Premiums and Discounts on Calves and Yearlings

December 2014

Emily Mollohan (Kansas State University)

Glynn T. Tonsor (Kansas State University)

Kansas State University | Department of Agricultural Economics

Premiums and Discounts on Calves and Yearlings

December 2014

Emily Mollohan (Kansas State University)
Glynn T. Tonsor (Kansas State University)

Understanding the factors influencing price differentials between calves and yearlings is highly beneficial for cattle producers making important management decisions. Since stocker operators make their profit on the margin of buying lighter weight calves and selling them at heavier weights it is critical to understand market influences on both purchase and sale prices. Similarly, cow-calf producers assessing backgrounding prospects and feedlot managers comparing options for feedlot placements need a similar understanding. This fact sheet provides producers an update of how prices of calves and yearlings are impacted by key market changes to enable better assessment and hence management decisions.

Insights offered by Past Research

In 1985, Dr. John Marsh published an article titled *Monthly Price Premiums and Discounts between Steer Calves and Yearlings* that focused on cost of gain, slaughter price and seasonality effects on calf and yearling prices.[1] Since these factors are large inputs and outputs of the cattle-feeding industry, they are used to estimate the variability in price differences between calves and yearlings as feedlots have an opportunity to purchase either for placement in their operation. Whether a cow-calf producer, stocker operator, or feedyard owner, knowing how cost of gain and slaughter price affect the price of calves or yearlings and the price differential between the two weight classes, is important. Given this importance, a recent research project updated and

[1] This paper is available online at: http://www.jstor.org/stable/1240683.

extended the original work of Marsh (1985) which was conducted for the period of January 1972 to December 1982.

The results found by Marsh (1985) were consistent with expectations. Cost of gain has a negative correlation with prices, meaning that an increase in the cost of gain reduces cattle feeding margins, and consequently the derived demand for both yearlings and calves. An increase in the price of slaughter steers causes an increase in prices of both calves and yearlings. The impacts of both cost of gain and slaughter cattle price on calf and yearling prices are unequal. This is because when calves are compared to yearlings, they do not necessarily yield a product with similar characteristics, such as biological finishing performance. There are also differences in beginning feed rations and the levels of concentrates used throughout the duration of the feeding program. Furthermore, there is also a time risk factor involved for each weight class to reach slaughter maturity that is significantly different.

When the cost of gain increases, the difference in prices between calves and yearlings will narrow. This larger proportional decrease in price of calves reflects there being more pounds to be added at a higher cost of gain. When the slaughter price increases, the price difference between calves and yearlings widens. The larger increase in the price of calves reflects the opportunity for more pounds to be added in feedlots at improved margins.

Confirmation, Update, and Expansion[2]

In order to add value to what Marsh (1985) published, a confirmation using the same years (1972 to 1982) was completed. This confirmation attempt was successful and consistent with results from Marsh (1985). An update was also completed to incorporate the years 1973 to 2013.

[2] A more in-depth analysis of this was completed in a 2014 thesis Price Analysis in the Stocker Industry, accessible at http://krex.k-state.edu/dspace/handle/2097/18689.

Rather than focus on this update, an expansion of the models was conducted to make the assessment more realistic to today's current market structure.

This expansion used monthly price data for a more recent time period from January 1993 to December 2013. In today's market it is much more common for a producer to wean a calf at 500 pounds instead of 400 pounds considered by Marsh (1985). Therefore, these models were estimated using 500 and 700 pound weight classes. Also, with data from the futures market now being available, a forward-looking, basis-adjusted live cattle futures price was incorporated instead of current and lagged price of slaughter cattle cash prices.

Table 1 details the findings of this expanded and updated assessment, highlighting impacts that cost of gain and price of slaughter cattle have on individual price series and the price differential between calves and yearlings. A negative relationship was found between the cost of gain and price of calves or yearlings. As corn price increases by $1/bushel, the price of 500 and 700 pound cattle decrease by $4.578/cwt and $4.267/cwt, respectively. As expected, the change in cost of gain has a larger effect on the price of calves than on the price of yearlings.

A positive relationship was found between the price of slaughter cattle and the price of a 500 pound calf or 700 pound yearling. As slaughter prices rise $1/cwt, prices paid for a 500 and 700 pound calf or yearling would increase by $0.899/cwt and $0.987/cwt, respectively. The price of slaughter cattle is shown to have more of an impact on the price of yearlings versus calves, although minimal.

The results for the price premium and discount equation highlight the relationships between cost of gain and slaughter prices on price premiums/discounts of key interest in the stocker and feedlot industry. A $1/bushel increase in corn price will cause a $1.051/cwt decrease

in the difference between prices for calves and yearlings. As price of slaughter cattle increases by $1/cwt, the difference in prices will increase by $0.151/cwt.

Table 1. Effects of changes in corn and slaughter cattle price on feeder cattle prices*

	P500	P700	P500-P700
Price of corn ↑ of $1/bushel	$4.578/cwt ↓	$4.267/cwt ↓	$1.051/cwt ↓
Price of slaughter cattle ↑ of $1/cwt	$0.899/cwt ↑	$0.987/cwt ↑	$0.151/cwt ↑
Price of corn ↓ of $1/bushel	$4.578/cwt ↑	$4.267/cwt ↑	$1.051/cwt ↑
Price of slaughter cattle ↓ of $1/cwt	$0.899/cwt ↓	$0.987/cwt ↓	$0.151/cwt ↓

* *P500 and P700* are prices of 500 lb calves and 700 lb yearlings, respectively.

Implications

This information on price premiums/discounts should aide producer decision-making. Whether a cow-calf producer entertaining backgrounding prospects, a stocker operator examining buy-sell margins, or a feedlot operator comparing alternative candidates for placement in their operation, knowing how changes in cost of gain and price of slaughter cattle affects the price of calves or yearlings and the price differential between the two is important to understand.