

# Communicating value to cattle producers: Issues, opportunities, and looking ahead

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**ABSTRACT:** Price systems in the beef industry have failed to communicate needed changes to producers. The lack of alignment between what is produced and what consumers want and are willing to pay for pushed beef demand down nearly 50% from 1980 through 1998. Ineffective grades allowed the price-driven system to fail, and current public policy blocks needed changes in quality grades for fresh beef. Product attributes of importance to consumers, such as tenderness, have not been identified and brought into the pricing process. In the presence of a failed pricing system, producers have looked to pricing grids, contracts, and vertical alliances to be paid for value and for investments in genetics and technology. The future will see continued competition between price-based systems and non-price means of coordination and quality control. If grades are not modernized and new technology brought in to allow more

attribute identification, the price-based system will continue to disappear. Producers will need to look at alternatives and find the approach that allows them to participate in a beef system that profits from better serving a discriminating and changing consumer. Packers have revised their business models as contractual arrangements and alliances have allowed them to coordinate what they buy with needs for new consumer-friendly products and to accomplish at least a modicum of quality control. Once low-cost commodity operations, the large beef packers are now more nearly quality-oriented. The huge investments in new products and markets they have made are the catalysts that have turned the beef demand picture to the positive. Those investments are important to the industry and will set the future of the beef industry for the year 2010 and beyond. The future of beef can be very positive if needed changes are made to ensure the consumer is better served.

Key Words: Communication, Contracts, Coordination, Prices

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## Introduction

Demand for beef decreased dramatically from the late 1970s through 1998. The primary reason for the decreases was a growing divergence between the fresh beef offering and what the consumer wanted as consumers' lifestyles changed. Beef lost over 30% of its market share and cattle inventories decreased from over 132 million head to 91 million head. Many producers were forced out of business and others consolidated to reduce costs. The prices consumers were willing to pay were not sufficient to support a beef industry that had grown to 43 kg in per capita consumption, retail weights, in 1976. By 1993, the inventories were much smaller and per capita consumption was down to 30 kg (Livestock Marketing Information Center, 2000c).

In theory, the price system should keep such a divergence from happening. Price premiums and discounts

are supposed to communicate to producers and prompt needed changes in production. In practice, the price system failed as a communication mechanism. Cattle were being sold on broad averages, with little or no price differences for value. Important product attributes such as tenderness were not identified by the quality grades, and price premiums or discounts cannot be generated if tenderness is not identified and brought into the price discovery process. In the presence of a failed pricing system, producers will increasingly look to non-price systems such as vertical alliances for more accurate identification of cattle value and for potential returns to investments in new genetics and new management practices. Cattle producers of all sizes will need to understand the new approaches in order to evaluate whether and how those approaches fit their particular needs and operations.

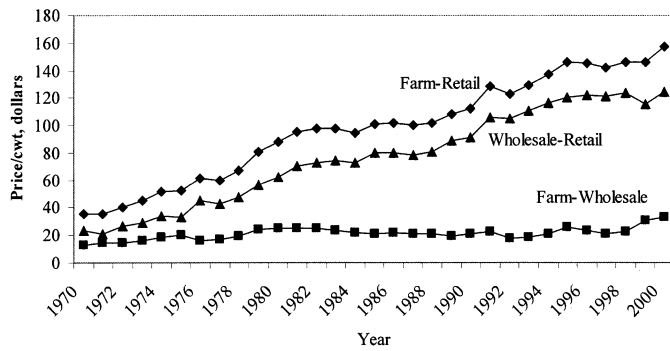
## Background

The value of calves from beef cow herds is derived from beef consumers' dollars. It is a derived value that, in the long run, will compensate cattle producers as a

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**Figure 1.** Price spreads for beef, 1970 through 2000. Source: Livestock Marketing Information Center (2000a; <http://lmic1.co.nrcs.usda.gov/>, Members Only section, spreadsheet BFPSPREAD.xls).

residual claimant. The beef system can be described as a supply chain that adds value as the product moves up toward the consumer. Middlemen try to extract a per-animal margin, and retail price minus the combined margins determines the calf price to producers. The individual producer is a residual claimant and has no power to set selling prices.

In the current marketplace, one firm may perform two or more of the economic functions along the supply chain, but the net result is the same. Consumers place a value on the fresh beef offering and decide whether to buy. If beef is offering the quality, consistency, and convenience the consumer is looking for, prices get bid up. If the fresh offering falls short in ways of importance to consumers, the packages stay in the counter and prices are pushed lower. The ability to always extract a margin sufficient to cover all costs weakens in moving from the retailer down through the cattle feeder, but all the “middlemen” want to extract targeted per-animal operating margins.

If all the middlemen margins were constant over time, producer-level prices would move directly with changes at the consumer level. But the margins between the producer and the consumer are not constant. They tend to move up with overall price inflation as labor, packaging, fuel, refrigeration, and transportation costs increase. Figure 1 shows wholesale, retail, and total price spreads for beef across recent decades. The spreads are in dollars per hundredweight, retail weights.

The price spreads are reported by the USDA and the “farm-wholesale” margin is essentially the packer/processor margin and the “wholesale-retail” margin or spread is the margin extracted by the retailer. It is clear that the price spreads have increased over time. Either costs, profits to middlemen, or some combination of the two are increasing. The expanding spreads are one source of downward pressure on producer prices (Livestock Marketing Information Center, 2000c).

The other primary source of downward pressure on producers’ calf and cow prices comes from decreases in

consumer-level prices. The price consumers pay to clear the market is pushed down from supply-side pressure when seasonal and cyclical forces increase slaughter levels. The prices consumers will pay for the quantity being offered are also pushed down when they do not like the offering and demand decreases. The supply-side pressures on price are related to time, and although they can last for several years as the cattle cycle moves through the liquidation phase, they do eventually come to an end. When decreasing demand is the problem, the price pressure will last as long as the consumer is dissatisfied with the product offering. Demand will decrease until the problem is fixed and until the sector moves to a “consumer-driven” status.

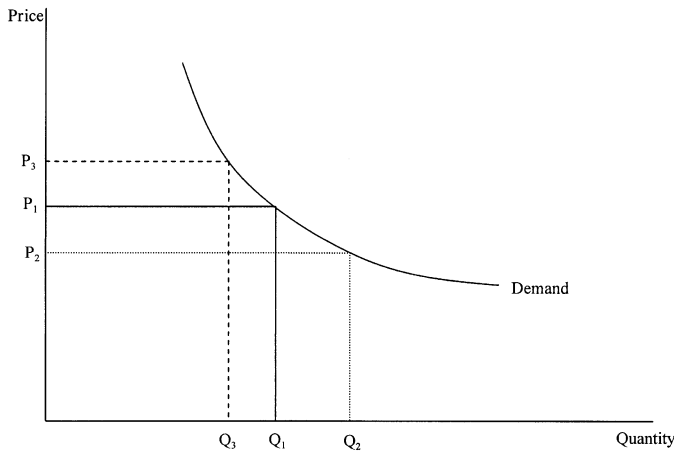
Sustained problems on the demand side mean the communication system inherent to any marketplace is not working. As lifestyles and eating behavior change, what the consumer wants and is willing to purchase will also change. There must be a communication channel to send a message to producers, a message that both identifies the needed changes and provides an economic incentive for producers to make new investments and adjust their production programs. If there are no effective communications and no recognizable set of economic incentives, what producers offer can increasingly diverge from what consumers want. A market failure has then occurred, and this “failure” is the dominant feature of the beef business in the United States during the decades of the 1980s and 1990s.

## Pricing Systems

Price-driven marketplaces with separate profit centers between the producer and consumer dominate the historical literature on the markets in any food sector. In theory, the consumer will send a message, a price premium or a price discount, down through the various profit centers to the producer. Price is bid up at retail on any product offering that finds favor with the consumer. The display counter empties, and the retailer bids up the price to get more of that particular product offering. Increasing prices and profits pull new investments into the sector, and growth in terms of increasing per capita supply, and, therefore, in increasing per capita consumption, is seen. The pattern in beef in the 1960s and into the early 1970s was one of growth, and increasing demand was the catalyst.

When retailers have to lower price to get the consumer to take the product offering, just the opposite occurs. Lower prices are pushed down toward the producer, and downsizing, disinvestment, and a loss of market share are the inevitable results. Dissatisfaction with the product offering brings decreases in demand, and producer-level price decreases can be significant and sustained.

Before turning to what is needed to prompt correct valuations and prices to beef cattle producers, it is useful to look at what happens when there is no effective communication in price-driven systems. It is problems



**Figure 2.** Price and quantity changes along a constant demand surface. Source: Original development. Price is price per unit such as cents per pound. Quantity is often per capita consumption in pounds.

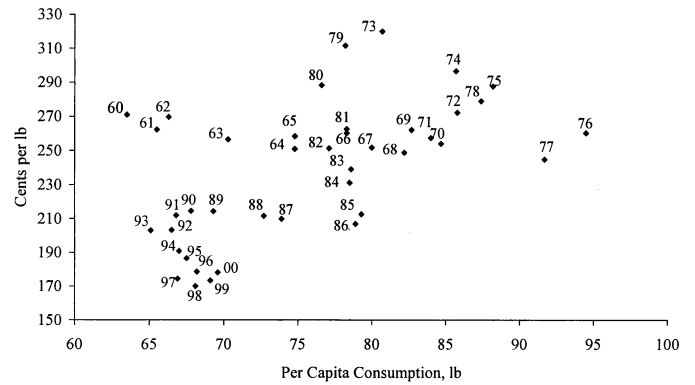
in this pricing dimension that cause market failures in economic systems.

### A Look at Demand

Demand is the schedule of quantities that consumers will take at alternative prices. If this schedule is plotted with price on the vertical axis, the curved line that results slopes down and to the right. Any price/quantity combination along the line represents the same level or strength of demand. If demand is not changing due to changes in preferences, in incomes, or in prices of substitutes, then any increase in quantity to  $Q_2$  will bring a market-clearing price,  $P_2$ , that is below the earlier  $P_1$  price. If quantity decreases due to seasonal or cyclical influences, the smaller quantity, or  $Q_3$ , will clear the market at a higher price than  $P_1$ , price  $P_3$ . Quantity and price change over time with no change in demand. In particular, quantity as measured by per capita consumption can change, and will change, with changes in per capita supply, but such changes in no way indicate whether the level or strength of demand has changed.

Figure 2 illustrates these possibilities. If  $Q_1$ ,  $Q_2$ , and  $Q_3$  are measuring per capita consumption, it is apparent that per capita consumption, which is a measure of per capita supply, can change while demand is constant. A new set of price-quantity coordinates is representing a different level of demand only if they are not on the curve labeled “Demand” in Figure 2.

Figure 3 presents a scatter plot with inflation-adjusted prices of Choice beef at retail on the vertical axis. Per capita consumption as a measure of quantity is on the horizontal axis. The average prices paid for the yearly quantity offered are identified by years in the plot. It is apparent that any negatively sloping line running through 1998, for example, is far below the



**Figure 3.** Per capita consumption and deflated Prices (CPI, 1982 through 84 = 100) for beef, 1960 through 2000. Source: Livestock Marketing Information Center (2000b; <http://lmic1.co.nrcs.usda.gov/>, under Members Only section, spreadsheets RETMT.xls and SUMQ.xls).

demand line running through 1980, 1985, or even 1990. Any move down and to the left is a decrease in demand, and the new demand line is below the prior line. If that pattern persists over time, low prices will force producers out of business, reduce per capita supply and per capita offerings, and the result is a loss of market share. That loss is apparent in the decrease in per capita consumption from near 43 kg in 1976 to 30 kg in 1993.

Table 1 presents a demand index developed for the Beef Promotion and Research Board as a part of an industry demand study launched in 1997. The index was calculated using 1980 as a base period (index value of 100) and it declined to 51.45 in 1998. To facilitate monitoring any progress from the 1997 study date, a transformed index with 1997 = 100 is also shown in the table. In 2000, the index with 1997 = 100 suggests demand was 6.7% above demand in 1997.

The dramatic and sustained decline in demand, running unabated from 1979 or 1980 through 1998, is evidence of a massive market failure. There was no significant response to consumers’ changing wants and no significant and badly needed modification of the fresh beef product offering for nearly 20 yr.

### A Failed Pricing System

The beef pricing system of the 1980s and 1990s appears to have failed in its role as a communication system. Many fed cattle sell each week in a few hours at one average price with no significant price discrimination in spite of a huge variation in final quality and value of fed cattle in any pen and in every feedyard. Producers who have invested in superior genetics, production technology, and management expertise get little or no reward if they sell at the average price. There is a subsidy flowing from producers of the high-value cattle in the overall quality and value distribution to producers of the low-value cattle. Schroeder and Graff (2000) estimate the subsidy at \$30 per animal.

**Table 1.** Beef demand index, 1980 through 2000<sup>a</sup>

Year	Per-capita consumption, lb	Deflated price, cents/lb	Constant demand price, cents/lb	Index 1980 = 100	Index 1997 = 100
1980	76.6	283.5	—	100.00	193.5
1981	78.3	258.2	274.13	94.19	182.3
1982	77.1	247.0	280.71	87.99	170.3
1983	78.6	235.0	272.40	86.27	167.0
1984	78.5	227.3	271.82	83.26	161.1
1985	79.3	212.7	268.59	79.19	153.3
1986	78.9	206.9	270.78	76.41	147.9
1987	73.9	209.8	298.35	70.32	136.1
1988	72.7	211.6	304.99	69.38	134.3
1989	69.3	214.2	323.76	66.16	128.0
1990	67.8	214.5	332.04	64.60	125.0
1991	66.8	212.0	337.63	62.79	121.5
1992	66.5	203.3	339.29	59.92	116.0
1993	65.1	203.1	346.94	58.54	113.3
1994	67.0	190.9	336.57	56.72	109.8
1995	67.5	186.6	333.81	55.90	108.2
1996	68.2	178.6	329.89	54.14	104.8
1997	66.9	174.2	337.14	51.67	100.0
1998	68.1	170.0	330.42	51.45	99.6
1999	69.1	173.4	325.02	53.35	103.3
2000	69.4	178.1	323.17	55.11	106.7

<sup>a</sup>Source: Original calculation. Per capita consumption data and nominal prices can be found at the Livestock Marketing Information Center (2000; <http://lmic1.co.nrcs.usda.gov/>, Members Only section, spreadsheet SUMQ.xls and RETMT.xls). The Consumer Price Index used to deflate the prices is available at the Bureau of Labor Statistics (<http://stats.bls.gov/cpihome.htm>).

The reasons for the long-running decrease in beef demand are widely known, and they are associated with the effectiveness of the price system (Schroeder et al., 2000). Moving through the 1980s, consumers were increasingly concerned about fat and cholesterol levels and they were willing to pay for convenience in the form of a reduction in meal preparation time (Purcell, 1993). Perhaps most important, consumers of fresh beef or beef entrees in their favorite restaurant wanted a consistent, high-quality eating experience. Instead of consistency, consumers were treated to a fresh beef offering with Choice cuts that were often tough. A “quality concerns” strategy workshop that examined the findings of the national beef quality audit conducted in 1991 ranked excessive external fat, excessive seam fat, low overall palatability, and inadequate tenderness numbers 1 through 4 in the top 12 list of concerns about beef quality (NCA, 1992).

The failure of the pricing system to provide coordination between what is produced and what consumers want has roots in both the public and private sectors. Public quality grades for beef are administered by the Agricultural Marketing Service (AMS) of the USDA on a user fee basis. The policy of AMS is to change the grades for any food or fiber product only when the industry demands change. The last significant change was in the late 1970s when the industry supported a move to “flatten” the marbling requirements against age of the animal. The argument was that declining age of the steer and heifer at slaughter would compensate

for lack of marbling. To the extent that marbling is correlated with tenderness, this reduction in marbling requirements for the Choice grade may have contributed to the tenderness problem of the 1980s and 1990s.

The economic purpose of grades in any food product is to identify and categorize the product attributes of importance to the final consumer. In beef, if any attribute such as tenderness varies significantly within a grade such as Choice, the necessary conditions for effective price signals are not met. There is no price signal mechanism for consumers to use in sending a message to either encourage production of tender beef or discourage production of tough beef. There is no categorization within Choice beef to which a price signal can be attached. A market failure results and consumers simply walk past the beef counter in the grocery store and order something else at the restaurant, even at their favorite steakhouse. The study by Lusk et al. (1999) indicated that consumers will pay significant premiums for guaranteed tenderness in beef, but tenderness is not identified as part of the quality grade specifications.

Across the 1980s and into the 1990s, the beef quality grades have been inadequate and outdated. Without reference to the widespread concern about consistency across USDA graders, the grade specifications were simply not sufficient. The volatile industry reaction to the late 1990s move to get B-maturity cattle out of the Choice and Select grades made the USDA and AMS leaders even more cautious about changing grades, and the beef quality grade program continues largely un-

changed since the 1970s. Helming (1996) stated that the USDA grading system stifled development and use of branded beef products and blocked value-based beef production and pricing from becoming a reality. Helming (1996) wanted to see the public grades replaced with private grades that included specifications on product attributes such as tenderness that influence the quality of the consumer's eating experience. However, this call for a dramatic change was buffered by observations on the usefulness of the quality grades in selling to other countries, and exports were starting to grow rapidly in the middle of the decade. There was no widespread support for elimination of public grades and no proposal for new approaches emerging from private firms along the supply chain.

The beef industry of late 2001 will likely not demand a change in grades. Those cattle owners feeding cattle with overall quality below the mean level of the quality distribution are receiving a significant subsidy. This part of the feeding industry will not want a change such as tenderness scores within the Choice and Select quality grades. They fought the proposed change in the B-maturity issue.

The public sector that includes federal agencies and the land-grant university system, perhaps predictably because of long-standing USDA policy, has been slow to make progressive change in the beef grades. As a result, the price-driven system could not prompt the vertical coordination and related quality control so necessary to improvement in the offerings to the consumer market, especially in fresh beef. Market share for beef declined sharply across the 1980s and 1990s. Cattle producers were forced out of business as inflation-adjusted retail prices plunged, even in the presence of declining per capita offerings, and prices were forced down at the cow-calf level.

The private sector reluctance to make changes was predictable and grows out of the way the sector has been structured under the traditional price-driven system. There are a number of profit centers between the original cattle producer and the consumer. Inter-level relationships have been adversarial for decades. Producers and producer groups complained when told by industry experts that they should make sure the new product development work was done and pointed fingers at the packers. But the large packers were following a business model of being the low-cost provider of commodity beef, and they were efficient in that role. The packers had no strong motivation to spend billions of dollars on new product lines when the raw material supply (fed cattle) was heterogeneous, unpredictable, and variable in quality and value. Without quality control to allow them to brand and stand behind their products, the large packers could see no way to build a fence around the benefits of investments in new products and in new markets. The industry drifted and needed corrections were not made.

## The Move to Non-Price Systems

The recent move to non-price means of coordination and quality control was very predictable. The profit opportunities coming from better serving consumers, long ignored, were becoming so apparent that they demanded attention. In-house analysts at the large packers were looking at the massive decline in demand and starting to analyze what could happen if that trend could be reversed. In pork, where grades and the price system had suffered a similar market failure, the move away from price-driven systems occurred at an incredible pace. The largest firm, Smithfield Foods, Inc., acknowledges publicly that some 70% of their kill is from their own genetics in company-owned and contract production programs. As the company achieved a measure of coordination and quality control, they were able to meet a company goal to move into export markets such as Japan, and company profits surged. The message was not lost on other meat packers and processors.

In beef, smaller firms in the further processing business moved first into pre-cooked product and attacked the problems of quality inconsistency and too much time in meal preparation. Contracts, price grids, vertical alliances, and other forms of non-price coordination were developed to help processors buy what they needed for a new product line. Non-price approaches to vertical coordination and quality control are now a reality. As the price-driven system is increasingly being abandoned, processors are identifying and buying the genetics and the quality control they need to serve the consumer with a new and branded product offering. In 2001, the large packers have largely abandoned a business model built around being a low-cost commodity operator and are using price grids, contractual procurement, vertical alliances and quality control and are offering branded and cooked product lines.

It is not impossible for the price-driven system to come back and compete with these non-price systems, but it is not likely to happen. At a minimum, it would appear that the quality grades would need to be modernized or widely used private sector replacements would need to be developed, and neither of these developments appears to be very likely. Instead, vertical alliances are sorting carcasses using in-house measures of tenderness to identify carcasses acceptable for branded and quality-assured product lines. Because these processes and procedures are developed with private monies, there will be less interest in participating in open-market, price-driven systems in which prices are averages and do not reflect the premiums that can be generated from branded beef products.

## What Producers Will Need to Do

Producers looking to be paid for value will have, therefore, two broad approaches they can follow. They can campaign hard to fix the price system to give it a chance to compete with the non-price approaches, or

they can go to the contracts, grids, and vertical alliances.

The price system will not be easy to fix. It will need a change in grades toward a more refined identification of product attributes that influence value to the consumer, and a corollary move to objective and high-tech measures will be essential. Any progressive proposal for change splits the cattle-feeding sector and seed stock producers. Firm-level profits and opportunities to increase those profits are still usually seen as more important than a progressive change for the industry as a whole. That was clear in the sometimes bitter dialogue surrounding the move away from B-maturity cattle. With leading meat scientists saying tenderness is a key factor in consumer acceptability and describing USDA quality grading as “mass inspection” and lacking in precision, those feeding the B-maturity cattle still put their bottom line first and some tried to block the change (Tatum et al., 1999). In the near term, the chances of an industry consensus to incorporate tenderness scores or other more refined measures in the quality grades are small. The price-based system will, in all probability, continue to languish and falter.

In the presence of a failed price system, producers need to look at the non-price coordination opportunities to learn what will be valued in a consumer-driven marketplace, and try to offer what consumers want. Depending on geographical location and the constraints that geography place on genetic mix, the need is to find an opportunity that will reward producer-level investments in technology and management expertise. Individual animal identification and feedback is essential and is increasingly available. No one grid or contract arrangement or alliance will fit every producer’s resource base and opportunities, so there is a need to look and compare. Fortunately, the alliances recognize the reality of geographical and other influences on genetic mixes, and the alliance within a producer’s region will probably fit some or most producer needs. The best situation, arguably, is one in which producers get a significant share of the “premium pool” associated with high-quality cattle moving into premium-priced, branded product lines, and some vertical alliances are offering producers who maintain ownership of their cattle a share of those premiums. It is this set of premiums for high-quality and branded product lines that can expand the number of consumer dollars shared across all participants, and competing for more of those consumer food dollars is very important (Hudson and Purcell, 2001).

## Implications

The move to non-price systems for beef products will not block all opportunities to make needed changes to give the price-driven system a chance. Modernization of beef grades, including taking into account varying levels of tenderness, would provide needed quality control. The price-driven model can be effective if it has the grades, technology, and policies to allow it to work. In the meantime, it will be the non-price alternatives that offer some chance of “pricing to value,” and it will be the price grids, contract arrangements, and vertical alliances that will likely continue to grow in importance. Producers wishing to be compensated for high-value cattle will need to take a look. If better coordination and quality control is the result of these new systems, both the individual cattle producer and the beef industry as a whole will face a more promising future.

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