

FARMERS' INCENTIVES TO TAKE COLLECTIVE ACTION VIA COOPERATIVES:
A TRANSACTION COST APPROACH

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This paper uses concepts from transaction cost economics to examine two questions: (a) Under what conditions do farmers benefit from collective action? and (b) Under what conditions is that **collective** action likely to take the form of a farmer-owned cooperative firm?¹ The transaction cost approach hypothesizes that the structure that an economic enterprise develops in a particular environment reflects the enterprise's attempt to minimize its production and transaction costs. Organizational forms that are most successful in reducing these costs in a given environment tend to become dominant there (Williamson 1981). By examining the conditions under which collective action via cooperatives offers advantages to farmers, the transaction cost approach can therefore be used to highlight the situations in which farmer cooperatives are most likely to arise as well as the situations in which cooperatives may be at a competitive disadvantage compared with investor-owned firms (IQFs).² The incentives to maintain a cooperative once it is formed may differ from the incentives that gave rise to its formation. This paper discusses only the incentives to form a cooperative; for a discussion of the incentives to maintain a cooperative once it is formed, see Staatz (1984, pp. 206-8) and LeVay.

The paper is divided into seven sections. The first briefly describes the transaction cost approach to analyzing the structure of organizations, and the second through fifth discuss four basic principles of that approach: the asset fixity principle, the uncertainty principle, the externality principle, and the hierarchical decomposition principle. The asset fixity principle receives particular emphasis because it underlies many of the traditional arguments for farmer cooperatives. The sixth section discusses how cooperative action may be used to redistribute rights in farmers' favor rather than simply to reduce transaction costs within a given set of property rights. The seventh section summarizes the major arguments of the paper.

The Transaction Cost Approach

The transaction cost approach, as developed by Coase; Williamson; and Ouchi, focuses on how the characteristics of a transaction affect the costs of handling it through markets, bureaucracies, and other forms of organization. A transaction occurs whenever "a good or service is transferred across a technologically separable interface** (Williamson 1981, p. 1544). Transaction costs include the costs of gathering and processing the information needed to carry out a transaction, of reaching **decisions**, of negotiating contracts, and of policing and enforcing those contracts.³ The transaction cost approach argues that the organizational form or "governance structure" that minimizes the sum of production and transaction costs for a given activity will have a competitive advantage and hence tend to dominate that activity.

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A shortcoming of the transaction cost approach is its tendency to take cost structures as given, paying little attention to the ability of different organizational forms to change the distribution of property rights and hence the definition of "efficiency" (Bromley; McNeil). The approach adopted here attempts to broaden the transaction cost approach to look at the design of an organization or association not simply in terms of optimizing within a given set of property rights, but also in terms of the ability of different designs to change the distribution of rights in favor of those controlling the organization or association. Within this broadened approach, the paper examines the traditional arguments for farmer cooperation, outlining the conditions under which agricultural cooperatives may provide benefits to their members that are unavailable or more costly elsewhere.

Williamson (1981) argued that four principles for efficient organizational design determine the type of organizational structure that will tend to dominate a particular line of economic activity (where efficiency is defined as the ability to minimize transactions costs): the asset fixity principle, the uncertainty principle, the externality principle, and the hierarchical decomposition principle. As will later become apparent, most traditional justifications for farmer cooperatives, such as the competitive yardstick argument, can be subsumed under these four principles.

The Asset Fixity Principle

The asset fixity principle states that as assets become more specialized or "specific," autonomous market contracting becomes a progressively less efficient means of allocating them (Williamson 1981, p. 1548). An asset becomes more specific to a particular use or user as the cost of transferring the asset to alternative uses increases. This cost may reflect technical characteristics of the asset itself, the spatial dispersion of production, or poorly functioning factor markets. As an asset becomes more specific, its resale or salvage value diverges from its acquisition value. As long as the value of the asset in use lies between the asset's acquisition and resale or salvage value, the asset will remain fixed in its current use; the owner will have no incentive to invest or disinvest in the asset in response to product price changes (Johnson).

Asset Fixity and Opportunism

The divergence between the acquisition and resale or salvage value of an asset gives rise to rents that are potentially appropriable through market transactions if insufficient competition in the market permits one of the parties to the transaction to act opportunistically (Klein, Crawford, and Alchian; Staatz 1984, chap. 2). Hence, the combination of small numbers in the product market combined with asset fixity, which itself is often a function of poorly functioning factor markets, can lead to situations to which farmers are at considerable risk in their dealings with their trading partners.⁴

For example, consider a farmer who invests in specialized fruit production equipment and trees to supply a processing firm that enjoys some degree of

local monopoly. Assume that the annual rental-equivalent price of those assets (calculated with respect to their acquisition price) is \$300,000 and that the farmer incurs \$100,000 in variable costs per year. The farmer made these investments based on the processor's promise to pay \$500,000 per year for his or her fruit, yielding the farmer a profit of \$100,000. Further assume that the most those assets can yield in their next best alternative use is a gross revenue of \$100,000 per year. Once the farmer has invested in the specialized assets, the processor may be tempted to renege on the agreement and strategically lower the price because it realizes that as long as it offers at least \$200,000 it will still pay the farmer to deliver the fruit to it, even though its action imposes a capital loss of up to \$200,000 on the farmer.

Obviously, the processor cannot habitually act in this way because if it does the farmer will be both unable and unwilling to maintain his or her investment in fruit production. Nonetheless, if a large proportion of the farmer's production costs are sunk at the time of the transaction, he or she is particularly vulnerable to this sort of short-term opportunistic behavior by his or her trading partner. Farmers may attempt to counteract this opportunism by forming an association to: (a) bargain collectively with the processor and threaten strikes if contract terms are ignored or (b) lobby for government action to ensure the sanctity of contracts. In many instances, however, even with a strong farmer association, it may be more costly for farmers to try to enforce contracts with another firm than to internalize the transaction by integrating forward via the creation of their own cooperative firm. The incentives for farmers to integrate vertically via a cooperative firm to avoid opportunistic behavior are greatest where the proportion of sunk costs to total costs at the time of the transaction is high and the product is highly perishable, making its transfer to alternative markets on short notice very difficult. Fruits, certain vegetables, and dairy products are examples.

If an IOF is threatened by potential entry of competing firms, it may forego short-run opportunistic behavior to maintain its market position (i.e., it may practice limit pricing). This implies that the market share of cooperatives would be smaller in rapidly expanding markets, where the threat of entry of competing IOFs is greater, than in markets where demand is static or declining. In static or declining markets, IOFs may have little to lose by acting opportunistically. Such behavior may therefore create incentives for farmers to integrate forward via cooperatives in these markets. This may partly explain why U.S. farmer cooperative firms historically have expanded their memberships and market shares during recessions, when markets for **agricultural products** have typically stagnated or shrunk (Heflebower, pp. 45, 76, and 77).⁵

An IOF may itself face opportunistic behavior on the part of farmers, particularly if the IOF has a large number of specialized assets at risk and farmers have the option of reneging on their contract obligations and dealing with other firms. Fear of such opportunistic behavior may make private investors reluctant to undertake certain types of socially beneficial agribusiness activities that also would be privately profitable if opportunism were absent. Forms of vertically integrated ownership, such as

farmer cooperative firms, may, **by** attenuating such opportunism, help fill these important "empty niches."*⁶

Asset Fixity and the Exercise of Market Power

Baumol, Panzar, and Willig, in their theory of contestable markets, argue that the immobility of assets, **rather**, than industry concentration per se, allows the exercise of market power.⁷ They stress that for market power to arise assets must be immobile on both sides of the market. Although the immobility of assets in farming creates the potential for transferring rents between farmers and their trading partners, the ability to capture these rents depends on assets being immobile in the trading partners' businesses as well. In other words, if barriers to exit are sufficiently high, they serve to deter entry even where positive rents could be earned by entering the market. This barrier to entry allows the farmers' trading partner to act opportunistically.

Immobility of assets (including human capital) may reflect poorly functioning factor markets, high costs of transferring resources due to other reasons such as transport costs, and a high degree of asset specificity. This suggests that the poorer the integration of markets and the more highly specific the assets on both sides of the market, the greater the scope for opportunistic appropriation of rents, and hence the greater the likelihood of cooperatives or other forms of vertical integration by farmers. This is another reason why agricultural cooperatives attract increased membership and expand their activities during hard times, when alternative employment opportunities for farmers and their assets are few and hence exit from farming is difficult. It also partially explains the higher incidence of cooperatives in subsectors such as dairy and fruit, in which assets on both sides of the market tend to be highly specialized (milking parlors, orchards, and processing plants), **than** in other subsectors where assets are more substitutable among uses.⁸

The analysis also suggests that as product and factor markets become less fragmented, the asset fixity argument for the creation of farmer cooperative firms becomes less compelling. If, however, greater market integration is accompanied by increased asset specificity (including human capital specificity), justification for vertical integration may still remain.

The asset fixity principle is involved in two of the most common rationales for farmer cooperative firms and associations: the need to build countervailing power and the need to preserve market access.

Countervailing Power

One of the most common justifications for farmer cooperation is that through collective action farmers are able to counterbalance the market power of their trading partners, leading to more equitable and efficient market outcomes (Galbraith). Although this argument arises most often with respect to cooperative associations, such as farmer bargaining associations, it applies to farmer cooperative firms as well. Cooperative associations or firms use their **countervailing power** to raise farm incomes in two ways:

through redistributing existing income in the farmers' favor and through increasing the efficiency of the economic system.

Countervailing Power and Income Distribution--Advocates of collective action by farmers have long argued that markets in which farmers face highly concentrated input, marketing, and processing industries generate a fundamentally unjust distribution of income, both in terms of the income received by farmers as a whole compared to other participants in the economy and in terms of the inequality of incomes among farmers that results from merchants playing one farmer off against another. By uniting in a bargaining association, farmers may be able to redistribute income in their favor if the association can effectively control enough of the supply to influence prices and force IOFs to treat all members of the association equally.⁴

Much of the potential of farmer cooperatives to use countervailing power to redistribute income lies in the ability of these associations to limit the appropriation of rents by farmers' trading partners. The creation of a farmers' collective bargaining association or a farmer-owned firm may limit the scope for such opportunistic behavior by reducing the ability of an IOF to act as a discriminating monopsonist (through forcing the firm to treat all farmers equally) and by increasing the actual or potential competition facing the IOF.¹⁰ In addition to redistributing income in farmers' favor, the reduction in the opportunistic appropriation of rents also may affect the level of investment in agriculture, as discussed later.

Supporters of cooperative firms sometimes argue that in addition to redistributing income in farmers' favor, a system that includes cooperatives results in a more desirable regional distribution of income than a system dominated entirely by IOFs. Large IOFs, it is argued, extract profits from farming communities and channel them to metropolitan financial centers rather than reinvesting locally. In contrast, say these advocates of collective action, cooperative firms rebate net margins to patrons who invest them locally, leading to higher local multipliers. The formation of cooperative firms therefore may appeal to farmers not only as a means of increasing farm income but also as a way of strengthening rural communities and redistributing power in society.

Countervailing Power and Economic Efficiency--The promise of increased economic efficiency through countervailing power also may induce farmers to form cooperative associations or firms and the state to support their creation.¹¹ Cooperative bargaining associations may increase efficiency by transforming the market relationship between farmers and their trading partners from one approaching simple monopoly or monopsony to one approaching bilateral monopoly. (See Henderson and Quandt, pp. 244-49.) If farmers form a cooperative marketing or supply firm to compete directly with IOFs instead of simply bargaining collectively, such competition may improve economic efficiency by compelling the IOFs to expand their output and increase their X-efficiency (Leibenstein). Such competition also may reduce market segmentation because the stockholder-customers of cooperatives may pressure management to provide information, such as open formulas for feed and fertilizers, that aids the customers in making buying decisions, even though providing such information does not directly profit the cooperative firm.¹²

Perhaps the most important way farmer cooperative firms may increase economic efficiency is by decreasing the threat of opportunism in the face of fixed assets, thereby encouraging investment in specialized assets in farming and marketing facilities that can increase productivity. This advantage of cooperatives may be particularly significant where the minimum efficient size of operation in marketing and processing is large relative to the market and hence the threat of monopoly or monopsony is very real.

Preservation of Market Options

The argument that agricultural cooperative firms are needed to preserve the market options of farmers, particularly when **IOFs** exit a market, is explicable largely in terms of the asset fixity principle. The prospect of suffering large capital losses on illiquid farm assets should market access be lost often motivates farmers to purchase investor-owned processing or supply facilities that are closing because of poor earnings and convert these facilities into cooperative firms. It is sometimes argued that farmers can afford to operate marketing or farm supply facilities that **IOFs** have abandoned in favor of more profitable investments elsewhere because farmers take into account the joint profitability of farming and the marketing or farm supply operations, not simply the profitability of marketing or input supply alone. Whereas an **IOF** can exit the industry without having to take into account the costs its departure imposes on its farmer-clients, cooperative firms, because of their integrated nature, do take those costs into account. Implicit in this argument is the idea that if **IOFs** did take the joint profitability of farming and their marketing or farm-supply activities into account, the **IOFs** would find it attractive to remain in the industry.

This argument by itself is too facile. If the joint farming-input supply (or marketing) operation is profitable but marketing or input supply alone is not, why could not farmers and the **IOF** renegotiate their contracts, redistributing some of the profits from farming so that the **IOF** could stay in business? Indeed, if pricing of farm products is competitive, such a redistribution of profits should take place automatically through the market. There are several possibilities why this redistribution of profits may not occur:

1. If there is no collective bargaining by farmers (or if such efforts are not effective--e.g., because of free-rider problems), if markets for farm products are competitive, if cost structures differ among the farms served by the **IOF**, and if the **IOF** cannot price discriminate among its farmer customers, then competition among farmers will redistribute rents only up to the level of the rents previously earned by marginal producers.¹³ Inframarginal producers still may earn rents at the competitive price, and these farmers stand to lose those rents if the **IOF** exits the market.
2. If, instead of pricing according to a competitive market, farmers bargain collectively with the **IOF**, they may refuse to make price concessions because they do not believe the **IOF** is in serious financial trouble, a belief engendered by an unwillingness of the **IOF**

to open its books to the farmers. In this case, an advantage of unified ownership of farming and marketing or input supply facilities is an improved flow of information among system participants about the financial health of the different operations.

3. In collective bargaining with farmers, **IOFs** often have to commit themselves to a raw product price before they know what prices they will receive for their processed products. If agricultural production and hence supplies and prices of products are volatile, the **IOF** can incur heavy losses, yet be severely limited in its ability to renegotiate its contracts with growers. Given highly volatile markets, it is difficult for farmers to discern ex ante whether an **IOF** asking for concessions is genuinely in trouble or is simply attempting to act opportunistically.
4. There may be no possible redistribution of profits between farmers and the **IOF** that would simultaneously satisfy both parties' requirements for profitability, yet the overall profitability of the integrated operation may be acceptable to farmers but not to the **IOF**. Farmers may be willing to accept a lower overall rate of return on investment than is the **IOF** to capture the nonmonetary rewards of farming, be assured secure input and output markets, or because farmers have fewer alternative investments open to them than do **IOFs** due to imperfections and transaction costs in the capital market.
5. There may be efficiencies in running input supply or marketing facilities as cooperatives rather than as **IOFs**. These potential efficiencies are discussed later.

The argument that farmers form cooperative firms to avoid capital losses that would accrue if market access were lost suggests, as did the countervailing power argument, that cooperatives would be more prevalent where farmers have a large number of specialized assets at risk. This partly explains why historically cooperative firms in the United States have been most prevalent in those areas where farmers were highly specialized in a few activities.¹⁴

Development of New Farm Activities

Another consequence of the asset fixity principle is that cooperative firms may be more likely to encourage the development of new crops and farming techniques than are **IOFs**, particularly where the **IOFs** are restricted from vertically integrating into farming. A marketing or processing **IOF** may be reluctant to invest in teaching farmers new production techniques because the farmers can potentially use their new skills to produce products for a competing firm. Absent slavery, it may be very difficult for the **IOF** to compel a farmer to sell exclusively to the firm for a long enough period to amortize the firm's investment in specialized human capital in the farmer. There is therefore an incentive to move toward unified ownership of farming and processing to reduce this potential for opportunism. If permitted, **IOFs** may integrate backward into farming;¹⁵ alternatively, farmers may integrate forward into processing. If forward integration takes place via a cooperative firm and if farmers' return on their investment in the firm is

contingent on their continued patronage (see Staatz 1984, chap. 2), then they may be less inclined to act opportunistically toward the cooperative firm than they would be toward an IOF. This greater loyalty to the cooperative would increase the cooperative's incentive to train farmers in new production techniques. Ranade reports that in India, where land ownership ceilings prevent multinational processing firms from integrating backward into farming, multinationals are extremely reluctant to engage in farmer extension work, while cooperative processors are heavily engaged in these activities.

The Uncertainty Principle

The uncertainty principle states that the greater the uncertainty surrounding a transaction the less likely the transaction is to be efficiently mediated by autonomous market contracting (Williamson 1979b). As uncertainty increases, so does the cost of renegotiating contracts; as unforeseen contingencies arise, so does the potential for opportunistic behavior. An increase in uncertainty therefore creates incentives to shift from institutions like the spot market to contingent contracts and vertical integration. Because farmer cooperative firms combine elements of both vertical integration and contingency contracting, ¹⁶ they may offer more ways of dealing with uncertainty than either IOFs or bargaining associations.

Flexibility in Pricing

Because a farmer cooperative operates at cost, the prices it charges or pays farmers are contingent on the firm's earnings. Typically, contingent pricing in cooperative firms is accomplished using patronage refunds. In some lines of business, such as fruit and vegetable processing, farmer cooperative firms have extended contingency pricing to the point where payment for the crop may be spread out for a year or longer following the harvest, with the amount of the total payment contingent on the earnings of the pool in which the crop participates.

Contingent pricing has several advantages in an uncertain environment. It helps firms on both sides of the market avoid the costly mistakes of committing themselves to prices that are either too high or too low in light of changing and not fully known supply and demand conditions. It also renders unnecessary the costly renegotiation of contracts should one party feel it has been treated unfairly in light of the evolving market situation. In the presence of imperfect capital markets, it also allows firms greater flexibility in the timing of their sales. For example, Hamm (pp. 478 ff.) describes how investor-owned processors in the canned fruit and vegetable industry often have to offer special prices to distributors early in the processing season to generate the cash flow necessary to pay farmers for their crops. Cooperative processors, which are not constrained to pay farmers immediately for their crop, have greater marketing flexibility.

In recent years, many investor-owned agricultural processing firms have moved to contingent pricing of raw agricultural products similar to that practiced by cooperatives (Chase-Lansdale). Nonetheless, contingency contracting is likely to operate more smoothly in a cooperative firm. Because farmers own

the firm, have access to its financial accounts, and can discipline the manager through the board of directors, they are less likely to believe that the cooperative is using contingency contracting to act opportunistically toward them. In contrast, unless contingency contracts between farmers and IOFs are based on a formula (rather than a promise to "pay what we can afford**) and permit farmers to verify the IOF's earnings, they may give rise to disputes that are costly to adjudicate.

Reduction of Risk Through Pooling

A commonly cited advantage of agricultural cooperatives is their ability to reduce the variability of farmers' incomes through the pooling of grower returns and expenses across products, time, and space. Pooling may lead to some reduction in risk for individual farmers because fluctuations in the returns for their commodities are counterbalanced by offsetting fluctuations in the returns for other commodities in the pool.¹⁷ This income stabilization function may become increasingly important to farmers as they specialize because in specializing they lose the income stabilization imparted by on-farm diversification.

Although cooperative pooling may provide an income insurance function, for it to be an incentive to establish cooperatives, this form of insurance has to be cheaper than other ways farmers have of stabilizing their income, such as on-farm diversification and reliance on the capital or futures markets. This is more likely to have been true in the past than it is currently. In the past, farmers may have preferred pooling as a means of stabilizing income for at least three reasons. First, the uncertainties in agricultural production and the fragmentation of rural capital markets may have caused lenders to charge a large premium when lending to farmers. Second, pooling often involved fewer transaction costs at the level of the individual farmer than other forms of income insurance. Whereas gaining income stability through the capital or futures markets requires the farmer to undertake several transactions, such as taking out and repaying loans and buying and selling contracts, in pooling the buying and selling decisions are centralized at the level of the cooperative's management. This advantage of pooling probably has been reduced as cooperatives themselves have increasingly turned to hedging in an attempt to stabilize member returns. Third, farmers who believed that the demand for their crop was declining may have seen pooling as a way of transferring income to themselves from producers of more remunerative crops. If a pool includes a broad array of products, substantial income transfers can occur as returns from highly profitable crops subsidize producers of low-return crops. The extent to which such transfers can be maintained, however, is circumscribed by pressures from producers of high-value products to limit pools to a narrow range of crops having similar demand characteristics and to distinguish between different qualities within a pool through a system of premiums and discounts.

Historically, many cooperatives have fluctuated between widely and narrowly defined pools, as management has tried to balance the economies of size in marketing permitted by broad pools against the pressures to limit income redistribution within the cooperative through pooling. In recent years, many

cooperatives have moved to more narrowly defined pools (Staatz 1984, chap. 7).

If the income stabilization gained through pooling has served as an incentive to form farmer cooperatives, one would expect pooling to be most prevalent in cooperatives handling highly perishable products whose prices fluctuate widely (and hence generate very unstable income streams) and for which there are no organized futures markets. Cooperatives handling storable commodities like grains or perishable products like livestock that can be traded on the futures market might operate more on a simple buy-sell basis because their members have the option, not open to producers of other highly perishable products, of trying to achieve some degree of income stability through intertemporal arbitrage of their raw product or through relying on the futures market. This hypothesis is consistent with the experience of U.S. agricultural marketing cooperatives: Most major fruit and vegetable processing cooperatives operate on a pooling basis while most grain and livestock cooperatives simply buy and resell the products of the members.

The Externality Principle

The externality principle states that a firm has an incentive to integrate vertically when participants in adjacent market stages impose negative externalities on the firm (Williamson 1981, pp. 1549-50).

Preservation of Product Quality

A major externality arises when participants in adjacent market stages intentionally or unintentionally debase a firm's inputs or branded products. For example, if a company produces a high-quality perishable product that requires special handling in subsequent stages of the distribution system, negligent handling of the product by distributors can damage the company's reputation with consumers. Because it is often easier to control product quality within the firm than across market boundaries, the company producing the product may vertically integrate to gain tighter control over the distribution system. For example, during the early 1900s California citrus growers perceived that the erratic quality of their products in eastern markets was limiting the demand for oranges and lemons. Much of the early work of the California Fruit Growers Exchange (later Sunkist) was aimed at improving the distribution channels for citrus, partly through vertical integration, to ensure that citrus reaching eastern markets was of consistently high quality (Kirkman).

On the input side, farmers also may have an incentive to integrate vertically, particularly when new inputs, such as fertilizer, improved seeds, and insecticides, are being introduced whose characteristics are difficult to determine ex ante. In such situations, the scope for opportunistic behavior is large. When such inputs are first being introduced, even ethical dealers may not devote full attention to quality control because in the short run it is difficult to demand a premium price for higher quality products when the higher quality is not immediately apparent to the buyer. Concern about building long-term business relationships tempers the tendency to shirk on

product quality; nonetheless, if the costs of entry into and exit from the input supply business are low, incentives for fly-by-night behavior remain. In such situations, the cheapest way for farmers to guard against such opportunism may be to integrate vertically into the input supply business through a grower-owned firm. For example, Southern States Cooperative, a large supply cooperative in the southeastern United States, was formed in 1923 in response to problems that farmers had with the poor quality seed sold by private dealers at that time. 18

Agricultural processing firms attempting to build a strong brand name may face the same problem of assuring the quality of their inputs, particularly their raw agricultural inputs. The problem may be most acute when the processor is encouraging the production of a new crop, and farmers, unfamiliar with the techniques necessary to produce a suitable product, need close supervision. The cheapest way for the processor to assure product quality may be to integrate vertically into farming or to use detailed contracts to require farmers to follow specific production practices. Contracting leads to contract enforcement costs, which may be lower for cooperative firms than for IOFs because cooperative firms potentially have more ways of punishing members who fail to live up to their contracts than do IOFs. Not only can a cooperative include the same noncompliance clauses in its contracts as does an IOF, but members who act opportunistically toward their cooperative may face social sanctions from their fellow farmers as well. In addition, a cooperative can make a member's return on equity in the organization contingent on fulfilling the terms of the contract. 19

Provision of Public Goods

Many of the "competitive yardstick" activities of farmer cooperative firms, such as their leadership in introducing open formula feeds, can be viewed as public goods. Farmers, faced with unsatisfactory performance by IOFs, may form a cooperative firm whose purpose is to force the IOFs, through competition, to improve their service to farmers. If successful in enforcing competition, the cooperative generates benefits that it does not capture itself but which accrue to the farmer-stockholders, as well as to other farmers in the area. No independent IOF has an incentive to generate such positive externalities (although the logic of a competitive market often forces such behavior); it is the integrated nature of farmer cooperatives that leads to their being formed specifically for this purpose. 20

The Hierarchical Decomposition Principle

Earlier sections of this paper have argued that where asset fixity is present, firms have an incentive to integrate vertically to avoid opportunistic behavior by their trading partners. This section uses the hierarchical decomposition principle to examine why such integration is more likely to take the form of farmers vertically integrating into other types of agribusinesses via cooperative firms than IOFs vertically integrating into farming.

Simply transferring a transaction from the market to the internal bureaucracy of a firm does **not** guarantee a **reduction** in transaction costs. Although internalization of the transaction **eliminates** previously incurred selling costs, **these** are replaced by the costs of mediating the transaction within the firm. For **vertical** integration to result in a net savings, the firm **must** be organized internally in a way that allows it to handle the transaction **eff'iciently**. Williamson (1981, p.1550) argues that this is best accomplished **by** following the hierarchical decomposition principle, which he states as follows:

Internal organization should be designed in such a way as to effect quasi-independence between the parts, the high frequency dynamics (operating activities) and low frequency dynamics (strategic planning) should be clearly distinguished, and **incentives** should be aligned **within** and between components so **as to** promote **both local** and **global** effectiveness.

Decomposing the firm's activities into relatively independent subunits helps prevent top management from being swamped with day-to-day operational duties, promotes an orderly flow of information within the firm, and helps managers within a division create an effective set of incentives for their subordinates by making division employees primarily responsible to their division manager, not a myriad of others, as might occur in a less hierarchical organization.

The separation of responsibilities for daily operational decisions, particularly at the farm level, from longer-term strategic planning and marketing decisions would be particularly important for a firm attempting to integrate vertically into farming, as many farm-level managerial decisions are highly **time-** and site-specific. Unless environmental conditions on the farm can be tightly controlled (as, for example, in poultry production), vertical integration into farming may require a higher degree of farm-manager autonomy than most **IOFs** are willing to delegate.

A farmer cooperative firm, on the other hand, represents a looser form of vertical integration than a **vertically** integrated **IOF**, resembling in many ways a contingency contract.²¹ Stockholders in the cooperative firm agree to eschew competition among themselves in their marketing and input supply activities but continue to make the rest of their decisions independently. Cooperative firms therefore allow their members to capture many of the advantages of large-scale marketing, input production, and strategic planning while still permitting farmers to make most of their farm-level decisions themselves. Thus, while there are often strong reasons for vertically integrating between farming and certain marketing and input supply activities, **the** more decentralized nature of cooperatives make them a more efficient means of carrying out that integration than an **IOF**.

Cooperatives as a Means of Redistributing Rights

Farmers often have acted collectively in an attempt to redistribute property rights in society, not simply to reduce transaction costs within a given

distribution of rights. Such collective action usually has taken the form of cooperative associations rather than firms. Because organizing collective action to redistribute rights often involves free-rider problems, however, a cooperative association may attempt to finance its political activities through sales of appropriable goods to its members (Olson). For example, most farm supply cooperatives in the United States were started by farmer organizations that originally were formed for other purposes, mainly political lobbying (Heflebower, p. 75). Farmer cooperative firms that provide their members with goods such as farm supplies as well as lobbying may be an effective means of organizing for political action in those instances where farmers have a strong economic interest at stake, such as in the design of commodity policies, and where laws concerning how these firms spend their net earnings are lax.

Political Activity of Cooperatives

Cooperative associations attempt to redistribute rights not only through the exercise of countervailing power but through direct involvement in the political system as well. Particularly in those areas of agricultural production where public involvement is large, for example because of public health concerns, farmers may feel the need to organize politically to make their voice heard in public decisionmaking bodies. Once organized for this purpose, a cooperative association can be used at low cost to lobby for other issues, such as improved terms of trade. (For example, consider U.S. dairy cooperatives.) As direct government involvement in the agricultural economy increases, lobbying may become the most important function of many cooperatives. In the words of the manager of a large dairy cooperative interviewed by the author:

We can increase returns to our members in two ways: through improving the efficiency of our distribution system for milk and through political action. Increasing efficiency adds pennies to our members' milk checks while political action adds dollars. We allocate our resources accordingly.

Cooperative associations also may be used to channel resources to farmers after the rights to those resources have been won through political action. For instance, tobacco and peanut cooperatives in the United States serve largely as mechanisms to administer price support programs for these commodities. Many dairy, fruit, and vegetable cooperatives implement the provisions of marketing orders, some of which permit price discrimination and other manipulations of supply. In Scandinavia, agricultural cooperatives take on many of the functions of a public agency, helping to coordinate government farm programs and equilibrate the supply and demand for agricultural products (Ollila).

Cooperatives and the Democratic Ideal

Farmer cooperative associations, with their emphasis on member involvement and voting on a basis other than capital contribution, historically have often been formed as part of a broader attempt to promote democratic values and wider political participation in society, particularly in situations

where other social organizations were highly autocratic. Early cooperative organizers in the United States **saw** themselves as part of a larger social movement aimed at redistributing power in society, and much of the early growth of farmer cooperatives, and hence their current competitive position in U.S. agriculture, is attributable to the strength of the populist movement of the late 19th and early 20th centuries. Neopopulist authors such as Kravitz continue to emphasize the importance of democratic cooperation not only as an end in itself, but also as a way of combating the concentration of wealth and power they see as inherent in capitalism. Many cooperative supporters also stress the importance of cooperatives as "training grounds for democracy,"* in which members gain skills they later use in local governments and other organizations (see, e.g., Wills, pp. 25 and 28).

Although cooperation as a goal in itself may have been an important element in the founding of some agricultural cooperative associations and firms, it is unlikely by itself to sustain them, even when they have members with a strong ideological commitment to cooperatives. This is particularly true where the level of competition between cooperatives and **IOFs** is intense, perhaps due to the previous success of the cooperatives, and where there are alternative outlets for democratic participation, such as running for the school board. As the manager of one cooperative firm put it, "currently cooperative loyalty is worth about two cents per bushel."

Summary

Many of the potential benefits farmer cooperative associations and firms offer their members derive from the fixity of assets, both physical and human, in farming and other types of agribusiness. Asset fixity in farming generates rents, which farmers' trading partners can potentially capture by acting opportunistically, provided that asset fixity in the trading partners' business creates barriers to entry or exit that permit the exercise of market power. Asset fixity therefore underlies the arguments that cooperatives are necessary to provide farmers with market power and to preserve their access to markets. This suggests that farmer cooperatives are more likely to arise and convey greater benefits to their members where: (a) Assets on both sides of the market are highly specialized and/or (b) product and factor markets are fragmented, leading to a divergence between the values of the asset in its current use and its value in alternative uses. It also suggests that cooperatives will tend to be more prominent in declining markets than in expanding markets because in declining markets the long-term consequences to farmers' trading partners of acting opportunistically are less severe than in expanding markets, in which the threat of entry of competing firms is higher.

Because of asset fixity, cooperative firms may offer certain advantages over **IOFs** during the early stages of agricultural specialization. Farmer-stockholders have fewer incentives to act opportunistically toward their own cooperative firm than they do toward an **IOF** (provided that their return from the cooperative is contingent on their continued patronage); therefore, the cooperative firm has more of an incentive than an **IOF** to invest in training farmers in new production techniques.

The potential for opportunistic appropriation of rents from farmers is accentuated by the riskiness inherent in agricultural markets. Cooperative firms may offer farmers certain advantages in dealing with risk, primarily through the firms' ability to practice contingency pricing via patronage refunds and to offer members some degree of revenue insurance through pooling. This suggests that pooling will be more prevalent in subsectors like fruit and vegetables, where production and prices are more volatile and other risk management tools such as the futures market are unavailable, than they will be in subsectors like grain, where risk may not be as great and there are alternative ways of managing it.

Farmers also may vertically integrate via cooperative firms to internalize externalities imposed on them by their trading partners. On the output side, farmers' trading partners may pay insufficient attention to maintaining the quality of farm products, particularly highly perishable ones, as they move through the marketing system, thereby depressing farm-level demand for these products. On the input side, farmers may have an incentive to integrate backward when they have no simple way of ascertaining the quality of purchased inputs, such as by simple inspection or by relying on the sellers' reputation. Particularly in the early stages of the industrialization of agriculture, when purchased inputs are just becoming important in farming and input suppliers' reputations are not well established, farmers may have a strong incentive to integrate vertically via cooperative firms to assure input quality.

Farmers also may have an incentive to integrate vertically to provide themselves with goods and services that no IOF has an incentive to produce due to their public good nature. This is particularly true of the "competitive yardstick" services of farmer cooperative firms, the benefits of which accrue not to the cooperative firm as such but to the farmer-members.

In their internal organization, farmer cooperative firms may offer certain efficiencies over IOFs that help offset cooperative firms' possibly higher decision costs.²² In particular, the cooperative structure allows farmer-members to make certain location-specific farm-level decisions individually while allowing other decisions to be made collectively. Therefore, if there are incentives to vertically integrate farming with other stages of production, cooperatives may be a more flexible means of achieving that integration than IOFs, in which central management may be reluctant to decentralize a large number of farm-level decisions.

Farmers do not form or join cooperatives simply to reduce transaction costs; an additional motivation may be to try to redistribute rights in the farmers' favor. Particularly where farmer-members have strong common interests, as in single-commodity organizations, farmer cooperative associations may be an important means by which farmers can unite to take political action. Such an association may evolve into a firm because a cooperative firm also can provide its members with appropriable goods and services as well as a means of organizing political action, thereby overcoming many of the free-rider problems inherent in political organizations (Olson).

Most of the cost savings outlined in this paper could accrue not only to a farmer cooperative but also to an **IOF** that was involved in agribusiness and owned primarily by farmers. In many societies, however, the ability of a farmer organization to attract an initial membership and win concessions from the political system may depend on its being perceived as a democratic instrument of self help, aimed at tempering the alleged rapaciousness of capitalism. In this sense, it may be true, as Kravitz claims, that the process of cooperation is inseparable from the results of cooperation.

Notes

1. van Ravenswaay discusses the need to distinguish between a cooperative association (i.e., an organization to promote collective action by farmers, such as a bargaining association or a lobbying group) and the firm owned by a cooperative association.
2. The transaction cost approach could be used to compare farmer-owned cooperatives with other forms of economic enterprise as well, such as worker-owned firms. Due to space limitations, this paper only presents comparisons between farmer-owned cooperatives and **IOFs**.
3. Williamson (1981) pointed out that all transaction costs derive from a combination of bounded rationality (which reflects both imperfect information and a limited capacity to analyze it) and opportunism, which he defines as "self-interest seeking with guile." Given imperfect information about the future, all contracts are necessarily incomplete. If people were never opportunistic, however, incomplete contracts would not lead to contract enforcement problems; contracts would simply state that if unforeseen contingencies arose the parties would act in a manner acceptable to all.
4. See Johnson and **Quance** for a detailed discussion of the factors that contribute to asset fixity in agriculture.
5. Declining markets, leading to an increase in cooperatives' activities, may result from changing consumer preferences as well as from recessions. For example, during the 1950s and **1960s**, when demand for canned fruits and vegetables was growing, the market share of investor-owned fruit and vegetable processors was high. With declining demand in the 1970s and **1980s**, farmer cooperatives have come to dominate the processing market.

IOFs may have another important advantage in markets that are expanding: the ability to respond rapidly to emerging market opportunities. Cooperatives, with their higher costs of collective decisionmaking, may be less adept at seizing such opportunities.
6. See the section on the hierarchical decomposition principle for a discussion of why vertical integration by farmers into other agribusinesses is more likely than vertical integration by **IOFs** into farming.

7. For concise summaries of this argument, see **Baumol (1982a, 1982b)** and Rhodes.
8. Heflebower, in reviewing the history of farmer cooperative firms in the United States, concluded that, "Cooperative marketing has developed most vigorously where farmers specialize in one or a few products and have substantial investment that cannot be diverted to other **use**" (pp. 72-73). For more recent evidence, see Wilkins.
9. There is strong debate over whether bargaining associations can effectively influence supply. See, for example, Baron.
10. Implicit in the creation of a bargaining association is the threat that the association may form a firm to compete with the **IOFs** if they do not bargain in good faith. For example, the California Canning Peach Association, a bargaining cooperative, was instrumental in founding California Cannery and Growers (Cal Can), which until 1983 was one of the largest fruit and vegetable processing cooperatives in the United States. Cal Can was founded in part because investor-owned processors were cancelling the contracts of farmers who participated actively in the bargaining association.
11. Most farmers are interested in how cooperatives affect overall economic efficiency only to the extent that such improved efficiency results in more favorable net farm revenues. Supporters of agricultural cooperatives, however, have often argued that the efficiency-improving effects of cooperatives' countervailing power justify state support of farmer cooperation.
12. In the United States, farmer cooperatives pioneered the use of open formula feeds and fertilizers (Heflebower, pp. 78-82). Cooperatives may, nonetheless, have incentives to differentiate their products, both through advertising and member relations programs, to increase member loyalty. Indeed, cooperatives often stress their member orientation as a distinctive quality of their service.
13. A marginal producer is defined here as the highest cost producer among those who collectively generate the minimum total volume of patronage necessary for the **IOF** to stay in business.
14. There is substantial evidence on this point. For dairy, grains, and poultry, see Heflebower (pp. 44, 52, and 71). For vegetables, see Hamm (p. 501).
15. Around 1900, many of the large national fruit and vegetable processors in the United States were vertically integrated into farming, in part to assure the quality of their raw product inputs. After the human capital to produce these products had been built up and sufficiently amortized, the firms sold their farming operations and met their raw product needs through contracting with farmers.

16. See Shaffer, "Thinking About Farmers' Cooperatives, Contracts, and Economic Coordination," in this volume.
17. There is no guarantee that pooling will stabilize returns to all participants in the pool. Producers of "stable" crops may find their returns destabilized by pooling.
18. As an alternative to forming their own firm, farmers may unite in an association to lobby for greater direct government regulation of investor-owned input supply firms to ensure the quality of their products. Whether this approach is more cost effective than ensuring product quality through creation of a farmer cooperative firm depends in part on how open the political system is to farmers. **For a discussion** of the historical experience in the United States, see Heflebower (pp. 78-82).
19. Staatz, "The Structural Characteristics of Farmer Cooperatives and Their Behavioral Consequences," in this volume.
20. The public good nature of many of the activities of farmer cooperatives leads to free-rider problems, which are analyzed in Staatz, "**A** Game-Theoretic Analysis of Decisionmaking in Farmer Cooperatives," in this volume.
21. See Shaffer, "Thinking About Farmers' Cooperatives, Contracts, and Economic Coordination," in this volume.
22. See Staatz, "The Structural Characteristics of Farmer Cooperatives and Their Behavioral Consequences,"* in this volume.

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