

# Management and Marketing Economics

## Beef Cattle Economics

Each of us makes economic decisions every day. Earning and spending money involves economic decision making. These decisions influence the way our economy functions. Similarly, decisions made by beef consumers and beef cattle farmers result in changes in the cattle industry each day.

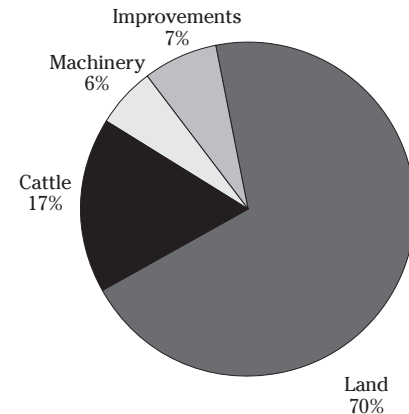
The economics of beef cattle management and marketing is really a study of human behavior. Cattle prices are determined by how much beef consumers choose to buy and how much beef farmers choose to sell in the marketplace. If consumers want to buy more beef than is available, the price is bid up, thereby rationing the beef among buyers. If beef farmers need to sell more beef than consumers are willing to buy, the price of beef is forced down to move the excess supply.

The United States beef industry has evolved into an intricate, highly sophisticated beef production system. Beef farmers add value to their products at each stage in the management and marketing process. Cow-calf farmers produce a product called a *calf*. What they are really selling is not just the calf, but output from the cow and bull and the grass, grain, labor, management, and capital used to produce the calf. Stocker operators buy 300- to 500-pound feeder calves from cow-calf farmers. Then, the stock operators put an additional 300 to 400 pounds of weight gain on the calves and sell them as feeder cattle, thereby increasing their value in the marketplace. Feedlots buy the feeder cattle, feed grain to finish them, and sell them at about 1,100 to 1,300 pounds to a meat packer. Packers slaughter the finished cattle and break the carcass into wholesale cuts for purveyors and retailers who, in turn, sell the beef cuts to consumers.

Beef cattle management and marketing economics are simply the beef farmers' way of obtaining dollars for the value added to the products they produce. The following beef cattle management and marketing economic tables and figures are provided to help you make wise economic decisions.

**Table 1.** Beef Enterprise Investment Cost (Owned Real Estate)

Item	Number	Units	Dollars per Unit	Percent Charged	Total Dollars	Dollars per Cow	Dollars per Acre
Land	200	acres	2,200	100	440,000	4,400	2,200
Well and pump	1	each	4,500	100	4,500	45	23
Cows	100	head	1,000	100	100,000	1,000	500
Bulls	3	head	2,000	100	6,000	60	30
Commodity barn	1	each	6,500	100	6,500	65	33
Equipment barn	1	each	4,500	100	4,500	45	23
Tractor and implements	1	each	55,000	50	27,500	275	138
Pickup	1	each	20,000	50	10,000	100	50
Fences	4	miles	3,960	100	15,840	158	79
Corral	1	each	6,500	100	6,500	65	33
Water troughs	4	each	500	100	2,000	20	10
Mineral troughs	4	each	250	100	1,000	10	5
<b>Total Beef Enterprise Investment Cost</b>					<b>\$624,340</b>	<b>\$6,243</b>	<b>\$3,124</b>



**Figure 1.** Beef enterprise investment cost

**Table 2.** Cow-Calf Budget, Raised Replacements, One Bull Unit, 60 Acres, Preconditioned Feeders, 10-Year Average Cattle Market Prices, Alabama, 2007<sup>1</sup>

30	Cow herd size	90	Percent weaning rate	8	Labor hours/cow/year
30	Cows per bull ratio	15	Percent culling of cows	100	Days cow-herd fed supplement
30	Grass pasture acres	25	Percent culling of bulls	3	Pounds/head/day—cow herd
30	Grass and clover pasture acres	17	Percent culling of replacements	45	Days on preconditioning/backgrounding feed
0	Small grain and ryegrass acres	1.5	Percent death loss, cow-herd	18	Pounds/head/day, preconditioning/ backgrounding
		0	Percent death loss, backgrounders		

Item	Head	Unit	Quantity	Price or Cost/Unit	Total Value/Cost	Dollars/ Brood Cow	Percent of Total
<b>Gross Receipts(1)</b>							
Steer calves	13.00	cwt.	7.00	91.19	8,298.29	277	53
Heifer calves	8.00	cwt.	6.50	87.72	4,561.44	152	29
Cull cows	5.00	cwt.	11.00	37.76	2,076.80	69	13
Cull replacement heifers	1.00	cwt.	9.00	63.63	572.67	19	4
Cull bulls	0.25	cwt.	17.00	52.05	221.21	7	1
Total					<b>15,730.41</b>	<b>524</b>	<b>100</b>
<b>Variable Costs(2)</b>							
Grass pasture		acre	30.00	80.88	2,426.40	81	11
Grass and clover pasture		acre	30.00	66.93	2,007.90	67	9
Small grains and ryegrass		acre	0.00	163.55	0.00	0	0
Hay purchased		ton	38.75	70.00	2,712.50	90	12
Supplements—cow-herd		ton	4.65	70.00	325.50	11	1
Backgrounding feed		ton	10.94	70.00	765.45	26	3
Veterinarian and medical—cow-herd(3)		head	31.00	18.00	558.00	19	2
Veterinarian and medical—calves(3)		head	27.00	14.00	378.00	13	2
Veterinarian and medical—backgrounders(3)		head	27.00	6.00	162.00	5	1

Salt and minerals	cwt	24.00	16.00	384.00	13	2
Custom hauling	head	27.00	3.25	87.75	3	0
Labor	hour	295.71	7.25	2,143.90	71	9
Land rental	acre	60.00	18.50	1,110.00	37	5
Sales commission	dollars	15,730.41	0.03	471.91	16	2
National/state promotion fee	head	27.00	1.50	40.50	1	0
Miscellaneous supplies	head	31.00	5.00	155.00	5	1
Bull replacement	head	0.25	2,000.00	500.00	17	2
Equipment (repair)	dollars			444.96	15	2
Interest on operating capital	dollars	7,080.68	0.0900	637.26	21	3
<b>Total Variable Cost</b>				<b>15,311.03</b>	<b>510</b>	<b>68</b>
<b>Income Above Variable Cost</b>				<b>419.38</b>	<b>14</b>	
<b>Fixed Costs</b>						
General overhead	unit	1.00	210.00	210.00	7	1
Grass pasture	acre	30.00	21.03	630.81	21	3
Grass and clover pasture	acre	30.00	21.03	630.81	21	3
Small grains and ryegrass	acre	0.00	7.84	0.00	0	0
Interest on livestock capital	dollars	23,000.00	0.0800	1,840.00	61	8
Interest on building and equipment	dollars	17,584.13	0.0800	1,406.73	47	6
Depreciation on building and equipment	dollars			1,886.36	63	8
Other fixed costs on building and equipment	dollars			666.01	22	3
<b>Total Fixed Costs</b>				<b>7,270.72</b>	<b>242</b>	<b>32</b>
<b>Total Costs of All Specified Expenses</b>				<b>22,581.75</b>	<b>753</b>	<b>100</b>
<b>Net Returns Above Total Costs</b>				<b>-6,851.34</b>	<b>-228</b>	

<sup>1</sup>These estimates should be used as guides for planning purposes only.

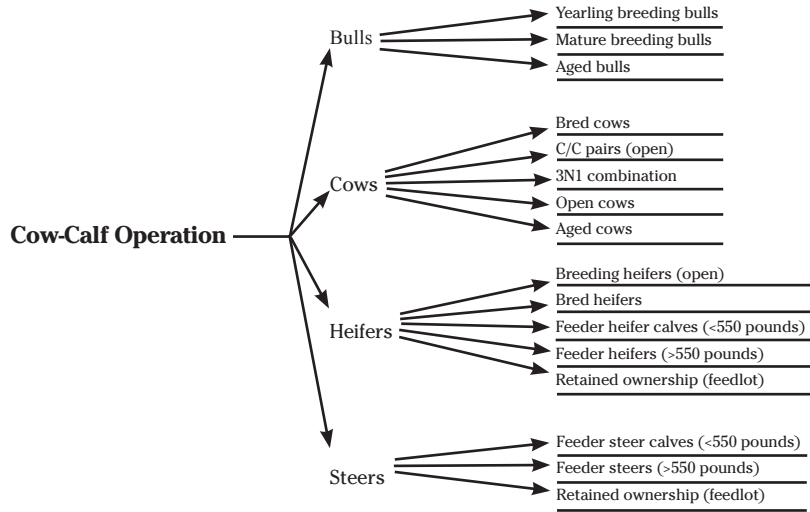
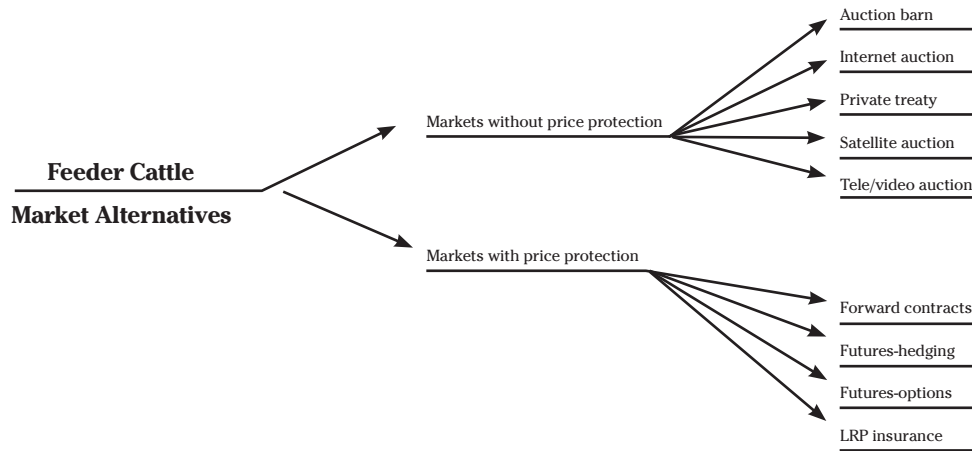


Figure 2. Potential beef cattle market products for a commercial cow-calf operation



**Figure 3.** Feeder cattle market alternatives

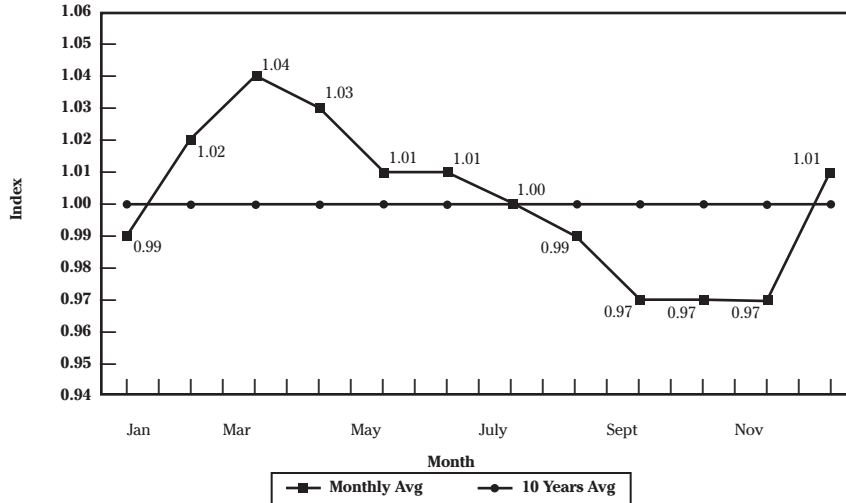
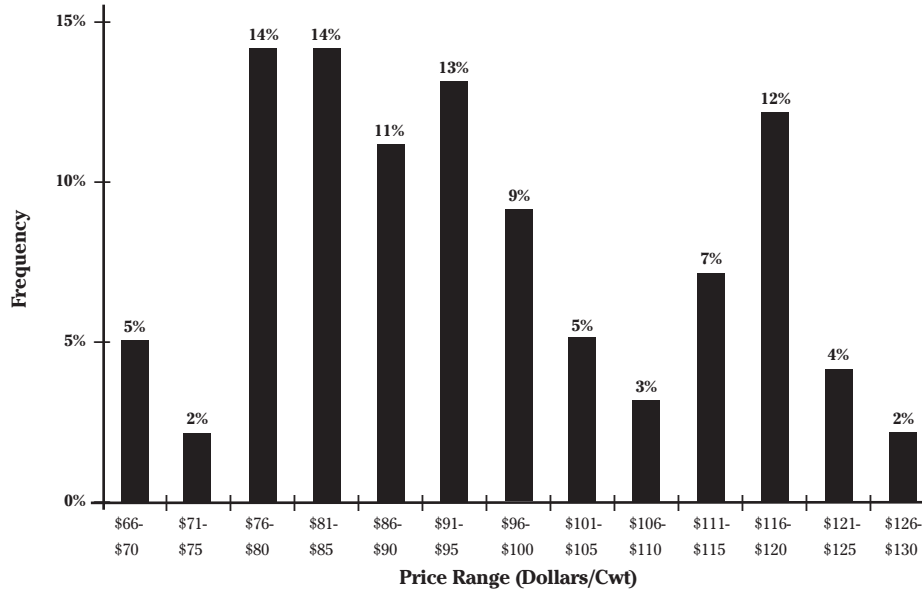


Figure 4. Seasonal feeder steer price indices, 500 to 600 pounds, medium and large frame, #1 muscling score, 1997-2006, Alabama



**Figure 5.** Price distribution of feeder steers, 500 to 600 pounds, medium and large frame, #1 muscling score, 1997-2006, Alabama

**Table 3.** Annual Payments (Principal and Interest) Required to Amortize a \$1,000 Loan

Interest Rate	Length of Loan (in years)										
	1	2	3	4	5	7	10	15	20	25	30
1%	\$1,010.00	\$507.51	\$340.02	\$256.28	\$206.04	\$148.63	\$105.58	\$72.12	\$55.42	\$45.41	\$38.75
2%	\$1,020.00	\$515.05	\$346.75	\$262.62	\$212.16	\$154.51	\$111.33	\$77.83	\$61.16	\$51.22	\$44.65
3%	\$1,030.00	\$522.61	\$353.53	\$269.03	\$218.35	\$160.51	\$117.23	\$83.77	\$67.22	\$57.43	\$51.02
4%	\$1,040.00	\$530.20	\$360.35	\$275.49	\$224.63	\$166.61	\$123.29	\$89.94	\$73.58	\$64.01	\$57.83
5%	\$1,050.00	\$537.80	\$367.21	\$282.01	\$230.97	\$172.82	\$129.50	\$96.34	\$80.24	\$70.95	\$65.05
6%	\$1,060.00	\$545.44	\$374.11	\$288.59	\$237.40	\$179.14	\$135.87	\$102.96	\$87.18	\$78.23	\$72.65
7%	\$1,070.00	\$553.09	\$381.05	\$295.23	\$243.89	\$185.55	\$142.38	\$109.79	\$94.39	\$85.81	\$80.59
8%	\$1,080.00	\$560.77	\$388.03	\$301.92	\$250.46	\$192.07	\$149.03	\$116.83	\$101.85	\$93.68	\$88.83
9%	\$1,090.00	\$568.47	\$395.05	\$308.67	\$257.09	\$198.69	\$155.82	\$124.06	\$109.55	\$101.81	\$97.34
10%	\$1,100.00	\$576.19	\$402.11	\$315.47	\$263.80	\$205.41	\$162.75	\$131.47	\$117.46	\$110.17	\$106.08
11%	\$1,110.00	\$583.93	\$409.21	\$322.33	\$270.57	\$212.22	\$169.80	\$139.07	\$125.58	\$118.74	\$115.02
12%	\$1,120.00	\$591.70	\$416.35	\$329.23	\$277.41	\$219.12	\$176.98	\$146.82	\$133.88	\$127.50	\$124.14
13%	\$1,130.00	\$599.48	\$423.52	\$336.19	\$284.31	\$226.11	\$184.29	\$154.74	\$142.35	\$136.43	\$133.41
14%	\$1,140.00	\$607.29	\$430.73	\$343.20	\$291.28	\$233.19	\$191.71	\$162.81	\$150.99	\$145.50	\$142.80
15%	\$1,150.00	\$615.12	\$437.98	\$350.27	\$298.32	\$240.36	\$199.25	\$171.02	\$159.76	\$154.70	\$152.30

**Example:** You want to buy a herd bull for \$3,000. Your lender will finance the bull over 5 years at 9 percent interest rate. To find the annual payments to finance the bull, identify 9 percent in the left column and 5 years in the row at the top of the table. The intersection of the interest-rate row and 5-year column is \$257.09. This is the annual payment (principal and interest) necessary to repay a \$1,000 loan amortized over 5 years at 9 percent interest. Thus, an annual payment of \$771.27 (3 x 257.09) would be needed to pay for the \$3,000 herd bull over 5 years.

**Table 4.** Beef Enterprise Financial Strength/Weakness Measures, 2007

		<b>Desirable</b>	<b>Caution</b>	<b>Undesirable</b>
Asset turnover ratio =	$\frac{\text{Gross farm revenue}}{\text{Average farm assets}}$	40% or larger	20% to 40%	Less than 20%
Current ratio =	$\frac{\text{Current farm assets}}{\text{Current farm debt}}$	2 or larger	1 to 2	Less than 1
Debt to asset ratio =	$\frac{\text{Total farm debt}}{\text{Total farm assets}}$	Less than 40%	40% to 70%	Greater than 70%
Interest expense ratio =	$\frac{\text{Interest expense}}{\text{Gross farm revenue}}$	Less than 10%	10% to 20%	Greater than 20%
Net farm income =	Gross cash farm income - total cash farm expense - depreciation +/- inventory change	+\$xxx,xxx	\$0	-\$xxx,xxx

Operating expense ratio =	$\frac{\text{Gross farm expense} \\ - \text{farm interest expense} \\ - \text{depreciation expense}}{\text{Gross farm revenue}}$	Less than 60%	60% to 80%	Greater than 80%
Operating profit margin =	$\frac{\text{Net farm income} \\ + \text{farm interest expense} \\ - \text{value of operator's labor and management}}{\text{Gross revenue}}$	Greater than 5%	0% to 5%	Less than 0%
Rate of return on farm assets =	$\frac{\text{Net farm income} \\ + \text{farm interest expense} \\ - \text{value of operator's labor and management.}}{\text{Average farm assets}}$	Greater than 5%	0% to 5%	Less than 0%
Rate of return on farm equity =	$\frac{\text{Net farm income} \\ - \text{value of operator's labor and management.}}{\text{Average farm equity}}$	Greater than 10%	5% to 10%	Less than 5%

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