population and gradual geographic expansion of cooperatives' membership has made internal cohesiveness a major concern for the modern cooperative. There are many diverse characteristics of American farmers, but two stand out as the most likely sources of divisiveness.

(1) Large Versus Small

The major example of diverse economic interests in farmer cooperatives is the size of members' farming operations. When a cooperative's operations are subject to increasing returns to size or scale of operation, economic interests are more apt to conflict over equitable policies. In some cases, cooperatives distribute returns in proportion to the economic impact of volume and establish voting power in proportion to patronage volume. Differences in the size of farm operations have long been a source of disagreement on member policy.

(2) Different Farm Technologies and Practices

Many farm enterprise technologies are increasingly specialized for, and integrated with, specific marketing channels. When that occurs, coordinated marketing or services need to be organized by and for producers with compatible systems. For example, the increasing advantages for producing more uniform-quality meat can be a more difficult adjustment to carry out when a traditional cooperative's membership has widely varying production systems and differing views about strict adherence to any specific standardized method.4

[1] F. E. Parker, The First 125 Years: A History of Distributive and Service Cooperation in the United States, 1829-1954, The Cooperative League of the U.S.A., 1956.

[2] Ibid, p. 321.

[3] E.G. Nourse, "Recent Trends of Cooperation Among Cooperatives," Proceedings of the National Association of Marketing Officials, 7th Meeting, 1925.

[4] B. J. Reynolds and J. D. Reilly, "Integrators, Innovators," Farmer Cooperatives, March 1994.

Membership Consensus in a Business

Agricultural cooperatives are controlled and directed by their members to be financially sound businesses. Many cooperatives have achieved public notoriety for entrepreneurial innovation. Rather than consensus governance and decisions being a limiting factor, they have helped make many cooperatives highly competitive and innovative. A consensus approach can also make organizations vulnerable to unfocused business objectives, which often prompts the admonition that cooperatives must "operate as a business."

The requirement of consensus in cooperative decision-making is further discussed along with some of its potential positive and negative influences on achieving business objectives. Lastly, member consensus has also had an impact on strategies of organizational structuring of cooperatives. Different approaches have been developed.

Consensus Process

Consensus does not require everyone to be in perfect agreement. Rather, it involves acknowledgment and respect for different opinions and economic needs. The process requires members to exercise judgement about supporting proposals that build and accomplish their goals, even when such decisions may not exactly satisfy individual preferences.5

In consensus-based organizations, members' views are acknowledged even when not in complete agreement with a majority of befiefs. This act of having individual preferences and views communicated and acknowledged is often called the power to exercise voice, either by voting or other means.6 Voting in cooperatives occurs in two forms, as in democratic government. Representatives are elected to a governing body that, in turn, makes group decisions by either implicit or explicit voting.

Voting by the membership is often required for certain major decisions, but is primarily for electing directors to the board. Directors usually serve in staggered terms to maintain continuity and to provide frequent elections. But members need not always present their views through official channels, i.e., to a member of the board. Members often have direct access to management. Managers regard the process of being "called on the carpet" by any member as a regular part of their job.[7] Of course, members are likely to take a different view from management about the effectiveness of control. Surveys of cooperative members often reveal some disgruntlement about the extent of their control and influence.*

A board of directors is the primary avenue where diverse member opinions are brought to a consensus. The board has both fiduciary responsibilities for overseeing the financial solvency of the cooperative and representing member interests. The former responsibility comprises the group interest, while the latter involves individual, often diverse, interests of members that must be reconciled and harmonized.

Because cooperatives are voluntary organizations, members' final recourse may be to exit the organization? That ultimate threat gives cooperatives an incentive to practice consensus decision-making. In many theoretical discussions of governance, unanimity is established as a logical and efficient criterion for cooperative policy decisions.[10] While directors often differ on many issues, they usually make a concerted effort for consensus, if not unanimous, decisions.[11]

Positive Effects

While cooperatives are built on democratic governance and consensus, these attributes are not displayed in daily business decisions. The consensus process of cooperatives goes largely unnoticed by the public. The importance of consensus is subtle but pervasive in how it affects what cooperatives do and how they do it.

A major advantage is in combining different perspectives and experiences in making decisions. The pressure from having to consider diverse interests actually builds new values and innovative ideas for cooperatives.

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[5] Reynolds, "It's Unanimous: Why Cooperative Boards Strive for a Norm of Unanimity," Farmer Cooperatives, July 1995.

[6] A.O. Hirschman, Exit, Voice, and Loyalty, Harvard University Press, 1970.

[7] H.C. Peterson and B. L. Anderson, "Cooperative Strategy: Theory and Practice," Agribusiness, Vol. 12, No. 4, 1996.

[8] R.D. Boynton and H.T. Elitzak, Member Control of Farmer Cooperatives, USDA/ACS, SR 7, 1982.

[9] Hirschman, op. cit.

[10] J. Staatz, "A Game-Theoretic Analysis of Decision-making in Farmer Cooperatives," note 4, Cooperative Theory, USDA/ACS Service Report No. 18 1986, p. 141, and R.J. Sexton, "The Formation of Cooperatives," American Journal of Agricultural Economics, 68, May 1986, and I? Zuzman, "Constitutional Selection of Collective-Choice Rules in a Cooperative Enterprise," Journal of Economic Behavior and Organization, Vol. 17, 1992.

[11] Reynolds, Ibid, July 1995.

Another advantage is the recognition outside officials give to the fairness of cooperative dealings with members, such as in distributing earnings to members, as challenged in cooperative tax cases. The courts have upheld these distributions as fair, largely on the basis of the consensus process as being superior to the opinions of outside experts in determining fairness. [12]

Questions about fair dealings are often not easily resolved when there is no agreement on criteria. Different justifications can be used to support conflicting approaches. However, democratic institutions give weight to consensus decisions as providing some validation of policy fairness.

Negative Effects

Cooperatives have to guard against negative effects that pressures for consensus can have on business capability and acumen. A consensus-based organization may be more prone to fall into certain traps than a business with more concentrated and top-down decision-making.

'Business As Usual' Trap

Cooperatives have to guard against preserving cohesiveness at the cost of avoiding timely and controversial decisions. New business directions often have uneven or selective benefits among the membership, so the safest option is to avoid rocking the boat or "business as usual." There can be a tendency to avoid initiatives because then it is harder to find fault should business decline. Such thinking can be reenforced by consensus pressures.

Changes in agriculture are undermining the "business as usual" approach as a sure route to member consensus. Producers who have adopted new technologies or production practices want linkage to value-added processing or marketing systems to maximize the benefits of the on-farm adjustments they are making. Special programs can be developed for some producers, as long as these selective actions do not jeopardize the joint gains of cooperation.

Unremunerative Services Trap

The agency status of cooperatives(see Glossary)often involves developing or providing services that are under or inadequately provided by Investor-Owned Firms (IOFs) or other non-cooperative alternatives. These services may have a limited-earnings potential, but are valuable to at least some of the members. Demand is often extremely influenced by price cycles in farm product markets. This complicates the process of consistently supplying such services on a remunerative basis. In these cases, producers have to take initiatives to establish and control off-farm businesses, usually cooperatives, to ensure availability of special services.

Special services are likely to supplement core functions of a cooperative. An example is providing tire repair service at field locations. This service is not always feasible to offer as the core service of a business, but with coordinated support of a membership, it can be provided. Other examples include new specialty crops or livestock that do not have highly developed markets. Market development is an extreme example of valuable services not easily provided in a remunerative way. It usually requires producer initiative in a cooperative to develop a generic product market.

A cooperative may get trapped into providing certain services without full remuneration or extending their supply beyond a point where variable costs are covered. A recent survey of **31** local cooperatives in Oklahoma showed that 65 percent provided services with negative margins. Only 35 percent of that group indicated that discontinuing them was under consideration. The top three money-losing services are service stations, feed mills, and tire repairs?

Consensus pressures for nonremunerative services often arise from diverse member interests. Management and board may feel pressured to placate certain highly vocal members with services that do not contribute to the cooperative's margins.

Organizational Structuring

Organizational structure and restructuring strategies are influenced in several ways by the role of member consensus in a cooperative. Consensus has often been an obstacle for implementing mergers and consolidations. The advantages of producer access and control of large-scale and capital-intensive facilities for food and fiber processing have in many cases been gained by organizing federations of several locally organized cooperatives.

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[12] R.E. Lee, "Expense Allocation and Apportionment," Cooperative Accountant, Fall 1989, p. 25.

[13] l? Kenkel, "Survey of Cooperative Managers and Boards of Directors, 1991," Unpublished, Oklahoma State University, 1992, p. 45.

Cooperatives have also been able to facilitate many types of large-scale coordinated marketing that would otherwise not be feasible from a member consensus standpoint if access to such capabilities were only possible by consolidating multiple organizations. A recent alternative to federation that may have more application to agricultural cooperatives in the future is the use of specialization networks.

Some local cooperatives in contiguous regions are capturing economies of size by having each organization specialize in a particular service. All members throughout the network region have access to one cooperative that can provide each service with more efficiency. By offering specialization in a single service they also might avoid potential problems of diverse member interests when cooperatives offer multiple services.

Recent organizational innovations have emerged in so-called New Generation Cooperatives. Although they have developed for a wide range of reasons and objectives, an indirect and supplementry advantage is the ability to form cooperatives with minimal member diversity of economic interests. By requiring advance commitment to an already developed plan for value-added operations, consensus and planning and decision-making are effectively secured.

Furthermore, equity investments and patronage volume needs are estimated. Memberships are closed when they reach the specified target. The defined membership of these cooperatives have a powerful incentive for consensus that many open membership organizations lack. This capability of building consensus is an important advantage that tends to be overlooked or understated in promoting these new organiza tional forms.

Making Consensus an Advantage

Membership consensus in a business is challenging and is a complex attribute of traditional cooperatives with diverse member interests. Maintaining a consensus among a large number of diverse members need not inhibit sound business decisions. The board and management of most cooperatives handle the pressures of consensus building by being strategically aware about the process. This involves taking advantage of potential strengths in consensus decision-making and avoiding its potential traps.

Consistent Policy

Economic transactions for similar agricultural products or services can often be negotiated on a multitude of different terms or arrangements. Financing methods, timing, quality variations in product or service delivery, and informal promises about future deals are a few of the dimensions on which buyers and sellers may transact with distinctive or individualized terms. Furthermore, planning and policy for transacting can only provide general guidance for addressing individual opportunities and contingencies.

One characteristic of cooperatives that stems from consensus is adherence to consistent procedures and policies for member dealings. Cooperatives differentiate their prices or service fees according to established criteria on quality or cost standards. Some members regard the policies of their cooperatives as being fairly uniform, and occasionally inflexible in not adjusting policies to market contingencies.[14]

This section examines some implications for competitive strategy of consistency and adherence to policy in a cooperative's dealings with members. Cooperatives handle the combined demands of meeting individual member needs while maintaining balanced and consistent quality of services to all members. They must also compete with firms that do not operate within a structure of member governance and consensus.

Consistent Policy and Procedure

Consistent policy is needed to prevent arbitrariness or uneven quality in member dealings. This characteristic is initially established in a membership agreement. Marketing cooperative agreements may contain substantial details on mutual rights and responsibilities for a cooperative and its members?

Most cooperatives are committed to receive members' entire output and to provide services to all members, and to report their financial and operating information to members and to directors. IOFs operate without the same kind of pressures for consistent dealings with customers, although they may have incentives to make their customer dealings consistent. But they differ with cooperatives in having more flexibility

[14] Ibid, p. 72, and L.D. Sanders, P.Kenkel, and E. Smith, Summary of Survey of Critical Issues for Cooperative Survival, Oklahoma State University, AE# 92-131, 1992.

[15] Reilly, Cooperative Marketing Agreements, USDA/ACS RR 124, 1992

to selectively differentiate customers. In the general theory of cooperation, this distinction is critical. In cooperation, services must be provided to all members of the group if provided to any, which sets it apart from other forms of organization.[16]

Most cooperatives are highly responsive to members' differing needs, while also adequately safeguarding interests of the entire membership. Access to management and the power of voice, mentioned in the previous section, keep cooperatives relatively well informed about, and responsive to, members' diverse needs and interests. In fact, many cooperatives tend to err more on the side of insufficient safeguarding of the group interest, than on inflexible adherence to policies.[17] Nevertheless, cooperatives are generally consistent in their dealings with members, and competitors strategically react to this orientation of cooperatives.

Strategic Considerations

A cooperative's consensus policies and procedures for market dealings have several strategic dimensions and ramifications. The term "strategic" refers to making decisions in light of information on the expected actions and responses of others. A strategic framework involves making assumptions about each side's perspectives and decisions. Those used in this report demonstrate implications of agricultural producers' diverse interests.

One strategic effect of policy consistency is to make information about cooperative terms of trade more available and predictable than the same kind of information from IOFs. When cooperative managers refer to "operating in a fish bowl," they are referring not only to the burden of public reporting but also to the consequences of uniform and consistent policy. Members know their cooperative's terms in transacting business, but lack reliable access to comparable information about IOF dealings with different customers.

A second strategic consideration is that IOFs are more likely to customize services or selectively offer special pricing when competing with cooperatives than with other IOFs. A competitor is aware that a cooperative has constraints in responding to certain individual customer needs. IOFs can selectively bid on products or offer services, knowing the general limits that a cooperative must follow. Cooperatives must also face the fact that any differentiated deals that they might make, or are suspected of making, may create ethical conflicts and erode trust.[18] IOFs are more insulated from such criticism.

A third consideration is for an IOF to offer pricing arrangements that would be both highly remunerative and risky if offered to all customers who might want such terms. The strategic approach for an IOF is one of portfolio offerings that balance the risks. An IOF can selectively offer a range of terms, easily controlling its financial position. An IOF competitor is also aware that such individualized pricing is difficult, and possibly more risky for a cooperative to match. A high risk/return marketing method can eventually become a service that members want from their local cooperative. When such individualized high risk/return terms are offered by a cooperative, the stage is set for losses that may spill over to the entire membership.

Competitor Specialization

A fourth strategic consideration involves the opposite of individualized and differentiated dealing. When customers are economically diverse, a competitor may have more incentive to specialize and expand a segment of the market. In effect, a firm selects its market to conform to a uniform service it provides. In addition, the incentive to specialize is affected by the extent to which the competition accommodates diverse customer needs. Examples of such situations are common in many local feed milling businesses.

Suppose a cooperative feed mill serves a variety of livestock producer members, including some large-scale hog finishing enterprises. The cooperative will try to provide its service at prices that are feasible for its entire livestock membership.

A competitor may derive advantages by operating a feed mill dedicated to and integrated with an expanding hog finishing business. Their advantage in specialization may come from several sources, not the least of which would be in not having to supply feed at prices that help maintain a varied customer base. In sum, diverse interests create opportunities for strategic positioning.

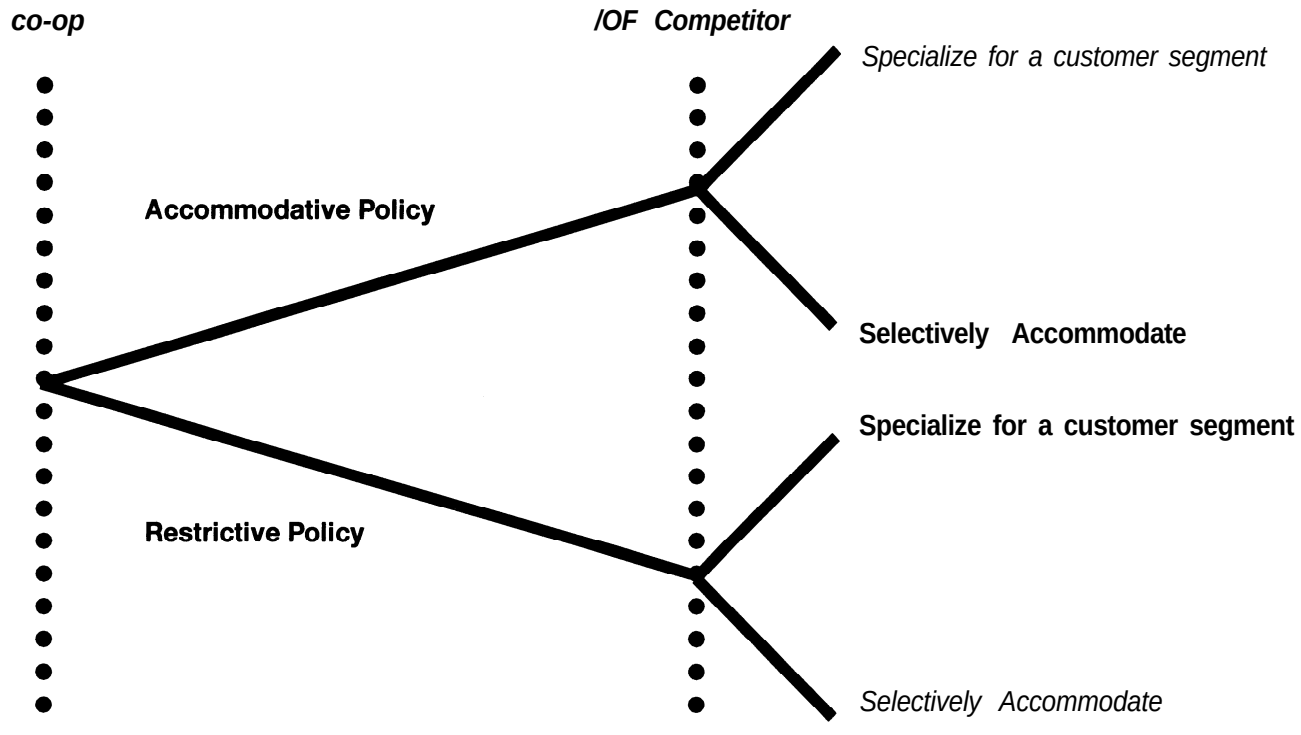
The key elements of strategic positioning can be visualized in a game-tree diagram. Figure 2 shows a cooperative having to make decisions that move it in either a direction of accommodative or restrictive poli-

[16] M. Olson, The Logic of Collective Action, Harvard University Press, 1965, p. 14.

[17] P. Lasley, C. P. Baumel, R. Deiter, and P. Hipple, Strengthening Ethics Within Agricultural Cooperatives, USDA/RBS RR 151, 1997

[18] Ibid.

Figure 2— **Strategy Under Conditions of Diverse Producers**



cy to meet the diverse interests of members. An IOF competitor can modify its operations to take advantage of consistent policy and business decisions of a cooperative.

Along the top branch of Figure 2, in italics, the competitor will specialize or focus its services if the cooperative decides to follow an accomodative policy in serving diverse customers.

Along the bottom branch, the competitor will selectively accommodate diverse customer needs, when faced with a cooperative that chooses a restrictive policy on the kinds of services it will offer and limits the extent of customizing services.

Figure 2 demonstrates a strategic framework, one of many possible actions and responses. Specialization decisions are based on many considerations. When a competitor specializes, opportunities might improve either by providing more general services or by specializing in some other service. Although actual decisions involve many more considerations, cooperatives have to guard against giving too little weight to strategic factors and too much to service demands of members. Any new service or business venture must consider the extent of diverse interests, risks to the group, the impact on member cohesiveness, and the efficiency of how it fits in with, or complements, the cooperative's resources and capabilities.

Defining a Cooperative Business

Most cooperatives operate in similar fashion to other firms in a given industry, but also act as agents for members in trying to improve earnings for their farm enterprises. Selection of services to be offered is usually determined by member interests.

Nevertheless, not all services or business operations that can benefit members are economically feasible. Even services that have been profitable for some IOFs may draw heavily on resources and situations that are disadvantageous for cooperatives.

Competitive strategy for cooperatives begins with selecting and defining a business that coalesces member goals and economic interests, and minimizes incentives for individual members to defect from cooperation. Some agricultural industries and farm services vary in regard to how united members feel about the value and effectiveness of what their cooperative provides. Here are three examples of agricultural services that differ in how conducive they are for cooperative organization. The first two are relatively conducive, while the third is more challenging for cooperatives.

Value-Added Processing

Many cooperatives have developed successful value-added businesses from processing raw products. For perishable farm products, such as milk, cooperative processing has been especially prevalent. As many farm products have encountered a transition from actively traded commodity markets to integrated systerns, opportunities for comparative pricing and individualized dealing are narrowing.

Producers can potentially capture added value by participating in integrated systems through cooperatives. Although there are many competitive dimensions to the new systems of integration, uniform dealings with producers and efficient management of processing are strong points for cooperatives, in contrast to the individualized deal making of traditional farm-commodity trading.

Market Development

Market development involves substantial commonality of interests among producers, and there is usually no direct competition in providing this type of service. This situation is demonstrated in the history of cooperatives that have developed markets for specialty farm products. Cranberries and almonds are examples of products that were new to many consumers in the U.S. Cooperatives took a lead role in developing those markets. In recent years, economic growth in several foreign countries has renewed the task of market development, and cooperatives have played an active role. Some of the producers of new varieties of crops and animals are organizing cooperatives with a market development orientation.

Tractor Services

Tractor retailing and repair is a diverse service that often requires significant customization. Until about 40 years ago, cooperatives were expected to play a significant role in the retail and repair industry. In the 1930s, numerous cooperatives were formed for farm machinery leasing and repair services.[19] They rapidly went out of business during the 1950s, but some remained by establishing dealership franchises. In recent decades, the number of these dealerships have significantly declined, but cooperative tractor dealerships closed at a faster pace. There were 101 cooperative dealerships in 1970, 56 by 1980.[20] They number only about 12 in the U.S. today.

Some of the remaining cooperative tractor dealerships and repair service businesses serve wide geographic areas with multiple locations. Cooperatives that have tried or are successfully maintaining tractor retailing dealerships, have reported a considerable dearth of these services. Members have regarded their cooperative's involvement as meeting an under-supplied need .[21]

Cooperatives have historically been competitive in managing marketing and farm service tasks that are relatively uniform for the membership. In addition, as farm populations become smaller, more geographically dispersed, and composed of more economically diverse producers, cooperatives may want to avoid increasing membership when it creates a multitude of disparate member needs. Rather, they can help set up new cooperatives to meet specialized needs, and work together for lowering costs by establishing network relationships.**

Cooperative Forms of Marketing

Cooperative marketing techniques vary as to the extent they coalesce member interests, or as to the extent of exposure to losses from individual member decisions. In very general terms, marketing cooperatives have followed two basic approaches. One provides a competitive market price for member reference and gains member patronage by bettering or at least matching the offerings of competitors. The other, distinctly "cooperative" marketing, serves individual member interests by coordinating with other members. This type of marketing pools member production, and is most effective when integrated with value-added operations and risk management for members.

Many producers, particularly in the grain industry, are more accustomed to monitoring market prices and receiving individualized pricing services. In such cases, a distinctive program that is not comparable to competitive bids may not appear to offer advantages to producers. In these situations it is especially critical

[19] W.W. Fetrow and R.H. Elsworth, Agricultural Cooperation in the United States, USDA, Bulletin 54, 1947.

[20] L. Biser, Cooperative Farm Machinery Operations, 1970-80, 1983.

[21] Interview with Larry Crook, AG West Supply, Aug. 15, 1996.

[22] J. R. Fulton, M. P. Popp, and C. Gray, "Strategic Alliance and Joint Venture Agreements in Grain Marketing Cooperatives," Journal of Cooperatives, Vol. 11, 1996, and A. Borst, "Network Movement Presents challenges and Opportunities for Farmer Cooperatives," Farmer Cooperatives, January 1995.

to integrate pooling with value-added functions. Limiting membership may also be necessary to prevent dissipation of potentially higher earnings.

Individualized dealings in producer markets by non-cooperatives can draw cooperatives into involvement with terms and situations that may impose costs on other members. The seriousness of unanticipated hazards from cooperatives pursuing individualized member dealing is demonstrated by the recent problems with hedge-to-arrive contracts. This form of contract benefited individual growers prior to 1996. But that year incentives existed for members to not honor their contracts. Those who defaulted imposed losses on other members of their cooperatives.

The defaulting on hedge-to-arrive contracts is being criticized as a breakdown of trust and ethical behavior.*3 However, this problem can be approached strategically as well as ethically Hedge-to-arrive contracts are an outgrowth of pressures for cooperatives to pursue individualized dealings. Competitors might be aware that such contracts are likely to impose more dilemmas and conflicts for cooperatives than for their own firms. By strategic framing of the issue, cooperatives avoid or circumvent ethical crises by using cooperative marketing techniques. The approach of circumventing ethical dilemmas by making precommitments is examined by many theorists of strategy.[24]

Pooling programs generally offer advantages in marketing large volumes and in providing market risk management. Cooperatives face a special kind of risk when independent decisions of individuals can impose losses on the group. Pooling addresses such hazards by avoiding individualized pricing contracts. Nevertheless, techniques like pooling will not be more widely adopted if advocated as merely a safeguard. Pooling must be framed in a value-added context to become more widely adopted in commodity industries such as grain.

Attracting Large-Scale Producers

Many cooperatives need to attract large-scale producers to achieve efficient operating size. Pressures to retain and gain their patronage is particularly critical in the bulk commodity industries, such as grain and the related farm services.[25] Cooperatives usually review their economic performance, streamline their services into those with critical volume support, and make their services more effective for the needs of large producers.

An alternative and more consequential approach for addressing problems of inadequate membership of large producers is to provide differential treatment in cooperative policies. Many cooperative leaders and economists advocate policies for differential treatment of members in proportion to their patronage volume or use.[26] Such policies provide more efficient and equitable dealings when increasing returns justify compensating large patronage members above the average return.[27] Some proponents point out that providing such compensation would also create more incentives for large producers to join or to remain as members of cooperatives.

This discussion focuses on strategic issues of gaining patronage from large producers in situations where a cooperative's earnings are being impaired by insufficient volume. In this framework, cooperatives evaluate the use of policy instruments or new services to determine the most effective ways to increase incentives for patronage from large producers. This discussion is in three parts.

Before presenting a game theoretic analysis, it is important to avoid any misunderstandings about cooperative policies as being strictly uniform and designed for equalizing all dealings with members. Therefore, the first part of this discussion reviews how most cooperatives apply proportionality and differential treatment of members.

Part two analyzes the large-scale producer problem by using game-theoretic payoff matrices. These matrices describe incentives and relevant choices in concrete situations, but this analytical technique leaves out many details in order to clearly define strategic moves and decisions.

The third part discusses some of the institutional details and social contexts left out of payoff matrices that help make cooperation feasible and sustainable. It incorporates some of the game results and institutional

[23] Lasley, op. cit., and Rural Cooperatives, July-August 1996.

[24] T. C. Schelling, "Ethics, Law, and the Exercise of Self-Command," chapter 4, Choice and Consequence, Harvard University Press, 1984.

[25] Kenkel, op. cit.

[26] H. Swann, American Institute of Cooperation Yearbook, 1985, and R. D. Knutson. "Cooperative Principles and Practices," Farmer Cooperatives for the Future, 1985, and J. B. Royer, "Cooperative Principles and Equity Financing," Journal of Agricultural Cooperation, Vol. 7, 1992.

[27] M. Fulton and J. Vercammen, "Distributional Impacts of Non-Uniform Pricing," Journal of Cooperatives, Vol. 10, 1995.

aspects of cooperative governance and decisions into a long-term planning approach to the problem of retaining and gaining membership of large-scale producers.

Proportionality and Differentiation

In their early years U.S. cooperatives tended to strictly apply equal treatment, but over time they have increasingly incorporated more differentiation of terms according to quality or cost differences in member dealings.** In today's economy, cooperatives usually combine elements of both proportionality and equality in member dealings. The three basic principles of cooperation — (1) user ownership, (2) user control, and (3) user benefits — are compatible with differentiated treatment of members and a wide range of policies or practices for member dealings? Member dealings in proportion to use is inherent in the traditional principle of service at cost.

The emphasis on member size or patronage volume differences is often called the proportionality principle or policy.[30] It refers to equitable policies in the sense of maintaining parity in the relationship between benefits and contributions across all members. In contrast, the traditional member policy of cooperatives in the U.S. has tended to apply aspects of both proportionality and equality. In general, cooperatives distribute benefits and share burdens in proportion to use, while member voting has predominantly been on an equal or one-member, one-vote basis?

In the two operational areas of member payments and finance, allocations are intended to be in proportion to use or volume, but many cooperatives fall short of strict proportionality in several aspects.

The distribution of benefits in proportion to use or volume is usually on an average value or per-unit basis. This approach is labeled "equal" because the average or same price for like qualities of product or services is applied. Although this approach falls short of strict proportionality, cooperatives have often been diligent in communicating value or quality-price differential information to members.

In many commodity industries, cooperative marketing captures quality premiums for members. They have been pioneers for improving producer incentives by passing these differentials on to individual members. At the same time, cooperatives may exercise discretion in the interests of lower transactions costs, or for risk management or for member cohesiveness, by not always fully differentiating earnings across all commodities.[32] To some extent the risk management aspects of cooperative pooling, by smoothing out price fluctuations over time, involves equalizing potential earnings differences of the membership.

Member financing in proportion to use by cooperatives is reflected in the method of per-unit retains. The acquisition of equity capital and its redemption in the future, coupled with changes in member patronage and composition, often make financing disproportionate to use.[33] However, some cooperatives that have encountered this shortcoming use base capital plans to place financial responsibility more in proportion to members' current and future use.[34]

In regard to voting, studies of methods used by cooperatives in 1978 and in 1995 indicate about 93 percent have a policy of equal or one-member, one-vote.35 In followup questions to survey participants who used proportional voting, many did not extend proportionality terms to product or service pricing or to provisions for investment returns on equity.

An important consideration when making pricing or financial differentiations is that they communicate incentives on factors that are adjustable or capable of improvement by at least a large percentage of members, rather than on factors that may not easily be changed or improved. Payment differentiation according to product quality criteria can create incentives for all members to make improvements that will expand a cooperative's future earnings. The scale of agricultural production has possibly been one factor that cooperatives have traditionally regarded as not easily adjusted by many of their members. In sum, cooperatives have tended to combine elements of both proportionality

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[28] I.W. Rust, Providing Equitable Treatment for Large and Small Members, USDA, Farmer Cooperative Service, Information 21, 1961, p. 3-5.

[29] J. Dunn, "Basic Cooperative Principles," Journal of Agricultural Cooperation, Vol. 3, 1988.

[30] D. Barton, "Principles," chapter 2, Cooperatives in Agriculture, D. Cobia (editor), Prentice Hall, 1989, and Royer, op. cit.

[31] B.J. Reynolds, T.W. Gray, and C.K. Kraenzle, Voting and Representation Systems in Agricultural Cooperatives, USDA/RBS RR 156, 1997.

[32] S.T. Buccola, J.C. Cornelius, and R.R. Meyersick, "Pool Payment Equity in Agricultural Marketing Cooperatives," Journal of Agricultural Cooperation, Vol. 4, 1989.

[33] D. Cobia, J.S. Royer, R.A. Wissman, D.P. Smith,, S.D. Lurya, J.W. Mather, and P.F. Brown, Equity Redemption, USDA/ACS RR 23, 1982.

[34] R.C. Rathbone and R.A. Wissman, Equity Redemption and Member Allocation Practices of Agricultural Cooperatives, USDA/ACS RR 124, 1993.

[35] Reynolds, Gray and Kraenzle, op. cit.

and equality in member dealings, and have traditionally applied differentiated treatment when it can influence economic growth.

Two Games With Strategic Moves

When diverse economic interests of members come into conflict, it is usually because of differences in stand-alone or outside opportunities of some members, especially large-scale producers. Conflicting interests of members have been modeled for agricultural cooperatives by using game-theoretic techniques. In developing a theory of agricultural cooperatives, some economists have used a branch of game theory known as coalition analysis.36 A game-theoretic approach, but with a more applied orientation, is used here to examine the structure of incentives in dealing with problems of defections by large-scale members.

An important difference in this report with the approach taken in other game-theoretic analyses of cooperatives is the use of incentive structures that involve contingent choices. Theoretical work in game theory often employs dominated choice situations, like the prisoners' dilemma. In dominated choice games, what the other side or player chooses does not influence a player's decision. By contrast, contingent choices provide opportunities for influencing the decisions of the other side by demonstrating various types of commitment.

Schelling specified two general ways or "strategic moves" for a decision maker to influence the choice of the other side or player, either as "promises" or as "threats."[37] However, these two types of moves are not necessarily made in literal or face-to-face confrontations. Rather, they are labels for actions that alter incentives for others to make different choices than they otherwise would make. In game theory, a promise is an action that improves the payoff for the other side. A threat is a move that reduces the other side's payoff enough to change its decision from what would otherwise be chosen.

The following two game-theoretic situations involve fairly extreme, but not unrealistic, situations. In both cases, there is a hypothetical cooperative that operates far more efficiently when it receives patronage from large members. A competitor offers individualized deals that have bid large members away from the cooperative.

(1) The Promise

Many cooperatives can create incentives for member patronage from large producers by revising policies in accordance with a strict proportionality agenda. Policy provisions most applicable for this purpose are differential pricing and proportional voting. Applying differential pricing would be relevant to redistributing marginal gains when a cooperative's operations have increasing returns.38 Both provisions change the way earnings and governance are shared in a cooperative, but do not change the total efficiency or earnings from what the cooperative achieves when it is operating at full capacity with support from its entire membership.

The two choices (columns) in Figure 3 for large producers are cooperation and defection. The cooperative operates initially in the lower left cell, **(4,3),** but in a subsequent season, large producers chose to defect from cooperation, **(1,4),** the lower right cell. In other words, the game starts in the lower two cells of Figure 3, until an alternative can be offered to "business as usual."[39] When large producers choose defection, the low volume results in a payoff of 1 for the cooperative, indicating an industry with significant increasing returns.

The cooperative would prefer to operate in the lower left cell, **(4,3).** It used to work at one time but it is no longer feasible because of the lower payoff of 3 for large producers. The fact that its lower, and not equal for all members accords with the views espoused by advocates of the proportionality principle. However, the higher payoff for smaller members in the lower left cell creates an opportunity for an alternative.

The lower left cell enables the cooperative to transfer from smaller scale members, a part of the payoff, 1, to large producers. That would produce a cell with pay-offs of **(3,4).** In game theory, when a player transfers part of its payoff in a cell to the other player in order to induce a decision solution in that cell, such moves are called a **promise.**[40] This type of promise move is the basis of the policy provisions alternative to business as usual, with its payoffs in the top two cells of Figure 3.

Management and board consider offering a new policy of differential pricing in proportion to product volume delivered and proportional voting. Several

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[36] J. Staatz, "Cooperative as a Coalition," American Journal of Agricultural Economics, 65, Dec. 1983, and Sexton, op. cit.

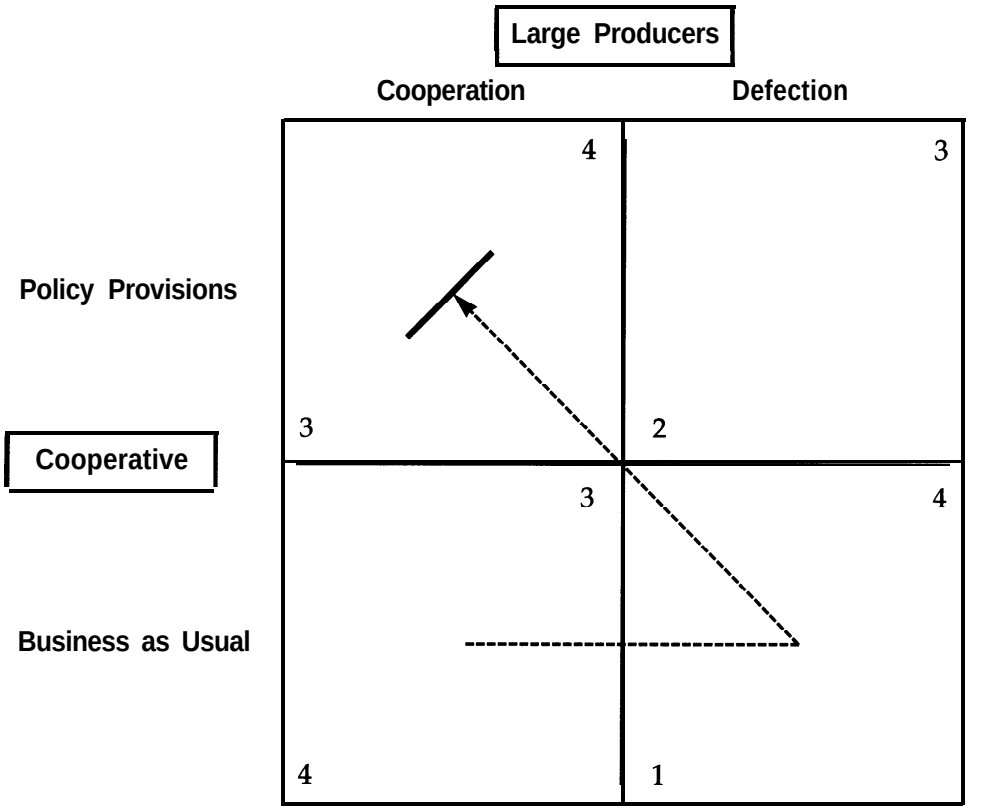
[37] Schelling, The Strategy of Conflict, Harvard University Press, 2nd edition, 1980, p. 122-134.

[38] M. Fulton, op. cit.

[39] 'S. Brams, The Theory of Moves, Cambridge University Press, 1994, p. 24-34.

[40] Schelling, op. cit., 1980, p. 131-134.

Figure 3— Large Producer Game-Attract with Policy Provisions



directors want to add a "kicker" to this policy. If implemented and large members continue to defect, their sizeable volume of equity in the cooperative would be expropriated or, at the very least, retained for as long as possible.

Figure 3 shows a situation that game theorists call the "mixed motive game." Incentives for conflict and cooperation are combined.[41] The cooperative implements policy provisions in an attempt to lure large producers back to cooperation. However, the smaller producers would prefer a cooperative that operates in the lower left cell. But, knowing how the large producers make decisions, they will accept and implement the policy provisions. In the upper left cell, smaller producer-members incur a loss of value from transfers to large members by means of patronage volume premiums and from a relative reduction in their voting power.

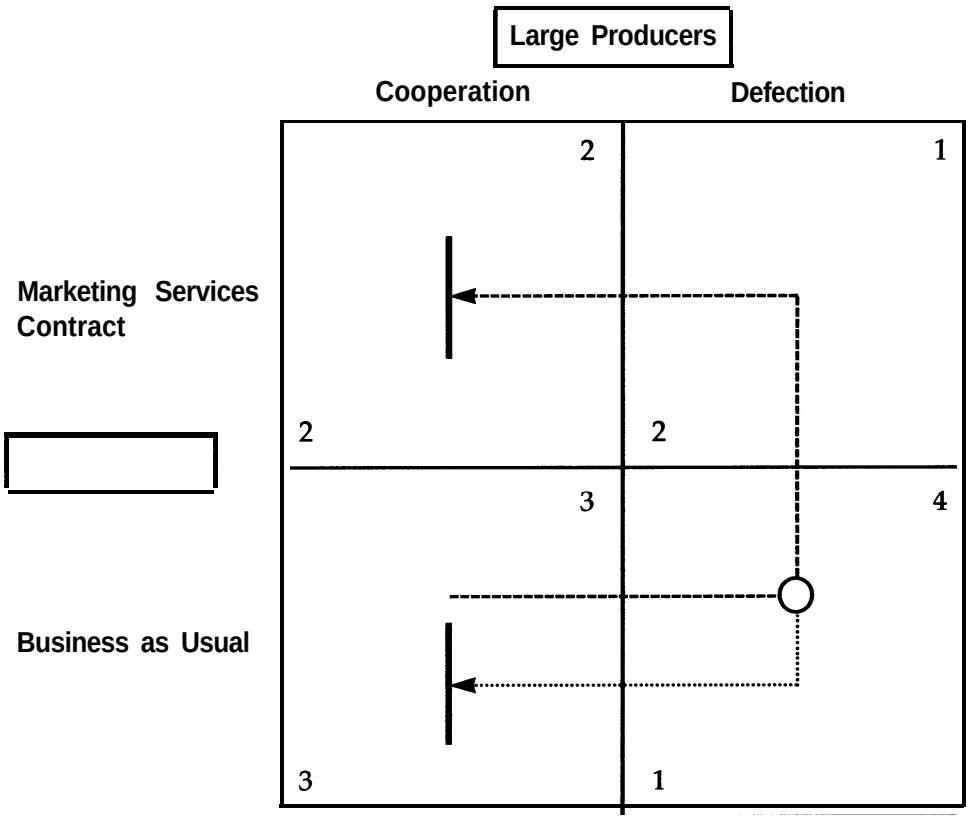
The large producers, essentially, let the cooperative make the first move with regard to implementing an alternative to business as usual. Once the policy provisions are announced, they must evaluate a choice between cooperation and defection. Cooperation, in the upper left cell is (3,4), consisting of the cooperative's payment, plus the volume premium and their additional share of voting power. In the defection choice, (2,3), the kicker provision on retaining equity of defectors explains why the payoff is lower for large producers than if they could maintain the conditions in the lower right cell of defection and business as usual. Once the policy provisions are announced, defection is no longer the best choice.

The equilibrium solution for the game in Figure 3 is, therefore, in the upper left cell. The two groups of players are likely to coordinate their expectations in that cell. The pattern of combined decisions is mapped by the broken line that ends in the upper left cell of Figure 3.

This game may seem to be a determinant choice in having an obvious equilibrium solution in the upper left cell. Yet, it is a game of contingent choices in that how each player chooses depends on the incentive payoffs for each counterpart player. The steps in getting to a solution, like that of the upper right cell,

[41] Ibid, p. 89, and J. Friedman, "Introduction and Overview," Problems of Coordination in Economic Activity, Friedman (editor), Kluwer Academic Publishers, 1994, p. 4.

Figure 4— **Large Producer Game-Contract with Competition**



demonstrate a process that, in practice, might be slow and involve uncertainties that may derail any decisions about making a change.

(2) *The Threat*

Figure 4 demonstrates the use of communicating a "threat" in an attempt to change the choices that others would make.[42] In this game, the previous season of defection is likely to be repeated with the same lopsided payoffs in the lower right cell as in Figure 3.

The opportunities for a joint maximum exist in the lower left cell, as in Figure 3, but market conditions have deteriorated in Figure 4. Any performance gain from receiving the high volume of products from large members, which would benefit the membership as a whole, is lost under severe market conditions. Its payoff in Figure 4, lower left cell, is (3,3). As a result, there is a diminished opportunity to use the policy provisions alternative to business as usual in order to regain the cooperation of large producers who have chosen defection. Recall that in Figure 3, the cooperative could transfer part of its payoff to loyal members by implementing favorable policy provisions for large producers.

In the game of Figure 4, the cooperative's alternative is to consider a major reduction in the scope of its operations. Such a strategic move has some power to influence large-scale producers to choose cooperation if they perceive the cooperative as taking actions that would reduce their opportunities if they defected. The alternative to status quo in this situation is to terminate its independent marketing program and obtain marketing services from its former competitor. The cooperative would provide storage and product assembly for shipment, as well as negotiate the marketing service contract. In order to function as a threat, defectors must be made aware of the plan and its consequences.

An important assumption in the game presented in Figure 4 is that the availability of the large producers' outside advantage, the payoff in the lower right cell, depends on the existence of the cooperative. This assumption represents the "Nourse yardstick effect" of cooperatives upon competition (see Glossary). Both large producers and the membership as a whole are aware of this dependency

[42] Schelling, 1980, p. 123-134.

As a practical matter, some cooperatives resort to marketing service contracts with outside firms in an effort to improve earnings. Such decisions are made under circumstances where announcements of preliminary plans would have little if any threat value. In actual cases of cooperatives that contract outside for marketing services, their go-ahead decision is probably made as if it were a dominated choice. It is dominated in the game theory sense that they perceive no better alternative and are not expecting the contingency of winning new member support. That would allow them to withdraw from having to terminate an autonomous marketing program. Even though the game in Figure 4 is selectively designed to highlight the use of a threat, the conditions and alternatives are not too far removed from the kinds of choices that some cooperatives confront.

The Figure 4 payoff matrix, like Figure 3, is a game of contingent choices. Neither of the two rows or columns is dominated. Under the usual game theory assumption for contingent choices, each player makes an inference about the choice that the other player will make. Finding an equilibrium solution to the game in Figure 4 depends upon how credible the cooperative's threat of a marketing service contract is perceived to be by the large producers.

If the threat is not considered credible, but is subsequently implemented, larger producers would switch from defection to cooperation. The solution would be in the upper left cell. The reason for this outcome is that the aggregate volume of the cooperative's loyal membership is larger than the separate volume of each large producer. If they continue to defect, the payoff is higher for the cooperative in the upper right cell because it has much more volume and power when negotiating the marketing service contract than the individual large producers, who have lost the leverage they had when the cooperative was that firm's marketing competitor.

If the threat is credible, there is opportunity for the cooperative and large producers to achieve the outcome of the lower left cell. It is not the preferred solution of large producers at the start of the game, before they perceived the threat as credible, but it is better than the solution of the upper left cell.[43]

The arrow lines in Figure 4 show possible sequences of decisions. At the start, only the lower row is available, and large-scale producers have an incentive to choose defection. The top row is a potential response or strategic move by the cooperative that, if implemented, would remove the bottom row alternatives for large producers. If this "threat" is not considered credible, but is implemented, decisions converge along the broken line. They make a transition in the upper right and eventually settle in the upper left cell. The movement from upper right to upper left is likely to occur as large producers gradually discover their loss of marketing leverage. The upper left cell has lower transaction costs than the upper right by consolidating all producer transactions and giving the cooperative a quasi-bargaining role.

If the threat of a marketing service contract is credible, the dotted line is followed. After decisions move to the lower right cell, a credible threat returns the decision game back to the starting point. The joint maximum solution for producers is the cell with highest total payoff. In this game, decisions return to the cell of business as usual cooperative marketing with cooperation from large producers.

Insights From Game Theory

Most situations encountered by cooperatives are neither pure conflict, nor pure cooperative gain. Most strategic decisions involve mixed incentives of conflict and cooperation. The mixed incentive game in cooperatives develops from the circumstances of consistent policy in member dealings and individual differences in outside opportunities. The games of Figures 3 and 4 highlight some extreme mixed incentive choices. The usual situation for these kinds of strategic choices is depicted in Figure 1, where cooperation and conflict unfold as a gradual process of adjustments, with the potential for a cooperative to rebuild its strengths and mission.

A second insight from contingent choice game theory is in demonstrating how easily decision makers can be drawn into lower- value joint outcomes. In Figure 4, movement to the highest joint gain, the lower left cell, implies that information on the consequences of ending a cooperative marketing program have been adequately communicated to producers who have defected. Incomplete information or misunderstandings of complex market situations create a potential for ending up in lower-value joint outcomes, such as the upper cells of Figure 4.

Sustainable Cooperation

Large-scale members often have leverage in obtaining policy provisions that exclusively meet their needs. Such initiatives may involve some type of non-uniform sharing of earnings or may only include pro-

[43] Ibid, and Brams, op. cit., p. 138-148.

portional voting. Under these circumstances, cooperatives should evaluate impacts on future conditions for member consensus and sustained cooperation. Some cooperatives may find a natural and appropriate consensus with non-uniform distribution and proportional voting. In other circumstances, when policy provisions are implemented under economic duress, as in the game in Figure 3, they undermine a foundation for member cohesiveness. An analogous problem may occur when mergers of cooperatives lack adequate melding of different cooperative business and political cultures.

Many economists point out that differential pricing in accordance with marginal contribution of volume would likely be a complicated and costly process, although various multipart pricing schemes are relatively feasible. Although economic analysis of distribution on an equal price basis reveals inefficiencies from inaccurate pricing of resources, finding alternative allocation methods that are superior for all purposes and that remain valid under changing economic conditions usually proves to be impossible.[44]

A critical consideration for implementing non-uniform distribution is that the program obtains consensus in a reasonable and low-cost time frame. Controversies over distribution methods distract cooperative management from a business and value-added orientation. The role of cooperatives, particularly managers, is to lead efficient and competitive businesses, rather than debate and dispense economic justice. Fair division of an economic pie is a traditional image for cooperatives,[45] but as recent theorists of strategy have noted, the time costs of battles over shares, rapidly diminish net-present values for all claimants.[46]

An important feature of voting methods, either one-member, one-vote or proportional voting, is that they do not lead to significant departures from consensus decisions by a board of directors. Consensus is not relevant or measured by the margins of victory in director elections, but only in the governance process of directors. However, proportional voting allocates more voting power to some members, and might influence a board of directors to exercise decisions with near majority winning coalitions, rather than on the basis of cooperative consensus. Proportional voting would seem to more likely lead in this direction if adopted to attract large producers. If adopted, proportional voting should reflect member consensus and their social conventions. This point was made in debates during the 1950s on the strict proportionality approach.[47]

A lack of services that adequately meet the needs of large producers is the more basic problem which, if addressed, may help avoid situations of having to offer policy concessions as a form of compensation. Many cooperatives address the development of outside opportunities for their large-scale members by innovating new or more effective services for them. Long-range planning enables these cooperatives to be positioned to prevent diverse member interests from becoming conflicting interests. Services are identified and developed to meet the special and different needs of members.

When cooperatives address the interests of large producers with expedient measures, or outside the context of planning, they are likely to erode trust and support from the membership as a whole.[48] In addition, a broader spectrum of alternative approaches in meeting the needs of large producers are likely to be overlooked if this objective were to be handled either by management discretion in dealing with producers or by adopting policy provisions of the strict proportionality agenda.

Coordinated action and decision-making, when cooperative membership is composed of diverse economic interests, involves an incentive structure of both conflict and cooperation. The lessons that can be clarified by structuring decisions in game-theoretic payoffs are the importance of continuously developing and improving business services that provide a joint or cooperative gain. With long-term planning of this kind, cooperatives improve their prospects for avoiding the traps of equilibrium outcomes with lower performance and weaker incentives for cooperation.

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[44] T. Groves, "The Impossibility of Incentive-Compatible and Efficient Full Cost Allocation Schemes," Cost Allocation, P.H. Young (editor), North Holland, 1985, and P.H. Young, Equity in Theory and Practice, especially see chapters 4 and 9, Princeton University Press, 1994.

[45] R. Phillips, "The Economic Nature of the Cooperative Association," Journal of Farm Economics, 35, 1953.

[46] A. Dixit and B. Nalebuff, Thinking Strategically, W.W. Norton, 1991, p. 45-48.

[47] J. Savage, "Comment on, Economic Nature of the Cooperative Association," Journal of Farm Economics, 36, 1954.

48 Lasley, op. cit.

Summary and Conclusions

Producers organize and support an agricultural cooperative when it helps accomplish their goals better or more completely than if they transacted in the marketplace as separate individuals. Cooperatives are voluntary organizations and operate under the principles of democratic governance. These features establish cooperatives as consensus-based organizations.

Members typically have diverse economic interests. Consensus is a process of building cohesiveness and incentives for member support. Cooperatives are established to serve member interests, but consensus is achieved with policies for consistency in member dealings and relationships. Policy consistency has the characteristic of a local public good in that any services or special terms offered to one member must be available to all members.

Diverse economic interests of members and policy consistency have strategic dimensions in the way non-cooperative firms compete with cooperatives and in the corresponding response by cooperatives. Non-cooperative firms or IOFs have an incentive to compete by offering more individualized and customized services than is feasible for cooperatives, or to pursue more narrowly defined business services that avoid higher transactions costs of serving diverse producer needs.

Cooperatives are most effective in responding to the competitive pressures of individualized dealings by identifying services that prosper from substantial coordination and application of consistent quality handling. In the area of marketing, this approach involves programs for value-added earnings that provide individual incentives for member commitment in delivering product to their cooperative. Cooperatives are implementing a variety of these kinds of value-added commitment programs, either in the newer form of new-generation cooperatives or in traditional methods of pooling.

Large-scale producers are a focal point for individualized dealings by firms that compete with cooperatives. Cooperatives can address the problem of losing some of their largest patrons by offering differential terms in distributing earnings and voting power in proportion to member patronage volume or patronage-generated equity. There are other justifications for adopting policies of this kind, but this report solely addressed potential strategic uses and implications. The use of these policy provisions and other strategic moves for attracting large producers to a cooperative are analyzed in a game theoretic framework.

The framework of these games helps clarify the incentives for conflict and cooperation that emerge, even when cooperatives address diverse interests of members that are less extreme than problems in attracting large-scale members. This framework identifies interdependencies of decisions and the impacts of mixed-incentive structures. It provides a starting point for long-range planning in developing alternatives for favorably changing the decision game. Many cooperatives attract large-scale producers by continuously innovating and developing new marketing programs and services that build on cooperative strengths and incentives for producers to choose cooperation.

Glossary

Agency — An individual or organizational entity that represents or works on behalf of another individual or organization.

Contingent — In game theory decisions, what the other party, counterpart, or competitor chooses will influence the choice to be made. In such games, it is possible to influence the choice made by the other party. It makes a difference whether one has the first or second move, or whether or not communication is possible.

The test for contingent choices is when payoffs in each cell along a column or row are not larger than the payoffs in every cell in adjacent columns or rows.

Dominated — In game theory decisions, what the other party, counterpart, or competitor chooses will influence the payoffs, but neither party can influence the choices the other will make. In such games, it makes no difference whether one has the first or second move, or whether communication is possible or not. The prisoners' dilemma is an example of a game with dominated choices.

The test for domianted choices is a column or row with payoffs in every cell that are larger than those in adjacent columns or rows.

Mixed incentives — Game theory decisions that involve competition (conflict) in priorities within choices for mutual gains from cooperation. Mixed incentives are a third type of game theory situation between pure conflict (zero-sum) and pure cooperation. In many studies and discussions of game theory, mixed incentive games are subsumed into the general category of noncooperative games, with the only other type identified as cooperative game theory.

Nourse Yardstick — Part of a theory of cooperatives, developed by E.G. Nourse. The presence of cooperatives in a market provides a measure, "yardstick," of how other firms are performing. In these market situations, a cooperative has an effect of establishing competitive prices.

Payoff matrix — Payoffs are represented in an indexed form or in their minimum relative value in order to show comparative gains or losses from making different choices in a context of influence from the choices made by another party.

Proportionality — Equitable treatment of members by bringing the economic contributions and burdens of every individual into a parity or equal relationship.