



Comparing the factors affecting the selling price of beef calves sold at Arkansas livestock auctions during a declining cattle inventory

T. R. Troxel,¹ PAS, and M. S. Gadberry, PAS

Division of Agriculture, Animal Science, University of Arkansas, Little Rock 72204-4940

ABSTRACT

The objectives of this study were to determine how declining calf supplies affected the selling price of calves. Data from 12 weekly Arkansas livestock auctions were collected from January 1 to December 31 in 2000, 2005, and 2010. Data included sex, group size, breed or breed type, color, muscle score, horn status, frame score, fill, condition, health, and BW. Mean selling price for 2000, 2005, and 2010 was $\$93.94 \pm 12.80$, $\$117.00 \pm 13.41$, and $\$109.12 \pm 13.42$ (mean \pm SD; US dollars/45.45 kg), respectively. Individual price observations were standardized within year (mean = 0). Calves sold in groups received a premium compared with calves sold as singles ($P < 0.01$). Steers received the greatest premium in 2010 ($\$8.21 \pm 0.09$) compared with 2000 ($\5.18 ± 0.07) and 2005 ($\$6.00 \pm 0.07$; $P < 0.01$). Only Angus \times Brahman received increased premiums $\$0.55 \pm 0.13$, $\$1.47 \pm 0.13$, and $\$3.03 \pm 0.19$ in 2000, 2005, and

2010, respectively; $P < 0.01$. The selling price of black-white face and yellow and yellow-white face calves was above the average all 3 yr. Horned calves received greater discounts in 2010 ($-\$4.25 \pm 0.20$) than in 2000 ($-\1.17 ± 0.09; $P < 0.01$). Large- and medium-framed calves received premiums in 2005 and 2010, and the price received differed among year ($P < 0.01$). Number 1 muscle score calves received a premium ($\$0.51 \pm 0.04$, $\$2.75 \pm 0.06$, and $\$2.21 \pm 0.06$ for 2000, 2005, and 2010, respectively; $P < 0.01$). Premium received for preconditioned calves was greater in 2010 ($\$6.84 \pm 0.31$) than in 2005 ($\4.68 ± 0.27; $P < 0.01$). Calves classified as a muscle score 2 or 3, small-framed, full, tanked, fleshy, or fat were discounted all 3 yr. The same factors affecting the selling price of calves sold through Arkansas livestock auction in 2000 continued to affect the selling price in 2010, and in some cases discounts were greater even with a declining United States cattle inventory.

Key words: beef cattle, calf, livestock auction, price comparison, selling price

INTRODUCTION

Sale barns or auction markets are the most preferred method of marketing calves. Across the United States when cattle or calves permanently leave their operations, 90.0% of operations merchandize cattle via the sale barn or auction market (USDA, 2009). In 2007 to 2008, for herd sizes of 1 to 49 and 50 to 99 cows, the percentages of operations sending cattle through a sale barn or auction market were 90.3 and 93.2%, respectively, but those percentages decreased as the herd size increased (USDA, 2009). Marketing options for smaller producers are limited because of their relative size (Schmitz et al., 2003). Most cow-calf operations in the United States (71.9%; USDA, 2008) were reported as a supplemental source of income, making the local livestock auctions a convenient place to market cattle.

Cow-calf producers are challenged to produce calves that are acceptable to the industry. Reports indicated that breed or breed type, health, sex, frame, muscle score, sale barn location, age and source verification,

¹Corresponding author: ttroxel@uaex.edu

and other factors affect calf selling price (Troxel et al., 2002; Barham and Troxel 2007; Kellom et al., 2008; Blank et al., 2009; Alkire et al., 2012; Beverly et al., 2012; Stutts et al., 2012; and Troxel and Barham, 2012). The industry perceives factors affecting the selling price changing over time thus making marketing decisions difficult to predict.

The United States and Arkansas calf crop decreased 8.2% (3.2 million cattle) and 4.8% (40 thousand cattle) from 2000 to 2010, respectively (USDA/NASS, 2012). The reduced United States and Arkansas cattle inventory may have contributed to the Arkansas mean selling price increasing 18.0% (Cheney, 2011). The objectives of this study were to determine whether factors affecting the selling price of feeder calves changed from 2000 to 2005 to 2010 and to examine the perception that discounts tighten or even disappear as calf supplies decrease. We hypothesized the factors affecting selling price do not change over time and discounts do not tighten or disappear as calf supplies decrease.

MATERIALS AND METHODS

Experimental Data

Animal Care and Use Committee approval was not obtained for this study because at no time did the University of Arkansas Division of Agriculture own, handle, or assume responsibility for care of the cattle in this study. Cattle producers delivered calves to a privately owned livestock auction where the feeder cattle were placed on public display for sale. Data used in this study (2000, 2005, and 2010) were collected at the time the calves were offered for sale.

Five USDA-certified livestock market reporters collected data from the same 12 weekly livestock auctions in Arkansas from January 1 to December 31 in 2000, 2005, and 2010. Livestock auctions surveyed were located in Ash Flat, Charlotte, Conway, Fort Smith, Glenwood, Green For-

est, Hope, Ola, Ozark, Pocahontas, Ratcliff, and Springdale. Data collected included group size (singles, 2 to 5 calves, or ≥ 6 calves), calf sex (bull, steer, or heifer), breed or breed type, color (black, black-white face, gray, gray-white face, red, red-white face, spotted or striped, white, yellow, or yellow-white face), muscle scores (1 = moderately thick throughout; 2, 3, or 4 = least amount of muscle thickness), horn status (polled or horned), frame score (large, medium, or small), fill [gaunt, shrunk, average, full, or tanked (excessively full)], condition (very thin, thin, average, fleshy, or fat), age (calf or yearling), health [dead hair, stale (dull or lifeless behavior), morbid, bad eye(s), lame, healthy, or preconditioned], and BW. A total of 382,446, 482,238, and 475,279 calves were sold through these livestock auctions in 2000, 2005, and 2010, respectively. Data were randomly collected (every 6th to 7th calf) on 48,463 (12.7%), 84,749 (17.6%), and 56,968 (12.0%) calves in 2000, 2005, and 2010, respectively.

Frame and muscle scores were determined based on the US Standards for Grades of Feeder Cattle (USDA, 2000). On October 1, 2000, the USDA changed the muscle scoring system for estimating muscle thickness (USDA, 2000). Therefore, to compare the effect of muscle scores on selling price, only data collected on and after October 1 were compared.

Statistical Analysis

The percentage of calves within age, group size, sex, breed or breed type, color, horn status, frame score, muscle score, fill, condition, health, and BW group was determined by the frequency procedure of SAS (SAS Institute Inc., Cary, NC) based on the number of lots sold. Chi-squared analysis of SAS was used to test for significant changes in the proportion of cattle representative of each descriptive characteristic among years. Cattle marketed in groups were excluded from the analysis of influences on selling prices of individual calf descriptive

characteristics. Individual price observations were standardized within year (mean = 0), and the standardized price was the dependent variable. Calf characteristic was analyzed individually as independent variables in which the model included month and BW as covariates. All other variables contributed to the error sum of squares. The ANOVA was performed with the GLM procedure of SAS. Least squares means (\pm SE) were generated and separated based on predicted differences, and both are reported throughout. Because all colors are not represented within each breed or breed type, color and breed or breed type data are somewhat inherently confounded. All selling prices reported are in US dollars per 45.45 kg.

RESULTS AND DISCUSSION

The mean selling prices for 2000, 2005, and 2010 were $\$93.94 \pm 12.80$, $\$117.00 \pm 13.41$, and $\$109.12 \pm 13.42/45.45$ kg (mean \pm SD), respectively (Figure 1). Each year showed a typical seasonal price trend, with higher prices occurring in the spring and lower prices occurring in the late summer and early fall (Cheney, 2011). Seasonal price patterns for calves are relatively consistent and associated with production patterns. In 2000, 2005, and 2010, 76.2, 70.1, and 71.6%, respectively, of the calves sold weighed less than 250 kg (Figure 2). The percentage of calves in the 136- to 158-kg and 159- to 181-kg BW groups decreased from 2000 to 2010 ($P < 0.01$), and the percentage of calves in the 250- to 271-kg and 272- to 294-kg BW groups increased from 2000 to 2010 ($P < 0.01$). This may have been attributed to either improved beef cattle genetics or a change in management. The price of corn steadily increased during the marketing period of 2000 ($\$0.015/\text{kg}$) to 2010 ($\$0.042/\text{kg}$; USDA, 2012), which generally increases the value of calf gains from pasture. Arkansas cattle producers may have retained ownership postweaning to capture additional profits.

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