

The National Agricultural  
Law Center



University of Arkansas  
System Division of Agriculture  
NatAgLaw@uark.edu | (479) 575-7646

---

An Agricultural Law Research Article

**Farm Supply Cooperatives: Specialized  
Inputs, Exchange Arrangements and  
Economic Coordination**

by

John J. Haydu and John M. Staatz

Originally published in JOURNAL OF AGRICULTURAL COOPERATION  
4 J. AGRIC. COOPERATION 68 (1989)

[www.NationalAgLawCenter.org](http://www.NationalAgLawCenter.org)

# **Farm Supply Cooperatives: Specialized Inputs, Exchange Arrangements, and Economic Coordination**

*John J. Haydu and John M. Staatz*

Some critics of the cooperative farm supply system point to an erosion of member loyalty and suggest that it indicates that farm supply cooperatives are not currently meeting the needs of their farmer-members. This paper discusses the commitment problem within a transaction-cost-economics framework that analyzes the effects of agricultural specialization on the farm input industry. The analysis shows that: (1) despite complaints by many cooperative managers, farmers are behaving rationally and efficiently in their purchasing practices of specialized inputs, and (2) the cooperative system has responded well by instituting a unique exchange mechanism at the upstream end of the input system.

A recurring theme in discussions among cooperative leaders is the growing lack of commitment exhibited by members to their cooperatives. For many, this perceived lack of commitment strikes at the heart of what is wrong with the cooperative system today. Traditionally, member commitment has been expressed in two main ways—patronage and equity investment. This paper concentrates on issues affecting farmer patronage of their farm supply cooperatives, based on information gathered during a case study of several midwestern regional input supply cooperatives and their affiliated locals (Haydu).

Farmers are continually faced with many decisions that influence the financial viability of their farm firms and of their cooperatives. A growing price consciousness of many members, perhaps driven by their need to reduce expenditures, is pressuring cooperatives to become more efficient suppliers of farm inputs. One way of enhancing efficiency is to improve the

---

*John J. Haydu is assistant professor, Department of Food and Resource Economics, University of Florida, and John M. Staatz is associate professor, Department of Agricultural Economics, Michigan State University.*

*The research upon which this article is based was funded under a cooperative agreement between the Agricultural Cooperative Service of USDA and the Department of Agricultural Economics at Michigan State University. We gratefully acknowledge ACS's support. The views expressed here, however, are solely our own.*

---

coordination among the major economic stages of the input supply system. This requires greater planning capabilities by decision makers, especially by cooperative managers. One way of enhancing coordination is by instituting forward contracts between buyers and sellers of farm inputs. This practice allows participants to capture some of the benefits of the vertically integrated firm while still maintaining the advantages of decentralized decision making (Shaffer). Although forward contracting is currently employed at all levels of the input system (i.e., by manufacturers, wholesalers, retailers, and farmers), implementation is weakest at the local cooperative-farmer interface. A major complaint by regional and local managers who were interviewed was that farmers are overly reluctant to make early commitments for their input needs. Such reluctance eliminates potential benefits that could be derived through more effective planning of purchases, shipping, and inventory levels.

The purpose of this paper is to discuss the commitment problem within a transaction-cost-economics (TCE) framework and show that, for a certain class of inputs, forward contracting is not a viable or efficient response. The paper also shows that because members own their cooperatives, the market response by cooperatives is consistent with the fundamental principles of transaction-cost economics.

The first part of the paper introduces TCE and relates it to certain observations regarding trends within the agricultural industry in general and the input industry in particular. The following part of the paper applies TCE to the farm input industry and relates it to empirical findings regarding the system's performance. A brief conclusion completes the paper.

## **The Principles of Asset Specificity and Uncertainty**

Williamson (1985) asserts that within a given market environment, the organizational structure that minimizes the sum of production and transaction costs will tend to dominate. He states further that four principles for efficient organizational design ultimately determine the type of organizational structure that evolves: the asset fixity principle, the uncertainty principle, the externality principle, and the hierarchical decomposition principle. The first two principles concern us here.

The asset fixity principle states that as assets become increasingly specialized or unique, the desirability of the spot market as a mechanism for exchange diminishes (Williamson 1981, p. 1548). Assets exhibiting this "specificity" have fewer alternative uses than do more general purpose assets and, as a consequence, the cost (and therefore risk) of transferring them to alternative uses is greater. To illustrate, consider a tomato grower who has invested in a costly mechanical harvester designed solely for the purpose of picking tomatoes. Since this machine is limited to tomatoes, the owner faces a continuing risk of nonuse in the event area crops fail. Because of the harvester's design, the cost of modifying the machine to harvest other crops such as green beans or potatoes would be prohibitive. As the specificity of an asset (like the tomato harvester) increases, so does the divergence between the asset's acquisition and salvage prices. This divergence between an asset's purchase and resale values gives rise to rents

that are potentially appropriable through market transactions if one of the exchange agents decides to act opportunistically (Klein, Crawford, and Alchian).

The uncertainty principle states that the spot market becomes a less preferred exchange mechanism as the uncertainty surrounding the transaction increases (Williamson 1979). Uncertainty creates incentives for some market participants to act opportunistically against those in a more vulnerable position. This, in turn, creates incentives for those who are vulnerable to seek other ways of handling the transaction, such as vertically integrating, that protect them from this type of opportunistic behavior. In the case of farm inputs, increasing specialization implies a corresponding increase in uncertainty. For instance, farmers are unlikely to regard the risks associated with the purchase of diesel fuel in the same category as those associated with purchasing a costly host-specific insecticide demanding application precision. Clearly the impact of an unforeseen event, like unfavorable weather, weighs heavily in the farmer's decision when considering the purchase of this specialized input. This characteristic provides decision makers with an incentive to move from autonomous market contracts to their less risky counterparts, such as contingent contracts and vertical integration (Staatz).

Growing agricultural specialization is forcing farmers to purchase (rather than produce on the farm) a greater proportion of their total input needs. Individual farmers are faced with larger and more risky investments as these inputs become more asset-specific. Farms in general are being pushed to greater levels of efficiency, and, as a result, the spread between the high-cost and low-cost producer appears to be narrowing (Goldberg; Hopkin and Associates). Efficient farmers, with their large investment but small cost advantage, are more vulnerable to outside conditions. They can no longer afford simply to ride out the downside of a price-cycle while the inefficient (or highly leveraged) producers are eliminated.

Regional input manufacturers are similarly confronted with growing levels of risk. Many of the manufacturing plants in the farm input sector, especially for fertilizer and agricultural chemicals, were built in the 1970s and now have excess capacity. The investments in these plants are highly asset-specific. In a depressed and more competitive agricultural economy, cooperatives are seeking new exchange arrangements to help them avoid future risks that arise from making investments in such highly specific assets in an uncertain market.

Hence, increasing specialization, affecting both the inputs and the capital used to produce them, has made the market environment less predictable. Those firms that rely on autonomous market contracting for transactions involving asset-specific inputs or investments expose themselves to greater risks and costs.

The second manner in which inputs are affected by asset specificity is in the coordination process. With agricultural specialization, not only are inputs themselves becoming more specialized, but the number of inputs used for the maintenance of a particular crop has grown considerably. "Broad spectrum" inputs (e.g., agricultural chemicals) have been replaced by "target-specific" inputs using refined application techniques. Knowing

when, where, and how to apply these inputs is requiring higher levels of precision, more sophisticated and costly equipment, and increasingly specialized knowledge. In other words, the risks to both buyers and sellers are greater since both the application period for the farmer and the distribution period for the seller have shrunk appreciably. With specialized inputs, higher levels of precision are necessary both to sell and use the products. Clearly, even small errors in judgment can have important adverse effects on either party.

## **An Empirical Analysis**

The information used in this research came from case studies of federated cooperatives. Officials of three regional firms, nine affiliated locals (three per regional), and eighteen farmer-members were interviewed. Firms were selected on a purposive basis from predetermined criteria, including problems of member commitment. Regional cooperatives also had to be major suppliers of farm inputs.

The following analysis illustrates how conditions of asset fixity and uncertainty influence the exchange process in the farm input supply industry.

### **Input Fungibility and Management Practices**

#### **A. A Classification of Inputs**

Table 1 identifies major inputs of farm supply cooperatives and ranks them according to their degree of specificity. These rankings represent a consensus opinion of experts within the farm supply divisions of those regionals interviewed.

Fungibility refers to the degree to which an input is interchangeable across uses. There are at least three dimensions to fungibility. Perhaps the most common is in terms of the input's purpose or function. The extent to which different inputs, with their idiosyncratic functions, can be applied to different uses characterizes their degree of specificity. Time, in the sense of an input's use-period, is a second crucial element affecting an input's fungibility. As inputs become more specialized, their use is designed for greater degrees of precision and, consequently, their performance is increasingly conditional on close adherence to application guidelines. In this sense, the length of an input's use-period is inversely related to its degree of specificity. A final dimension to input fungibility relates to physical location and the extent to which an input is interchangeable across geographic regions. For instance, seeds are limited in terms of geographic substitutability because of differences in plant photosensitivity. Referring to table 1, petroleum is classified as general purpose because it satisfies all three dimensional requirements. It can be readily used in any part of the country, for a large array of equipment, and at nearly any time of the year. Conversely, many agricultural chemicals are designed for a specific crop, to arrest a specific pest, and to be applied at a precise time when the pest (i.e., bacterium, virus, or insect) is most vulnerable. Pre-emergent corn herbicide, for example, was developed for a specific crop and should be applied after seeding but prior to plant emergence. This affords an effective

**Table 1.—Major Farm Inputs of Farm Supply Cooperatives and Their Degree of Fungibility<sup>a</sup>**

Type of Input	Fungibility		
	GP	MED	AS
1. Petroleum _____			
a) Oil	x		
b) Gas (Liquid)	x		
c) LP	x		
2. Agricultural Chemicals _____			
a) Insecticide			x
b) Herbicide			x
c) Fungicide			x
3. Fertilizer _____			
a) Nitrogen		x	
b) Potassium		x	
c) Phosphorous		x	
4. Feed _____			
a) Complete feeds		x	
b) Supplements		x	
c) Premixes		x	
5. Seeds _____			
a) Hybrids			x
b) Other			x

<sup>a</sup> This taxonomy of inputs represents general categories only; it is not intended to be an exhaustive list. GP = general purpose; MED = medium; AS = asset-specific.

use-period of roughly one week. Fertilizer, on the other hand, is interchangeable among different crops, although it is moderately restricted by optimal application periods. These periods constitute a window of a few weeks; hence, this input falls within the middle category.

The prohibitive costs and risks associated with highly specialized inputs have prevented their manufacture by case-study firms. Respondents pointed out that historically cooperatives have been averse to investing in inputs involving high research and development (R&D) and marketing costs, which are characteristic of specialized inputs. The respondents attribute this behavior to farmers' belief (perhaps due to years of positive reinforcement) that government is responsible for undertaking necessary but risky R&D to help mitigate the risks inherent in agriculture. As a consequence, cooperatives limit their marketing activities to wholesaling and retailing of highly asset-specific inputs. Three important components of cooperatives' wholesale and retail operations are the planning process, alternative exchange arrangements, and handling practices. The following section examines how an input's specificity affects various aspects of these three marketing activities.

## **B. Management Effects**

*1. The planning process.* The planning component is very important for inputs exhibiting a high degree of asset-specificity. Because these inputs

are designed for a specific use, their duration of use may be extremely small. This affects the reliability of forecasting demand for both manufacturers and distributors. Manufacturers must ascertain demand within the various segmented markets and, depending on the type of input and its degree of asset-specificity, account for the influence of unforeseen events (like weather) that significantly alter this demand. The manufacturers must also contend with substitute products from competitors, about which the manufacturers may know little at the time they are making major marketing decisions.

Distributors must deal primarily with logistical constraints. The planning process requires considerable time and expense because of the segmented markets associated with specialized inputs. This segmentation is related directly to the three dimensions of fungibility mentioned earlier. Decision makers must ascertain with more precision where sales are likely to occur and what quantity will be demanded in that market. These decisions affect strategic factors like locating central distribution points and deciding on the proportion of inventories to hold at central terminals versus localized facilities. Logistical tradeoffs are involved. To the extent one anticipates demand correctly, locating inventories close to the point of sale is desirable. Respondents pointed out, however, that when demand estimates are wrong, readjustment is easier and quicker if inventories are more centrally located. Also, the likelihood of incorrectly estimating demand increases with market segmentation. Hence, not only is the probability of error greater for asset-specific inputs, but the consequences of error can be more significant than for general purpose inputs. Because of the specialized function and limited application period of highly specific inputs, failure to position inventories correctly could eliminate further opportunities to sell the product until the following season.

2. *Exchange arrangements.* Purchase commitments are useful for all classes of inputs but are more desirable for specialized inputs because of the greater inherent risks. Manufacturers of specialized inputs and regional cooperatives habitually establish written exchange agreements prior to each production year. In addition to specifying standard terms of trade (like price, quantity, quality, and date of delivery), many of these contracts include a stewardship arrangement. These arrangements specify responsibilities of both parties (buyer and seller) and often include safety, quality control, and technical training. Largely through use of market power, regionals have also succeeded in negotiating special arrangements to mitigate some of the risks of purchasing these inputs. Two interrelated arrangements are (1) a buy-back or return arrangement and (2) a credit rebill program. In a buy-back arrangement the buyer has an option to return some portion of the total quantity of input purchased (usually 10-20 percent) to the manufacturer. This percentage is renegotiated annually and is based on current market conditions. Regionals may in turn pass this option on to their local affiliates. The credit rebill program is a component of the buy-back agreement and was initiated to eliminate needless movement of inventories. In the event the regional has overpurchased inputs, the manufacturer simply reimburses the regional for the amount remaining unsold and the following season resubmits the bill for this amount.

3. *Handling practices.* There are two ways in which handling practices differ between specialized and general purpose inputs. The most important has to do with technical and safety procedures, especially for agricultural chemicals. Handling and storage of these chemicals require technical expertise both in terms of use and safety. These precautions must be implemented throughout the entire vertical system, and players at each stage of the system must be concerned with the high cost of the care, distribution, and final application of the chemicals. A second manner in which handling practices differ for asset-specific inputs is inventory security. Costly inputs that have little volume or mass are more subject to theft than are low-cost, bulky items. In both cases contracts are used to specify each party's legal obligations to the product. Responsibility is generally shared, albeit unequally. As producer, the manufacturer ultimately bears the greater risk. The regional's accountability is influenced heavily by the nature of the exchange agreement, such as whether the cooperative actually takes ownership of the product or acts simply as a distributing agent.

### **Asset-Specificity and Risk**

There are different types of risk that participants face depending on their location in the vertical system. This section synthesizes perceptions of regional, local, and farmer respondents regarding the risks associated with specialized inputs. The views of the different groups of participants were remarkably similar. Risks are evaluated for the three major system players: farmers, locals, and regional cooperatives.

#### **A. Farmers' Risks**

Currently there are three major risks confronting farmers when using asset-specific inputs. The first is price risk—the risk that prices may change unfavorably after the input has been purchased. Use risk is a second concern of farmers, and it has three components: (1) an inability to utilize the input because of some unforeseen event, such as bad weather; (2) misapplication risk—because these inputs are more concentrated, the likelihood of under- or overapplication is significant; and (3) diagnostic error—this is directly influenced by the continued proliferation of highly specialized inputs. As this arsenal of inputs continues to expand, the probability of judgment error is more likely. Finally, the third risk farmers face is “carry-over”—an unintended residual that may be particularly harmful under extreme agro-climatic conditions. For example, the combination of dense soils and drought can result in an unanticipated herbicide residue that can damage subsequent crops.

When farmers delay purchases of inputs until the last minute because of uncertainties about being able to use the input, they have no way of reducing price risk. This behavior shifts the risk of being unable to use the input upwards to the local (cooperative) firm. Farmers have adapted to misapplication and diagnostic errors by moving increasingly toward custom application services.



## **B. Locals' Risks**

Respondents mentioned inventory and misapplication risks as the two most important risks facing local cooperatives. These firms also distinguish between (merely) specialized and highly specialized inputs. The former category constitutes "manageable" risks, in which adverse effects are mitigated through special buy-back or exchange programs. Exchange programs are coordinated by the regional cooperative and involve a simple exchange (money for inputs) between two or more locals that are either long or short on a specific input. Some general managers have also instituted aggressive marketing programs in efforts to reduce inventory errors. Field staff try to reduce inventory errors by working closely with farmers to ascertain their needs and to offer information on products and services available. In this manner cooperatives are able to reduce some of the uncertainty surrounding demand for specialized inputs. Highly asset-specific inputs represent a category of special concern to local managers. The combination of high cost and uncertain demand has relegated these inputs to a "special order only" status. In other words, these items are purchased only upon request and are frequently listed under a separate accounting system in which costs are not pooled with remaining inputs.

As locals move more into services like fertilizer and chemical application in response to member demand, these firms will face greater risks of making diagnostic and application errors. Managers believe, however, that given the trend toward growing agricultural specialization, this venture is a necessary undertaking for cooperatives. Cooperatives offer a mechanism whereby members can pool their resources to hire highly trained technicians who have the knowledge and expertise to cope with these problems effectively. With the local co-op assuming this responsibility, the growing risks and costs to individuals can be reduced substantially, albeit at some increase in risk to the local cooperative.

## **C. Regionals' Risks**

A combination of high costs, high risks, and low margins has stimulated the development of very formalized exchange arrangements between regional firms and manufacturers of highly specific inputs. Regionals have been effective at shifting their risks to manufacturers (as have locals and farmers), although this has resulted in higher prices to buyers. All exchange between regionals and manufacturers is now undertaken on a written contractual basis for asset-specific inputs. These contracts are of two basic types. In the more traditional agreement, the regional actually purchases the input and negotiates for special programs that reduce inventory risks. Under more recent arrangements, regionals act merely as distributing agents; they contract to handle certain inputs and for their services receive a percentage of profits based on sales. Although the regional never actually takes ownership of the supplies, it actuates all other services (e.g., buy-back programs) for the manufacturer. Regional and local cooperatives are satisfied with this latter arrangement, asserting that it involves less risk, has good profits, and adequately meets members' needs.

## Input Fungibility and Economic Coordination

Manufacturers of asset-specific inputs are trying to find new ways to establish a more secure foothold in agricultural markets. There are two major reasons for this desire to stabilize demand. One relates to the highly sensitive nature of asset-specific inputs to "exogenous" forces. (For farm inputs, these outside forces are largely weather related.) These external forces cause demand to fluctuate widely, thereby complicating production planning. Second, despite a relatively concentrated industry, the environment surrounding these inputs is surprisingly competitive. Competition is intense because the user group (farmers) is very tightly circumscribed and the seasonal use period is so restrictive that even minor marketing errors by input distributors can create major problems. For example, missing the strategic placement of an agricultural chemical by even a few days may result in losing that market altogether. This is particularly true for pest infestations, where the window of opportunity is often extremely small.

Manufacturers of specialized agricultural inputs recognize that cooperatives have a well-established and intricate network to reach the farmers who use these inputs. Tapping into a well-established distribution network is critical for specialized inputs because market opportunities can come and go overnight. Given the intense competition among independent manufacturers, cooperatives should be ideally positioned to extract favorable concessions. A limiting factor is that cooperative federations (regional and local firms) do not represent a unified coalition. Manufacturers have responded to this lack of unity by segmenting the federation and, consequently, undermining the potential bargaining power of many cooperatives.

Manufacturers appear to approach cooperative federations using several strategies. First, by means of a contractual arrangement, manufacturers use regional firms as the primary distribution and merchandising channel for their products. But the manufacturers recognize that operating through the regional only ensures access to the "loyal members" of the regional. Hence, the manufacturers attempt to capture the remaining market segments ("disloyal" members) by selling directly to the local or to the farmer. In the case of locals, manufacturers offer three exchange options to potential buyers: (1) a forward contract in which the buyer pays in advance of receipt of goods, obtains a discount premium, and qualifies for a buy-back program; (2) a forward contract in which the buyer pays on the date of delivery and qualifies for the buy-back program; (3) purchases on an as-needed basis, in which case there is no buy-back agreement. Regional cooperatives also offer these same programs to locals, but many of these locals are not loyal customers, usually because they are highly price-sensitive. Manufacturers are ideally positioned to deal with these buyers because of the price advantage they can offer them by eliminating the wholesale distribution step in the distribution chain. In addition, a competing manufacturer may use extremely low prices to undermine the contractual mechanism established by its competitor. This rather common tactic allows a new entrant to establish a foothold in a tightly knit market.

At this point the coordination problem should be viewed in terms of finding the most efficient method (in a systemwide sense) of getting the

input from the source (the manufacturer) to the end user (the farmer). This coordination problem is exacerbated when asset-specific inputs are involved. Let us review this process by starting with the end user.

Farmers are the ultimate users of farm inputs. For various reasons they choose to purchase the majority of inputs on an "as needed basis"; this behavior is prominent for asset-specific inputs. First of all, only that class of producers who plan future operations in advance tend to forward purchase their inputs. Even those who do forward purchase limit their advance purchases to inputs with relatively little use-risk. Most chemicals, for example, are specialized inputs. Herbicides fall into this category but are generally used habitually each year. Insecticides have extremely high use-risks because their application is based on infestations of particular pests, which are not regularly recurring events. Because farmers have no prior knowledge of their need for highly specific inputs, they purchase these inputs *ex post*. This practice complicates the logistical operations of distributors considerably.

Local cooperatives note that in order to remain competitive, inventories must be positioned in advance as much as possible. Because of the inherent risks and costs of specialized inputs and the unpredictable buying behavior of farmers, however, locals are resigned to mimicking the behavior of farmers by delaying purchases. This effectively shifts supply and coordination responsibilities up to the regional firm.

Traditionally, regionals have based their purchases of highly specific inputs on estimates of future demand. They develop such estimates by exchanging information with manufacturers, which often make their own forecasts of market demand; by drawing on the services of market research firms; and by having representatives work closely with local firms and farmers. But obstacles to efficient distribution and merchandising of these inputs are substantial. Because of the high-cost, low-margin nature of these inputs, investments are both large and risky. Purchasing practices of farmers and locals compound the uncertainty of sales, which in turn complicates the logistical placement and distribution of inputs. In response, regional firms have turned to alternative exchange arrangements with manufacturers. The most recent is a written contractual agreement in which the regional's primary function is to distribute and merchandize asset-specific inputs, with ownership retained by the manufacturer. Under this strategy, all risks to the regional are removed and it receives a percentage of profit based on sales.

Unfortunately, this is only a partial solution to the coordination problem. Even though a more reliable and less risky linkage has been established between the manufacturer and the regional, no similar arrangement is present for the other two participants in the vertical chain. The source of the problem is the eleventh-hour buying decision of farmers—and this is precisely the behavior to which locals, regionals, and manufacturers must react. The problem is that, with asset-specific inputs, the closer the product moves to the end user, the greater is the risk of commitment because of the nonsubstitutable nature of the input. The three dimensions of fungibility are directly related to this problem. Although each participant is affected by this lack of fungibility for asset-specific inputs, the conse-

quences become less severe as one moves up the vertical system. When the manufacturer produces a specialized input, options still exist in the event a market becomes inaccessible (e.g., the manufacturer can relocate the input). Options are still available at the regional level, but less so at the local level because of time and geographic constraints. When the input finally reaches the farmer, those options that were present for upper level participants are now nonexistent. Hence, farmers are making rational decisions based on the needs of their own farm operations, even though this behavior may lead to greater costs to distributors and eventually to the farmers themselves.

Is this purchasing behavior consistent with Williamson's principle of transaction costs for investments exhibiting idiosyncratic characteristics? Williamson's basic assertion is that the confluence of asset specificity, opportunism, and uncertainty provides the primary incentive for trading partners to establish alternative exchange arrangements rather than relying on the spot market. For example, tree fruit growers with large investments in orchards that are specialized, fixed, and long term would want an ensured market at prices sufficient to provide a return on investment. Similarly, processors with expensive and highly specialized equipment would want an ensured supply at prices that cover their investment. Clearly some form of vertical integration or long-term contracts would be in the interest of both parties. In our case, farmers' practice of relying on the spot market for highly specialized inputs seems to contradict this assertion. Let us review some key points.

First of all, distinguishing between "medium" and "highly" asset-specific inputs is crucial. For the sample of firms in this study, formalized agreements are found at all levels of the vertical system for "medium specificity" inputs. This is not the case for highly idiosyncratic inputs where the contracting is limited to manufacturers and regional cooperatives. It is absent at the farmer-local and local-regional levels. This behavior is directly attributable to the tremendous use-risk associated with this class of inputs. Second, the regional component of the cooperative system has established formalized exchange arrangements with the manufacturers. The third, and perhaps most important, point is to recall the ownership characteristics of farmer cooperatives. Even in a federated system, the farmer still owns the regional supplier, albeit indirectly. The farmer, recognizing the prohibitive use-risk associated with the direct forward purchase of asset-specific inputs, has deferred this responsibility to a more logistically positioned and financially capable participant. The cost to the farmer is a higher price but this is small when weighed against the alternative of taking possession of a high-risk, nonredeployable input.

Nor is it clear that local cooperatives would gain by forward contracting these inputs with farmers. Farmers emphasized that entering into a forward contract with their local for highly specific inputs would be attractive only if, in addition to a lower price, the cooperative offered the option of returning the inputs if unforeseen events prevented the farmer from using them. If the local offered such a buy-back provision, the cooperative could often be faced with three separate transactions for a given unit of input: the original forward contract, the buy-back, and (it is hoped) a subsequent

resale of the product. Whether the financial and logistical benefits of forward contracting these inputs offset the costs of such triple transactions is an empirical question. The fact that case-study locals are not forward contracting highly specialized inputs (although they often do forward contract "medium-specificity" inputs) suggests that local managers do not see the benefits of handling highly specific inputs in this way as outweighing the costs.

## Conclusions

Commitment is a continuing problem for farm supply cooperatives, and there is good reason for concern. But concluding that all behavior of farmers is based solely on the desire for short-run profits at the expense of longer-term benefits is an inappropriate generalization. Some actions have resulted in surprisingly efficient methods of distributing specialized inputs. In particular, we have shown that the lack of forward contracting between farmers and their local cooperatives for highly specific inputs is both in the farmers' interest and consistent with the logic of transaction-cost economics. The cooperative system has responded to farmers' needs by developing specialized exchange arrangements between manufacturers of these inputs and regional cooperatives. These arrangements not only ensure that farmers are supplied with these inputs but, at the same time, shift risk from farmer-members upward to other participants in the distribution system who have more capacity to deal with such risk. In this way, the cooperative system is serving the interests of its farmer-members.

## References

- Goldberg, Ray A. "Profitable Partnerships: Industry and Farmer Co-ops." *Harvard Business Review*, March-April 1972.
- Haydu, John J. "Barriers and Opportunities Facing Cooperatives in Improving the Economic Coordination of the Farm Supply Industry." Unpublished Ph.D. dissertation, Michigan State University, 1988.
- Hopkin and Associates. *An Assessment of Restructuring Alternatives for Banks for Cooperatives*. Final report submitted to the Bank for Cooperatives. College Station, Tex., July 1987.
- Klein, Benjamin, Robert G. Crawford, and A.A. Alchian. "Vertical Integration, Appropriable Rents, and the Competitive Contracting Process." *Journal of Law and Economics* 49 (Oct. 1978):297-326.
- Shaffer, James D. "Thinking About Farmers' Cooperatives, Contracts and Economic Coordination." In *Cooperative Theory: New Approaches*, ed. Jeffrey S. Royer, pp. 61-86. Washington, D.C.: USDA ACS Serv. Rep. 18, July 1987.
- Staatz, John M. "Farmers' Incentives to Take Collective Action via Cooperatives: A Transaction Cost Approach." In *Cooperative Theory: New Approaches*, ed. Jeffrey S. Royer, pp. 87-107. Washington, D.C.: USDA ACS Serv. Rep. 18, July 1987.
- Williamson, Oliver E. "Transaction Cost Economics: The Governance of Contractual Relations." *Journal of Law and Economics* 22 (Oct. 1979):233-61.

- \_\_\_\_\_. "The Modern Corporation: Origins, Evolution, Attributes." *Journal of Economic Literature* 19(Dec. 1981):1537-68.
- \_\_\_\_\_. *The Economic Institutions of Capitalism*. New York: Free Press, 1985.