

PRODUCING AND MARKETING QUALITY BEEF IN THE 21ST CENTURY¹

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Bottom Line

Evolving forms of value-based pricing of fed cattle will continue to increase in importance. Understanding how these new valuation systems work, what their components are, and how your management decisions affect the value of your cattle will be key for capitalizing on these opportunities. Having detailed data on your cattle and knowing how to analyze, interpret, and use these data to your advantage will be essential.

Importance of Beef Quality

One of the most difficult challenges and most financially devastating trends facing beef producers over the past 20 years has been the dramatic decline in beef demand by consumers. Beef demand is the amount of beef a consumer will purchase at a given price level. Demand includes both *per capita quantity* and *price*. If consumers do not desire a particular product on the retail shelf, the only way to sell it is to drop the price enough to induce someone to purchase the product. Over the past 20 years, the only way to sell the amount of beef produced was to successively drop retail price. That is, each year successively more consumers bypassed the beef counter. A brief review beef demand is important to understand the extent of this problem.

Figure 1 illustrates the inflation-adjusted beef price on the vertical axis and domestic per capita consumption on the horizontal axis from 1980 to 2000 (points on the scatter refer to years). From 1980 to 1986 the amount of beef offered for consumption increased slightly over 2 pounds per person. However, inflation-adjusted retail beef price had to decline 27% to encourage consumers to consume this additional 2 pounds. This large decline in retail price was reflected in a 35% decrease in inflation-adjusted fed steer prices over this same seven-year time span.

The large fed cattle price drop led to considerable liquidation in the cow herd, with noticeable declines in beef production realized by 1987. From 1986 to 1993, beef consumption per person fell by 18%. Such a huge decline would bring considerably higher retail prices in a market with stable demand. However, inflation-adjusted retail beef price increased only an imperceptible 1.5%. By 1998 beef demand had plummeted to nearly half of what it was in 1980 (Figure 2). ***That is, for a given quantity of beef available in the market in 1998, the price was only about half what it would have been with that same quantity produced at 1980 demand levels.***

During 1999 beef demand increased (by about 4%) for the first time in 20 years. In 2000 beef demand increased roughly another 3-4% getting demand back to the level it was in 1995/96, still

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well below a decade earlier. Though modest, these two consecutive years of demand increase, after such a long precipitous decline, are very important. They suggest that some of the changes that have taken place in the beef industry may have begun to strengthen demand.

In order to effectively improve demand it is essential one understand why so many consumers walked away from the beef counter. Based upon considerable research across numerous studies several key factors that beef consumers want have been identified. In particular, consumers want beef that is:

1. Always tender
2. Flavorful
3. Convenient to prepare
4. Consistently of high and predictable quality
5. Healthy and nutritious
6. Ensured safe from bacteria and any other food-borne illnesses
7. All the above and competitively priced relative to substitute meats

The dramatic and sustained decline in beef demand over time indicates that the industry simply failed to provide beef products that possess the attributes consumers wanted. If the beef industry had provided products possessing these characteristics, demand for beef in all likelihood would not have declined nearly as much as it did and would undoubtedly be at much higher levels today. Much like declining beef demand translates into frequent losses for beef producers (including cow/calf, back-grounders, and cattle feeders), improving beef demand makes profitability much easier and more frequent for all industry participants.

Addressing the Problem

The root of much of the beef demand problem has been poor vertical coordination in the industry. That is, consumers clearly told the industry, by walking away from the product, that beef was not providing what they wanted. Further exacerbating the problem was that virtually no product development was taking place until just recently. Today, processors, retailers, food service suppliers, and others have recognized the need for improved beef products that meet consumer demands. As a result, considerable efforts and investments are being put into improving beef product offering. This translates directly into processors needing more control over the kinds of beef they process meaning the need for more control over the kinds of cattle slaughtered. In particular, this has created increased interest in value-based pricing of fed cattle. That is, to acquire quality beef, processors recognize they must send these signals to producers through price premiums for desired quality attributes and discounts for undesirable traits.

At the same time processors began to realize a need for increased value-based purchasing to assure the quality of beef they need to meet demands, beef producers, who for years were satisfied with selling live cattle on averages, began to realize this was not an effective way to get price signals sent down the stages of production to cow/calf producers. For years fed cattle were predominantly priced on a live animal average basis with every animal in the pen, feedlot show-list, and even market region bringing the same price. Our research indicates that generally the range in actual value of fed cattle in a particular pen exceeds \$500/head. A lot of this range in value is associated with individual carcass weight differences, but frequently even carcasses with the same weight have value differences of more than \$100/head. ***Our research indicates that***

when fed cattle are sold on average live-weight values, producers of high quality cattle are essentially subsidizing producers of low quality cattle by an average of \$30/head. Virtually no message is sent regarding cattle value difference to feeders or cow-calf producers.

Enough producers have become frustrated with average pricing of fed cattle that now nearly 60% of fed cattle are sold via some method other than cash negotiated live animal trade (Figure 3). Many of these non-cash traded animals are sold under a value-based pricing system where each carcass receives a price that reflects its particular quality attributes.

Grid Pricing

The current popular form of value-based pricing fed cattle is grid pricing. Grid pricing refers to valuing each carcass in a pen in accordance with its own particular attributes. A typical grid is illustrated in Figure 4. This grid portrays premiums or discounts per cwt a particular carcass will receive relative to the carcass quality and yield grade. In this grid, the base carcass, a Choice, yield grade 3 carcass weighing between 550 and 950 lbs., would receive the base price per cwt.

Applying this grid to a particular pen of cattle helps illustrate how a grid works. Assume a base price for the Choice, yield grade 3 carcass is \$118.00/cwt carcass weight basis. A carcass that is a Select, yield grade 2 would bring a price of \$110.50/cwt (\$118/cwt base minus \$8.50 Select discount plus \$1.00 yield grade 2 premium). To calculate the net price for an entire pen, the proportion of weight in a pen (i.e., the number of carcasses times their individual weights divided the gross weight of the pen of cattle) times each respective premium or discount is added to the base price. A summary of how the overall average price of the carcasses in the pen would be calculated for a particular pen of cattle is shown in Figure 5.

Several important aspects of a fed cattle grid pricing system are worth noting. *First*, grid pricing premiums and discounts send strong signals and incentives to producers. These premiums and discounts reflect wholesale market price signals and therefore, significantly increase the amount of value information being transmitted from wholesale markets to producers. *Second*, when selling cattle on grids it is essential that you know how the cattle will perform. Especially important is being able to reduce the chances of having carcasses with substantial discounts such as heavy- or light-weight carcasses or yield grade 4 or 5 carcasses. The more information one has about past performance of cattle from a particular herd (i.e., cow-calf operation), the more accurately one can predict carcass quality attributes and avoid huge discounts. One or two heavily discounted carcasses can totally wipe out premiums for the rest of the pen. Thus, producer price risk increases in moving toward grid pricing. The way to reduce this risk is to increase information about expected cattle quality and implications of management and marketing decisions. *Third*, such information will help guide cow-calf producer genetic decisions including bull selection and cow culling. But, to make use of such information one needs to have individual animal identity from calving through slaughter and be able to link the calf back to its dam and sire. ***Managing cattle for grids is all about detailed data collection and use of these data to enhance management decisions.***

Management Tips for Grid Sellers

Several dimensions of management can enhance opportunities for increased profits from grid pricing. These dimensions range from short-run cattle feeding management to long-run genetic

selection decisions. Some grid pricing components are managed by relatively short run decisions. Consider carcass weight for example. Figure 6 illustrates how improved management of carcass weight would have added \$2,397 to total pen revenue in our example pen by hypothetically removing the 7.3% of carcasses that weighed in excess of 950 lbs. This assumes that one could have managed those cattle to sell them at lighter weight before the large weight discount was realized and that they would have been sold at the base yield grade 3 Choice price. This may slightly over-state the value of managing weight in this pen, but probably not by a large amount. Carcass weight should be relatively easy to manage and is certainly a decision that is managed in a short period of time during the time cattle are on feed.

An additional relatively short-run management decision is managing yield grade. Some yield grade propensity is genetic, however, yield grade is also affected by cattle feeding management. In addition, by doing a better job of managing cattle weights (eliminating heavy weights), a producer is likely going to improve yield grade as well. If the producer in the example pen was able to eliminate the 7.3% heavy-weight carcasses and also make the 3.6% and 0.4% of carcasses that were yield grades of 4 and 5, respectively, the total pen revenue could have been enhanced by \$3,421 relative to what the pen received (figure 7).

Consider one final component of the example pen of cattle. Suppose in addition to the short-run feeding management of eliminating heavy carcasses and yield grade 4 and 5 carcasses, the producer was able to make genetic decisions that improved quality grade so that the percentage of Standard carcasses went from 0.7% to 0.0% and the percentage of Select carcasses were reduced from 21% to 10%. This would result in a cumulative increase in pen revenue of \$5,381 or \$28.81/head (Figure 8). Could one make such management decisions to accomplish this kind of revenue enhancement? Further, could it be done without increasing costs by more than the increased revenue to increase overall profitability? The answer to these questions is some producers will figure out how to do it (some already are well on their way), and others may not. Those that do, stand to profit from improved management and they will be in a better position to make necessary changes that are going to continue in this respect in the future.

Challenge to Producers

Figure out where you want to be in the beef industry. Do you want to produce calves that are sold for average prices in a generic commodity market with little information about their likely finishing performance? Do you want to be rewarded for producing cattle that are higher quality? If you want to do the latter, you will need to acquire detailed information on your calves through the kill floor. Collect detailed records on every calf from birth through slaughter. Identify and determine over time carcass attributes that you can control through short-run feeding management decisions (e.g., carcass weight) and longer-run genetic selection. The remaining papers in this conference detail ways to help you address these management challenges.

In the future cattle value is likely to evolve to include additional attributes beyond quality grade and yield grade. In particular, the industry is likely to move toward objective quality measurement and more accurate red meat yield measures. Factors such as meat tenderness are going to be important quality determinants. Computer imaging will replace yield grade measures predicting red meat yield from a carcass. To the extent you can secure some of this information

as you manage now for current grids, you will be in a better position to capitalize as these new techniques are introduced.

Additional Information

You can find related publications on the Kansas State University Livestock and Meat Marketing web cite located at:

<http://www.agecon.ksu.edu/livestock/Extension%20Bulletins/Extension%20Bulletins.html>

or, go to <http://www.agecon.ksu.edu/> and go to livestock link then research publication link.

Publications at this location are updated often and presently, in addition to many others, include:

Fed Cattle Pricing: Live Weight & Dressed Weight

Fed Cattle Pricing: Formulas & Grids

Grid Pricing of Fed Cattle: Risk & Value of Information

Grid Pricing of Fed Cattle: Base Prices & Prem._Disc. Grids

Beef Tenderness & Beef Demand Publications

Valuing Beef Tenderness (4 page fact sheet)

In_Store Valuation of Steak Tenderness (12 page journal article)

Beef Demand Determinants: A Research Summary (4 page fact sheet)

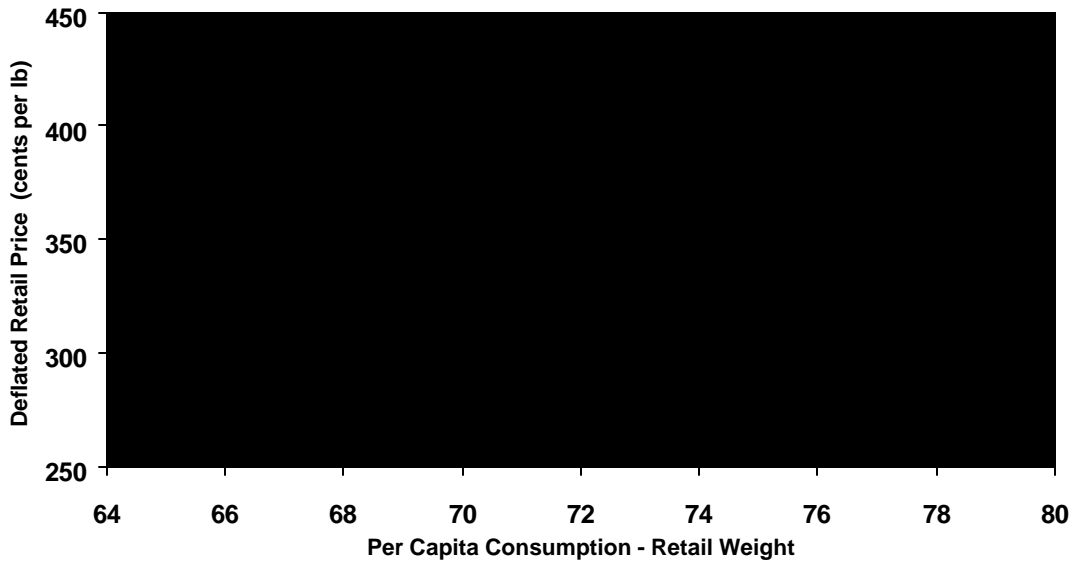
Beef Demand Determinants (complete 61 page report)

Meat Packer Vertical Integration & Contract Linkages in the Beef & Pork Industries: An Economic Perspective

Contracting In The U.S. Pork and Beef Industries: Extent, Motives and Issues

Beef Industry Price Discovery: A Look Ahead

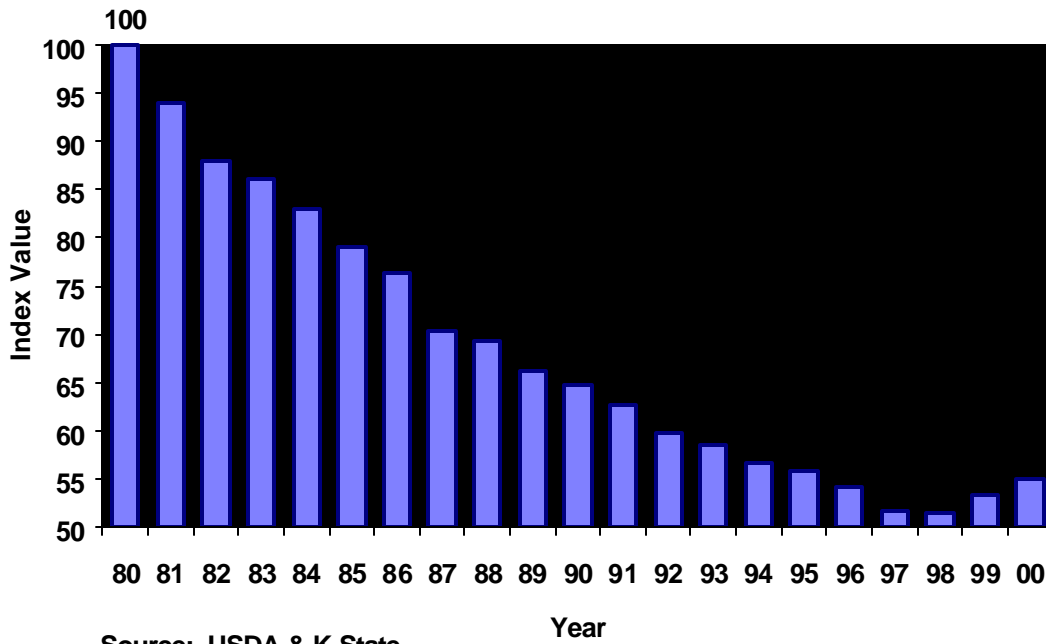
Annual Beef Price - Quantity Relationships 1980-2000.



Source: USDA & Commerce Dept. , Price Deflated by GDP Implicit Price Deflator 2000=100

Figure 1.

Retail Beef Demand Index, 1980=100



Source: USDA & K-State

Figure 2.

Weekly Formula Fed Cattle Sales as a Percentage of Total Marketings, Kansas and National, April 15-October 21, 2001

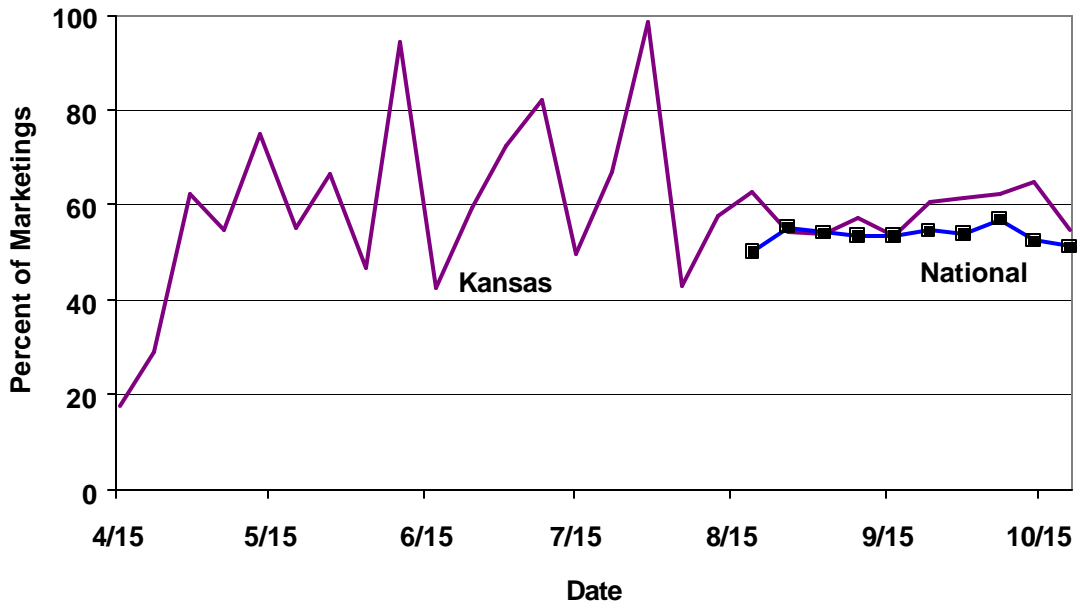


Figure 3.

Example Grid

Quality Grade	(\$/cwt carcass weight)				
	----- yield grade -----				
	1	2	3	4	5
Prime	9.00	8.00	7.00	-7.00	-17.00
Certified Angus Beef	5.00	4.00	3.00		
Choice	2.00	1.00	0.00	-14.00	-24.00
Select	-6.50	-7.50	-8.50	-22.50	-32.50
Standard	-15.00	-16.00	-17.00	-31.00	-41.00
Dark Cutters, Stags, Hardbones		-20.00			
Carcass Weights					
Greater than 950 lbs.		-20.00			
Less than 550 lbs.		-20.00			

Figure 4.

How Does A Grid Work?

Figure

Start With BASE PRICE Choice, YG-3 price \$118.00/cwt

5.

Attribute	USDA Grid		Percent		
Prime	+\$7.00	x	6.2	=	+ \$0.43/cwt
CAB	+\$3.00	x	24.9		+ \$0.75/cwt
Choice	+\$0.00	x	46.5		+ \$0.00/cwt
Select	-\$8.50	x	21.0		? \$1.79/cwt
Standard	-\$17.00	x	0.7		? \$0.12/cwt
Outs	-\$20.00	x	0.7		? \$0.14/cwt
YG 1	+\$2.00	x	1.5		+ \$0.03/cwt
YG 2	+\$1.00	x	33.2		+ \$0.33/cwt
YG 3	+\$0.00	x	61.2		+ \$0.00/cwt
YG 4	-\$14.00	x	3.6		? \$0.50/cwt
YG 5	-\$24.00	x	0.5		? \$0.12/cwt
<550 lbs.	-\$20.00	x	0		? \$0.00/cwt
>950 lbs.	-\$20.00	x	7.3		? \$1.46/cwt
				=	\$115.42/cwt
					carcass weight

Value of Managing Cattle Attributes

Figure

Attribute	USDA Grid	Percent	Percent
Prime	+\$7.00	6.2	6.2
CAB	+\$3.00	24.9	24.9
Choice	+\$0.00	46.5	46.5
Select	-\$8.50	21.0	21.0
Standard	-\$17.00	0.7	0.7
Outs	-\$20.00	0.7	0.7
YG 1	+\$2.00	1.5	1.5
YG 2	+\$1.00	33.2	33.2
YG 3	+\$0.00	61.2	61.2
YG 4	-\$14.00	3.6	3.6
YG 5	-\$24.00	0.5	0.5
<550 lbs.	-\$20.00	0	0
>950 lbs.	-\$20.00	7.3	0.00
PRICE		\$115.42/cwt	\$116.88/cwt
			\$2,397 pen revenue

6.

186 steers on feed 147 days, ADG=3.8, Conversion=6.9,
883 lb carcass, Choice, YG-3 price = \$118.00/cwt

Value of Managing Cattle Attributes

Figure 7.

Attribute	USDA Grid	Percent	Percent
Prime	+\$7.00	6.2	6.2
CAB	+\$3.00	24.9	24.9
Choice	+\$0.00	46.5	46.5
Select	-\$8.50	21.0	21.0
Standard	-\$17.00	0.7	0.7
Outs	-\$20.00	0.7	0.7
YG 1	+\$2.00	1.5	1.5
YG 2	+\$1.00	33.2	33.2
YG 3	+\$0.00	61.2	65.3
YG 4	-\$14.00	3.6	0.0
YG 5	-\$24.00	0.5	0.0
<550 lbs.	-\$20.00	0	0
>950 lbs.	-\$20.00	7.3	0.0
PRICE		\$115.42/cwt	\$117.50/cwt
			\$3,421 pen revenue

186 steers on feed 147 days, ADG=3.8, Conversion=6.9,
883 lb carcass, Choice, YG-3 price = \$118.00/cwt

Value of Managing Cattle Attributes

Figure

Attribute	USDA Grid	Percent	Percent
Prime	+\$7.00	6.2	6.2
CAB	+\$3.00	24.9	24.9
Choice	+\$0.00	46.5	57.9
Select	-\$8.50	21.0	10.0
Standard	-\$17.00	0.7	0.0
Outs	-\$20.00	0.7	0.0
YG 1	+\$2.00	1.5	1.5
YG 2	+\$1.00	33.2	33.2
YG 3	+\$0.00	61.2	65.3
YG 4	-\$14.00	3.6	0.0
YG 5	-\$24.00	0.5	0.0
<550 lbs.	-\$20.00	0	0
>950 lbs.	-\$20.00	7.3	0.0
PRICE		\$115.42/cwt	\$118.69/cwt
			\$5,381 pen revenue

186 steers on feed 147 days, ADG=3.8, Conversion=6.9,
883 lb carcass, Choice, YG-3 price = \$118.00/cwt

8.

Value of
Managing
Attributes
\$3.27/cwt
or
\$28.87/head