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# Factors affecting cost of gain of feedlot steers

## Abstract

This study examined the relative effects of corn price and cattle performance factors on steer finishing cost of gain. Seasonal analysis of cost of gain and the factors affecting it was also conducted. Using over 10 years of closeout data from two western Kansas feedyards, corn prices, feed conversion, and daily gain explained 93 to 94% of the variation in steer finishing cost of gain. About 60% of the variability was explained by corn price alone. Cost of gain and feed conversion rates were seasonally below average for steers placed in February through August. Daily gain was seasonally high for steers placed in March through August. Because cost of gain is heavily influenced by the volatility and seasonal patterns of corn price and cattle performance, cattle feeders should consider this information when making placement decisions.

## Keywords

Cattlemen's Day, 1993; Kansas Agricultural Experiment Station contribution; no. 93-318-S; Report of progress (Kansas State University. Agricultural Experiment Station and Cooperative Extension Service); 678; Beef; Feedlot cattle; Cost of gain; Feed conversion; Daily gain

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# FACTORS AFFECTING COST OF GAIN OF FEEDLOT STEERS

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## Summary

This study examined the relative effects of corn price and cattle performance factors on steer finishing cost of gain. Seasonal analysis of cost of gain and the factors affecting it was also conducted. Using over 10 years of closeout data from two western Kansas feedyards, corn prices, feed conversion, and daily gain explained 93 to 94% of the variation in steer finishing cost of gain. About 60% of the variability was explained by corn price alone. Cost of gain and feed conversion rates were seasonally below average for steers placed in February through August. Daily gain was seasonally high for steers placed in March through August. Because cost of gain is heavily influenced by the volatility and seasonal patterns of corn price and cattle performance, cattle feeders should consider this information when making placement decisions.

(Key Words: Feedlot Cattle, Cost of Gain, Feed Conversion, Daily Gain.)

## Introduction

Cost of gain is susceptible to fluctuations in feed prices, veterinary costs, yardage and processing fees, miscellaneous costs, and cattle performance factors. However, some of these factors have a relatively greater impact on steer finishing cost of gain. This study used fed steer closeouts from two western Kansas feedyards to estimate the relative importance of corn price and cattle performance factors on cost of gain.

## Experimental Procedures

Closeout data on nearly 6700 pens of steers placed on feed from January 1980 through May 1991 were collected from two western Kansas custom feedyards. Only pens with steers averaging between 600 and 899 lbs at placement were used. The corn price used was the average Kansas price during the month the steers were placed on feed. Inflation was adjusted for by converting all cost and price data to January 1991 constant dollars.

Cost of gain is a function of input costs and cattle performance. Input costs include feed costs, veterinary costs, processing and yardage fees, and miscellaneous costs; and average daily gain, feed conversion, and death loss are key performance factors. Regression analysis was used to determine the relative contribution of each variable to the volatility in steer cost of gain over time.

## Results and Discussion

About 93% of the variability in real cost of gain per cwt. over time was explained by corn price, feed conversion, and daily gain. Corn price and feed conversion were positively related to cost of gain, whereas daily gain was negatively correlated. The relative contribution of these factors to steer cost of gain over time is presented in Table 1. Overall, changes in corn price had more explanatory power for lighter placed steers; it accounted for 67% of the variation in cost of gain for 600 to 699 lb steers and 58% of the

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variation for 800 to 899 lb steers. Feed conversion had more influence on cost of gain as placement weight increased. For 600 to 699 lb steers, conversion explained 23% of the volatility in cost of gain, whereas it accounted for 33% of the variation for 800 to 899 lb steers. Finally, daily gain explained about 3% of the variability in steer finishing cost of gain.

Results from Table 1 show that corn price and feed conversion were effective in explaining cost of gain variability across

placement weights. For lighter weight cattle, cost of gain variability was more heavily influenced by corn price, whereas variability for heavier weight steers was impacted more by changes in feed conversion. Further, cost of gain, feed conversion, and daily gain exhibited similar seasonal patterns for each placement category (Figures 1 to 3). Steers placed from approximately February through August had more advantageous cost of gain and performance factors.

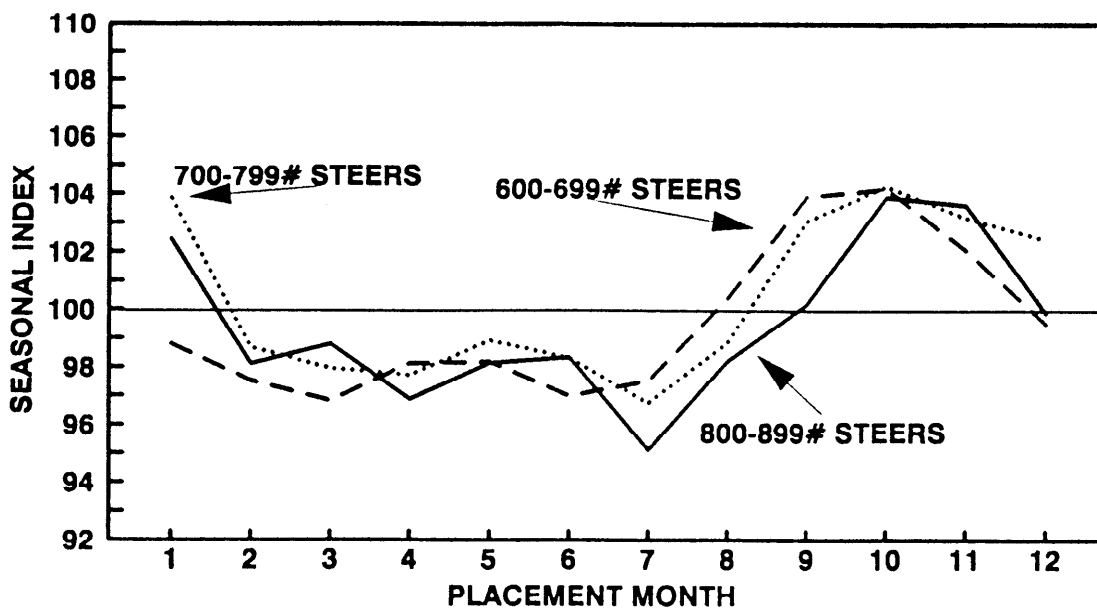
**Table 1. Percent of Variation in Steer Finishing Cost of Gain Explained by Various Factors**

Explanatory variable	Placement weight		
	600 to 699 lb	700 to 799 lb	800 to 899 lb
	----- % of variability explained -----		
Corn price	66.9	65.1	58.4
Feed conversion <sup>a</sup>	22.9	25.7	32.8
Daily gain	3.1	2.6	2.6
Total explained <sup>b</sup>	92.9	93.4	93.8
Unexplained variability <sup>c</sup>	7.1	6.6	6.2

<sup>a</sup>Feed/gain expressed on an as-fed basis.

<sup>b</sup>Total percentage of variability in cost of gain accounted for by volatility in the explanatory variables.

<sup>c</sup>Unexplained variability is 100 minus total explained.



**Figure 1. Seasonal Index of Real Cost per Cwt. of Gain for Steers Placed on Feed January 1980 through May 1991**

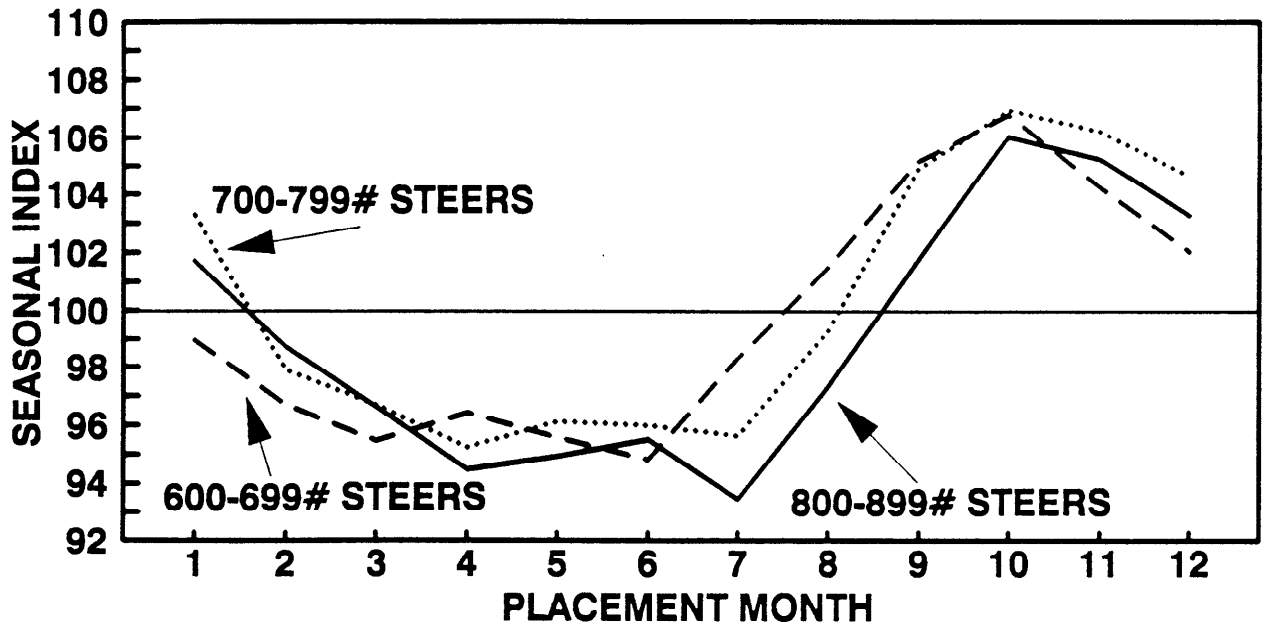


Figure 2. Seasonal Index of Feed Conversion for Steers Placed on Feed January 1980 through May 1991

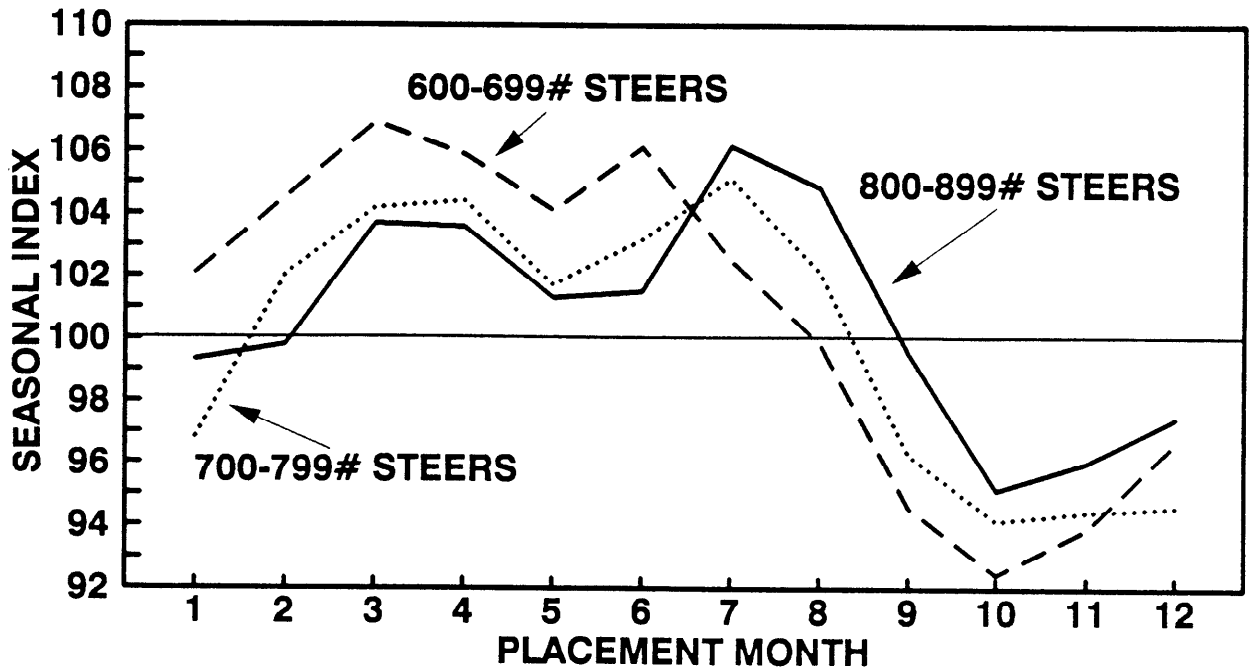


Figure 3. Seasonal Index of Average Daily Gain for Steers Placed on Feed January 1980 through May 1991