8-6-1997

Factors Affecting the Coordination of Agricultural Production and Marketing

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Cornhusker Economics

August 6, 1997

Cooperative Extension

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Market Report	Yr Ago	4 Wks Ago	8/1/97
Livestock and Products, Average Prices for Week Ending			
Slaughter Steers, Ch. 204, 1100-1300 lb Omaha, cwt.	$62.00	$64.13	$65.69
Feeder Steers, Med. Frame, 600-650 lb Dodge City, KS, cwt.	*	86.50	87.68
Carcass Price, Ch. 1-3, 550-700 lb Cent. US, Equiv. Index Value, cwt.	92.39	94.81	100.18
Hogs, US 1-2, 220-230 lb Omaha, cwt.	62.05	60.94	56.30
Feeder Pigs, US 1-2, 40-45 lb Omaha, hd.	*	*	*
Fresh Pork Loins, Wholesale, 14-18 lb Cent. US, cwt.	124.00	115.80	121.70
Slaughter Lambs, Ch. & Pr., 115-125 lb Sioux Falls, SD, cwt.	96.00	79.63	86.38
Carcass Lambs, Ch. & Pr., 1-4, 55-65 lb FOB Midwest, cwt.	185.00	160.00	160.00
Crops, Cash Truck Prices for Date Shown			
Wheat, No. 1, H.W. Omaha, bu.	4.85	3.25	3.72
Corn, No. 2, Yellow Omaha, bu.	4.56	2.30	2.53
Soybeans, No. 1, Yellow Chicago, bu.	7.73	7.27	7.60
Grain Sorghum, No. 2, Yellow Kansas City, cwt.	6.68	4.02	4.36
Oats, No. 2, Heavy Omaha, bu.	*	*	*
Hay, First Day of Week Pile Prices			
Alfalfa, Sm. Square, RFV 150 or better Platte Valley, ton.	*	*	*
Alfalfa, Lg. Round, Good Northeast Nebraska, ton.	77.50	82.00	85.00
Prairie, Sm. Square, Good Northeast Nebraska, ton.	65.00	70.00	75.00

* No market.

Agricultural markets depend considerably less on open market transactions than 40 years ago. Increasingly, the production and marketing of agricultural products have been coordinated by forward contracting, production and marketing contracts, and vertical integration. The degree to which these alternative marketing mechanisms have been employed varies across commodities and products. Production contracts, marketing contracts, and vertical integration dominate in several livestock markets, including broilers, turkeys, eggs and milk, and in most specialty crop markets, including fruits, vegetables and sugar beets. Market transactions have continued to be more important for field crops and the cattle and hog markets although contract production and marketing of livestock, particularly sheep, lambs and hogs, have increased during the late 1980s and the 1990s.

Economists have sought to explain and predict the choice of organizational forms used to coordinate the production and marketing of various products. Two areas of economics that are concerned with the choice of organizational form are *transaction cost analysis*, which considers the frequency of transactions, uncertainty, and asset specificity, and *agency theory*, which emphasizes individual incentives and measurement problems.

Recently, Professor Joseph T. Mahoney of the University of Illinois developed an approach for analyzing organizational form that combines aspects of both transaction cost analysis and agency theory. Table 1 presents the essential elements of Mahoney's framework, which is based on empirical evidence from research in the fields of industrial organization and strategic management.

Table 1. Predicted Organizational Form

	Low Task Programmability		**High Task Programmability**	
	Low Specificity	**High Specificity**	**Low Specificity**	**High Specificity**
Low Nonseparability	1. Spot market	2. Long-term contract	5. Spot market	6. Joint venture
High Nonseparability	3. Relational contract	4. Clan (hierarchy)	7. Inside contract	8. Hierarchy

Source: Joseph T. Mahoney, "The Choice of Organizational Form: Vertical Financial Ownership versus Other Methods of Vertical Integration," *Strategic Management Journal,* 13 (1992), p. 576.

Mahoney focuses on asset specificity, nonseparability, and task programmability in analyzing the choice of organizational structure. *Asset specificity* refers to the specialization of assets. Generally, the value of highly specialized assets diminishes when they are shifted to alternative uses. Therefore, large investments in specialized assets increase the potential loss from an unexpected market outcome and encourage internal coordination of production and marketing. *Nonseparability* concerns the problem of determining and rewarding individual effort in team production. If rewards cannot be based on output (i.e., output is nonseparable), a manager is required to monitor behavior or effort. *Task programmability* relates to the ability to measure inputs in a production process. Low task programmability reduces the effectiveness of management monitoring efforts and increases the likelihood of ownership integration.

Table 1 consists of eight possible combinations of asset specificity, nonseparability and task programmability. When the output of an individual is easily measured (low nonseparability) and asset specificity is low, task programmability is inconsequential. In both cases (1 and 5), open market transactions (spot markets) should serve as an effective coordinating device.

When there is low nonseparability and high asset specificity (cases 2 and 6), a long-term relationship is necessary for parties to invest in highly specialized assets. The type of relationship will be influenced by the ability to measure input behavior. If task programmability is high, a joint venture is an effective organizational form. If task programmability is low, a long-term contract that specifies output performance and is enforced by courts is the predicted organizational choice.

A long-term relationship is unnecessary when there is high nonseparability and low asset specificity (cases 3 and 7) because of low switching costs or exit barriers. If task programmability is low, a relational contract that fosters a cooperative attitude is required because output and behavioral controls are ineffective. High task programmability suggests an "inside contract" system, in which departments are paid piece-rate and a manager is needed to monitor behavior.

Contractual problems arise when there is high nonseparability and high asset specificity (cases 4 and 8). If task programmability is high, vertical integration (hierarchy) is the most effective organizational structure. Low task programmability leads to what Mahoney calls the worst-case scenario, in which asset specificity is high and both input and output measurements are ineffective. The prescribed organizational structure is a "clan" relationship, in which individuals are not rewarded on the basis of performance and opportunistic behavior is replaced by an emphasis on organizational goals.

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