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To Cut or Not to Cut? Price Comparisons of Bulls and Steers in Tennessee

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Most cattle producers market their calves through a local livestock auction facility. When marketing through a sale barn, many of the marketing aspects cannot be controlled or managed by the cattle producer. For instance, cattle producers do not control the volume of buyers or the quantity of cattle marketed that day. A producer can, however, control sale location, sale timing and at what weight they choose to sell calves.

Another controllable factor that may influence price and profitability is the choice of a producer to sell male calves/feeder cattle as steers or as bull calves. If bull calves are not intended to be kept as herdsire prospects, a producer has the choice to castrate them or leave them as intact calves at the time of marketing. The decision to cut a male could be based upon age of the calf and/or the method that the producer chooses to utilize for castration. The decision leaves producers with a common question, “Does cutting calves increase revenue?” This publication aims to help producers answer that question.

This publication uses weekly USDA-reported sale prices of medium- and large-framed (#1 and #2 muscle) steers and bulls in Tennessee. The data is compiled by the Livestock Marketing Information Center (LMIC) and considers the time period of January 2010-March 2020. Utilizing weekly auction market prices, this publication analyzes the comparative prices (discount or premium) for different classes of steer and bull calves. The price differences discussed in this publication are calculated as:

$$\text{Price Difference} = \text{Weekly Steer Price} - \text{Weekly Bull Price} \quad (1)$$

If the price difference is positive, this means that steers had a premium over bulls in the same weight class for that week. If the price difference is negative, this means that bulls had a premium over steers in the same weight class for that week.

Figures 1 and 2 are box and whisker graphs that characterize the average price difference between bulls and steers from January 2010-March 2020. The box and whisker graphs display the data in quartiles. The box contains an “x,” which is the mean, and whiskers or lines that come out of the box indicate variability outside the lower and upper quartiles. If a point is outside of the whiskers, that point is considered an outlier. **Figures 1 and 2** display the price differences for steer calves in comparison to bull calves from January 2010-March 2020 calves. The weekly prices are for prices received for 400-800 lb calves in 50-lb increments.

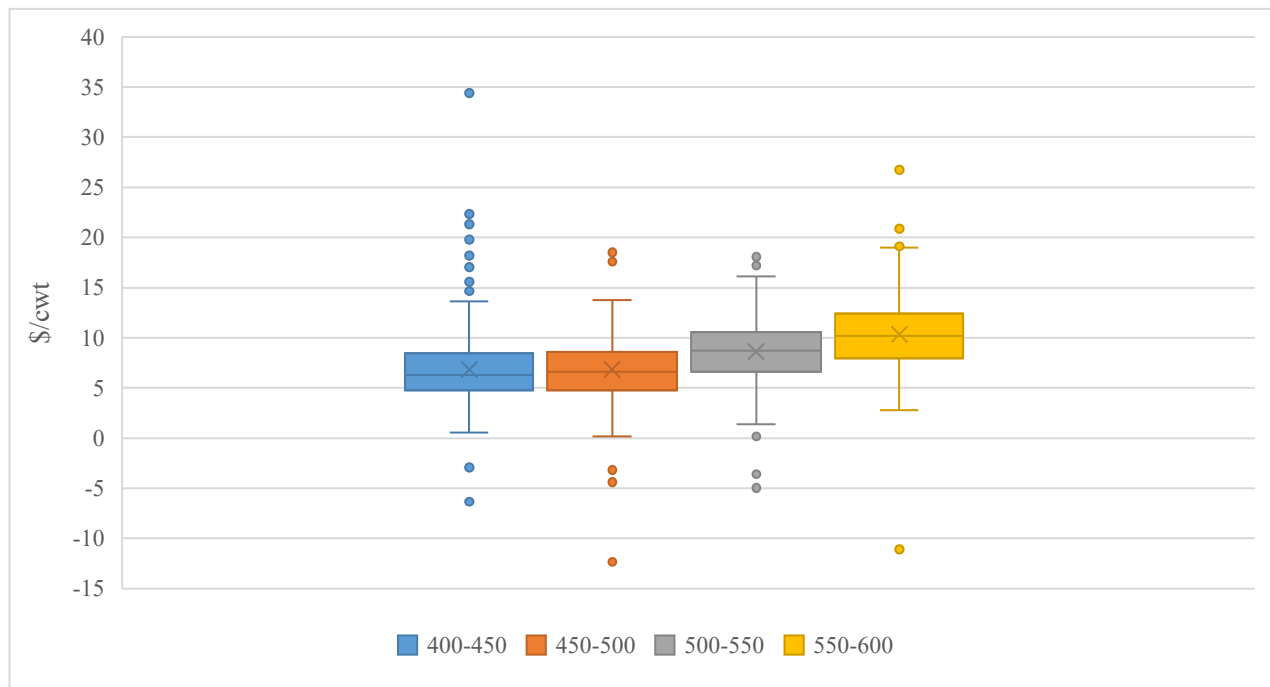


Figure 1. Price Difference Between Steer and Bull Prices in Tennessee (400 lb-600 lb).

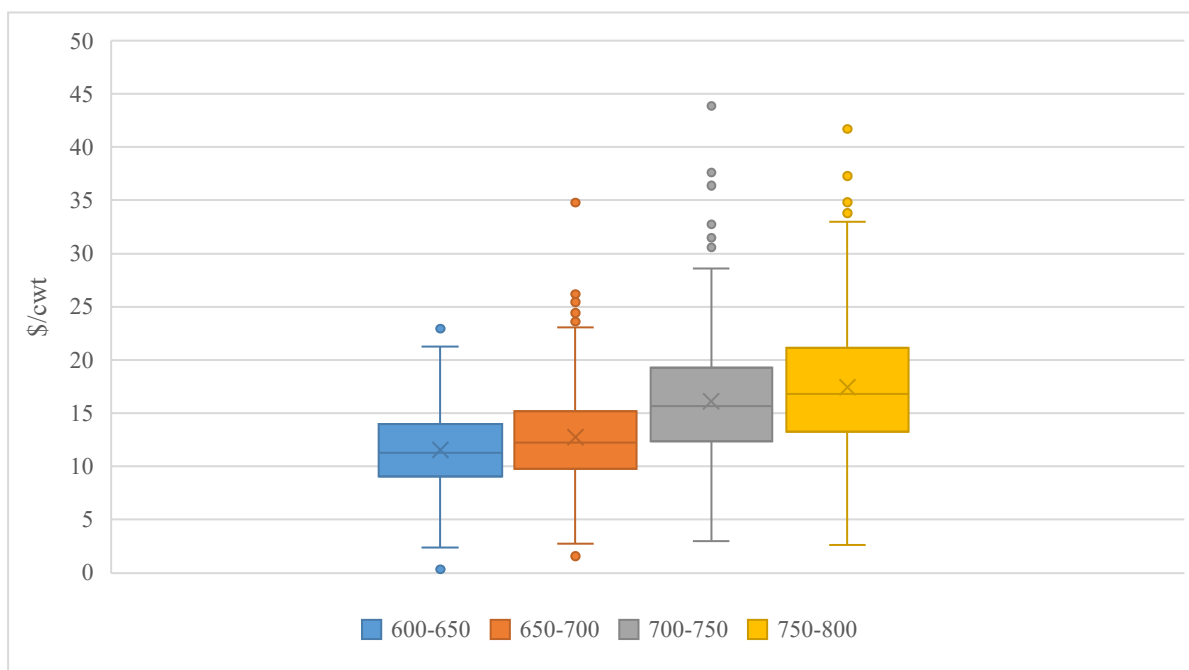


Figure 2. Price Difference Between Steer and Bull Prices in Tennessee (600 lb-800 lb).

On average, bull calves have been discounted when compared to steers in the same weight range throughout this time frame. In **Figure 1**, eight instances illustrate where producers did receive a premium for their bull calves. These are seen as outliers because they are outside of the whiskers, and in those cases, there were few steers sold, while there were more bulls sold in that week. There were zero instances where a premium was received for bull calves in the 600-800 lb range.

By taking the data set and breaking it into two sets, one can examine five-year averages for the last 10 years. It is important to note that producers saw historic highs for feeder calves in 2014. **Table 1** shows the average discount (\$/cwt) for all weight classes for January 2010-December 2014 and January 2015-March 2020. As weights get bigger, the trend is that the average discount increases. Between the two five-year time frames, the average discount has increased for each weight class.

Table 1. Average Discounts for Bulls for Each Weight Class for Medium and Large Frame #1-#2 (\$/cwt)

| | <u>400-450</u> | <u>450-500</u> | <u>500-550</u> | <u>550-600</u> | <u>600-650</u> | <u>650-700</u> | <u>700-750</u> | <u>750-800</u> |
|-------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 2010-2014 Average | 6.81 | 6.11 | 7.73 | 9.29 | 10.52 | 11.33 | 15.11 | 16.77 |
| 2015-Current Average | 6.87 | 7.47 | 9.48 | 11.35 | 12.59 | 14.08 | 17.10 | 17.98 |

By taking the midpoint of each weight class (e.g., 425 for the 400-450 lb class), one can estimate, on average, what the discount is on a per-head basis.

Table 2. Average Discount Per Head for Bulls (\$/head)

| | <u>425</u> | <u>475</u> | <u>525</u> | <u>575</u> | <u>625</u> | <u>675</u> | <u>725</u> | <u>775</u> |
|--------------|------------|------------|------------|------------|------------|------------|------------|------------|
| 2010-2014 | 28.93 | 29.01 | 40.56 | 53.43 | 65.72 | 76.50 | 109.56 | 129.97 |
| 2015-Current | 29.21 | 35.51 | 49.75 | 65.27 | 78.70 | 95.01 | 124.01 | 139.35 |

These results are similar to the findings in Massey et al. (2011), where a \$7/cwt discount was found in their data set of feeder and bull calves. Similarly, Duggin and Stewart (2017) found \$9-\$12/cwt in their research on 350-600 lb feeder cattle and bulls.

Tables 1 and **2** provide averages, in five-year increments, for the last 10 years but do not examine yearly variation, which raises the question, could there be a quarterly discount that producers can use to their advantage? The quarterly averages are calculated by taking the weekly price differences and grouping them into calendar quarters and taking an average for a given quarter. **Table 3** displays the quarterly average discount on bulls, by weights class, for the last 10 years. On a quarterly basis, the discount has generally been higher for all weight classes in the quarter of the year. Tennessee producers can use this to their advantage when thinking about when they will market their bulls or steers during the year. Over the past 10 years, the later animals are marketed during the year, the higher the discount across all weight categories.

Table 3. Quarterly Discount (\$/cwt) (January 2010-March 2020)

| | <u>400-450</u> | <u>450-500</u> | <u>500-550</u> | <u>550-600</u> | <u>600-650</u> | <u>650-700</u> | <u>700-750</u> | <u>750-800</u> |
|------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Quarter 1 | 6.69 | 6.37 | 7.92 | 9.50 | 10.36 | 11.46 | 14.10 | 14.60 |
| Quarter 2 | 6.60 | 6.55 | 8.31 | 9.39 | 10.55 | 10.84 | 13.55 | 15.02 |
| Quarter 3 | 6.79 | 7.15 | 9.11 | 11.18 | 12.77 | 14.18 | 18.19 | 19.18 |
| Quarter 4 | 7.30 | 7.15 | 9.19 | 11.41 | 12.82 | 14.71 | 19.19 | 21.47 |

From a revenue equivalence perspective, a producer could ask, “What weight(s) can a bull and a steer be sold at, to generate a similar amount of revenue?”

Value for an animal can be calculated by taking the midpoint of a weight class and multiplying it by the weekly price for the weight class. **Table 4** displays the average value/head for each weight class from January 2015-March 2020.

Table 4. Average Value Per Head for Bulls and Steers in Tennessee (January 2010-March 2020)

| | <u>400-450</u> | <u>450-500</u> | <u>500-550</u> | <u>550-600</u> | <u>600-650</u> | <u>650-700</u> | <u>700-750</u> | <u>750-800</u> |
|---------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Bulls | 717.29 | 773.16 | 808.17 | 840.98 | 869.32 | 903.38 | 908.02 | 942.45 |
| Steers | 747.31 | 804.88 | 857.68 | 906.26 | 948.08 | 996.83 | 1,029.77 | 1,076.53 |

In general, when bulls and steers are lighter, the revenue differences are smaller, but as the weights increase, the revenue differences expand. For example, a 450-500 lb steer generates \$804.88; the nearest bull calf of the same value is a 500-550 lb bull calf. To generate similar revenue as a 600-650 lb steer, a 750-800 lb bull calf has the closest value. By comparing the weight differences, a producer can utilize the expected revenue differences between lighter steers versus heavier bulls in their decision of when to market their calves.

Producers that choose to castrate will have to select a method of castration and decide at what weight to castrate. The decision of what method to use for castration and at what age/weight to castrate a bull calf will depend upon an operations marketing strategy (Coetzee, 2010; University of Tennessee Extension, 2010). Castrating bull calves has been found to improve calf performance, with an additional benefit of lower stress levels when bulls are castrated earlier (Knight et al., 2000; Bretschneider, 2005)

The analysis in this publication found that there are revenue gains (or premiums) for steer calves at greater weights when compared to bull calves. The discount between bulls and steers isn't as big when calves are lighter in weight, but if a producer typically sells 600 lb calves or larger, castration should be strongly considered. The management practice of castration can aid in Tennessee producers receiving increased revenue during a time when margins are getting tighter, not only in Tennessee but around the country.

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