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Abstract

Our purpose in this paper is to highlight the role of organizational structure and incentives in the design of contracts between buyers and sellers of agricultural products. In particular, we consider how differences between investor-owned (IOF) and producer-oriented (POF) firms, and differences between alternate types of POFs, may affect the types of contract terms those respective organizations are likely to prefer in their contracts with agricultural producers. New institutional economics theories of contracting, agency and property rights allocation suggest that cooperative contractors may be able to design contracts that enhance economic efficiency that IOFs cannot easily replicate

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Consolidation and increased coordination throughout the agri-food sector are rapidly reshaping the role of cooperative organizations in agriculture. Increased concentration, both up and downstream, raises the specter of the traditional cooperative role of counter-balancing market power. However, increasing demands for coordination among players throughout the agri-food system point to a different role in which cooperative organizations may have a unique advantage.

Particularly at the producer level, where large-scale vertical integration of productive resources is relatively impractical, contracting plays a critical role in coordinating the activities and interests of trading parties in agriculture. The structure of these myriad contractual arrangements is only beginning to be explored (Sykuta and Parcell). While some researchers have studied the effects of differentiated producer characteristics on contract performance (e.g., Goodhue), little attention has been paid to the identity or nature of the contracting organization when examining the structure of agricultural contracts.

However, one might think it reasonable to suggest that a producer-owned contractor should be better able to contract with (owner-member) producers than would an investor owned firm (IOF). Indeed, Balbach found that contracts between sugar beet producers and producer-owned refiners were not only structured differently than those with investor-owned refiners, but they were different in a manner that improved both processing efficiency and producer returns. This is but one example of one particular dimension of contract design (namely, the interface between quality-attribute measurement and organizational structure), but it is suggestive of a broader implication.

The purpose of this paper is to proffer a comparative conceptual framework that examines efficiency implications for contracting parties depending on the ownership structure of the contractor. New institutional economics theories of contracting, agency and property rights allocation suggest that cooperative contractors may be able to design contracts that enhance economic efficiency that IOFs cannot easily replicate. Moreover, issues of vaguely defined property rights characteristic of traditional cooperative structures (Cook) also affect the viable contractual forms, suggesting certain producer owned and controlled organizations may have additional advantages in certain types of contracting arrangements that will be more attractive to member/producers.

In this paper, we focus on potential contractual design differences between IOFs, traditional marketing cooperatives, and new forms of cooperation including closed membership cooperatives. Beginning with a brief overview of the fundamental dimensions of the economics of transactions, we go on to discuss how differences in organizational structure (property rights allocations, incentives, and performance measures) affect the incentives of the contracting parties and the likely contractual design response. We conclude with a summary of testable implications that form the basis of a continued research agenda.

Fundamental Elements of Contract Design

Every transaction relationship involves three basic economic components: the allocation of value (or the distribution of gains from trade), the allocation of uncertainty (and any associated financial risks), and the allocation of property rights to decisions bearing on the relationship. These three dimensions are inherently interdependent; each

one is likely to have implications for the others. For instance, a producer may demand a higher price for assuming the uncertainty of growing a new product or variety. A buyer may offer a price premium on the product in return for the right to assert certain terms with respect to production decisions (e.g., handling/segregation). A fixed price contract eliminates nominal price uncertainty, but may create financial risks for either side as relative market prices change, for either inputs or related products. A fixed price contract may also affect either party's incentives and the way they exercise their respective decision rights, particularly with regard to product quality.

Traditional neoclassical economics offers little insight into how such economic relationships should be structured. By focusing on a frictionless market as the unit of analysis, where price and quantity are the variables of primary interest, the multidimensional nature of an individual transaction is necessarily overlooked. To the extent that "extraneous" factors come into play (e.g., risks from price uncertainty), market solutions such as a futures market are assumed effective solutions.

New institutional economic theories of agency, property rights, incomplete contracting and Williamson's transaction cost economics have been advanced to provide a finer theoretical focus by which to analyze the structure of transactions and their governing institutions.¹ These theories suggest how the rights and responsibilities incumbent to the transaction are allocated will depend on the characteristics of the transaction, the costs of monitoring and enforcement, the relationship of the trading parties, and their respective negotiating skills or bargaining position (which might be influenced by control rights over complementary assets).²

Agency theory addresses information asymmetry and incentive incompatibility between trading parties. Although commonly considered in the context of the employer-employee or principal-agent relationship (Fama, Jensen and Meckling), it applies as well in all cases wherein one party has an informational advantage over another that can be exploited to the benefit of the advantaged party at the expense of her trading partner (Salanié). Implicit in that statement is the assumption that the information asymmetry is costly to correct. Those costs may include *ex ante* search costs (associated with adverse selection (hidden information) problems) and/or *ex post* monitoring and enforcement costs (associated with moral hazard (hidden action) problems).

The resulting focus is on developing contracts that align incentives (i.e., encourage truthful information revelation) while at the same time addressing measurement (or monitoring) issues. While Jensen and Meckling focus on the combination of value and risk allocations in designing effective incentive systems, the delegation of decision rights also plays a significant role. Indeed, an agency problem exists only because the agent is assigned decision (or control) rights that affect the principal's wealth or utility function (typically, his claims to the residual income generated by the asset). To the extent that contracting organizations embody different incentive systems, a greater degree of information asymmetry, or more costly monitoring, one would expect that contractual relations would also differ among the organizations.

Since Coase's 1960 classic, "The Problem of Social Cost," economists have become concerned with how the assignment of and costs of transferring property rights affect incentives and economic outcomes. Recognizing that most assets or products are characterized by multiple attributes, and that property rights to these various attributes

may belong to different people, points to the importance of organizational form in mitigating property rights issues, particularly commons property (Barzel, De Alessi). The separation of residual claim rights and control rights in modern corporations, though dating back to Berle and Means, is perhaps the best noted example in the work tying property rights to organizational form.³

This property rights perspective forms the basis of the arguments Cook makes regarding the evolution of cooperatives and the rise of the “new generation” cooperative structure. He defines five “vaguely defined property rights” problems devolving from the traditional cooperative organization’s division of residual claims and control rights: Free Rider Problem, Horizon Problem, Portfolio Problem, Control Problem, and Influence Costs Problem. The Free Rider Problem results when gains from cooperative action can be accessed by individuals that did not fully invest in developing the gains, whether those individuals are new(er) members or non-members. The Horizon Problem results from residual claims that do not extend as far as the economic life of the underlying asset. Like the Horizon Problem, the Portfolio Problem stems from the tied nature of the equity in the cooperative; the organization’s investment portfolio may not reflect the interests or risk attitudes of any given investor/member, but members cannot withdraw and reallocate their investments. The Control Problem is similar in nature to the shareholder-manager problem in IOFs, but is compounded by the lack of external competitive market pressures (e.g., equity markets and the market for corporate control) that help discipline managers in IOFs. Influence Costs are incumbent to all organizations where decisions affect wealth distribution among members. These costs are greater when there is a wider variety of interests among group members and when the potential gains are greater.

Cook asserts that these different incentive problems increase the transaction costs of managing the cooperative organization. He goes on to conjecture how different cooperative types, reflecting different property right constraints, may be more or less affected by each of these five types of problems. Cook and Iliopoulos later demonstrate that these vaguely defined property rights problems affect members' incentives to invest in the organization and the organization's overall ability to generate equity capital. Specifically, they find that members are more willing to invest equity when the cooperative is characterized by structures such as closed membership, marketing agreements, and transferable and appreciable equity shares; structures that tend to reduce the free rider, horizon, and portfolio problems.

Incomplete contract theory builds on property right themes in attempt to prescribe optimal asset ownership based on residual control rights of an asset (Hart, Hart and Moore). Residual control rights are defined as the right or ability to control access to or use of an asset in any circumstance not otherwise prescribed under contract. In legal parlance, these residual control rights are the effective default rules that apply when the terms of the formal contract are incomplete. Given contractual incompleteness, the story goes, ownership of assets should be arranged to maximize investment incentives and returns.⁴ More important to this paper is the corollary: given asset ownership, the degree of completeness in a contract, i.e., the degree to which contingencies are more fully specified will depend on the allocation of residual control rights over the related asset.

Transaction cost economics (TCE), as popularized by Williamson, also tends to focus on firm boundary issues—under what conditions an activity will be organized in an integrated, hierarchical manner versus in a more arms-length contractual manner.

However, governance mechanisms can be viewed in a continuum ranging from anonymous spot market transacting to an autocratic hierarchy, with a range of varying degrees (sometimes called hybrids) in between. TCE analysis tends to focus particularly on the roles of asset specificity and bounded rationality, in the context of opportunistic decision behavior, as the key determinants of organizational form. Three other transaction attributes, complexity, uncertainty and frequency, are also discussed by Williamson, but tend to be de-emphasized in the final analysis. The general implications are that as assets involved in a transaction are more specific to the transaction, as the potential for opportunistic behavior increases, and as the need for coordination between parties increases, the more likely hierarchical mechanisms will be used to govern the transaction. In the context of contractual governance mechanisms, this suggests more fully specified terms with more decision rights vested in the contractor.

A common theme across all of these approaches is that transaction costs are positive; information is imperfect, costly, and frequently asymmetric; the allocation of decision rights (or property rights more generally) affects performance; and governance structures are designed to mitigate the hazards, or minimize the costs, involved in effecting economic transactions. While the frequent focus is on firm boundary questions, the concepts also directly apply to alternative contractual governance forms.

Coordination, Contracting and Organizational Structure

The agri-food system is increasingly characterized by demand for greater coordination between players at every level. Demand for extra-sensory attributes by consumers, realization of processing production efficiencies from using more consistent

inputs, and the increasing trait specialization of agricultural products all push toward greater control and coordination. Particularly at the producer level, the most practical coordination mechanism is contracting. The central premise of this paper is that contractors with different organizational structures may use different contract forms even when contracting for the same product from the same set of agricultural producers. Moreover, the differences in contract form will be directly related to the nature of the contractors' organizational structures and the incentives they create.⁵

That IOFs and producer-owned cooperatives are different is generally understood. For most IOFs, a diverse and diffuse set of equity investors shares proportional (and perhaps atomistic) ownership rights to the residual income of the organization. Few investors have any other business ties to the organization than their equity investment (and perhaps managerial control), and all residual income is distributed based solely on equity shares. These rights are fully transferable and appreciable, allowing investors to alter their own investment portfolio to meet their personal investment objectives at relatively low cost while being able to capture the fully capitalized value of their investment.

The relationship between the IOF and its input suppliers can be characterized as a zero-sum game: any increase in payments to inputs is a decrease in residual income for investors. The IOF has no inherent interest in the welfare of its input suppliers. Because of this zero-sum nature of the IOF-supplier relationship, there is an inherent element of distrust between parties. Both sides recognize the incentive to withhold private information that may provide its owner greater returns. As a result, at least a perception, if not a reality, of greater information asymmetry prevails.

Producer-owned cooperatives (traditionally speaking) have a very different property rights structure. In this context, ownership of the organization takes on a very different meaning. While producer-owners have equity investments in the organization, residual income is distributed based not on equity investment, but on the patronage of or business dealings with the organization. Here the relationship between the cooperative and its input suppliers is not necessarily a zero-sum game, since a higher price to inputs represents an equivalent payment to (some) investors; the residual income is simply paid in the form of higher prices to the producer (or in the case of a supply cooperative, in the form of discounts to the producer).

Given their producer-owned and producer-governed nature, cooperatives have an inherent producer orientation. Moreover, because producers are involved in the governance of the organization, there is a lesser degree of perceived information asymmetry—the incentive to withhold information is lower since producers are involved on both sides of the transaction. Both of these suggest a greater degree of trust between producers and the organization than in the IOF-producer relationship.⁶

This simple dichotomous scenario already suggests differences in the ways contracts may be structured based on the different property rights structures, information asymmetries, and trust levels associated with IOFs and traditional producer oriented firms (POFs). In particular, we suggest that:

1. Because of the lower level of trust and greater information asymmetry, IOF contracts will rely on more transparent and easily verified measurement and pricing mechanisms.

2. For similar reasons, IOF contracts will be more likely to incorporate third-party verification or mediation.
3. Again, due to more poorly aligned incentives and lower trust, negotiated contracts with IOFs will be more complete in specifying rights and responsibilities over a broader range of contingencies, thereby reducing the importance of residual control right issues.
4. Along the same lines, IOF contractors will likely exert more decision rights control over the more easily specified and verifiable producer activities.
5. The value paid to producers in IOF contracts will be less-directly correlated with the IOF's net operating revenues.

The first of these is particularly relevant to the current trends in agricultural specialization. To the extent that the value source (e.g., embedded trait) in a particular product becomes more difficult to assess in a transparent way, IOFs are less likely to be able to implement pricing strategies that provide the most efficient incentives to producers.

Alternative Producer Organizational Structures

The above discussion considers the stereotype polar cases of an IOF and a traditional producer-owned cooperative. However, not all POFs are characterized by the same property rights and governance structures; there is a spectrum of hybrid producer-owned organizational forms designed to mitigate the costs and hazards associated with the five vaguely defined property rights problems identified by Cook.⁷ Cook and Iliopoulos demonstrate that the ability of these different cooperative forms to reduce

some of those hazards affects producers' investment incentives. The broader implication is that different cooperative forms engender different types of relations with producers that are likely to be manifested in more than just equity investment decisions.

Open versus closed membership cooperatives typically encounter greater external free-rider problems. One source of those problems is that the cooperative must purchase whatever volume and quality of product the producer chooses to deliver. However, as the food system moves toward greater specialization and segregation of agricultural products, more coordination is required—something open-membership coops do not easily accommodate. Therefore, POFs with more clearly delineated and specific delivery rights will be more effective in contracting with producers for high valued specialty products.

POFs with appreciable and transferable equity shares provide their producer-owners with an alternative means of capturing value from the cooperative's activities. Producers can either capture their equity returns through traditional patronage or usage-based means, or through equity capital appreciation. This creates a tension in the decision to reinvest earnings into the organization or to pay them out in patronage (not unlike the IOF's decision to either reinvest earnings or pay dividends), particularly since taxes on capital appreciation are deferred until the producer liquidates her investment. This suggests POF's with appreciable and transferable shares will reinvest a greater proportion of the value created through the POF and pay out a smaller portion of the value under the producer contracts (i.e., contract prices will be less-directly correlated with the POF's net revenues).

Multi-purpose cooperatives, where producer-owners have more heterogeneous investment interests, are subject to the portfolio problem—investments from the common

resource pool may benefit one group of owners more than, or at the expense of, another. Value premiums to producers of one commodity may be perceived as windfall by producers of other commodities. Moreover, producers involved in different commodity production may not fully understand or appreciate the value and costs associated with the production of products with which they have little experience. Therefore, POFs with multiple products and/or with a more heterogeneous group of producers will be less effective in offering contracts that accurately compensate producers for product-specific investments (either tangible such as equipment or intangible such as value or production uncertainties). In addition, a smaller proportion of the residual income from the business line will be paid to producers in patronage form via the contract. Finally, more transparent pricing and measurement tools will be used.

POFs differ in the amount and type of up-front capital producers are required to invest in order to obtain delivery rights. At first blush, one might suggest that producers that are not required to put up a hostage in the form of collateral investment are more likely to shirk in their production relations with the firm, thus calling for greater contractual controls. However, the value of delivery rights will be determined in large part by the expected returns on the delivery contracts and on the equity investment itself. Both depend on the nature of the product being produced. Those products offering the highest returns are likely going to be ones that require higher degrees of managerial effort by producers, coordination between producers and the contractor, and product specificity on the side of the contractor. All of these suggest the contract with the producers will be more complete and specific in its requirements. While this is ultimately an empirical question, the corollary seems more clear: POFs that require less up-front investment from

producers are less likely to contract for specialized products that require specific investments from either party.

Summary

Our objective in the above discussion is to advance a conceptual framework using new institutional economics theories that draws attention to the importance of the organizational structure of contractors for the design of the proliferation of contracts increasingly governing agricultural production. Understanding the interplay between organizational form and contract structure is a necessary step in understanding why and how contracting is occurring, where and when it does. The next step is to begin systematically examining actual contracts to empirically evaluate these theoretical conjectures—a process we have begun by initiating a collection of contract forms.⁸

No doubt, competitive forces shape the structure of contracts—contractors can offer more appealing contract terms as well as higher prices when competing for a common pool of producers. In fact, legal scholarship suggests contracts are likely to converge over time (e.g., the evolution of boilerplate). However, few industries if any outside of agriculture have the breadth of distinctly different organizational forms involved in similar contracting activities. The dramatically different incentives inherent in those organizational forms, both of the contracting organization itself and of the producer in relation to the contractor, suggest key contractual differences are likely to persist. To the extent that those differences have economic consequences in the coordination efficiencies they facilitate, cooperatives may find a special niche in a more highly coordinated agri-food system.

Notes

¹ While asymmetric information and externalities are not themselves new to traditional neoclassical economics, agency theory and related models are based on the concept of positive transaction costs, which distinguishes these new institutional theories from neoclassical theory. The broad application of the principal-agent model in particular is evidence of how new institutional economics is integrating into the mainstream literature.

² This notion of complementary asset ownership includes concepts of market power as traditionally argued in the economics literature, particularly the monopsonistic market structure asserted to face most agricultural producers. One could well consider a dominant market share as ownership of access rights to a downstream market. Producers are faced with acquiring those access rights from the monopsonist (in the form of reduced prices) or purchasing alternative access rights through investment in a cooperative.

³ This also provided grist for the aforementioned agency theory mill, the shareholder-manager relationship characteristic of the separation of residual claims and asset control being a pre-eminent example of a principal-agent relationship.

⁴ The incomplete contracting approach is more directed toward vertical integration issues than contract structure. It may be a useful framework to consider integration as a mechanism to enhance coordination in the agriculture sector, but that leads more to the decision to form a cooperative (producers integrating downstream to capture more of the gains from coordination, for instance). Hendrikse and Bijman address this very issue.

⁵ Because the focus of this paper is on the ability of the contractor to improve coordination through contracting, our discussion and analysis is primarily related to downstream cooperatives (e.g., marketing coops) as opposed to upstream, or supply-type,

cooperatives. While the value transfer works in the other direction, we suggest that the underlying issues would be similar in supply cooperative-producer relationships; however, we leave that as a question for future research.

⁶ Balbach argues that trust was a key factor enabling the cooperative sugar processors to implement sugar-content pricing of beets whereas the IOF processors could not.

⁷ It is for this reason we have introduced the term “producer-oriented firms (POFs).” The defining characteristic for these firms is not so much their adherence to the traditional definition of a cooperative, but their orientation toward the producer rather than to independent investors. For instance, we would consider a producer-owned and operated LLC a hybrid form of POF. Indeed, an IOF whose shareholders are predominantly producers for the organization would also be a POF. Employee-owned corporations would be a good example from outside agriculture, although most tend to suffer from a portfolio problem when dealing with employees from several different unions or professional strata.

⁸ The Contracting and Organizations Research Initiative (CORI, <http://cori.missouri.edu>) at the University of Missouri is already engaged in developing a collection of agricultural production contracts (among many other types of contracts both in and out of agriculture) specifically to facilitate empirical research on contract structure and the effects of organizational and institutional structures surrounding the contracting activity.

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