

Macro Economics and Cattle Ranching

Jerry L. Holechek, Jerry Hawkes, and Tim D. Darden

In the past, estimates of the financial outcomes of different range management practices in the USA have been primarily based on micro-economics. This approach evaluates cost-return benefits by focusing on current interest rates, livestock prices, livestock production costs, etc., with the assumption that major changes will not occur. In contrast macro-economics concerns the economy as a whole, and how government policy and global business conditions will affect management outcomes. A profitable ranching operation depends on a good understanding of both micro- and macro-economics. A close look at the last 20 years shows that the financial outcomes of decisions regarding grazing systems, brush control, stocking rate, fertilization, range seeding, and ranch expansion were as much affected by changes in the economy at large as the biological efficiency of the practice. This can be illustrated by considering the relationship between cattle prices and the macro-economy. This relationship is important because historical cattle prices have been closely associated with financial returns to western ranches (Fowler and Torell 1987).

History of Cattle and Ranch Prices

Since the formation of the western range livestock industry in the 1860's, there have been four basic periods of high cattle prices. Each of these periods was followed by a crash in cattle and ranch values. Each period is linked with a general economic inflation caused by a major sociopolitical event (war) that reduced supply followed by a depression or recession that occurred 7 to 10 years later due to restoration and over-expansion of supply.

The first major economic boom occurred during and after the Civil War (1861–1865) and lasted until the depression of 1873. The high cattle prices during and after the Civil War encouraged the formation of the cattle industry in Texas, and brought about the cattle drives to the railroads in Kansas in the late 1860's through the 1870's. The depression of 1873 was triggered by excessive speculation in railroads followed by disappointing profits once they were completed. Another major factor was the winding down of the boom caused by post Civil War reconstruction which caused a sharp drop in cattle prices for a few years (Stoddart and Smith 1943).

The next major economic expansion was brought

about by the explosion of technology at the turn of the century. World War I caused an inflationary spiral that lasted until 1920. The period from 1914–1920 was one of the most favorable for farmers and ranchers in the history of the country. It was also a period of great exploitation in which many fragile western rangelands were either severely overgrazed or plowed. Farm product prices (cattle included) declined in the early 1920's but recovered a bit between 1927–1929. This ended precipitously with the onset of depression in 1930. At the bottom of the depression in 1933 cattle prices had declined 35% from the 1929 levels and over 50% from 1920 levels. World War II (1941–1945) brought economic recovery and a sustained period of high cattle prices that peaked in 1951 at the peak of the Korean War and then crashed by nearly 50% over the next 2 years (Fig. 1). Cattle prices stayed relatively low until the Vietnam conflict began in 1964 and steadily climbed upward peaking in 1973 with the oil shock at nearly triple the 1964 level. After a 3 year pullback they resumed their ascent reaching another peak in 1979 when another oil shock occurred. The last bottom occurred in 1986 when cattle prices adjusted for inflation were the lowest since WWII (Fig. 1).

There are 6 basic stages to most business cycles each of which favors different classes of assets (commodities, stocks, bonds, cash, real estate) (Stoken 1984, Pring 1992). During stage 1 at the bottom of a slump, business becomes leaner and more productive by eliminating unprofitable operations, and reducing labor costs (Fig 2). In this period consumer demand is low due to concerns over debt, high unemployment, and high interest rates. Stocks, real estate (ranches), and commodities (cattle) are depressed but high quality bond prices are up.

Austerity leads to stage 2 when capital accumulation and lack of credit demand pushes interest rates lower. This causes a mild increase in economic activity. For ranchers this is the most favorable period to buy land, control brush, implement grazing systems, and expand the herd. The problem here is that because bankers are cautious from going through a period of bankruptcies and foreclosures only the ranchers with the highest credit ratings have access to capital. Financial assets, primarily stocks and bonds, do well in stage 2 but prices of real estate and commodities remain depressed.

Stage 3 marks beginning of the recovery in commodity and real asset prices. This is due to reduction in inventories and depletion of consumer goods. Bond prices tend to be flat but stock prices increases due to improvements

Authors are with the Department of Range Sciences, Box 30003, New Mexico State University, Las Cruces, NM 88003; Department of Agricultural Economics and Business, Box 3169, New Mexico State University, Las Cruces, NM 88003, respectively.

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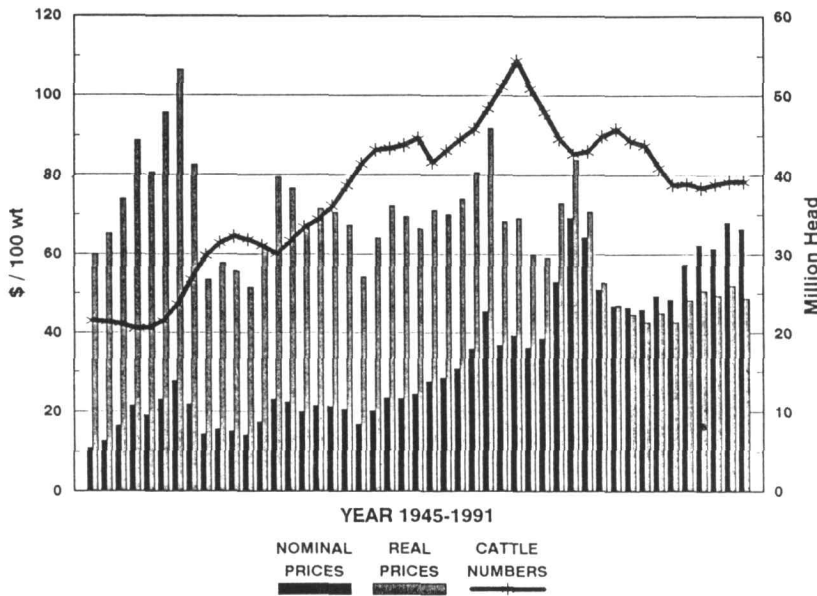
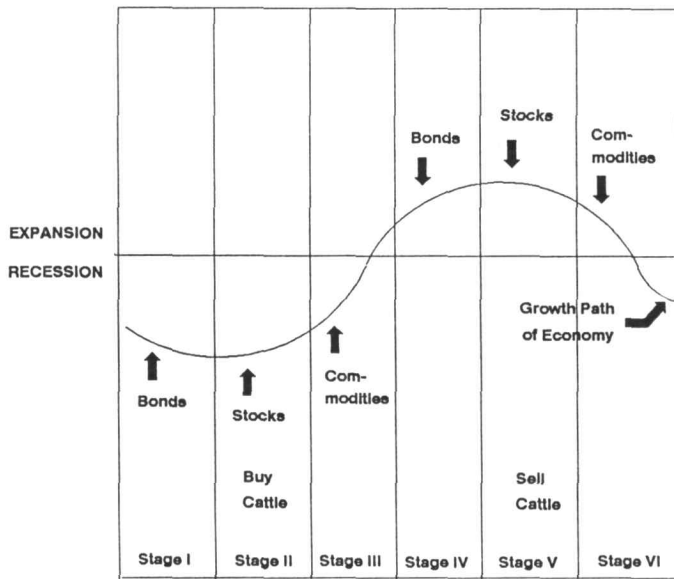


Fig. 1. The relationship between cattle numbers, nominal cattle prices and real cattle prices between 1945 and 1991.



(Adapted from Pring, 1992.)

Fig. 2. The relationship between the stages of the idealized business cycle and the various asset classes.

in corporate earnings. Real estate (ranches) and community (cattle) prices start to increase in this stage.

Stage 4 brings a high level of confidence about the future of the economy. Consumer and business spending causes interest rates to rapidly rise which depresses bond prices. Growing inflation and easy credit cause real estate and commodity prices to shoot upwards. This is the favorable period for both cattle prices and ranch values.

Stage 5 brings the peak in the business cycle. Here optimism about the future has led to recklessness. Credit is too easy to obtain, which causes high inflation and encourages poor business decision making. Commodity prices and real estate peak in this period due to both real and speculative demand. Real demand results from workers experiencing increased wages and access to easy credit. They are in a position to upgrade their standard of living. Speculative demand results from inflation pressures that causes investors to shift into real assets as a hedge against devaluation of the currency. Money flows out of the stock market into short term money market funds that provide high yields. Long term bonds are in disfavor due to fears of increasing inflation. This is the period when cattle and ranch prices peak. The thinking rancher will want to sell as many livestock as possible retaining only a core herd. This is the time to take capital gains on any extra land purchased during stages 1 or 2. Debt should be liquidated and avoided to the extent possible in this period. Historically this has been the period when credit was easiest to obtain and ranchers generally expanded their operations.

Stage 6 is characterized by a crash in commodity and real estate prices and a general economic downturn due to an oversupply of goods financed by excessive debt. The prosperity of stages 4 and 5 causes recklessness and over-optimism by bankers, producers, and consumers. The only way the boom can be sustained is with excessively loose credit. If the Federal Reserve maintains the discount rate

Table 1. Cattle prices in relation to American economy for the period between 1970 and 1992¹.

Year	% Change in real GDP ²	% Unemployment	% Change in consumer price index	Discount interest rate, %	Prime interest rate, %	Real interest rate, %	% Gain S&P 500 stock index	Nominal cattle prices, \$ ⁴	Real ^{3,4} cattle prices, \$	U.S. Beef cattle numbers (1000's)
1970	(0.3)	4.9	5.6	5.95	7.91	2.31	0.1	28.40	70.12	43,120
1971	2.8	5.9	3.3	4.88	5.72	2.42	11	30.90	73.92	44,541
1972	5.0	5.6	3.4	4.50	5.25	1.85	16	35.80	80.63	45,794
1973	5.2	4.9	8.7	6.44	8.03	(0.67)	(17)	45.30	91.89	48,354
1974	(0.5)	5.6	12.3	7.83	10.81	(1.49)	(30)	36.70	68.22	51,234
1975	(1.3)	8.5	6.9	6.25	7.86	0.96	32	39.30	69.07	54,351
1976	4.9	7.7	4.9	5.50	6.84	1.94	19	36.30	59.90	50,943
1977	4.7	7.1	6.7	5.46	6.83	0.13	(12)	38.50	59.05	47,919
1978	5.3	6.1	9.0	7.46	9.06	0.06	1	52.90	72.87	44,596
1979	2.5	5.8	13.3	10.28	12.67	0.63	12	69.20	83.98	42,589
\bar{X}	3.38	6.2	7.41	6.46	8.10	0.69	3.21	41.33	72.96	47,344
1980	(0.2)	7.1	12.5	11.77	15.27	2.77	26	64.30	70.74	43,049
1981	1.9	7.6	8.9	13.42	18.87	9.97	(10)	51.00	52.85	44,910
1982	(2.5)	9.7	3.8	11.02	14.86	11.06	15	46.99	46.99	45,837
1983	3.6	9.6	3.8	8.50	10.79	6.99	17	46.50	44.75	44,276
1984	6.8	7.5	3.9	8.80	12.04	8.14	1	46.00	42.75	43,677
1985	3.4	7.2	3.8	7.69	9.93	6.13	26	49.40	45.07	40,912
1986	2.7	7.0	1.1	6.33	8.33	7.23	15	48.50	42.69	38,781
1987	3.7	6.2	4.4	5.66	8.21	3.81	2	57.20	48.35	38,943
1988	4.4	5.5	4.6	6.20	9.32	4.72	12	62.30	50.77	38,432
1989	2.9	5.3	4.6	6.93	10.87	6.07	27	61.40	49.52	38,922
\bar{X}	2.67	7.3	5.14	8.63	11.85	6.71	13.1	53.34	49.45	41,774
1990	1.0	5.4	5.4	6.75	10.01	4.61	(4.5)	68.00	52.02	39,179
1991	(0.6)	6.6	4.2	5.00	8.00	3.80	28	63.92	48.75	39,205
1992	2.1	7.5	2.9	3.25	6.00	3.1	4.5	69.73	51.49	42,378

¹Sources: National Agriculture Statistical Services 1945–1991; United States Department of Labor, Bureau of Labor Statistics; United States Department of Commerce, Consumer Price Index.

²Gross Domestic Product.

³Averaged across classes of cattle and adjusted for inflation using 1982 as the base year.

⁴\$/100 wt. (lbs).

(cost of money to banks) below the inflation rate, the money supply increases at a more rapid rate than the expansion of the economy. This occurred during the 1970's (Table 1). Historically this has always caused devaluation of a nation's currency and collapse of its bond market (Davidson and Rees-Mogg 1993). Debtors are always favored over creditors when the government takes the inflationary approach, by making the real cost of money negative (prime interest rate minus consumer price index). Investment goes into speculation in real estate, commodities, gold, precious metals, chinese ceramics, etc., as a hedge against currency devaluation rather than into creation of real wealth through product development and improved production efficiency. Western ranch values increased at around 10% per year when this happened in the 1970's.

To contain inflation the Federal Reserve raises the discount rate well above the inflation rate (typically measured by the consumer price index). This forces bankers to contract credit which in turn slows product demand. Commodity and real estate prices fall in response to tighter credit and oversupply of goods. Falling prices are accentuated by bankruptcies of heavily indebted busi-

nesses and consumers that now meet their financial obligations with lower collateral (falling real estate) and less income (lower wages, lower employment levels). Cash and U.S. treasury bonds are favored assets in this period. High yield, low grade corporate bonds are to be shunned because of high default rates. Stock prices are depressed in this period due to sagging corporate profits and the fact investors will have shifted to money market funds to capture their high real interest rates at low risk.

The conditions just described prevailed in the early 1980's. The Federal Reserve raised interest rates to the point that the real cost of money was over 8% (Table 1). This collapsed cattle and ranch prices with nearly a third of western USA ranchers going out of business. In New Mexico ranch values dropped 16%–38% (Torell and Fowler 1986) and in the southern part of the state 40% of the ranchers were for sale (Torell and Fowler 1985).

It is interesting to note that just prior to this policy shift the prevailing view among bankers and economists was that the trend towards higher ranch and cattle prices would last indefinitely. Ranchers were encouraged to borrow and heavily capitalize their ranches. Most of those who followed this strategy bought high, sold low, and are

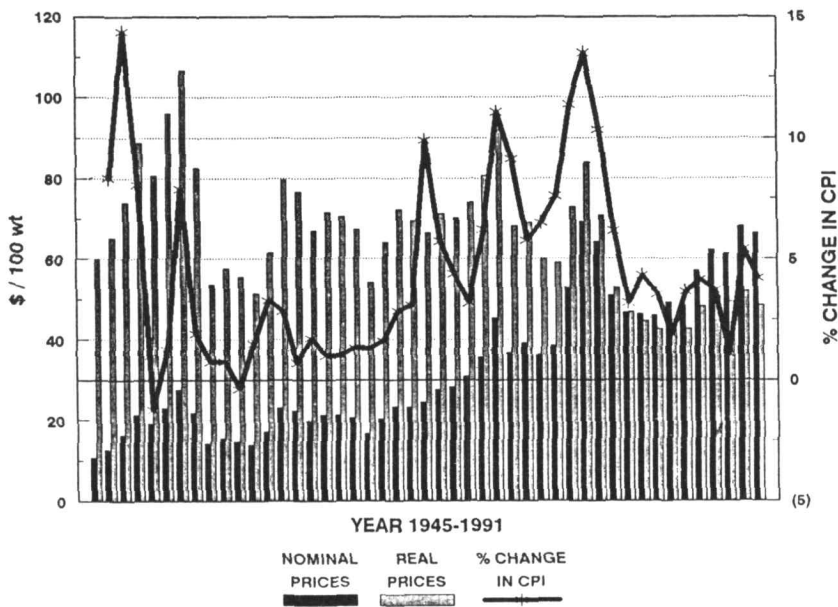


Fig. 3. The relationship between nominal cattle prices, real cattle prices and percent change in consumer price index (CPI) between 1945 and 1991.

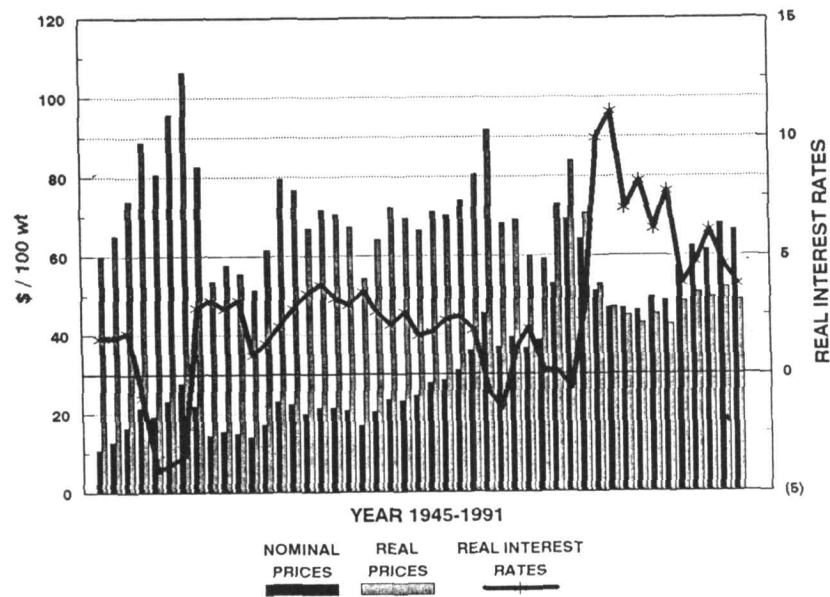


Fig. 4. The relationship between real interest rates, nominal cattle prices and real cattle prices between 1945 and 1991.

no longer in business. In the deflationary phase of the business cycle the informed rancher will be sitting on sidelines with high cash levels and only core holdings in land and livestock.

Since the 1860's cattle prices have closely followed the previously described model. Highs in 1872, 1918, 1951, 1973, 1979, and 1990 all corresponded to a rising consumer price index, negative or low real interest rates and in most cases followed a period of high economic growth (Figs. 3, 4). In contrast falling cattle prices were characterized by the opposite conditions generally bottoming when real interest rates (prime rate - consumer price index) were at maximum.

Beef Demand and the Future.

Although recent nominal cattle prices have come off the 1984 bottom, real cattle prices are close to their lowest levels since WWII (Fig. 1). The real question confronting ranchers is why the present low real prices and what the future will hold for cattle and ranch prices. To examine this issue it is necessary to consider indirect factors such as the world economy and grain production as well as future beef demand in the USA.

The present low real prices for beef are partially explained by the low corn and wheat prices. Low corn and wheat prices result in low chicken and pork prices because these are the main feeds used to produce these meats. Chickens and pigs convert grains into meat more efficiently than cattle, and therefore beef becomes relatively much more costly than poultry or pork when grain prices are depressed (Godfrey and Pope 1993). Annual per capita consumption of beef has dropped from 86 lbs in 1978 to 70 lbs presently based on U.S. Dept. of Agriculture data. Although the cholesterol scare has been blamed for this drop and has caused some of it, the reduction in per capita beef consumption is primarily because of the relatively low cost of chicken and pork relative to beef (Godfrey and Pope 1990).

The other big factor is the expansion of world grain production due to improved technology. China has gone from a net importer to a net exporter of wheat over the past 15 years. Russia is expected to become a grain exporter within the next 6 years assuming its free market reforms work out. This all means cheaper feed for chickens and pigs.

In the USA grain yields and total production are continuing to be boosted even though around 35 million acres of farmland have been retired since 1985 under the Conservation Reserve Program (CRP). If this land goes back into production it will probably adversely impact beef prices either indirectly by expanding grain supplies or directly by being used as a forage source. Our estimates indicate that if CRP contracts are allowed to expire it would increase beef production by 1.5 to 3%.

Another factor is the expanding world supplies of low grade beef from production increases in the developing countries, particularly Argentina and Australia. These countries are gaining world market share because their production costs are well below those in the USA. Research by Dr. Bill Gorman, Agricultural Economist at New Mexico State University, indicates that production costs are about 62% lower in Argentina and about 34% lower in Australia compared to the USA. For this reason the USA now imports more beef than it exports.

The positives for western cattle producers are increased human population and the possibility of improved affluency in some developing countries that would allow them to afford more meat in the diet.

The greatest improvement in living standards is occurring in the Pacific Basin (Asiatic) countries. These countries are a bright spot for USA cattle producers since they prefer high quality beef and per capita consumption is increasing. Australia is interested in capturing this market. So far the USA has had the quality advantage in producing the higher grades of beef but Australia has the cost advantage with the lower grades.

The other bright spot is Mexico where the North American Free Trade Agreement (NAFTA), if passed, will lower tariff levels on USA goods and should improve Mexican income levels. NAFTA is expected to expand Mexican demand for US beef. In the Mexican market we have the competitive edge in supplying the high quality cuts but we face serious competition from Argentina on lower grade beef.

Here in the USA our population is growing at a low rate (1% per year). About half of this growth comes from immigrants who consume high amounts of chicken and pork because of their low incomes and cultural traditions.

Based on this scenario we see nothing that would trigger a big increase in cattle prices over the next 5–10 years. There is a wild card. The USA has been experiencing disinflation since the early 1980's (Table 1). Productivity was increased and the government switched from

printing money to fund its debt in the 1970's to borrowing the money to fund its debt in the 1980's (Davidson and Rees-Mogg 1993). Borrowing favors financial assets (bonds, stocks) over real estate and commodities. Debt in all sectors (consumer, business, local government, federal government) of the USA economy during the 1980's has led to low level economic growth in the 1990's (Davidson and Rees-Mogg 1993). If the economy slips into recession or depression the government could decide to monetize the debt (print instead of borrow the money) and stimulate the economy with massive spending. Such a program could cause money to flow into commodities (beef) and real estate (ranches) as hedges against inflation. A severe devaluation of the dollar against foreign currencies would be the outcome of this approach. A lower dollar should increase our beef exports, but it could destabilize both the economy and the government (Calleo 1992, Davidson and Rees-Mogg 1993). Another problem for producers is that costs for fuel and supplemental feed could rise more than beef prices. Ranchers running extensive, low cost operations with high levels of long term debt at low interest rates would be most likely to benefit from this type of inflationary spiral.

Strategy for the Future.

We believe there is great uncertainty regarding the future of the USA and world economy in the next 5 years. Therefore we recommend ranchers use a conservative, gradualist approach that involves diversifying their assets and enterprises along with avoiding debt. We suggest that prudent ranchers try to maintain 10% of their liquid assets in cash at all times and invest no more than 25% of their annual net income back into the ranch. The other 65% would be allocated to cash, stocks, bonds, and commodities depending on stage of the business cycle. The rancher with a high cash level is in better position to buy low and sell high during the swings in cattle, land, commodity, stock and bond prices.

Historically stocks and bonds have given greatly superior returns compared to cattle ranching. Since 1900 western cattle ranches have returned about 1–3% on capital investment compared to 10% for stocks and 4–6% for bonds. We recognize that most western ranchers are not in the business strictly for monetary gains but unsound financial management is one of the quickest ways to become an ex-rancher. We strongly recommend diversification of assets, maintaining a high degree of liquidity, and keeping a major part of financial resources where they will receive the highest return. One important advantage of stocks and bonds is liquidity. In contrast, lack of liquidity is a disadvantage of real estate or investments in range improvements such as brush control, seeding or fence for grazing systems.

Need and risk/reward ratios should be determined for the remaining 25% of assets invested in the ranch. Some

of the options would include brush control, range seeding, specialized grazing systems, water development, herd improvement, and infra-structure repair, and construction. Brush control and seeding to increase grazing capacity would make little sense if a large portion of the ranch is poorly used due to lack of water. However, it might be the best selection if forage supplies were lacking in certain seasons due to government grazing permit restrictions. It might also be appropriate if a strategic calving pasture was wanted where animals could be concentrated for better care and nutrition. Specialized grazing systems would be advantageous where distribution problems occur due to terrain and/or heterogeneity in plant communities. The rancher with limited capital resources in a desert area might choose to improve efficiency of range use and livestock productivity through better selection of livestock.

Conclusions

The business cycle has received little consideration in management decisions by western ranchers and range economists. Our analysis of available information shows cattle and ranch prices are closely tied to the general economic conditions in the country.

We find it regrettable that ranchers have not been trained to conscientiously orient stocking rate, brush control, ranch expansion, and other decisions around the business cycle. They have often been advised to buy when nominal interest rates and cattle prices were at a peak and then were later forced to sell low because of excessive debt that could not be serviced when prices fell. The approach of buying low and selling high has long been used by successful Wall Street investors. History shows it has just as much utility with livestock as common stock.

Barring war, an oil shock or some other disaster that causes inflation, the rancher who takes a conservative approach avoiding high risk management strategies and debt is most likely to survive. Investing more than 25% of liquid financial resources back into the ranch appears unwise. We believe improved financial skills would be of great benefit to most ranchers. Diversification into guest ranching, nature tours, fee hunting, pack trips, and marketing of plants for landscaping could offer income opportunities for the entrepreneurial rancher.

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