

Increasing Profits in Bear Markets:
The Multiple Hedging Approach

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Anyone in the cattle business today accepts the fact that cattle prices are going to fluctuate. They fluctuate not only in the short period but over longer periods of time also. Analysts have identified two important longer period fluctuations - - the seasonal and the cyclical. The seasonal, of course, appears each year in some form. Our attention right now will focus on the cycle.

The cycle defines the existence of the longer period fluctuations we refer to as a Bull and Bear markets. Furthermore, there is often dispute as to where in the cycle the market may be at particular points in time. Unfortunately, perhaps, most of the analyses of the cattle cycle use the annual series, January 1 inventories, to measure the length of the cycle. But, problems can arise when cattle prices are analyzed if an annual series is employed (Figure 1).

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FIGURE 1. AVERAGE ANNUAL COST PER 100 POUNDS OF CATTLE SLAUGHTERED UNDER FEDERAL INSPECTION, DEFLATED, 1921-1969

Using annual data suggests no uniformity in successive cycles whether measured from peak to peak or trough to trough. Analysts have become accustomed to interpreting the data in a manner such that a cyclical peak is declared for 1932 followed by a downswing phase of only two years followed by an upswing phase to 1939 - - an upswing lasting five years. A cyclical peak is defined in 1951 followed by another downswing of only two years which, in turn, develops into an upswing lasting six years.

I have tried to demonstrate elsewhere¹ that the price cycle, when examined using monthly average prices for slaughter cattle adjusted for the forces of inflation and deflation has a regular and consistent periodicity of ten years. The work covered the time period from January 1921 - December 1969. A graphic summary of the results is shown in Figure 2.² Although this analysis has not been

¹John Franzmann, "Cattle Cycles Revisited," Southern Journal of Agricultural Economics, Vol. 5, No. 2. December, 1971, pp. 69-76.

²A statistical function including trend, seasonal, and cyclical terms was fitted in which each term was significant at $<.01$ level and possessed a coefficient of determination of 0.87.

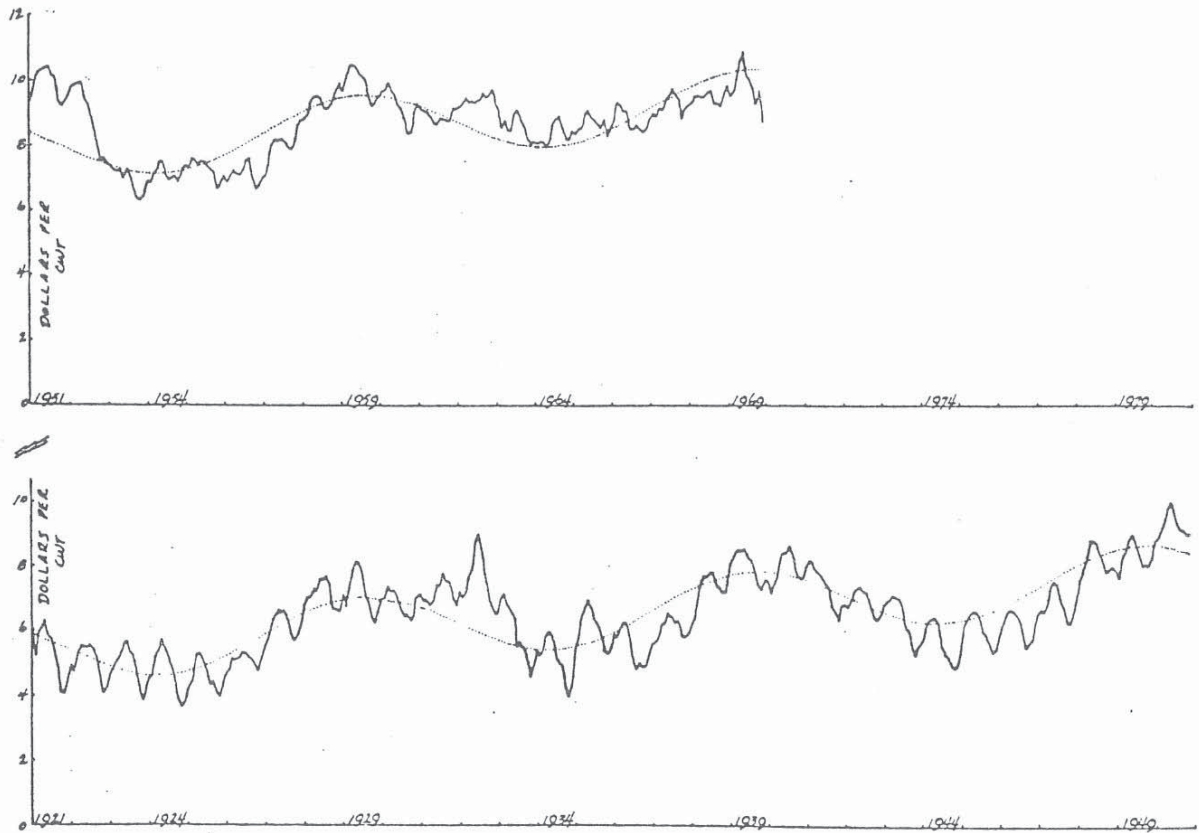


FIGURE 2. AVERAGE MONTHLY COST PER 100 POUNDS OF CATTLE SLAUGHTERED UNDER FEDERAL INSPECTION, DEFLATED, JAN. 1921 - DEC. 1969 AND ESTIMATED CYCLICAL TREND

updated, those who are familiar with cattle prices are aware of the sharp price break from 1969-1974 followed by the dramatic rise to the peak made in 1979.

If the price cycle is still intact, and it seems to be, we are currently in the downswing phase of the cycle with the low due sometime near 1984. During this downswing phase there will be considerable volatility in the markets, especially in nominal prices. Producers need marketing strategies not only to survive the downswing phases, but to prosper during them. I believe that MULTIPLE HEDGING provides the means for doing just that.

Multiple hedging means to hedge the same group of cattle more than once during the production period. Using the multiple hedging approach to risk management the producer hedges when there is the likelihood of an important adverse price move and is unhedged when there is little likelihood of an adverse price move.

One of the more difficult problems to be faced with a multiple hedging approach is to determine just when to place the hedge and just when to lift it. In Figure 3, it certainly would have been desirable to have had Sell hedges placed by the last week of November 1981. It is apparent also that such hedges could have been profitably lifted in early January 1982. Once the Sell hedges have been lifted, however, the producer would need to be alert for signs of

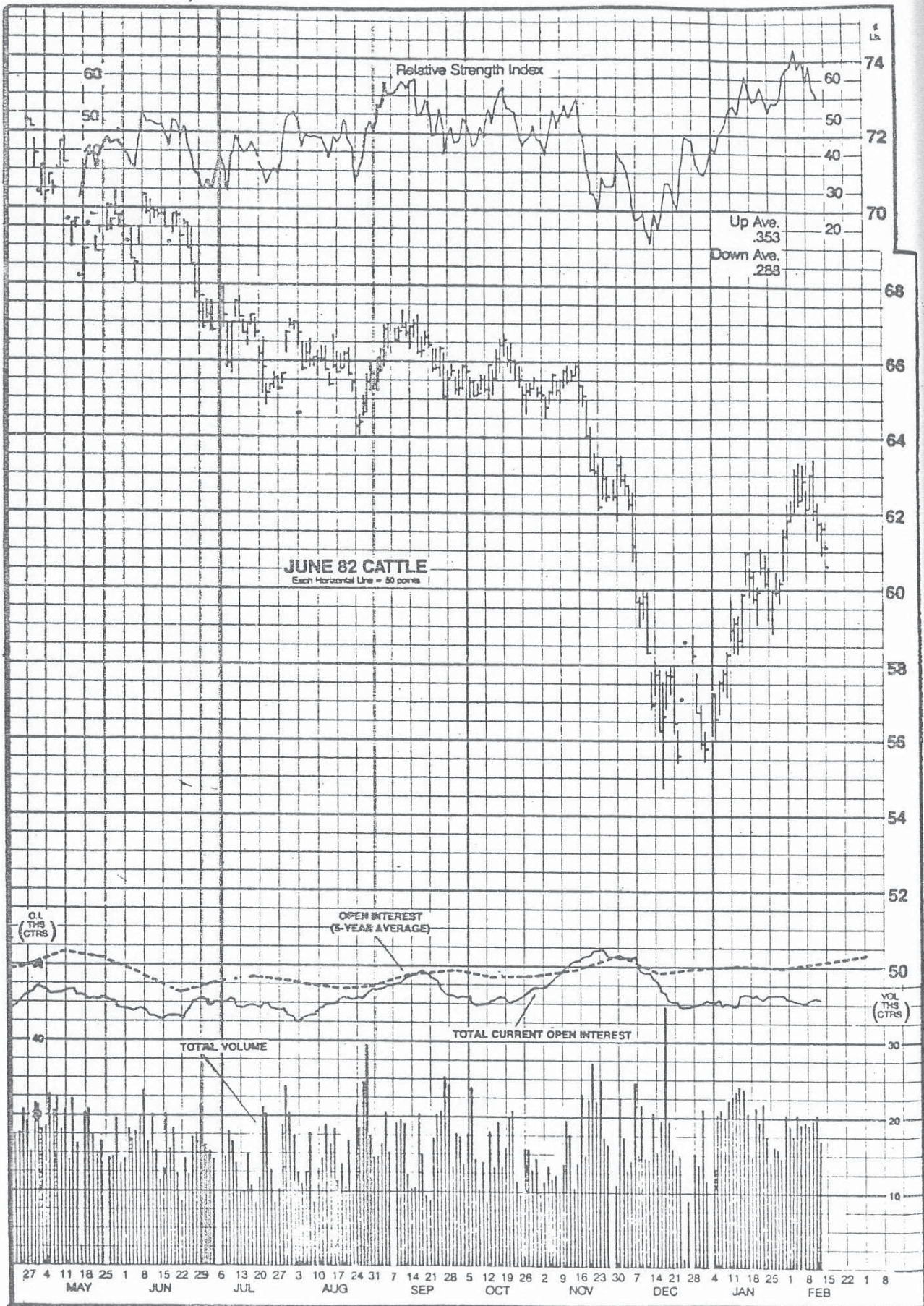


Figure 3.
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the need to reset the hedge.

The real difficulty with the decisions to place and lift hedges is the emotions that are involved -- fear and greed. Some producers refuse to hedge because of a fear of the futures market based on stories they have heard or based on one bad experience of their own. Others not afraid to hedge may, through fear, engage in improper timing of their hedge decisions.

Greed may also result in improper timing of hedges. Seeking to place hedges at the very highest price or lift them at the very lowest price can result in placing and lifting hedges much too late. Even worse, greed can result in a producer engaging in futures market speculation in the hedging account.

Strong self-discipline is the only way I know of to overcome problems stemming from the emotions. The necessary self-discipline can be developed through the proper application of tested rules for implementing the hedging decisions. A number of technical tools of analysis are available for hedgers to employ in hedging programs. Several of these can provide clear, precise signals concerning placement and lifting of hedges.

Research Results

One technical tool that holds promise for increased profits from hedging is moving averages. O.S.U. has been investigating the use of moving averages in hedging programs

for cattle for some time. In one study, an "optimized" set of moving averages for feeder cattle futures prices was developed for the period 1972-77. The optimized moving averages were then employed in several short hedging and long hedging simulations.

The results indicated that the use of moving averages to place and lift short hedges increased the average returns and reduced the variability of returns. Similar results were obtained for the long hedging simulations, i.e. average cost of feeders was reduced as well as the variability.

The results of the simulated short hedging strategies for a small grains production alternative are presented as an illustration (Table 1). It is evident that the moving average strategies increased the average returns significantly over the conventional hedging strategy and also over a no-hedge strategy. Risk, as measured by the standard deviation of returns is reduced markedly from the no-hedge strategy. The risk associated with the moving average strategies is greater than with the conventional hedge but not five times greater, in this case.

In more recent work the simulations indicated that feedlots using moving averages to hedge feeder cattle, corn and live cattle could have increased profits by 44 percent and reduced risk by 49 percent. Table 2 compares the results of a no-hedge strategy with a "complete" hedging

TABLE 1
RESULTS OF SIMULATED SHORT HEDGING STRATEGIES FOR THE SMALL GRAINS GRAZING
PRODUCTION ALTERNATIVE IN DOLLARS PER HEAD, 1972-1977

Strategy ^{1/}	Average Return	Change in Returns from Strategy 1	Standard Deviation of Return	Low Return	High Return
1. No hedge	13.20	--	50.13	-69.03	85.04
2. Hedge and Hold	4.67	-8.53	13.92	-16.15	24.28
3. 3-10	21.64	+8.44	20.76	-1.80	48.75
4. 4w-5-10	22.04	+8.84	23.70	-0.19	60.71
5. 4-8w (\$0.05)	21.67	+8.47	16.63	+2.16	43.54

^{1/} 3-10 represents a 3-day moving average coupled with a 10-day moving average; 4w-5-10 represents a 4-day linearly weighted moving average coupled with a 5-day and a 10-day set of moving averages; 4-8w (\$0.05) represents a 4-day moving average coupled with an eight day linearly weighted moving average and a \$0.05 penetration rule.

TABLE 2
 DISTRIBUTION BY YEARS OF THE PRODUCTION MARGIN^{1/} IN
 DOLLARS PER HEAD MARKETED, 1975-1979

	1975	1976	1977	1978	1979	Yearly Average
No Hedge Strategy	149.46	0.12	39.75	108.83	75.14	74.66
Hedging Feeder Cattle, Corn and Live Cattle by Means ^{2/} of Moving Averages ^{2/}	147.51	81.54	39.23	141.64	122.64	106.51

^{1/} Production margin refers to the margin between the costs of feeder cattle and corn and revenues from the sale of fat cattle.

^{2/} The moving averages used in this strategy were: 3-4-6 (\$0.07) for feeder cattle; 7w-15-26 (\$0.009) for corn; and, 1-3-5w (\$0.09) for live cattle.

strategy over the period 1975-79. In each of the years investigated, the hedging strategies using the moving averages technique closely approximated the results of the no-hedge strategy or were significantly better.

The 1981 Bear

Nineteen hundred and eighty-one was a difficult year for many cattlemen. The fundamentals were mixed enough to cause a significant divergence of opinion at any given point during the year as to the future direction of price. But, an important thing for hedgers to learn is that it does not matter what your opinion is or any other individual's opinion is. Too many hedgers (and speculators, too) try to tell the market that it is wrong and they are right. Most often they lose. Those who can recognize they have made an error, admit it and take the proper action, increase their profits or at least reduce their losses.

For some, to admit being wrong is unthinkable. Pride is at stake. And we do like to pay homage to our pride. Those for whom pride is an extremely valuable item must prepare themselves to pay a high premium. Use of technical tools of analysis can help pride from extracting such a toll.

In the summer of 1981 there were those who believed that the price weakness that had been suffered must surely come to a halt. Supplies of cattle were tightening and expectations were for a drop in hog slaughter.

Assume a continuous feeding operation with placements made on July 20 and an expectation that the finished steers will be sold on December 15. I've also assumed 700 pound in-weight, 1,100 pound slaughter weight, 145 days on feed, feeder price of \$61.20/cwt and a slaughter price of \$61.00/cwt.

³The 5-day weighted average is computed as in the illustration below:

Date	Closing Futures Price	Weight	Closing Futures Price X Weight
8-10	65.75	1	65.750
8-11	66.325	2	132.650
8-12	66.425	3	199.275
8-13	66.95	4	263.80
8-14	66.375	5	331.875
SUM OF WEIGHTS		15	\$993.325

5-day weighted average = \$993.35 / 15 = \$66.223

Three choices are now considered: 1) feed the cattle unhedged, 2) hedge the cattle when placed and hold the hedge until the cattle are sold, or 3) use moving averages to multiple hedge during the feeding period. In this case the set of averages used was the close, a simple 3-day average and a 5-day linearly weighted average.³

Unhedged Strategy

On July 20th the feeder cattle are placed on feed and held for 145 days. In addition to the assumptions stipulated above it is assumed that interest is paid on half the cost of the feeder cattle and feed at an annual rate of 18 percent and that the cost of gain averaged \$0.56 per pound over the feeding period.

Breakeven cost under the assumed conditions is \$61.43/cwt. On December 15 the cattle are sold at a price of \$61.00/cwt yielding a net feeding loss of \$0.43/cwt.

Hedge and Hold Strategy

Under this situation the cattle are hedged on the day they are placed. On July 20 the December contract closed at \$63.65/cwt. Breakeven cost is the same as in the foregoing case. However, when the cattle are sold on December 15 the futures contract is closed at a price of \$58.80/cwt, producing a futures market profit of \$4.69/cwt.

Applying this profit to the net feeding loss of \$0.43/cwt yields an adjusted net feeding profit of \$4.26/cwt.

Multiple Hedging Strategy

Under this strategy the cattle are placed but not hedged until a sell signal from the moving averages is generated. The hedge is lifted upon the appearance of a Buy signal and reset on the appearance of a second Sell signal. The procedure is repeated until the cattle are sold.

A Sell signal was generated on August 25 at a price of \$65.05/cwt and a Buy signal was produced on August 28 at a price of \$67.15/cwt for a futures loss of \$2.10/cwt. A new Sell signal was produced on September 22 at a price of \$67.725/cwt and a Buy signal appeared on October 14 at a price of \$65.525/cwt for a futures profit of \$2.20/cwt. An additional Sell signal appeared on October 23 at a price of \$64.175/cwt. This hedge was lifted on December 15 at a price of \$58.50/cwt for a futures profit of \$5.375/cwt.

The three hedges resulted in a combined profit of \$5.15/cwt. When these futures profits are combined with the cash returns and compared with the breakeven price, the adjusted net feeding profit is calculated as \$4.22/cwt. This represents an increase of \$5.15/cwt over the unhedged alternative and \$0.46/cwt over the hedge and hold alternative.

Conclusion

Cattle prices experience severe declines from time to time as a result of the downswing phase of the cattle price cycle. The cattle industry is very likely passing through a downswing phase of the price cycle at the present time.

During cyclical downswings it is important that cattlemen seek price risk protection by means of various risk management alternatives. One such alternative is the use of the futures market to hedge expected output.

Recent research at Oklahoma State University has demonstrated that hedging profits can be increased by means of a technique labeled Multiple Hedging. In the examples presented here, it was demonstrated that hedging returns were improved through the use of the Multiple Hedging technique during the last half of 1981 - - a period during which the price of finished cattle declined nearly \$7.50/cwt.