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Trends in Arkansas Cattle Markets:

Estimates of the Premium for Preconditioned Cattle

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In this paper, we determine the premium for value-added calves and feeder cattle sold in Arkansas. The analysis uses data from weekly USDA AMS market reports for the nine reporting auctions in Arkansas from May 2019-August 2020. The term "value-added" is loosely defined as weaned and vaccinated cattle, which includes cattle participating in the GoGreen Natural State Preconditioned program. While results are not direct premium estimates for the GoGreen program, they do provide important insights into what value-added cattle bring in Arkansas.

Understanding the potential for value-added cattle to bring a premium at auction is important for individuals deciding whether to participate in a value-added program. If we think about participation in a preconditioning program as an adoption decision, then the premium that value-added cattle bring at auction is one component of the return from that decision that can be compared to costs. Table 1 provides summary statistics for select cattle characteristics in the data.

Table 1. Summary Statistics for Medium and Large Frame Cattle Sold in Arkansas Auctions

Variable	Units	Mean	Standard Deviation
Price	$/cwt	131.00	18.88
Weight	pounds	522.80	142.78
Lot size	head	7.53	11.28
Value-added	%	6.93%	
Steers	%	47.42%	
Heifers	%	52.58%	
Muscle grade			
1	%	48.53%	
1 and 2	%	7.67%	
2	%	34.94%	
2 and 3	%	0.03%	
3	%	8.78%	
4	%	0.04%	
Number of Observations		23,387	

The data includes 23,387 lots of cattle. The analysis is limited to medium- and large-framed cattle. In the data, the average price and weight are $131.00/cwt and 522.8 lbs., respectively. The standard deviation for the weight variable suggests a wide weight distribution, which is not surprising since the data includes calves and yearlings.

Table 1 shows that 47.4 percent of cattle sold are steers while 52.6 percent are heifers. The data does not distinguish between uniform and mixed sex lots. The average lot size is 7.53 head. For the May 2019-August 2020 period, 6.93 percent or 1,623 lots were preconditioned cattle (Table 1). In addition to the variables in Table 1, the statistical analysis also controls for regional and seasonal price differences. The next table reports $/cwt premium estimates for value-added cattle.

Table 2. Premium Estimates for Value-Added Cattle Sold in Arkansas Auctions

		95% Confidence Interval	
	Estimate	Lower	Upper
All Cattle	7.14	6.68	7.60
Sex:			
Steers	7.31	6.70	7.93
Heifers	7.24	6.61	7.88
Weight Class:			
300-400	7.44	5.62	9.26
400-500	9.24	8.37	10.10
500-600	8.31	7.59	9.03
600-700	6.32	5.49	7.15
700-800	6.39	5.08	7.70
800-900	6.49	3.52	9.46

Premium estimates in Table 2 are in $/cwt units. The first row is the overall premium that value-added cattle bring at auction. That is, value-added cattle bring a $7.14/cwt premium relative to cattle that are not value-added. Table 2 reports 95 percent confidence intervals for each premium. For example, there is a 95 percent probability the overall premium is in the range 6.68 to 7.60. Table 2 also breaks out the value-added premium by sex and weight class. Weaned and vaccinated steers receive a $7.31/cwt premium over steers that are not weaned and vaccinated. Similarly, value-added heifers bring a $7.24/cwt premium relative to heifers that are not in a value-added program (Table 2). The similarity in the result between steers and heifers suggests that the value-added premium dominates the discount that heifers typically bring at auction. That is not to say that heifers are not discounted.

The value-added premium is larger for calves than it is for feeder cattle (Table 2). For example, value-added calves in the 300-400 lb. weight class receive a $7.44/cwt while feeders in the 800-900 lb. weight category receive a $6.49/cwt premium. The highest premium for preconditioned cattle is for calves in the 400-500 lb. weight class.

Figure 1 breaks out the premium for cattle in value-added programs by weight and sex. Value-added heifers in the 300-400 lb. weight category bring a higher premium relative to value-added steers in the same weight category. This might be related to the premium for light-weight replacement heifers over light-weight steer calves. For the remaining weight classes, value-added steers receive a higher premium relative to value-added heifers, which is consistent with expectations.

The highest preconditioning premium is for steers and heifers in the 400-500 lb. weight category. Preconditioned steers weighing 400-500 lbs. receive a premium of $9.50/cwt relative to 400-500 lb. steers that are not preconditioned. Likewise, preconditioned heifers weighing 400-500 lbs. receive a premium of $8.50/cwt relative to 400-500 lb. heifers that are not preconditioned. The largest difference between preconditioned steers and heifers is in the 700-800 lb. weight class.

The purpose of this paper was to determine the premium for preconditioned cattle sold at auction in Arkansas. Overall, preconditioned cattle bring a $7.14/cwt premium over cattle that are not preconditioned. Preconditioned steers receive a higher premium than preconditioned heifers. The $/cwt premium for value-added cattle is decreasing in cattle weight.

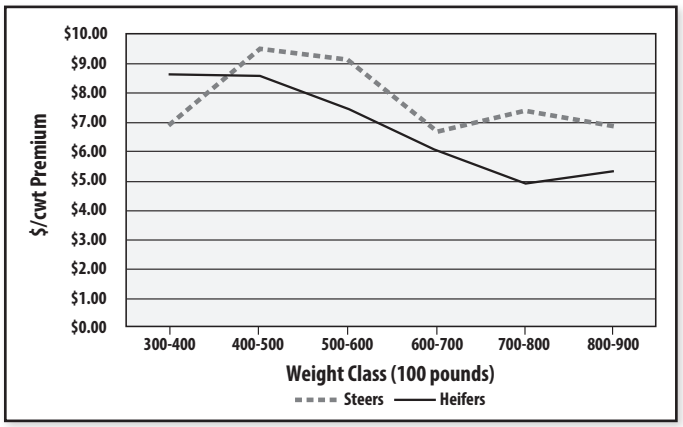

Figure 1. Premiums for value-added cattle by sex and weight class.

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