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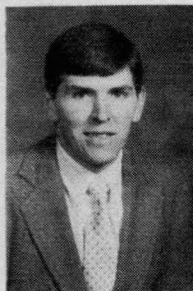
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SLAUGHTER CATTLE PRICING

by

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Slaughter cattle prices can change substantially over a fairly short time period. For the week of March 14, 1991 steer prices averaged \$81.74; by the week of August 15, 1991 prices had declined to \$65.04, a 20% drop in five months. During the winter of 1992-93 fat steer prices increased from \$74.86 for the second week of November to \$84.62 by the week of March 25, a 15% increase in four months. This year prices have declined from \$76.66 for the first week of April to less than \$65 for the last week of May, a 15% drop in only six weeks. These prices are the five-market average reported by the USDA, Livestock Market News, "Longhorn Flier."

When these changes occur, producers, meat packers, and others often want to know why. Market analysts and forecasters often are found scratching their heads as well. The intent of this article is to examine the market forces that affect the supply and demand for beef, and ultimately the general price level for slaughter cattle and the short term variations from that general level. Since slaughter cattle can be sold by any of three methods--live weight, hot carcass weight (in-the-beef), and carcass weight and grade (grade and yield)--the nature of these methods and the circumstances under which each method might be preferred by producers also will be explained.

General Price Level

In a free market economy, price is determined by the forces of supply and demand. If demand for beef increases then the price should increase, and if the supply of beef increases then the price should decrease. There are two problems with this simple explanation of price determination: (1) the relevant supply and demand variables must be identified; and (2) the actual supply and demand relationships, i.e., the amounts of product that will be purchased or sold at various prices, are not

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HOG COMMENTS

by

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Early in 1994, there was a lot of talk about slaughter hog prices above \$50, even as high as \$55, for this Summer. Certainly, not many people were talking about prices below \$45 early in June. And yet, that is what we see. The forecasters (or hopers) were wrong.

Forecasting never is easy. There are too many things which can go wrong. However, it still is necessary. After all, most sales are made on a cash basis, but not until several months after the production process is started.

One way some people forecast is to use the futures market--not as a hedge but merely as a guide as to where prices are going. Is that a good idea? How accurate is the futures market as a forecaster? A quick look at only one example may be surprising.

During the six-year period from 1988 through 1993, the "futures forecast" for June (June futures as reported on January 15) has been lower than the cash market in mid-June. The range in "errors" was as low as \$1.30 in 1993 (June futures in January was \$48.20 and the cash in June was \$49.50) to as high as \$8.05 in 1990 (June futures in January was \$52.95 and the cash in June was \$61.00). Only in 1989 was the June futures in January higher than the cash in June (\$9.65 versus \$47.00).

The above may lead one to conclude that it doesn't pay to hedge in January for Summer sales. That would be the wrong conclusion. One need look only at 1994 to see why. In January, 1994, the futures price of June hogs was \$53.87. That price was well above breakeven although it was not above most forecasted prices. What happened if the producer waited for the cash market in June? On June 3, cash hogs in Sioux Falls were at about \$41.50. In other words, the futures market "errored" by \$12.50. Unfortunately, for the

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known with certainty and are subject to change over time. What are the relevant supply and demand factors to be considered?

Demand

Consumers do not eat, wear, or use slaughter cattle. They eat hamburgers and steaks, they wear leather boots and jackets, and they use many other products made from slaughter cattle. Thus, the demand for slaughter cattle is derived from the demand which meat packers have from manufacturers, wholesalers, and retailers of beef and beef by-products.

Demand at the retail level for beef is affected by the quantity and price of pork, poultry, and other meats. If the quantity of these other meats increases, their price should decrease and this would decrease the demand for beef. Retail demand for beef also is affected by the general state of the economy and the level of consumer income. Holidays and retailers' features and promotions of various meat cuts also affect the demand for beef. All of these factors combine to influence the demand meat packers have for boxed beef. Because some meat and many meat by-products are exported, changing trade agreements, foreign exchange rates, and other related factors also influence the demand packers have for meat and meat by-products.

As demand for box beef and by-products changes, packers evaluate their current inventories and then adjust their demand for slaughter cattle. As can be seen from this brief discussion, understanding demand for slaughter cattle is more complicated than simply drawing a line on a graph.

Supply

The size of the cow herd impacts the number of cattle that are placed on feed and this affects the supply of slaughter cattle at any given time. Alternative feeding programs, for example, wheat pasture grazing, or backgrounding before finishing also influence the number of cattle available for slaughter in a particular time period.

The overall number of cattle on feed impacts the general price level for a year, but does not have that much impact on current prices. Current prices are influenced more by the showlists. The number of cattle on feed and their feedlot performance determines when and how many cattle are placed on the showlists.

Price Determination

In determining the supply of slaughter cattle that will affect prices in the next few days to few weeks, one needs to get very specific. The variable of greatest importance is the size of cattle feeders' weekly showlists and the weight and condition of the cattle on the showlists. These are the cattle that can and must be sold within the next few days or weeks.

So, based on the demand packers have for boxed beef and by-products, and the supply and condition of slaughter cattle available on the showlists, how is price actually determined? The beef packing industry is a high volume, low margin industry concerned with maintaining the flow of a non-storable product. It is also a highly concentrated industry with the largest four packers accounting for 80% of the box beef volume. And, it is an industry with excess capacity.

One result of these industry characteristics is some interesting and unique pricing strategies. Because of their size, it might be assumed that the major packers have the market power to set prices for boxed beef and for slaughter cattle. Furthermore, it could be assumed that the price one packer sets will influence other packers and their pricing decisions.

However, because (1) the major packers only have the ability to store a few days inventory of box beef and (2) their plants need to be run near full capacity to operate cost efficiently, the ability of packers to set the price of box beef above the competitive market equilibrium price is limited. If packers try to set higher prices, retailers will simply stay out of the market a day or two and packers will be forced to lower their prices to move the product.

On the purchasing side of the market, packers also lose some of their market power because of excess industry capacity. Packers must bid competitive prices to obtain their share of the available slaughter cattle and operate their plants as near to full capacity as possible.

To gain greater insight into the price negotiations between packers and feeders, it is necessary to reconsider the importance of the showlist. When the showlist is relatively small, and the cattle are not overly fat, cattle feeders have an advantage in the price negotiations. They realize that packers need cattle to keep their plants operating and they do all they can to get as high a price as possible. However, if feeders get too greedy, and try and feed cattle a little longer before selling, the bargaining position can quickly turn in favor of the packers. Once the packers see slaughter weights

increasing, they can stay out of the market for a few days and suddenly there are too many heavy cattle on the showlists. When this occurs, packers can reduce their bids considerably because they realize that those cattle must be sold.

To summarize, all of the demand and supply factors discussed have an impact on the price of slaughter cattle. However, it probably is (1) the continual pricing gamesmanship between major packers and feeders, (2) the packers' need to run near full capacity and (3) the feeders' need to keep their showlists current that are the primary determinants of short term slaughter cattle prices. When prices move sharply higher or lower in a short time period, it probably is due in large part to a change in the relative negotiating power of the two parties.

Prices Offered

Once a general price level is established, how are day-to-day prices actually determined and what accounts for the variation in these day-to-day prices? On at least a daily basis, each of the major packers examines their movement of box beef and by-products and evaluates the number of cattle they have purchased and the number of cattle they need to purchase in the next few days. They also closely monitor fed cattle prices, box beef prices, by-product prices and futures market prices. From this information they establish a price they would like to pay for par cattle. That price generally is for a USDA Choice, Yield Grade 1-3, 550-950 lb. carcass. They then establish discounts for USDA Select or lower quality grades, Yield Grade 4-5, and light and heavy carcasses. The discounts change throughout the year depending upon the type of cattle being supplied and the demand for USDA Choice versus no-roll (Select or lower grade) beef.

Buyers for the packers are given this information and attempt to buy cattle at these prices. If a seller chooses to sell on a Grade and Yield basis, the price offered is simply the par price and discounts discussed earlier. If the seller accepts this offer, the sale is confirmed. However, a check is not written until after the cattle are slaughtered and graded by a USDA grader. The seller in this case bears the risk of cattle not meeting the par specification and being subject to the various discounts. Since the price is based on the actual carcass weight, not live weight, the seller also bears the risk of dressing percent, or yield as the packers would say.

If a seller chooses to sell in-the-beef (hot carcass weight), then the buyer must estimate what percent of cattle will meet the par specifications and what percent will be subject to the various discounts. The buyer then

offers the seller a carcass weight price for the cattle. In this case the buyer bears the risk of the cattle not being of the expected quality and yield grades. However, the seller still is subject to the risk associated with dressing percent, and the check is not written until the cattle are slaughtered and the carcass weight determined.

Lastly, if a seller chooses to sell on a live weight basis the buyer must estimate not only the cattle quality, but also the expected yield or dressing percent. The buyer then offers the seller a live weight bid, based on the estimated quality and yield. If the seller accepts this bid, the cattle are weighed and the seller receives a check. In this case, the buyer bears all of the risk associated with quality and yield.

As buyers are able to buy more or fewer cattle than the packer wants, the par price and discounts may be adjusted down or up to adjust to the competition and to the sellers willingness to sell. Is there an advantage to selling via one method or another? The answer to this question depends upon the seller's knowledge of the cattle and the buyers estimate of the quality and yield of the cattle.

Pricing Example

Assume that a packer establishes a par price of \$110/cwt for USDA Choice carcass beef. The discounts are set at \$5/cwt for Selects, \$20/cwt for Yield Grade 4s, \$15/cwt for light carcasses and \$25/cwt for heavy carcasses. Assume a feeder has 100 head of steers to sell that grade 70% Choice and 5% of the Choice steers are Yield Grade 4. Their average live weight is 1200 pounds and their average carcass weight is 750 pounds (this is an average dressing percent, or yield, of 62.5%). All 100 steers are within the acceptable carcass range.

If these steers are sold on a grade and yield basis, then the net carcass price will be \$107.50/cwt [$(65\text{hd} \times \$110 + 5\text{hd} \times (\$110 - \$20) + 30\text{hd} \times (\$110 - \$5)) / 100$] and total revenue will be \$80,625 [$\$1.075/\text{lb} \times 750 \text{ lbs.} \times 100 \text{ steers}$]. This would equate to an average live weight price of \$67.19/cwt [$(\$1.075/\text{lb} \times 750 \text{ lbs}) / 1200 \text{ lbs}$]. The actual revenue and prices may be slightly different from these computed because revenue is determined by multiplying the actual carcass weight, not the average, by the Choice, Select, or Yield Grade 4 price.

The buyer may look at these steers and estimate them to be 65% choice with no Yield Grade 4's. The carcass price, in-the-beef, offer would be \$108.25/cwt [$(65\% \times \$110 + 35\% \times \$105)$]. In this case, the seller would be better off with the in-the-beef offer than going grade and yield, and the buyer would bear the risk of incorrectly estimating the number of Yield Grade 4's. However, suppose the buyer correctly estimates that



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70% of the steers will be Choice, but estimates that 10% of the Choice steers will be Yield Grade 4's. The in-the-beef price offer would be \$106.50/cwt [$(60\% * \$110 + 10\% * \$90 + 30\% * \$105)$]. In this case the seller would benefit by selling grade and yield rather than in-the-beef. The catch here is that neither buyer nor seller knows with certainty how the steers will look after the hide has been removed. Both must estimate this. Then, if the seller believes the cattle will do better than the buyer believes they will do, he can take the risk and market them on a grade and yield basis.

The same process is involved in making and evaluating live weight bids with the added component of estimating dressing percent. For the live weight bid, assume that the buyer correctly estimates the percent Choice and the number of Yield Grade 4's, but estimates a yield or dressing percent of only 61%. In this case the live weight price would be \$65.58/cwt [$\$107.50 * .61 = \65.58]. In this example, the feeder would benefit selling either in-the-beef or grade and yield because the buyer under-estimated the dressing percent.

Other examples could be provided that would show each of the marketing methods to be superior depending upon the type of cattle and the buyer's estimate of the cattle. The key for sellers is to know as much about their cattle and their feeding system as possible. If sellers can establish a degree of consistency in their cattle, then they can be in a better position to evaluate the offers of buyers, and buyers will likely do a better job of bidding on that seller's cattle.

(Murra – Continued from p.1)

producer, the error was in the wrong way (cash lower than predicted by futures), just the opposite from what had been the case for 5 of the last 6 years.

While the above is only a quick look at one example, it does have several important meanings. First, the futures market is no better at forecasting than any other tool or method. Second, the price offered on the futures market is the one you get only if you actively hedge. Third, the futures can prevent the "don't go wrong big" situations. Hedging in early 1994 would have prevented most, if not all, of the price drop which occurred. Yes, the gains by not hedging some years would not have been realized. Most of the time, those gains are much smaller than the losses noted this year.

In order to survive, the independent, family-farm type producer must be an efficient producer. He or she must be a good marketer, too. Maybe the first half of 1994 will help drive home that point.

ECONOMICS COMMENTATOR

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