



BRIEFING

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U.S. Beef Price Dynamics in 2003

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Objective

Analysis

For Informed

Decision Making

Prior to the U.S. BSE (mad cow disease) outbreak reported on December 23, 2003, the U.S. beef industry had experienced record beef prices at all market levels during the second half of 2003. For example, USDA and Livestock Marketing Information Center (LMIC) data show that in October 2003 prices of feeder cattle, fed cattle, and boxed beef exceeded those in October of 2002 by a range of 26 percent to 58 percent. Retail beef prices increased by an average of 21 percent over this period, but less than the 58 percent increase in wholesale beef prices. Retailer beef margins declined as farm and wholesale beef prices increased.

Examples of beef price increases from October 2002 to October 2003 are: (1) 600-650 lb. feeder steers, \$85/cwt to \$107/cwt; (2) fed choice steers, \$65/cwt to \$102/cwt; (3) boxed choice beef, \$112/cwt to \$177/cwt; and (4) choice retail beef, \$3.26 lb. to \$3.93 lb.

Reasons

The single case of BSE (mad cow disease) in Canada (May 2003) may have been a catalyst for the 2003 beef price surges. As a result of that reported case, the United States and the rest of the world closed off imports of Canadian live cattle and beef products.

Beef imports from slaughtered animals of 30 months or less into the United States were later restored, but have remained relatively low since reinstatement.

The primary factors causing the recent price increases relate to economic fundamentals in the beef market. These include decreased U.S. cattle inventories since 1996 (caused by relatively low cattle prices and drought problems), increasing domestic beef demand since 1998, and to a lesser extent, decreases in total U.S. net beef imports (imports less exports including live cattle) since 1993. Other factors causing the price advances were October 2002-to-October 2003 decreases in slaughter cattle weights and increases in beef by-product values. Corn prices also decreased over this period, increasing the demand price of feeder cattle.

Overall, the 2003 beef price increases are the result of increasing beef demand and decreasing beef supplies. The recent decrease in beef supplies particularly reflects the relative shortage of Choice grade beef as fewer cattle have been fed to this grade. As slaughter cattle prices have increased, feedlot marketing have accelerated (shorter time on feed) and slaughter weights have been reduced.

Price Decomposition

Many producers assume that the 2003 moratorium on Canadian live cattle and beef imports is primarily responsible for U.S. beef price increases. To delineate the causes of price advances, a statistical model of demand and supply in the U.S. beef sector was used. The model measured several economic factors hypothesized to cause beef price increases, including: (1) domestic retail beef demand; (2) domestic cattle slaughter and average slaughter weights; (3) live cattle imports from Canada, net beef imports from Canada (imports less exports excluding live cattle), and net beef imports from other countries (excluding Canada); and (4) beef by-product values and corn prices. The focus is on changes in fed cattle prices for a one-year period of October 2002 to October 2003. Prices in the feeder cattle market normally follow those in the fed cattle market; therefore, the effects of these economic factors extend to the feeder market.

Based upon data from the USDA and LMIC, the percentage changes in the economic factors from October 2002 to October 2003 were: (1) domestic beef demand (measured by a beef demand index) increased 6 percent; (2) commercial cattle slaughter from domestic sources decreased 5.5 percent and average slaughter cattle weights decreased 4 percent; (3) live cattle imports from Canada decreased to zero, which implied a reduction in U.S. slaughter cattle supplies of about 4.5 percent (the Canadian import share of U.S. slaughter cattle supplies in 2002), net beef imports from Canada decreased 70 percent, and net beef imports from all other countries decreased 7 percent; and (4) U.S. by-product values (hide and offal) increased 8 percent and corn price decreased 14 percent. Commercial

cattle slaughter, as reported by the USDA, includes cattle from both domestic and foreign sources. Thus, the October-to-October decline in commercial cattle slaughter was 10 percent, i.e., 5.5 percent from domestic sources and 4.5 percent from Canada.

Results

Table 1 gives the relative impacts of these economic factors in percentage and dollar terms. The “Economic Factors” in the table are arranged in descending order of importance. The “Percent Changes in Price” in the table (in parentheses) are generated through the statistical model. Multiplying these percentages by average fed steer price of \$83.35/cwt for October 2002 and October 2003 gives the dollar/cwt figures in the top row, labeled “Price”.

The leading factor in the cattle price increase was the decline in domestic cattle slaughter, which increased cattle price by \$7.83/cwt. The second leading factor was the cessation of Canadian live cattle imports, which increased cattle price by \$6.42/cwt. The Canadian effect was relatively large since it represented 45 percent of the reduction in U.S. commercial cattle slaughter.

The strength of consumer beef demand since 1998 has been

attributed to several factors including beef product promotion, beef product development (such as convenience foods), improved public perception of beef health attributes, and high protein diets (i.e., the Atkins diet). Improving beef demand was the third leading cause of the 2003 price increase, which added \$3.00/cwt to fed cattle price. Declines in average slaughter weights, due to acceleration of fed cattle marketing, was the fourth leading factor. This factor increased fed price by \$2.04/cwt.

Changes in prices of beef by-products affect meat packer price bids for slaughter cattle since by-products are crucial for covering packer profit margins. The increase in the value of by-products added \$1.67/cwt to fed cattle price, the fifth leading factor in affecting fed price. The last two factors were decreases in net beef imports from Canada and from other countries, which increased fed cattle price by \$0.45/cwt and \$0.08/cwt, respectively. The relatively small effect of these variables reflects two factors. First, *net* beef imports from *all* countries constitute only about 4 percent of U.S. beef supplies, and second, net beef imports more directly impact the wholesale-retail level of the market.

Table 1: Factors Contributing to 2003 Fed Cattle Price Increases Over 2002 Fed Prices

Market	Economic Factors						
	Domestic Cattle Slaughter	Canadian Cattle Imports	Domestic Beef Demand	Slaughter Cattle Weight	Beef-by Products	Canadian Net Imports	Other Country Net Imports
Fed Steer Price	\$7.83/cwt	\$6.42/cwt	\$3.00/cwt	2.04/cwt	\$1.67/cwt	\$0.45/cwt	\$0.08/cwt
Percent Changes in Price	(9.40%)	(7.70%)	(3.60%)	(2.45%)	(2.00%)	(0.54%)	(0.09%)

Note: Net Imports in the last two columns are beef imports less beef exports, excluding live cattle. “Percent Changes in Price” are the percentage changes in each of the “Economic Factors” from October 2002 to October 2003 multiplied by their model coefficients.

Summing up the estimated changes in fed cattle price, by economic factor, gives a total price increase of \$21.49/cwt. When added to the October-to-October average price of \$83.35/cwt, this pushes U.S. fed steer price to nearly \$105.00/cwt, which is within the \$93/cwt to \$113/cwt range of weekly fed prices in October 2003 reported by the LMIC.

The demand for feeder cattle (by cattle finishers) is positively correlated with the price of fed cattle. Thus, prices in the feeder cattle market logically followed the price increases in the fed cattle market. Feeder cattle prices were also supported by about \$2.00/cwt due to a 14 percent decline in corn price (from \$2.41/bu in October 2002 to \$2.08/bu in October 2003). Feeder cattle price (600-650 lbs) reached a peak of \$111.00/cwt in October of 2003; however, on a percentage basis, feeder cattle prices did not increase as much as fed cattle prices. This may be due to low net cattle feeding margins in the fourth quarter of 2002 (about \$3.00 per head) and uncertainty by cattle finishers about the permanency of high fed cattle prices.

U.S. BSE Outbreak

This study did not account for the December 23, 2003 report of BSE (mad cow disease) in a dairy cow in the state of Washington. Within a few days after the announcement, cattle futures and cash prices for fed cattle declined by 15-20 percent, i.e., fed cattle prices fell from about \$92/cwt to about \$75/cwt. Most of the decline was due to the United States quickly losing 90 percent of its beef export market (the U.S. exports about 10 percent of its beef supplies) and market uncertainty by livestock and meat buyers.

The market uncertainty involves several areas. One is the expected time frame of restoring lost U.S.

beef export markets, particularly the major markets of Japan, South Korea, and Mexico. This involves assuring foreign buyers about the safety of U.S. beef supplies, supported by USDA mandates of "downer" cattle not entering the food chain, U.S. testing programs for BSE, a national cattle ID system, etc. Another is source identification. Recently, DNA tests confirmed that the infected cow was from an Alberta, Canada dairy herd, and there is further search for the source of feed contamination. The ability to track the roughly 80 head imported with the calf from Canada in 2001 and account for meat distribution of associated slaughter of the infected cow (and others in that slaughter group) in a Washington State slaughtering plant is important. Consumer confidence in U.S. beef supplies will need to be assured in order to prevent declines in domestic beef demand, which had been steadily increasing since 1998.

Conclusions

Prior to the U.S. BSE outbreak, the analysis indicates that 78 percent of the increase in October 2002-to-October 2003 fed cattle prices was supply related. This included decreases in domestic cattle slaughter, Canadian cattle imports, net beef imports, and average slaughter weights. Increased consumer demand for beef accounted for 14 percent of the fed price increase while increased by-product values accounted for 8 percent of the price increase.

Retail beef prices had not increased as much (percentage-wise) as those in the live cattle and wholesale beef markets. Perhaps retailers expected consumer resistance to a complete pass through of wholesale beef prices due to relatively cheaper poultry and pork meats. Consumer resistance had been occurring, however, as wholesale beef prices substantially decreased from their high level of

about \$201.00/cwt in mid October to about \$158.00/cwt in mid December.

Prior to the BSE problem, market analysts predicted that the next two to three years should have sustained high U.S. cattle prices. This is because lengthy biological lags are required to build up breeding herds and increase beef supplies. Likewise beef demand was expected to remain strong. However, U.S. beef producers now potentially face a more volatile market due to the demands of foreign buyers, domestic consumer perceptions and behavior, and the effectiveness of U.S. policies to minimize the risk of BSE contamination in beef supplies. As of early January 2004, live cattle futures for October of 2004 were only about \$2/cwt to \$3/cwt below what they were prior to the BSE discovery, compared to the near futures (January and February) contracts which had fallen \$15/cwt to \$20/cwt. Information may change, but as of early January 2004 the expected cattle price impacts of BSE appear to be focused on the first-half of 2004 rather than the fall marketing period.



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