

Price Differences Ranchers Receive for Steers and Heifers

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Feeder steers and heifers are major sources of cash income for many Arizona ranchers. These two products are normally sold as either calves or yearlings. For most ranchers these two products are similar in that they are beef type animals and receive almost identical care up to the time they are sold. However, data on prices received by ranchers at Arizona auction markets in 1968, 1969 and the spring of 1970 reveal that a majority of steers sell from 4 to 6 cents a pound more than heifers. But, many ranchers sell both their steers and heifers through auctions, and are well pleased with the total dollar results of this method of marketing.**

Ranchers selling direct to country buyers report that differences in prices received for steers and heifers are 2 to 3 cents a pound. These cattlemen prefer this method of marketing because, according to them, they "get a fairer price for their heifers."

Almost all ranchers agree that steers perform better than heifers in the feedlot. Most ranchers also know that prices for slaughter steers exceed prices for slaughter heifers. However, how and to what degree these differences affect feeder steer and heifer prices and the profits from feeding cattle is a controversial subject among Arizona cattlemen.

The purpose of this article is to examine the effects of these and other

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**See "Gila Cattle Auction — A Smashing Success!" *Progressive Agriculture in Arizona*, Volume XX, No. 5, September - October, 1968, page 4.

***The question is beyond the scope of this article. Factors affecting prices for slaughter steers and heifers will be the subject of an article in a subsequent issue of PA.

differences and illustrate how they are reflected back to the rancher through prices paid for feeder steers and heifers. Major factors contributing to the differences in prices buyers are willing to pay ranchers for steers and heifers are: (1) prices buyers expect to receive for slaughter steers and heifers, (2) costs of feeding steers and heifers to slaughter grade and weight, (3) age and weight of feeder, that is, yearlings versus calves, (4) general price level for cattle, and (5) risks that heifers have been bred. Some relevant points to consider with regard to these price-making factors are summarized, and then their combined effects on feeder steer and heifer prices are illustrated with hypothetical examples.

Slaughter Cattle Prices

Almost all slaughter cattle fattened in Arizona are sold to packers in Arizona or California. The relationships between average weekly prices for Choice grade slaughter steers and heifers in Arizona and California, from January 1969 through July 1970, are shown in Figures 1 and 2. For Arizona, prices are for 900 to 1,100 pound steers and 700 to 900 pound heifers. For California, both steers and heifers weighed 900 to 1,100 pounds. Prices for slaughter steers were higher than for heifers the entire 82-week period in both states. The differences in weekly prices for Arizona ranged from a low of \$0.70 to a high of \$3.00 (Table 1). For California, the range

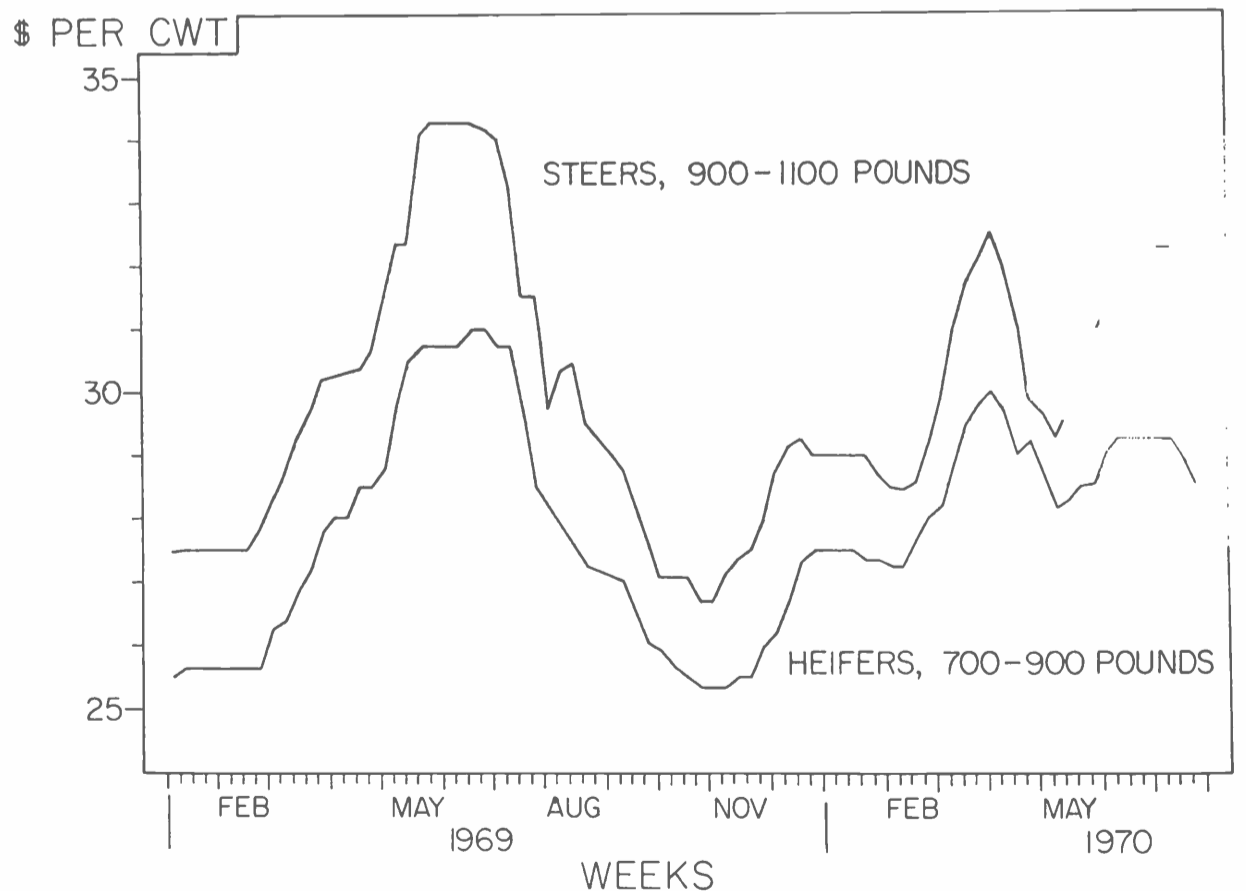


Fig. 1. Weekly Average Prices for Arizona Choice Slaughter Steers and Heifers, January, 1969, through July, 1970.

was from \$1.25 to \$3.75. The difference was \$2.00 or more for 44 weeks in Arizona and 56 weeks in California. It is to be expected that differences in prices for slaughter steers and heifers will be reflected in prices ranchers receive for feeder steers and heifers. Most ranchers agree with the logic of this conclusion, but question the justification for differences as great as 2 to 3 cents a pound in prices for slaughter steers and heifers.*** However, whether this price difference is or is not justified, the fact remains that cattle feeders must consider this difference when buying feeder steers and heifers.

Table 1. Comparison of Average Weekly Prices for Choice Slaughter Steers and Heifers, Arizona and California, January 1969 Through July 1970.

Steer Prices Greater than Heifer Prices by (Dollars/CWT.)	Arizona	California
	(Number of Weeks)	
Less than 1.25	7	0
1.25 to 1.74	17	10
1.75 to 2.24	22	36
2.25 to 2.74	22	25
2.75 to 3.24	8	7
3.25 or more	6	4
	82	82

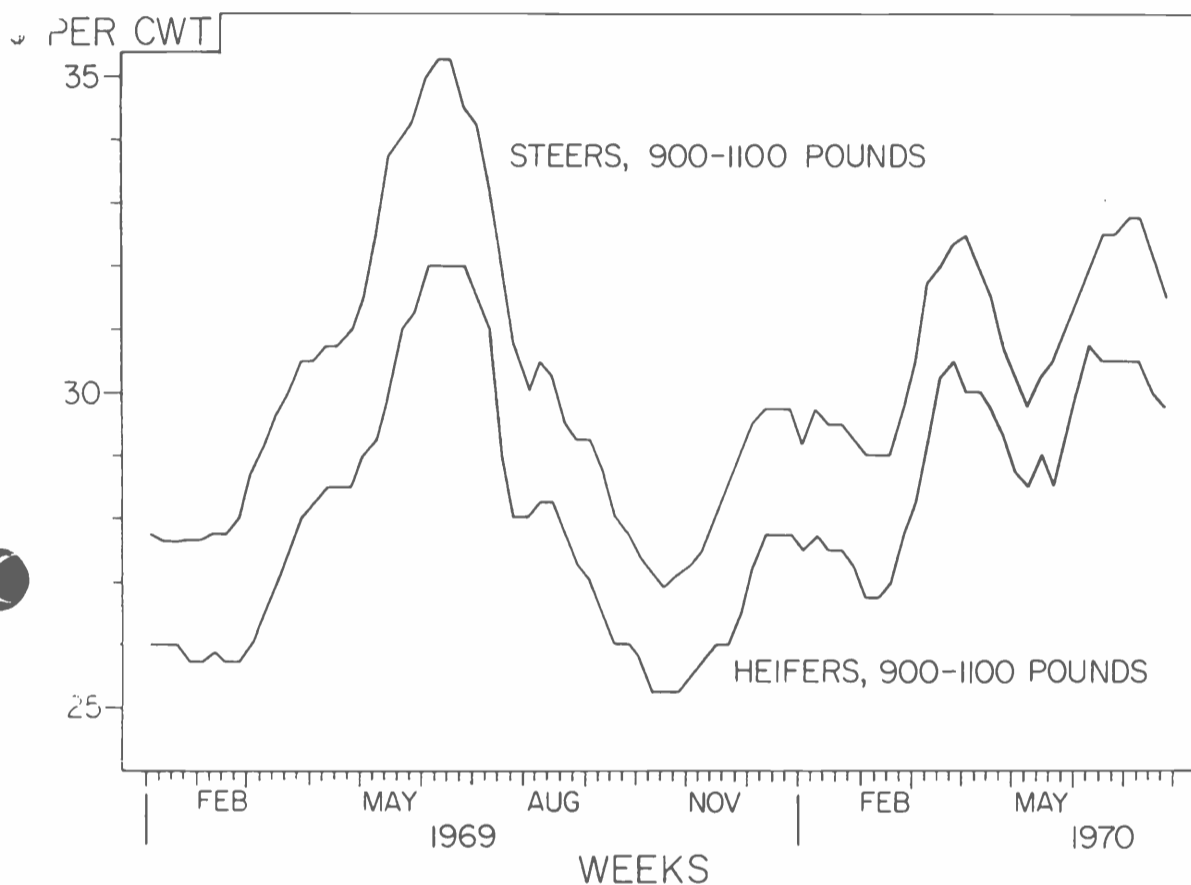


Figure 2. Weekly Average Prices for California Choice Slaughter Steers and Heifers, January, 1969, through July, 1970.

Costs of Gain for Custom Feeding

Grain and other ingredients in the ration plus processing and delivering feed to bunkers account for approximately 90 percent of the total cost of gain for custom feeding in Arizona. This percentage will vary slightly with differences in the cost of ration, custom feeding charge, and feed conversion ratio. The remaining 10 percent includes such variable items as interest on capital investment in cattle, death losses, and veterinary fees. These costs were combined and referred to as "all other costs" of gain in this article.

Major factors affecting the cost of gain are the proportion of concentrates used and the relative prices paid for different ingredients. Charges for custom feeding depend on the services provided by the feedlot. For

this analysis, a charge of \$10 per ton of feed delivered to bunkers was assumed for all animals. This charge combined with the cost of ration is referred to herein as custom feed cost.

The feed conversion ratio may range from less than 7 pounds to as much as 9 pounds of feed per 1 pound of gain. When only 7 pounds of feed are required per pound of gain, an increase in custom feed cost from \$55 to \$65 per ton will increase the feed cost per pound of gain by 3.50 cents (Table 2). However, if 8.2 pounds of feed are required per pound of gain, the same change in custom feed cost will result in a 4.10 cents increase in feed cost per pound of gain. If custom feed cost is \$55 per ton, a change of 0.4 pound in feed conversion ratio results in a cost change of 1.10 cents per pound of gain. If custom feed is \$65 per ton, the same change in feed conversion changes the cost per pound of gain by 1.30 cents.

Numerous factors affect the feed conversion ratio. Among these are breed, sex, weight, grade and condition of animal when put in the lot; ration or rations fed; climatic conditions; and competency of management. When all of these factors, except sex, are held constant, research and experiences of cattle feeders indicate that steers are more efficient

Table 2. Effects of Different Custom Feed Costs and Feed Conversion Ratios on Feed Costs per Pound of Gain.

Feed Conversion Ratio (Lb. Feed/Lb. of Gain)	Custom Feed Cost per Ton ^a		
	\$55	\$60	\$65
	(Feed Cost/Lb. of Gain, Cents)		
7.0	19.25	21.00	22.75
7.2	19.80	21.60	23.40
7.4	20.35	22.20	24.05
7.6	20.90	22.80	24.70
7.8	21.45	23.40	25.35
8.0	22.00	24.00	26.00
8.2	22.55	24.60	26.65

^a Equivalent costs per pound are 2.75¢, 3.00¢, and 3.25¢ respectively.

feed converters than heifers. This difference in pounds of feed per pound of gain may range from 0.2 to 1.0 pounds. Cattle feeders must consider this difference in feeding efficiency in establishing prices they can pay for feeder steers and heifers.

Total Gain and Daily Rate of Gain

In the Southwest, many of the yearling steers and heifers weigh approximately 550 pounds when placed in the feedlot, and calves weigh about 400 pounds. Regardless of their initial weight, most of the steers reach a slaughter grade of Choice at a weight of approximately 1,050 pounds, and heifers at about 850 pounds. Because of differences in total pounds gained, heifers will be in the feedlot fewer days than steers of the same initial weight.

However, the difference in number of days on feed is dependent upon daily rate of gain as well as total gain. A typical average rate of gain during the fattening period for 550-pound steers is 2.8 pounds per day, and for 550-pound heifers 2.5 pounds per day.

At these rates, it takes 179 days to add 500 pounds to yearling steers and 120 days to add 300 pounds to yearling heifers. Animals placed on feed at lighter weights can be expected to produce higher rates of gain. Assuming 400 pound steer calves gain an average of 3.0 pounds per day, it will take 217 days for them to reach a weight of 1,050 pounds. If 400 pound heifers gain an average of 2.7 pounds per day, they will weigh 850 pounds after 167 days of feeding.

Because of differences in total and daily rate of gain, estimates of returns to management necessarily differ between steers and heifers. This may be illustrated by assuming the cattle feeder wishes to realize a return for his management and on his investment of 10 cents per head for each day the animal is on feed, and treat this as a cost. Returns to management are, in effect, a self-paid salary, and therefore a true cost of being in the cattle feeding business.

On this basis, the cattle feeder must include \$17.90 as a component of total cost of gain for a yearling steer, and \$12.00 as an item of total cost of gain for a yearling heifer. In terms of cost per pound of gain, this is 3.58 cents

for a yearling steer and 4.00 cents for a yearling heifer. This cost is 3.34 cents for a steer calf, and 3.71 cents for a heifer calf.

Combined Effects on Prices Received by Ranchers

Effects of differences due to sex on slaughter prices, rates of gain, total gain, and feed conversions along with the effects of differences between yearlings and calves and between relatively high and relatively low cattle prices are summarized in Table 3. The figures represent *typical differences* between feeder steers and heifers for specific combinations of factors, and illustrate a method of estimating the difference in the break-even prices that a cattle feeder can pay for feeder steers and feeder heifers (line q). They are not intended to be representative of average or typical prices, costs, or other data for any specific time.

Referring to Steer 1 and Heifer 1, a difference of 200 pounds in total gain (line b), \$1 in slaughter prices (line d), and 0.1 pound in the conversion ratio (line f) were the major

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Table 3. Estimated Effects of Major Factors Affecting Price Differences Arizona Ranchers Receive for Steers and Heifers

Weight, Income and Cost Items ¹	Yearling Feeders						Feeder Calves		
	Relatively High Prices			Relatively Low Prices			Relatively Low Prices		
	Steer 1	Heif. 1	Heif. 2	Steer 2	Heif. 3	Heif. 4	Steer 3	Heif. 5	Heif. 6
a Purchase Weight, Pounds	550	550	550	550	550	550	400	400	400
b Total Gain, Pounds	500	300	300	500	300	300	650	450	450
c Selling Weight, Pounds (a + b)	1,050	850	850	1,050	850	850	1,050	850	850
d Selling Price, \$/CWT.	32.00	31.00	29.50	28.00	27.00	25.50	28.00	27.00	25.50
e Gross Income, Dollars (c × d)	336.00	263.50	250.75	294.00	229.50	216.75	294.00	229.50	216.75
f Feed Conversion Ratio, Pounds	7.6	7.7	8.0	7.6	7.7	8.0	7.2	7.3	7.6
g Total Feed, Pounds (b × f)	3,800	2,310	2,400	3,800	2,310	2,400	4,550	3,195	3,330
h Cost of Custom Feed, ¢/Lb. ²	3	3	3	3	3	3	3	3	3
i Custom Feed Cost/Lb. of Gain, Cents (f × h)	22.80	23.10	24.00	22.80	23.10	24.00	21.60	21.90	22.80
j "All Other" Cost/Lb. of Gain, Cents ³	2.50	2.57	2.67	2.53	2.57	2.67	2.40	2.43	2.53
k Total Cost/Lb. of Gain, Cents (i + j) ⁴	25.33	25.67	26.67	25.33	25.67	26.67	24.00	24.33	25.33
l Returns to Management/Lb. of Gain, Cents ⁵	3.58	4.00	4.00	3.58	4.00	4.00	3.34	3.71	3.71
m Total Cost plus Returns/Lb. of Gain, Cents (k + l) ⁴	28.91	29.67	30.67	28.91	29.67	30.67	27.34	28.04	29.04
n Total Cost of Gain and Returns to Management/Head, Dollars (b × m) ⁴	144.55	89.01	92.01	144.55	89.01	92.01	177.71	126.18	130.68
o Amount Can Pay for Feeder to break-even, Dollars (e - n)	191.45	179.49	158.74	149.45	140.49	124.74	116.29	103.32	86.07
p Break-even Buying Price for Feeder, \$/CWT. (o ÷ a)	34.81	31.73	28.86	27.17	25.54	22.68	29.07	25.83	21.51
q Break-even Buying Price for Steer Exceeds that for Heifer, \$/CWT.		3.08	5.95		1.63	4.49		3.24	7.56

¹ Data for lines, a,b,d,f,h,j, and l, are assumptions; see text for basis of assumptions.

² Includes cost of ingredients, mixing and delivering ration to bunkers.

³ Non-feed cost to owner having cattle fattened in a custom lot; 10% of total cost of gain.

⁴ Total cost excludes initial cost of animal.

⁵ Based on 10 cents per head for each day animal is on feed.

Prices for

Steers & Heifers

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factors contributing to the \$3.08 per hundredweight difference in the break-even buying prices between steers and heifers (line q). The difference in break-even buying prices increases to almost \$6 per hundredweight if the difference in slaughter prices is \$2.50 and the difference in feed conversion is 0.4 pounds (Heifer 2).

Differences in break-even buying prices between yearling feeder steers and heifers tend to be less when cattle prices are relatively low. For example, the difference between Heifer 3 and Steer 2 is less than the difference between Heifer 1 and Steer 1, primarily because the general level of slaughter cattle prices was \$4 per hundredweight lower.

Differences in weight of animals when placed on feed is also an important factor affecting differences in feeder prices between steers and heifers. This is evident from a comparison of the differences between Heifer 5 and Steer 3 and between Heifer 3 and Steer 2.

The examples indicate that there is justification for differences in prices paid ranchers for steers and heifers. The amount of the difference depends on differences in slaughter prices, conversion ratios, total gain, rate of gain, price levels, initial weight of feeders, and risks associated with possibility that heifers are pregnant.

Although differences in prices per hundredweight received for steers and heifers is important, it is more important for individual ranchers to consider *total dollars received* for their cattle and the *total cost* of production and marketing. The difference between these two totals represents the net returns to their business.

If in doubt as to the most profitable method of marketing, a rancher selling to country buyers should compare his total dollars received from steers and heifers with an estimate of what could have been received if he had sold through an auction. Likewise, a rancher who sells through an auction should compare his total dollars with an estimate of what he could have obtained if he had sold by some other method.

Air Shipment Prospects.

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during the normal 7 to 10 day rail shipment. If quality deterioration was important it could be reduced by controlled atmosphere shipment at substantially lower cost than by air shipment.

What set of circumstances might make domestic air shipment of lettuce or similar commodities economically worthwhile? It is doubtful that any conceivable reduction in air tariffs alone will be sufficient to bring about air shipment. There is a possibility that a large scale identification and promotion program could convince the housewife that the air shipped product is worth the extra cost. A new variety of lettuce might be produced that has greater consumer appeal but is too perishable to be shipped by truck or rail. This would facilitate the promotion approach. Air shipment might be possible by shredding the lettuce before shipment to allow enough saving in weight by shipping only the portion of the lettuce head that is actually consumed while making a much more perishable product.

Lettuce Shipments to European Markets

What are the prospects for overseas air shipment of horticultural products? Table 4 presents an evaluation of the

relative costs of lettuce shipped to northern European port cities by air and surface means. The surface transport involves rail shipment to New York City and then overseas shipment on a containership. The lettuce going to the European market is typically of smaller heads and packed in lighter weight cartons than lettuce for the domestic market. The analysis assumes a weight of 32 pounds per carton. The air tariff that is currently available over this route is about 7.2 cents per ton-mile.

It appears likely that when the FOB price of lettuce was \$1.25 per carton the European retail price of air shipped lettuce would be more than double the price of the lettuce shipped by surface means. When the FOB price is \$5.00 per carton the premium for air shipped lettuce would have to be a little more than 50 percent of the price of the surface shipped product. The great difference in transit time, one day rather than 18 days, substantially improves the prospect that the market would recognize enough quality differential to be willing to pay the necessary price premium to allow air shipment to succeed. Again, air transport would become more attractive with promotion programs and changes in the form of the product.

Table 4. Estimated Costs for Lettuce Shipped From California to Northern European Port Cities by Air and Surface Methods.

	Surface	Air
	\$/Carton	
\$1.25/Carton FOB Price		
Procurement	1.38	1.26
Transport	3.41	8.99
Time	.01	.00 ^a
Total	4.80	10.25
\$2.50/Carton FOB Price		
Procurement	2.75	2.52
Transport	3.41	8.99
Time	.01	.00 ^a
Total	6.17	11.51
\$5.00/Carton FOB Price		
Procurement	5.50	5.05
Transport	3.41	8.99
Time	.02	.00 ^a
Total	8.93	14.04

^a Less than one-half cent per carton.