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PRICE DISCOVERY CHALLENGES IN THE LIVESTOCK INDUSTRY

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Background

The title of the session carries with it an implicit question, or perhaps that should be "questions." The rather apparent implicit question is one involving what price discovery will look like in the years beyond 2000. An arguably less apparent implied question, but one on the minds of many astute observers of the livestock industries in this country, is whether there will *be* any significant price discovery function as we have traditionally known it in the years beyond 2000.

Price discovery is the dynamic interaction of buyers and sellers as they seek to find or to "discover" the market-clearing price. By implication, this is a competitive process with well-informed buyers and sellers entering some type of marketplace infrastructure and executing their buy and sell objectives. In the process of that give-and-take with what is admittedly less than perfect information, a market-clearing price is being discovered. This is, of course, the process of interaction and/or negotiation that goes on at the various points of exchange along the continuum between the original livestock producer and the consumer of a finished product. Separate and independently operated profit centers are usually involved at the production, processing, transportation, and retailing levels of economic activity in a price coordinated system featuring several points of exchange.

The vast research and educational literature dealing with the livestock and meats systems in the United States has been predicated on this type of market organization or structure. There is separate ownership at the various levels of economic activity, and while these economic activities are technically related much as are the operating stations along an assembly line, they can be subjected to substantial separation or inconsistency in terms of goals, objectives, and operating norms. The literature has always ascribed to the pricing system the job of coordinating these various levels of economic activity thereby ensuring that what is offered to the final consumers will in fact be consistent with their needs and/or preferences. Price signals, premiums or discounts, are gleaned from the yes-no consumer decisions on a particular product offering by retailers, and those signals are sent back down through the complex chain of events to prompt producers to make any needed changes in the quality of their production.

The path along which those price signals are presumed to travel is, at best, a difficult communication path to follow. There is the expected profit center mentality at each level of activity. Out of profit-maximizing goals and objectives comes an operating philosophy at each level that may or may not be consistent with what would be needed to accomplish high levels of coordination between what is demanded by consumers and what is offered by producers. A myriad of governmental policies and programs has developed over time to help make this price coordinated system function, succeed, and survive. There are market regulation policies in place, antitrust statutes that presume to influence firm conduct and performance of the system, and widespread programmatic activities to facilitate the workings of the pricing system. Paramount in this latter category of facilitative policies and programs are the government's grades and grading activities, efforts in food safety, and significant programs to collect and disseminate economic planning and/or price and market-related information.

The dual questions of how much price discovery activity will be seen and the form it will take in the years beyond 2000 may well be answered primarily by how effective current and future government programs of a facilitative nature turn out to be. This, it would appear, is the interesting and important policy-related issue as we think about, anticipate, and plan for the new millennium.

Changing Systems of Coordination

The efficacy of a price-coordinated system is going to be challenged in an increasingly complex global marketplace. As production and processing technology becomes yet more sophisticated and as new and sophisticated merchandising programs are attempted, the traditional price-based system will be a focus of attention. Whether it will be able to respond and maintain what remains of its historical position as a coordinating mechanism may well depend on what happens in our policy deliberations and decisions to change programmatic thrusts at the national level. Boehlje, *et al.* talked about 10 major changes they see in a restructuring of food, fiber, and agribusiness industries in the U.S. One of those 10 that they identified was called "integration, coordination, and partnering." The researchers summarized their thinking about the issue of control of the system as follows:

> "The fundamental issue of control of the system will result in significant new linkages between food firms, farmer/producers, and input supplier with the full range of acquisitions, joint ventures, and contractual and partnering arrangements being used. In many cases, the primary motivation for this more integrated system is to provide more accurate signals to producers and input suppliers as to what the ultimate end user, the consumer, wants in his food products. Increasingly, the current spot market pricing system is not providing the detailed information consumers want on product attributes such as safety and residue-free products or consistency in quality, and other mechanisms for conveying this information are being used such as contract specifications." (Boehlje*, et al*. p. 497)

In no sector of food and fiber systems are these issues and these questions of control more apparent than in the livestock industries. Effective price discovery, it could be argued, refers to a well-informed interaction between buyers and sellers with a capacity to attach a price or a price signal to product attributes of importance to the final consumer. If the price signal type of communication system is to work and is to motivate change as needed at the producer level to keep the basic raw material aligned with the ultimate needs of the consumer, any value differences that would influence consumers yes-no vote on a product offering need to be identified and brought into the pricing process. In other words, if there is a need for quality categories one through five, then those five quality differentials have to be identified so each can have a price discovered for it as compared to an aggregate or averaging-type pricing process where those specific quality levels are not identified.

When Boehlje and his colleagues mentioned that some of the current spot or cash market pricing systems are not providing the detailed information that consumers want on issues such as consistency and quality, they likely had the livestock and meat sectors in mind. The research literature has shown a substantial variation in eating satisfaction within the Choice grade for fresh beef, for example, across the past two decades. In the 1990s, as the national trade organization in the beef industry prompted beef quality audits for both the years 1990 and 1995, it has become apparent that inconsistent quality is a major problem for the beef sector. The professional meat scientists who organized and conducted these audits are indicating that one out of five, possibly one out of four, steaks from the Choice grade for beef is so tough as to block a reasonably satisfactory eating experience. This is a classic case of market failure and has arguably been a major contributor to the problems of declining demand that have plagued the beef industry for two decades. Analysis suggests that the demand for beef has decreased each year since 1979 or 1980 (Purcell, 1998).

Problems of a similar nature have plagued the other livestock-based meat products, specifically pork and lamb. USDA grades that were historically employed in reporting market prices did not distinguish in any significant way for final values of pork carcasses in terms of leanness and/or eating quality. As the large packer/processors started moving toward more of a merchandising mentality in their pork offerings and are into export markets, the lack of effective quality control became a major obstacle. Slaughter hogs, offering different identifiable levels of quality, especially as reflected by leanness of cuts, were not identified separately and priced by the price-based marketplace. To achieve the necessary control over quality and to avoid the merchandising problems associated with a highly variable quality of slaughter hogs coming to the marketplace, the processors have moved to control decisions on genetics, production management, rations, and health programs in their own or contract production arrangements. Once a modicum of control over quality variation was accomplished, the processors started to make important new investments in product and market development and to position themselves to brand and stand behind the quality of fresh pork offerings.

These systems in pork replace rather than complement the price-driven systems. They are an explicit recognition that the pricing system has failed and that the marketplace featuring separate profit centers at the various levels of economic activity with price to accomplish the needed level of coordination has not worked. As we move into the new millennium, we face the likely possibility that a majority of the pork produced in the United States will be produced under systems where there is an important element of control that is not price based. Whether they are vertically integrated systems where ownership of two or more stages of economic activity is involved or whether the coordination is accomplished by contract specification, these are non-price means of effecting the coordination that the processors appear to be saying they must have to accomplish their objectives.

In the beef system, the highly controversial captive supplies have been a response to the problems of variability in both quantity flows and quality of cattle. Where contracts are involved to schedule cattle through the plant, the processors can manage the stability of their operating levels and try to keep costs down. Increasingly, price grids or some set of premiums and discounts are being paid vis-à-vis some base price that is provided for in the contract. Unfortunately, the pricing grid or set of premiums and discounts being employed varies across every buyer and even within a particular buyer's program depending on projected end use for the particular set of cattle. This complicates any improvement in the level of coordination that a pricing system is able to achieve. Even when a premium or discount schedule is employed, it typically is no more refined than dividing the Choice grade into high Choice and low Choice, and the widely documented variation in eating quality within the Choice grade is still not managed effectively.

The vertical alliances that are emerging in the beef sector are another obvious attempt to get away from the problems of uncertainty that plague the price-coordinated system. For decades, beef producers who are making the breeding decisions at the farm level and choosing the genetics that will determine the nature of the beef product have agreed that there is little or no price discrimination and little or no pricing to value. There is a tendency to price on averages throughout the system from the sale of the small, weaned steer calf to the 1,200-lb slaughter steer and heifer coming out of feedyards. Indeed, in recent years that problem has arguably worsened as there is often a time window of only one to two hours during the week in which many of the cattle that are sold for that week are sold at essentially one average price. This is not effective price discovery and is not the necessary condition for an effective price-based system of coordination.

In an alliance, the producer can receive a calculated imputed value based on contribution of calves to the ultimate success of the coordinated program. No visible pricing takes place, and there is no contribution to price discovery for the beef industry in its entirety. The alliances are, it would appear, a predictable reaction to a failed pricing system that has not been able to discover prices consistent with value, a system that has been relegated to a system characterized by aggregating across value differences and trading cattle at virtually every level on price averages. There is obviously no effective communication and no high level of pricing efficiency in a system where attributes of significant importance to the final consumer of the product are not identified and are not brought into the pricing process.

The lamb industry in the United States has experienced demand decreases that may well parallel those that can be documented for beef. The pricing system for live slaughter lambs has not only been ineffective and inefficient but has arguably been based on perverse incentives. Within acceptable weight ranges, packers have always paid higher prices for lambs with higher dressing percentages. Yet, there is a widely researched and widely established negative correlation between dressing percentage and yield grade or the measure of lean cuts as a percentage of total carcass weight. Not only was leanness, which is clearly an attribute consumers wanted to see, not being encouraged, it was actually being discouraged by the way the slaughter lambs were priced and valued. This is not, of course, an effective system that will ensure that the needs and preferences of consumers are met by what producers offer over time.

A Public Good Component

The industrialization of agriculture is increasingly widely discussed. There have been congressional attempts to regulate the marketplace as buying processors in livestock get larger relative to selling producers. Proposed legislation has ranged from dictating how buyers and sellers should transact their business to restricting the percentage of slaughter livestock that could be "captured" by any particular buyer in any particular market area. Behind these well-meaning attempts is typically an interest in maintaining the type of structure that we have historically seen in rural America. Careful perusal of a number of USDA policies ranging from payment limitations in the old farm bill programs to programs encouraging economic development, economic viability, and quality of life in rural communities suggests a bias toward an atomistic sector with independent family farms. Typically, the view of that rural community that is explicitly or implicitly called for in some of these policy measures is one where independent, often family-based, farms are functioning as entrepreneurs and providing the bulk of the important raw material as it moves into processing in our food and fiber systems. If there is to be something approaching an atomistic structure at the producer level, such that independent operating farmers and farm families can function in an entrepreneurial way and make the necessary contributions to a coordinated production and processing system, then the price discovery system must be effective. The price signals have to be transmitted, and the price incentives that show up at the producer level must be recognizable, must be attached to product attributes that the producer's decision could influence, and they must be consistent with what the consumer wants and is willing to pay for.

Those conditions will not typically be met by for-profit firms pursuing a profit-maximizing scheme at the various levels of the system. If there is a "public good" component to all this, it occurs when the public at large desires a particular end result and recognizes that the desired end result will only occur if the public is somehow involved. We would never have had, for example, a standardized set of grades for feeder cattle or for slaughter cattle unless the public in the form of the USDA, a number of decades back, got involved and launched a grading system. Paid for by the packers but still a voluntary system, quality grades for beef cattle have been around for many years, and yield grades identifying yield of lean cuts have been with us for some 30 years or more. The last major change in the quality grades for beef goes all the way back to the 1970s when the marbling requirement to reach the Choice grade was substituted for, at least partly, by the youth of the animal. The traditionally required increasing marbling as the animal aged within A maturity was eliminated. Across the years there has been a growing, and now widespread, recognition that grades need to be modified and refined, at least to the point of bringing in a measure of tenderness, but no change has been forthcoming. The Agricultural Marketing Service of the USDA provides this public service and contributes to this widely recognized public good, but it tends to be totally reactive in terms of grading specifications and any change in the system.

The grading service is seen by the USDA as a voluntary service, one which performs functions of importance and is needed by the industry. Administrators expect to consider grading changes only when a strong request from the industry is forthcoming and preferably when there is a consensus across the industry and various industry participants with regard to the needed grading change. But this is a standard that is very difficult to meet. In the current system, all those cattle feeders who are feeding cattle of below average quality and selling them at essentially one average price are being paid too much for their cattle, often considerably too much. Conversely, those cattle feeders who are producing above-average cattle are being paid too little. Since the feedyard reflects the primary buyer of and demand for calves and feeder cattle, these same somewhat convoluted signals are passed down to producers. There is no effective price communication, and some experts would argue that quality variation in fresh beef offerings is worse in 1999 than it was 20 or even 30 years ago. Consumers who loudly proclaim they want a high-quality product, want consistency in the quality of that product and in their eating experience, and want convenience in preparation have largely been ignored. Consequently, they have moved to other meats and other sources of proteins across the years as the product failure experiences in the fresh beef market have mounted and taken a major toll.

A Look Ahead

As we approach the new millennium, the economic opportunities associated with a consumer-driven product offering are too big to be ignored. The three giant-sized packing firms in beef are all moving into value-added further processing--moves producers have hoped for since the 1970s. Large pork processors have already made moves toward coordination and control, and some of these firms are moving into pork from a background in poultry. The orientation toward new product development and quality control is what beef, pork, and lamb need, but these moves will prompt the continued demise of price-based systems. Integration and contractual arrangements will often replace price as the coordinating mechanism, testimony to the inability of the price systems to prompt the needed quality control and needed changes in what is being produced at the farm level.

Trying to anticipate the nature of price discovery for livestock beyond 2000 is not a very fruitful exercise. There *will* be price-driven systems, but they will be smaller than today and trending to even lower levels of importance. This will happen because non-price means of control and coordination will appear both more effective and easier to adapt and use.

It is much more interesting to reflect on what policy postures we will develop and, related, the extent to which the public good dimension of price discovery is recognized. Two directions are possible. First, policies and programs to facilitate effective price discovery can be developed and pursued, but this will not happen unless there is a rapid move toward recognition of the public good component of price discovery. The "market failures" in the livestock marketplace destroy the ability of independent farmers to compete. A failure to discover price consistent with final use value pushes the livestock sectors toward integration, contracting, and other means of non-price coordination. Alliances will grow to a position of importance, especially in beef, as producers and processors look for control and the opportunity to serve an identified consumer market. This trend is in place, is powerful, and will not be denied unless there is a significant shift in public support of facilitative programs in areas like market news. In addition, the willingness of governmental agencies to get out front and be proactive in areas like grades and grading will be very important. Needed changes will not be prompted quickly by an industry pursuing profit objectives that pull in different directions.

The second alternative is to let the private initiatives run their course with little or no policy-based effort to direct them. Price discovery as we have known it will disappear quickly if this course is pursued or allowed. It will linger in beef where integration and contracting is logistically more difficult but will move forward quickly in pork. And where it persists, price discovery will take a different form. Large packers will get involved, perhaps, in "discovery" of a base price for contracts and then apply a "price grid" of premiums and discounts. The same base price might be extended to all sellers, with some pricing to value being accomplished via the grids. This is not the traditional price discovery, but whatever form it takes in an industrialized livestock sector, it will be in the presence of other and non-priced means of coordination.

There is still time for some public choice, some control, over the direction the livestock sectors take. A healthy research-based dialogue is needed if the choice of directions is not to be made by neglect and default.

References

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Price Discovery Challenges in Livestock

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The title of the session contains two implicit questions:

1. What will price discovery be like beyond 2000?
2. Will there be any “discovery” in a traditional sense?

Price discovery is the dynamic process of buyers and sellers seeking a market-clearing price.

Price discovery is not the same thing as price determination. To blame price discovery for \$57 fed cattle and \$8 hogs in late 1998 is much like attacking the messenger who brings bad news.

If price is to be effective in coordinating what is produced with demands and preferences of consumers, the price discovery system must be able to develop and send to the producer clear “price signals.” To do this requires the ability to price to value. This is happening, especially in the beef sector.

The ongoing decline in reliance on price-coordinated systems, a decline that will be at an exponential rate across the next 2-3 years, is happening because of widespread market failure in the livestock sectors. We do not have pricing to value, and price and the price discovery process cannot accomplish its assigned task of coordinating what is produced with what consumers want.

Pricing on averages

Product attributes important to consumers are not being identified and priced (tenderness)

Absence of quality control blocks consumer-driven merchandising programs

Market failures are related to

- Profit center mentality
- Failure to see price discovery as a “public good”
- Failure, in public policies and programs, to facilitate the price discovery process

Industrialization of food and fiber coming at least partly because of price system failures

- Integration as non-price control
- Captive supplies and contracting
- Alliances as a means of non-price coordination and control

If there is value in a “family-farm” structure with independent entrepreneurs in our livestock sectors, then price discovery has to be seen as a public good. Grades and standards have to be modernized if the price-based systems are to accomplish the necessary level of coordination and give separate profit centers at the producing level a chance to compete with systems coordinated by management directive. Price and market-related information that reflect the modern marketplace must be collected and disseminated to producers, and we must invest public dollars in better surveys and more complete coverage of all the ways livestock and meat are being sold, contracted, and delivered.

The economic opportunities associated with moving to “consumer driven” are huge and will not be denied. If price-based systems cannot accomplish this, non-price means of coordination will fill the vacuum. What price discovery will look like beyond 2000, how much of it will survive, and the economic and social fabrics of our livestock-producing communities will be largely determined by our public policies and programs in the next 5-10 years. Collectively, we must consider policies and programs that give a marketplace characterized by separate ownership at the producer level a chance to compete.