



Extension FactSheet

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The Economics of Contracts for Non-Economists

Part I: Introduction

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The use of contracts is becoming increasingly common across a range of agricultural commodities from broilers, turkeys, and hogs to various fruit and vegetables. Economists devote considerable attention to the study of contracts but have done a relatively poor job of communicating this research to end users and practitioners. Most successful business people, farmers, and policy makers in agriculture have a sound understanding of the basics of supply and demand, marketing, finance, hedging, etc., but it becomes increasingly important that they also gain a sound grasp of the basics of contract economics. The purpose of this series is to introduce the fundamentals of contract economics to help the non-economist better understand agricultural contracts.¹

Part I of this series introduces the basic economic rationale for contracting and provides an overview of the key issues in contract economics. Subsequent parts of this series will discuss each of these key issues in more detail.

Why Contract in the First Place?

Contract economics begins with the assumption that an economic entity known as “the principal” wants to contract with an “agent” to undertake some productive activity. In agriculture, one might take the principal to be an integrator, a processor, or some other firm that wants to purchase agricultural commodity with special quality characteristics so that the principal can produce high-quality retail food products. The agent might be a grower, an employee, or an intermediary that grows or purchases commodity on behalf of the principal. The rationale for contracting between a principal and an agent will vary greatly across firms, sectors, and industries. However, one can aggregate these reasons

into two broad categories; that is, one can think of the principal (a processor or integrator) contracting primarily for *performance assurance* (e.g. quality or quantity assurance) and/or *risk management*. Most contract provisions are designed either to provide incentives for performance and/or to facilitate risk sharing.

Performance Assurance

Principals have productivity objectives in mind when they contract with agents. Principals attempt to write contracts that will motivate agents to “perform” these objectives in a satisfactory manner. For example, quality objectives are very common in agriculture so that a principal (e.g. an integrator or canner) with specialized quality needs may contract with agents (growers) to produce an agricultural commodity that meets the quality standards set by the principal. Since agricultural commodities with special quality attributes may be difficult to source on the spot market (Young and Hobbs, 2002), contracts may be necessary to provide the appropriate incentives to agents to produce goods that meet the principal’s objectives. Thus, an important aspect of any contract is that it provides the appropriate incentives for ensuring that exact quality specifications are met. One can also think of a contract as a means of bypassing “missing markets” for customized inputs.

Hueth, et. al. (1999) discuss several ways that incentives can be provided to agents in order to achieve performance objectives. The most obvious method is to simply offer pay for performance contracts where the payment is a function of quality; that is, the higher the quality, the higher the payment and vice versa. A second method is for the principal to write provisions in the contract that allow it to control the production process directly by specifying the types of inputs to be used, the planting and harvesting schedule, the seed variety used, etc. This involves constant monitoring of growers by the principal during the growing season and also means that growers will lose a considerable amount of

¹ Note that this document does not and is not intended to cover the legal side of contracts.

autonomy. Another method is for the principal to make the agent a “residual claimant” in the sense that the grower’s payments can be made contingent on the prices received downstream. If prices vary due to quality factors, then the grower is made directly responsible for low quality as reflected in lower prices. This method of compensating growers is particularly common in fresh fruit and vegetable commodities (Hueth, et. al. 1999). Finally, there may be “implicit incentives” that may emerge from long-term relationships between principals and agents. For example, there can be an informal “understanding” that as long as the agent performs at some satisfactory level, the agent will be retained by the principal in the future. When implicit incentives are strong, explicit incentives specified by formal contracts may not be as important.

In practice, relationships between the principal and the agent are rarely governed by only one of the above incentive devices; instead, there may be a combination of formal and informal incentives that complement each other to achieve desired results. For some firms, informal incentives may be the most cost effective way of managing performance whereas for other firms, pay for performance combined with input control may be the most efficient. It goes without saying that the principal should always choose the most cost effective combination of incentive instruments to achieve performance targets.

Risk Management

Price, quantity and quality risks are unavoidable in agriculture. The economics of contracts offers some general principles for understanding efficient risk sharing. The key rule of thumb is that the party that is best able to bear risk should bear the majority or all of the risk. To explain this, economists tend to think of firms and consumers as having “risk preferences.” For example, a large farm that is diversified across several different commodities may be less “risk averse” with respect to the price of any single commodity than a small farm that produces only that commodity. An alternative way of viewing this is to think of the cost of risk bearing as a real cost of doing business. One can think of this cost as the “risk premium.”

Risk premiums are common in everyday life. For example, the reason why we are willing to hold risky stocks rather than stick with simple savings accounts for our investments is because the expected payoffs of stocks over the long term is higher than the expected payoffs from a savings account. The difference in expected payoffs represents the “risk premium” that we get paid for holding the riskier investment. Sometimes, rather than receive a risk premium, we may pay a risk premium to reduce our financial risk. This is known as buying insurance. Viewed in this light, one can think of agricultural contracts as a means of allocating financial risks between two trading partners and the optimal allocation of this risk will depend on the risk preferences of the two parties. For example, if the buyer is a large, well-diversified company and the supplier is a small grower that

produces only one or two commodities, then the optimal allocation of risk would be for the buyer to bear most of the risk and the supplier to bear a lower fraction of the total risk. Allocating risk in this way is good for both parties because the risk premium of the buyer is low relative to the risk premium of the supplier. Therefore, it would make no sense for the buyer to pay the seller a larger premium to bear the risk when the buyer can bear the risk for a lower cost. To do the opposite would be akin to an insurance company paying a consumer an insurance premium to bear the insurance company’s risk. It would not make sense economically or intuitively.

Viewed in another light, there is always a trade-off between risk and return. For instance, when a principal wants the agent to bear more of the risk, then the principal may have to pay the agent a higher expected payment to take on this additional risk. Therefore, a principal that can bear risk relatively cheaply should fully insure the agent while reducing the agent’s expected payment by the amount of the risk premium. In a sense, the principal no longer has to pay the agent a risk premium (akin to an insurance fee) for bearing risk.

The key lesson for growers is that they should never accept more risk if they are not compensated for bearing it. It is the same principle one should use for assessing any investment—there is always a trade-off between risk and return. Accept more risk only when you are compensated for it. If contract A is more risky than contract B, your next question should be: does contract A have a higher *expected* payoff? If not, then always accept contract B. This is how you would assess a stock or mutual fund and this is how you should assess your contracts. However, there is a caveat to this discussion because things change when the buyer must provide incentives to the supplier for optimal performance. When this is true, then even risk-averse agents must be exposed to some risk to ensure adequate incentives. This will be discussed later on in this series.

Other Key Issues

A unifying theme in this series will be that contracts are designed to motivate performance and/or to facilitate risk management. Parts II and III will discuss these issues in more detail. Parts IV and V, will discuss some difficulties that may prevent contracting parties from writing ideal contracts and how one might think about these issues from an economic perspective. Finally, Part VI will discuss relational contracts or informal incentives. A complete list of topics to be discussed include:

1. Contingent or variable pay
2. Multitasking
3. Alternatives to contingent pay to manage risk and incentives
4. Tournaments and relative performance contracts
5. Contracts as a selection device
6. Verifiability of performance

7. Unforeseen contingencies
8. Completeness of contracts versus complexity of contracts
9. Asset specificity
10. Contract length
11. Bargaining power
12. Relational contracts

References

Hueth, B.; Ligon, E.; Wolf, S.; and Wu, S. "Incentive Instruments in Fruit and Vegetable Contracts: Input Control, Monitoring, Measuring, and Price Risk," *Review of Agricultural Economics*, Vol. 21 (1999): 374-389.

Young, L.M. and Hobbs, J.E. "Vertical Linkages in Agri-Food Supply Chains: Changing Roles for Producers, Commodity Groups, and Government Policy," *Review of Agricultural Economics*, Vol. 24 (2002): 428-441.

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