Potential Economic Returns from Selling Beef in a Specified Value-Based Market

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Summary

Three groups of steers--one theoretical group and two experimental groups--were evaluated for marketing cattle live, as boxed beef, and grade and yield when the live price was $71 to $73/cwt, grade and yield price $125/cwt for Choice yield grade 3 carcasses with $20/cwt discount for Select carcasses, and in a commodity-trim or close-trim boxed beef market. The results show that the value of high-yielding steers can be significantly increased if sold in a close-trim boxed beef market. The close-trim premiums ranged from $5.06 per head for Select close-trim yield grade 4 carcasses to $87.18 per head for close-trim Choice yield grade 1 carcasses. A group of experimental steers averaging 82% Choice and 60% yield grades 1 and 2 returned an additional $104 in the close-trim boxed market compared with selling live for $73/cwt. Another group of experimental steers averaging 21% Choice, 18% Standard, and 93% yield grades 1 and 2 had $29 per head greater return than if the steers had been sold live for $71/cwt. These comparisons emphasize the importance of knowing how cattle will potentially grade before selecting an alternative marketing strategy. This prior knowledge is most important when the spread in price between Choice and Select is high. Producers need to learn more about their cattle to predict how the cattle may grade for a specified value-based market.

Introduction

With increased awareness of the importance of quality, safety, and consistency of beef for greater acceptance by consumers, the beef industry is changing in all segments of production. Cow/calf producers need to work toward a more uniform cowherd that will produce more uniform high performance calves. Feedlot operators need to use specified nutrition and management programs to assure more consistent and quality carcasses from different types of cattle. Beef processors and retailers must use technologies known to improve safety, quality, and consistency of beef. Without market differentiation to recognize superior carcasses, there is no incentive for any segment to significantly change its production practices. Value-based marketing is the term being used to establish specifications for markets and to price beef carcasses relative to their value in specified markets. Producers rightfully question whether major changes in producing beef can be economically justified. Traditionally, the value of beef carcasses has been determined just prior to slaughter based on live weight or following slaughter based on carcass weight and attributes. Another method would be to value carcasses based on the quantity and quality of beef sold to retail. A tool to help establish value of boxed beef is the OSU Boxed Beef Calculator developed at Oklahoma State University. The purpose of this report is to compare the value of finished steers sold live as a group with that estimated for each individual animal by the OSU Boxed Beef Calculator for a theoretical group of steers and two experimental groups of steers.

Methods

The OSU Boxed Beef Calculator determines gross live and net carcass values for Choice and Select yield grade 4 or better carcasses for commodity trim (maximum of 1.0 inch external fat) and closely-trimmed beef (0.25 inches or less external fat). The program utilizes prices of Choice and Select boxed beef cuts for commodity- and closely-trimmed beef obtained from market reports, packers, or wholesalers. Costs of killing and fabrication are also inputs. Hot carcass weight, quality grade (Choice = 1, Select = 2) and yield grade to the nearest 0.1 of a grade are inputs to describe each carcass. Carcasses of Standard grade, over or under weight, dark cutting, and other defects which prevent fabrication are not evaluated in the program. Equations used in the OSU Boxed Beef Calculator were developed from cutting tests with 453 steer and 120 heifer carcasses fabricated first to commodity trim and then to 0.25 inch trim.

Theoretical Group

This was a group of steers weighing 1175 lbs with 63.75% dress and carcasses weighing 750 lbs. The mix of carcass grades was 15% Choice yield grade 1, 42% Choice yield grade 2, 9% Choice yield grade 3, 15% Select yield grade 1, 18% Select yield grade 2, and 1% Select yield grade 3. This would be group of high-yielding steers grading 66% Choice. The prices used were those for boxed cuts in mid-November of 1996. The live cattle bids were in the low $70 range at that time.

Trial 1

Ninety-six yearling steers, predominantly Charolais cross and weighing 840 pounds, were purchased at auction in

September following grazing during the summer. They were immunized and treated for external and internal parasites a corn-based diet containing on a dry basis 14% crude protein and 0.63 Mcal NEg/lb. Half of the steers were implanted with Revalor S®one week after the experiment was started. The steers were fed 158 days.

Trial 2

Ninety-six steers, predominantly Charolais cross and weighing 940 pounds, were purchased from one herd in southern Iowa in early March. The steers had been preconditioned, weaned and backgrounded on roughage and grain during the winter. The steers were fed corn-based diets containing on a dry basis 14% crude protein and 0.63 Mcal NEg/lb. All the steers were implanted with Revalor S® after they had been on feed four weeks. The steers were fed for 113 days.

All experimental cattle were sold at commercial beef-packing plants. Weights of hot carcasses were taken after slaughter, and measurements on the carcasses were obtained before beginning the test in October. The steers were all fed after 24-hr chill (Trial 1) or 48 hr (Trial 2). All regrades in Trial 1 were included in the data analysis. Area of ribeye and fat thickness between the 12th and 13th ribs were traced on acetate paper and measured later. Marbling and percentage of kidney, pelvic, and heart fat (KPH) for each carcass were called by the federal grader. Yield grades for individual carcasses were calculated from measurements on the carcasses using the standard yield grade equation.

Prices used to value the experimental cattle were live weight: $71 and $73/cwt and yield grade: $125/cwt Choice yield grade 3 hot carcass with discounts of $20 for Select grade, $30 for Standard grade, and $20 for yield grades 4 and 5. No premiums were paid for Prime and no Standard or yield grade 5 carcasses were fabricated in the boxed beef calculator. The Standard and yield grade 5 carcasses were valued on the grade and yield basis.

Table 1. Value of cattle estimated from Boxed Beef Calculator (Theoretical group).[a]

	Yield grade			
	1	2	3	4
Choice				
Commodity trim				
Net carcass value, $/cwt	138.64	129.82	123.46	117.82
Net live value, $/cwt	88.38	82.76	78.70	75.11
Value, $/steer	1039.76	973.65	925.88	883.65
Yield grade premium, $/carcass	66.11	47.77	42.23	
Close trim				
Net carcass value, $/cwt	148.82	137.20	127.76	119.17
Net live value, $/cwt	94.87	87.46	81.46	75.97
Value, $/steer	1116.12	1028.94	958.35	893.76
Yield grade premium, $/carcass	87.18	70.59	64.59	
Close trim premium, $/carcass	76.36	55.29	32.47	10.11
Select				
Commodity trim				
Net carcass value, $/cwt	115.49	108.11	102.72	97.61
Net live value, $/cwt	73.62	68.92	65.49	62.22
Value, $/steer	866.12	810.82	770.47	732.00
Yield grade premium, $/carcass	55.30	40.35	38.47	
Close trim				
Net carcass value, $/cwt	123.11	113.46	105.63	98.28
Net live value, $/cwt	78.48	72.33	67.34	62.65
Value, $/steer	923.29	850.94	792.24	737.06
Yield grade premium, $/carcass	72.85	58.70	55.18	
Close trim premium, $/carcass	57.17	40.12	21.77	5.06

[a]Based on 750 lb carcass; 63.75 dressing percent; drop credit of $9.30/cwt live wt; processing costs in $/head: YG = $80, YG 2 = $83, YG 3 = $86, YG 4 = $102; boxed beef cuts priced 11/18/96. Gross carcass value estimated with Boxed Beef Calculator. Net carcass value = (Gross carcass value + drop credit – processing costs)/carcass wt. Net live value = Net carcass value/live wt. Close trim premium = (gross live value close trim – gross live value commodity trim) – difference in fabrication costs to obtain close trim.

Results and Discussion

The data in Table 1 show the differences and premiums for cattle with different quality and yield grades based on prices during mid-November 1996. The value of beef carcasses increased as yield of carcasses improved. Value was greater for Choice than Select carcasses and greater for close- than commodity-trim boxed beef. The premium for close trimming was greatest for high-yielding carcasses and greater for Choice than Select carcasses. The yield grade and close-trim premiums ranged from $5.06 per head for Select close-trim yield grade 4 carcasses to $87.18 per head for Choice close-trim yield grade 1 carcasses. Based on these boxed-beef prices, there was about $20 per cwt discount for commodity-trim Select carcasses and $22 discount for close-trim Select carcasses. The average value of this group of cattle would have been $968.42 per head if sold in the close-trim boxed beef market—a $109.94 per head advantage compared with selling live at $73/cwt ($858.48 per head).

The average and range of values describing the experimental steers used in Trials 1 and 2 are shown in Tables 2 and 3. On average, both groups of steers would be considered very suitable relative to today's demand for beef. Both groups had similar carcass weight and fat cover. The steers in Trial 2, however, had larger ribeyes and lower marbling scores, suggesting they were a muscular group of cattle. The extreme variations from the low to the high values for each parameter were similar in both experiments. This variation exemplifies some of the problems of selling cattle in specification markets.

Economic values of the experimental steers in the three markets are compared in Table 4. The steers in Trial 1 were older and had superior quality grades and poorer yield grades, but similar average carcass weight and fat cover (Tables 2 and 3). The carcasses from Trial 1 included 78 Choice or Prime, 17 Select and no Standard; and 17, 40, 31, 6 and 1 yield grades 1, 2, 3, and 4 and 5, respectively. Compared with selling the steers in Trial 1 live at $73/cwt, selling grade and yield, commodity- or close-trimmed boxed beef would have returned an additional $54.29, $71.08 or $104.56 per steer, respectively. The range in least to greatest value of the carcasses in the close-trim boxed beef market was $660 per head. In Trial 2, there were 20 Choice, 57 Select and 17 Standard; and 30, 57, 6 and 1 yield grades 1, 2, 3 and 4, respectively. Selling the steers in Trial 2 grade and yield, commodity- or close-trimmed boxed beef would have netted -$39.08, -$4.32 or +$29.08 per steer compared with selling live at $71/cwt. It was assumed a cattle buyer might have detected the poorer grading steers in Trial 2 even though they had similar fat cover. The range in least to greatest value of the carcasses in the close-trim boxed beef market was $500 per head in this group of steers.

The steers in Trial 2 had greater value sold live than grade and yield or as commodity-trim boxed beef because of the high discount for Select and Standard carcasses. The 17 Standard carcasses were not accepted in the boxed beef market and were discounted similar to the grade and yield group. As a group, the steers in Trial 2 performed reasonably well in the close-trim boxed beef program because they were predominantly yield grades 1 and 2. The steers in Trial 1 performed very well in the grade and yield and boxed beef markets because they were predominantly Choice and Prime carcasses and 60% yield grades 1 and 2. All of the carcasses in Trial 1 were accepted in the boxed beef market except the one yield grade 5. The extra cost of processing the six yield grade 4 carcasses was more than offset by the greater value of the yield grade 1 and 2 carcasses.

The results of this study indicate that high-yielding cattle have considerably more value in a close-trim boxed beef market, and that it would be in the financial interests of producers to sell these cattle in such a market. The benefits of a boxed beef market, however, are greatly diminished when there is considerable discount for quality grade or if there are significant numbers of Standard grading carcasses not accepted into the boxed beef program. The two groups of experimental steers compared in this study did not have similar advantages in the three markets even though both groups were predominantly high-yielding cattle. If a

Table 2. Average and range of carcass values for Trial 1.

	Average	Low	High
Starting wt, lb	837	712	1034
Ending wt, lb	1236	1019	1671
Carcass wt, lb	815	605	1064
Dressing percent	61.8	57.7	63.9
Fat cover, in	0.39	0.08	1.18
Ribeye area, sq in	13.0	10.3	16.9
Marbling[a]	450	280	770
Yield grade	2.9	1.2	4.8
KPH fat, %	2.2	1.0	3.0

[a]Practically devoid = 100, Small = 400, Slightly abundant = 700.

different pricing structure had been used for the boxed beef cuts—e.g., less discount for Select grading carcasses—both groups of steers would have returned more money compared with the live market.

These comparisons emphasize the importance of knowing how cattle will potentially grade before selecting an alternative marketing strategy. This prior knowledge is most important when the spread in price between Choice and Select is high. This knowledge of potential grading of finished cattle will develop when producers learn more about their cattle. When selling grade and yield or in a boxed beef market, producers take the risk of discount for nonconforming carcasses. Before realizing the potential economic benefits depicted in this report, producers may have to participate in a marketing program that best fits their type of cattle in order to obtain the records required to improve their cattle and management skills to be more competitive in a boxed beef market.

Implications

High-yielding beef carcasses can return significantly more dollars in a boxed beef market. However, depending upon discounts for nonconforming carcasses or the spread between Choice and Select, the benefits may be greatly reduced or even lost compared with selling live. Producers need to obtain information about their cattle to effectively compete in alternative markets.

Table 3. Average and range of carcass values for Trial 2.

	Average	Low	High
Starting wt, lb	942	766	1157
Ending wt, lb	1289	1044	1508
Carcass wt, lb	795	643	964
Dressing percent	61.4	54.8	73.3
Fat cover, in	0.36	0.12	1.06
Ribeye area, sq in	14.6	11.2	18.5
Marbling[a]	340	250	450
Yield grade	2.3	0.3	4.5
KPH fat, %	2.5	1.0	3.0

[a]Practically devoid = 100, Small = 400, Slightly abundant = 700.

Table 4. Average and range of values of experimental steers in different markets.

	Average	Low	High
Trial 1		$ per steer	
Live[a], $71/cwt	908.20	720.58	1073.63
Live, $73/cwt	933.78	740.88	1103.88
Grade and Yield[b]	988.07	610.85	1188.75
Boxed beef[c], commodity trim	1004.86	610.85	1218.45
Boxed beef, close trim	1038.34	610.85	1271.34
Trial 2			
Live, $71/cwt	885.98	673.47	1184.78
Live, $73/cwt	910.94	682.44	1218.16
Grade and Yield	846.90	747.60	1298.75
Boxed beef, commodity trim	881.66	754.84	1353.84
Boxed beef, close trim	915.06	881.96	1382.15

[a]Live weight calculated from carcass weight divided by a constant dressing percentage of .6375.

[b]Grade and yield value calculated from actual individual carcass weights and $125/cwt for Choice yield grade 3 carcasses with $20/cwt discount for Select, $30/cwt discount for Standard and $20 discount for yield grades 4 and 5. No premiums were paid for Prime or yield grades 1 and 2.

[c]Boxed beef value determined from use of OSU Boxed Beef Calculator using mid November, 1996 prices for commodity- and close-trim boxed beef cuts.