



Slaughter Lamb Marketing and Price Differences

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Sheep producers have little direct control over the market price level for slaughter lambs. However, they can influence to some extent the price received for a specific sale lot of lambs. This fact sheet briefly discusses price determination and price discovery. For a longer discussion, see Extension Fact Sheet WF-551, "Understanding Livestock-Meat Pricing Issues," located on the Web at <http://agweb.okstate.edu/pearl/agecon/marketing>. Several key factors affecting slaughter lamb prices will be identified, as well as some regional differences in marketing practices.

Price Determination vs. Price Discovery

Some pricing issues relate to price determination and some to price discovery, two related but different concepts. In essence, high or low slaughter lamb prices are related to price determination factors, *not* price discovery factors. Low prices result from supplies that are large relative to existing demand. Widely varying prices, both above and below the market price level, result from many factors directly affecting price discovery.

Price determination is the interaction of the broad forces of supply and demand, which determine the market price level. For slaughter lambs, supply determinants or factors affecting the quantity of lamb produced include:

- input prices (feeder lambs and grain), and
- technology (nutrition management, animal health program, etc.)

Broad demand forces or factors affecting the amount of lamb consumed include:

- the price of products produced from slaughter lambs (retail lamb products and by-products),
- price of competing products, such as beef and veal,
- consumer income, tastes, and preferences

Another important factor in the lamb industry is the quantity of imported lamb. Imported lamb and domestically produced lamb, minus exports, combine to form the total supply of lamb available to U.S. consumers.

Price discovery is the process of buyers and sellers arriving at a transaction price for a given quality and quantity of a product at a given time and place. Price discovery involves several interrelated concepts, which include the following:

- market structure; that is, the number, size, location, and competitiveness of buyers and sellers,
- market behavior, which is determined by the procurement and pricing methods of buyers, and

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- market information and price reporting; or the amount, timeliness, and reliability of available information used in making pricing decisions.

Price discovery begins with the market price level. Because buyers and sellers discover prices on the basis of uncertain expectations, transaction prices fluctuate around the market price level. This fluctuation is attributable to the quantity and quality of the commodity brought to market, the time and place of the transaction, and the number of potential buyers and sellers present.

Slaughter Lamb Research, 1991

One type of price discovery research attempts to explain variation in transaction prices. Sale summary and transaction data for 1991 were analyzed to determine factors affecting slaughter lamb prices (Ward and Hildebrand 1993). In this study, wholesale lamb prices were positively related to slaughter lamb prices. Wholesale lamb prices are used by lamb packers as a starting point in the pricing process for slaughter lambs and represent an important component in the profit equation for packers. Thus, slaughter lamb prices tend to rise or fall as boxed lamb prices rise or fall. According to the research, it mattered little which of six wholesale lamb price series were used in each region; that is, prices reported either for the Northeast or River markets for lamb carcasses in the following weight groups: less than 55 pounds, 55 to 65 pounds, or 65 to 75 pounds. There was relatively little difference among the six wholesale lamb price series. Among weight groups, results were slightly better for the 55- to 65-lb. carcass series.

Pelt prices also were positively associated with slaughter lamb prices, because pelt sales represent the largest component of by-product income for lamb packing firms. Thus, slaughter lamb prices tend to rise or fall as pelt prices rise or fall.

Price differences were found for alternative marketing methods. Compared with auction market prices, prices at electronic markets (teleauction and computer auctions combined) were over \$3/cwt. higher for slaughter lambs. Direct marketing, the most common method of marketing slaughter lambs to packers (GIPSA 1999), resulted in significantly higher prices in one model in the study but not the other. Also important were time of year and region of the country.

Price and Production Summary, 1996

The American Sheep Industry Association discontinued reporting the industry data used by Ward and Hildebrand after sheep producers voted to terminate the sheep and lamb checkoff program. The last year such data were available was 1996. Data from that year were used again to examine factors affecting slaughter lamb prices. Table 1 summarizes data for 1996.

Data on slaughter lamb sales were reported in the American Sheep Industry Association's weekly, *Lamb and Wool Market News*. Reported sale data included summaries of several transactions and may also have included individual transactions for a given week. Table 2 shows 1996 reported data, which included the region and state where lambs were sold (see Figure 1), type of marketing method, number of lambs sold, weight range of lambs sold, and the price range for lambs sold. Additional data also were reported in the weekly report, including U.S. Department of Agriculture (USDA) boxed lamb cutout value for carcasses weighing 65 pounds or less, U.S. lamb and mutton production, U.S. federally inspected sheep and lamb slaughter, and pelt price range for No. 1 pelts.

Slaughter lamb and wholesale lamb prices, the latter measured by the lamb cutout value, reached record high levels in 1996 due in part to a continued decline in lamb production (Ward 1998). Both wholesale lamb and slaughter lamb prices varied widely and seasonally throughout the year. The wholesale lamb cutout value peaked in June at \$226.34/

cwt. and reached its low in January at \$187.38/cwt., averaging \$200.64/cwt. for the year. Seasonal slaughter lamb prices exhibited a similar pattern, reaching a high of \$104.20/cwt. in June and a low of \$75.17/cwt. in January. For the year, slaughter lamb prices averaged \$88.29/cwt.

Pelt prices for No. 1 grade pelts began 1996 at a moderately high level, \$11/pelt, and increased steadily throughout the year, peaking in November at \$16.50/pelt. For the year, pelt prices averaged \$13.87/pelt.

Slaughter lamb production during 1996 was the lowest since 1979. It, too, varied seasonally, reaching its peak in March and its lowest level in the June-August period.

Marketing Practices by Region

Figure 2 shows regional differences in weights of slaughter lambs marketed. On average, slaughter lambs were lightest in the East region, while being much heavier in the Mountain and West regions. The highest percentage of lighter-weight lambs was marketed in the East region. The highest percentage of heavier-weight lambs was marketed in the Mountain and West regions. The weight distribution of slaughter lambs was similar in the North and South Central regions.

One difficulty with the data as it was reported is that the number of lambs sold may represent either a single transaction or a summary of several transactions. Thus, the number of head marketed varied widely for each observed data point. Still, it is clear that slaughter lambs in the eastern two-thirds of the U.S. — that is, lambs in the East, North Central, and



Figure 1. Data Regions.

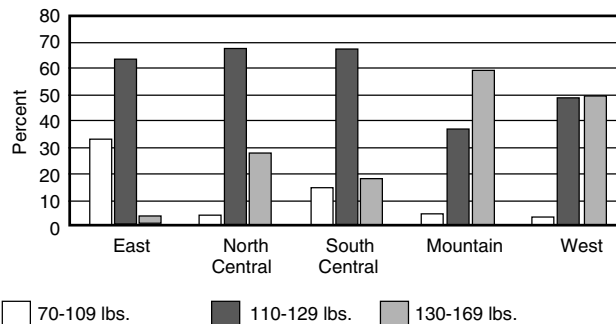


Figure 2. Slaughter lamb market by region.

Table 1. Summary Statistics for Selected Variables, 1996.

Variables	Units	Weekly Average	Standard Deviation	Minimum	Maximum
Slaughter Lamb Price	\$/cwt.	88.29	9.61	66.00	121.00
Wholesale Lamb Cutout Value	\$/cwt.	200.64	13.01	174.03	230.50
Average Pelt Price	\$/pelt	13.87	1.33	11.00	16.50
Sheep and Lamb Production	M. pounds	.64	0.66	3.50	6.90
Federally Inspected Lamb Slaughter	1,000 hd	75.70	10.10	54.00	106.00

Table 2. Distribution of Sales by Region.

	<i>Region</i>				
	<i>East</i>	<i>North Central</i>	<i>South Central</i>	<i>Mountain</i>	<i>West</i>
	<i>(Percent)</i>				
Mid-range Weight (pounds)					
70-89	2.5	0.2	0.0	0.0	0.0
90-109	30.7	3.6	14.2	3.9	2.4
110-129	63.8	68.0	67.8	36.4	48.2
130-149	3.1	26.7	16.4	54.5	49.4
150-169	0.0	1.5	1.6	5.2	0.0
Number of Head					
Less than 200	39.3	27.6	36.6	6.5	3.6
200-399	34.4	28.5	24.0	13.0	7.2
400-999	25.3	23.6	9.9	48.1	16.8
1,000-4,999	1.8	19.8	18.0	31.2	57.8
5,000 or More	0.0	0.4	11.5	1.3	14.4
Marketing Method					
Auction	59.8	47.4	49.7	6.5	4.8
Direct	15.5	32.0	38.3	80.5	92.8
Computer Auction	0.0	19.3	12.0	0.0	0.0
Teleauction	8.4	0.4	0.0	0.0	0.0
Pool	16.4	0.9	0.0	13.0	2.4

South Central regions — were marketed in smaller sale lots than in other regions, as shown in Figure 3. A much higher percentage of the smallest sale lot sizes was noted for those regions. The largest sale lot sizes were found in the West region. The South Central region was possibly the most diverse in that it had a large percentage of smaller sale lots, as well as several very large sale lots.

Figure 4 shows how marketing methods also varied by region. Auctions were the predominant marketing method in the three easternmost regions (East, North Central, and South Central), while direct marketing was most common in the two western regions (Mountain and West). Computer auctions served producers in the North and South Central regions, while teleauctions were used by producers in the East region. Limited use of slaughter lamb pools was found in four of the five regions but was most common in the East region.

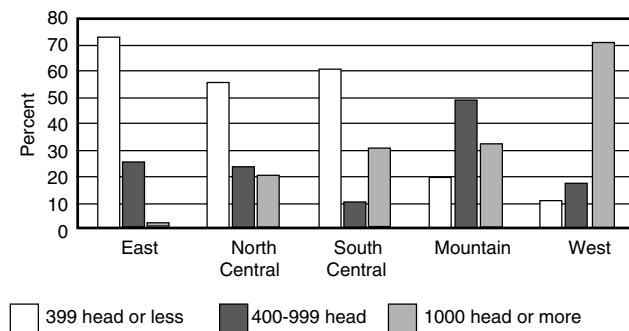


Figure 3. Slaughter lamb sale lot by region.

Factors Affecting Slaughter Lamb Prices

Regression models were estimated for each of the four regions and the U.S. as a whole. The U.S. model encompassed data from all regions, combining data for the Mountain and West regions.

As in 1991, slaughter lamb prices in 1996 were positively and consistently related to wholesale lamb cutout values (i.e., boxed lamb). Slaughter lamb prices were expected to be related to wholesale prices largely because packers use wholesale lamb prices as they estimate bid prices for slaughter lambs. The TAMRC Lamb Study Team (1991) found that slaughter lamb prices were more closely associated with wholesale lamb prices than with retail lamb prices. In 1996, a \$1.00/cwt. increase in the wholesale lamb cutout value was associated with a \$0.50/cwt. increase in slaughter lamb prices in the U.S. model.

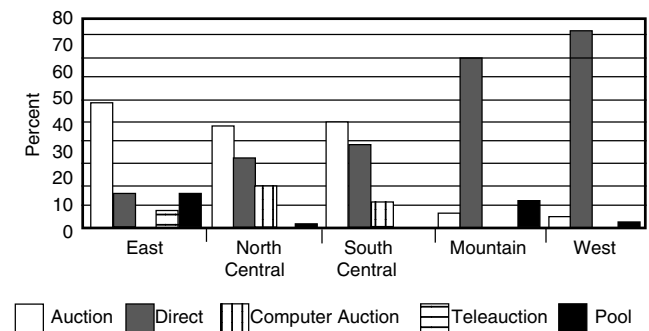


Figure 4. Slaughter lamb marketing method by region.

Slaughter lamb prices also were positively related to pelt prices. Pelt sales are a significant portion of by-product sales for packers. Again, results for 1996 paralleled those for 1991. Lamb production was expected to be inversely related to slaughter lamb prices, based on the economic theory of supply and demand. When lamb production is high, slaughter lamb prices are typically low. However, the regression results differed from what was expected. Similar unexpected results were found when federally inspected sheep and lamb slaughter was substituted for U.S. lamb production. Previous research has found that changes in supplies at the farm level began the price transmission process from farm to retail (Jones and Purcell 1993). However, they also found long time lags in this process. Thus, it is likely that production or slaughter changes might not be reflected immediately in transaction prices, possibly explaining why the price-production relationship was not found to be significant in this study.

For each reported sale summary or individual sale lot, the number of lambs sold was included in the model because buyers often pay a premium for larger sale lots of livestock. The expected positive relationship between price and sale lot size was found only in the East region. The aggregate nature of the sale data used in this analysis may explain why the expected relationship was not evident.

Typically, a negative relationship exists between slaughter livestock prices and average live weight for livestock marketed. It was expected that lamb prices would decrease as weight increased, but at a declining rate. The price-weight relationship differed widely among the estimated models. For the U.S. model, the expected relationship was not found in 1996, which was similar to findings in 1991. However, a weak price-weight relationship was found for the East, North Central, and South Central regions. In the Mountain/West region, the expected signs were reversed, and the differences were statistically significant. Differing results may be related to the normal market weight differences in each region and buyer preferences for lighter or heavier lambs.

Marketing methods affected prices received for slaughter lambs and varied across regions, both in 1996 and 1991. Prices received from direct sales were considered the base for comparison purposes. Prices were \$1.23/cwt. higher for slaughter lambs marketed through computer auctions in the U.S. model. However, for two other forms of group marketing, teleauctions and slaughter lamb pools, prices received were lower than direct sales (\$3.47/cwt. lower for teleauctions and \$1.09/cwt. lower for lamb pools). Prices received from auction markets also were significantly (\$0.95/cwt.) lower than direct sales in the U.S. model.

For the regional models, computer auction prices were consistently higher than direct sale prices in the North Central and South Central regions. Auction and pool prices were higher or lower than direct sale prices, depending on the region. Auction prices were higher and pool prices lower compared with direct sale prices in the East region. Opposite findings were observed in the North Central region. Regional

results may have differed because in some regions, some marketing methods were used more frequently than others.

Slaughter lamb prices exhibit a strong seasonal pattern, although the pattern has changed somewhat in recent years (Ward 1998). For example, seasonal prices for 1987-91 showed the highest prices in the spring months and the lowest prices in the late summer and fall months. However, for the 1992-96 period, slaughter lamb prices were slightly higher during the summer months compared with other times of the year. Results from the U.S. model suggest the seasonal price pattern for 1996 may be returning to the more normal pattern found for 1987-91 and earlier years. Slaughter lamb prices in 1996 were highest in the second quarter of the year and lowest in the third quarter. The seasonal pattern differed in the regional models, possibly due to the distribution of slaughter lamb sales throughout the year.

Summary and Conclusions

Price discovery models attempt to account for variation in slaughter lamb prices from several sources. Those variables that appeared to be most important in the U.S. and most regional models for 1996 were wholesale lamb prices, pelt prices, marketing method, and time of year. All factors were found to be important in 1991 as well. Slaughter lamb marketing practices (sale lot size, average weight, and marketing method) vary among the U.S. regions. Sheep producers and lamb feeders individually can do little about wholesale lamb and pelt prices. However, they have some control over other marketing factors, such as marketing method, time of year, sale lot size, and average weight of lambs. This research confirms that price differences occur among marketing methods but that these differences may be regional in nature. Finally, seasonal price patterns have been observed for slaughter lamb prices for many years and must be considered when planning production and marketing of slaughter lambs.

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