DEPARTMENT OF AGRICULTURAL ECONOMICS

Technical Analysis: Alternatives To Chart Analysis

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Technical analysis uses the information in past prices to form expectations of what will happen in the future. The bar chart shows the high, low and closing prices for each day for a particular commodity. Under the scrutiny of a skilled chart analyst, the chart reveals sell and buy signals as important components of a price risk management program. But not all commodity producers are comfortable with having to "read" a chart. For some, a more objective approach would be preferred.

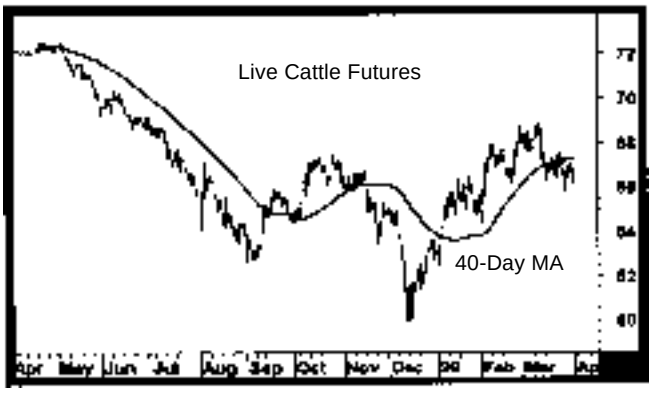
There *are* alternatives that are more objective, alternatives that produce more definitive sell and buy signals. Some of these same alternatives to chart reading provide an important safety net for any price risk management program. *One danger of waiting and watching for a particular price level tied to a chart pattern is that the pricing objective may never be reached*. There needs to be some protection against the possibility that the producer will never forward price in a particular year, the very year that threatens the financial viability of the firm. Among the many mathematical based market indicators, *moving averages* are simple to use, and they can be very effective. Among the many uses of moving averages is a single moving average used to determine the likely direction of price trend or a set of two moving averages that generate sell and buy signals by "crossover" action.

A 40-day moving average is widely used as an indicator of the direction of price trend. Figure 1 shows a 40-day moving average of closing prices on an April live cattle futures contract. A simple application of the 40-day moving average allows it to generate objective sell and buy signals. The rule is: *Sell when the closing price drops below the 40-day moving average and the average is decreasing and buy when the closing price moves above the average and the 40-day moving average is increasing.* If this approach were to be used in a selective hedging program for cattle placed in October, the dates of action, the closing prices for those days, and the net profit (loss) from the trade before commissions would be as follows:

Action	Date	Price ($)	Profit ($) (Loss)
Sell	Nov.	64.87	NA
Buy	Jan.	65.42	($.55)

As a selective hedger, the cattle feeder would place short hedges on sell signals and lift or remove the short hedge on buy signals. The one round turn in futures lost $0.55 per cwt before commissions, but this approach provides a "safety net." If the cash cattle were sold around $67, the net price before commissions would have been $66.45.

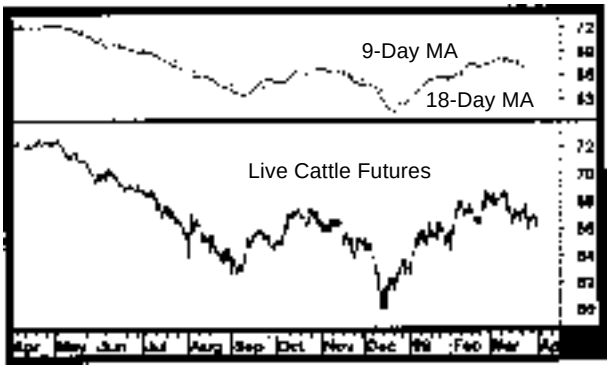
Figure 1.



When two moving averages are used, the shorter of the two is quicker to respond to a change in price direction. A widely used set is the 9-day and 18-day moving averages. When the 9 crosses the 18 from above, a sell signal is generated. When it crosses the 18 from below, a buy signal is generated. Figure 2 illustrates on the same April Live Cattle Futures contract. Actions, dates, prices and profits (losses) to a selective short hedge program follow:

Action	Date	Price($)	Profit (Loss)($)
Sell	11/3	66.17	N/A
Buy	12/30	62.97	3.20
Sell	3/17	66.87	Open

If the cattle are sold in cash at $67 in late March or early April with the short hedge in place, the net price for the cattle before commissions would be $67 + 3.20 - $.13 = $70.17. This assumes the short position is bought back at $67. Note that the April futures never offered a price above $69 from October into April.

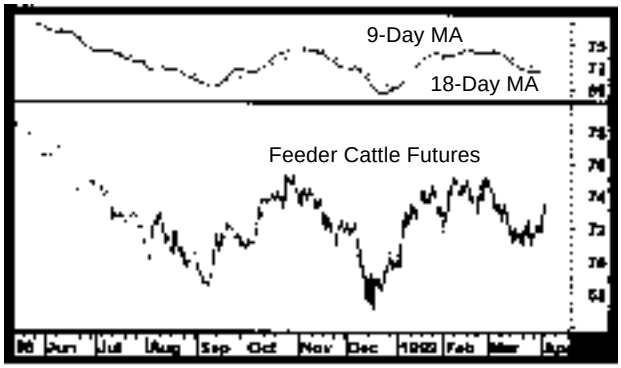


During that same time period, the April feeder cattle futures offered the chart reader an excellent selling opportunity when the market rallied in February toward the resistance plane drawn across the October highs (Figure 3). But what if that price rally had not happened? How would the moving averages have done in this market? Figure 3 shows the chart and the 9- and 18-day moving averages. Actions, dates, prices and profits (losses) would have been as follows:

Action	Date	Price ($)	Profit (Loss) ($)
Sell	11/9	74.05	N/A
Buy	12/31	69.65	$4.40
Sell	2/25	74.70	N/A
Buy	4/5	73.52	$1.18

In April, the net price would be a cash price of $73 + 4.40 + 1.18 = $78.58 if the cash-future basis is near zero and the cattle are sold at $73 on or near the date the second short hedge is bought back.

Figure 3.



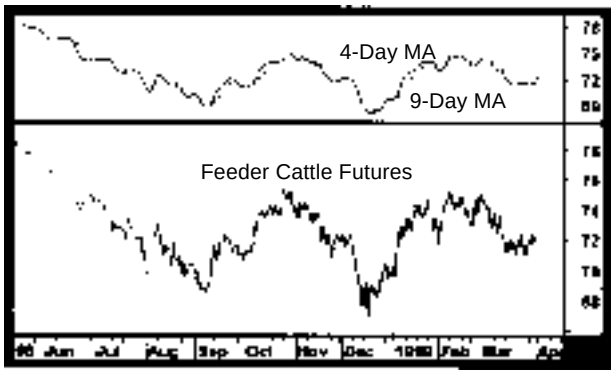
An obvious question emerges: Which is the correct set of moving averages to use for a particular commodity? The 9- and 18-day is a widely used and generally applicable set.

To illustrate the differences that can emerge, the actions, dates, prices, and profits (losses) for a 4-day and 9-day used on the same feeder cattle chart follow:

Action	Date	Price ($)	Profit (Loss) ($)
Sell	11/2	73.70	N/A
Buy	11/30	71.80	1.90
Sell	12/7	71.15	N/A
Buy	12/22	68.60	2.55
Sell	1/28	73.12	N/A
Buy	2/4	74.60	(1.48)
Sell	2/18	73.52	N/A
Buy	2/24	74.70	(1.18)
Sell	3/4	73.15	N/A
Buy	3/24	71.52	1.63

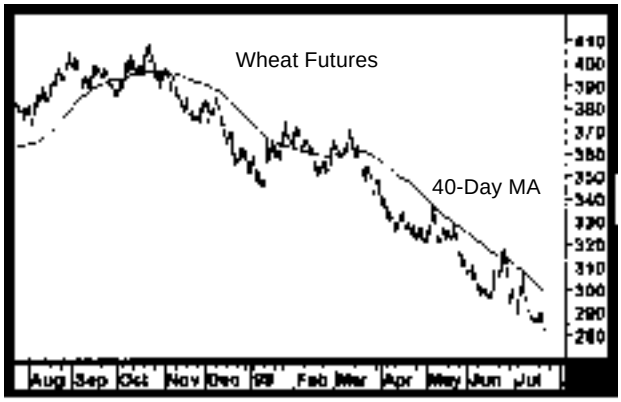
Figure 4 shows earlier signals, more trades, more commissions, and two round turns that lost money. The net addition to a $73 cash selling price in early April would be $3.92 for a net price of $76.92, and commission costs would be more.

Figure 4.



The July wheat futures (Figure 5) offered the chart user a rally to a resistance plane in March, and sell orders just under the January high near $3.75 would have been filled and short hedges set. But the chart gives fewer clear signals after March and drifts lower into harvest. The 40-day moving average shown in Figure 5 would have been effective in this difficult market. A sell signal on November 27 at $3.95 would have set short hedges initially, and that short hedge position would have been lifted on a buy signal on February 27 at the closing price of $3.62. A March 17 sell signal on a close below a declining 40-day moving average would have replaced the short hedges at $3.61 and they would have been in place when the July futures closed around $2.90.

Figure 5.



The net price would have been (assuming zero basis for simplicity) $2.90 + .33 + .71 = $3.94. The market offered only brief and early (in September and October) opportunities to sell at a price above $3.94.

The 9- and 18-day moving averages are less effective in this type of market. The trend is generally down, but the choppy price patterns will generally give the moving averages strategy using crossover action trouble. The signals, dates, price and profit (loss) for the 9- and 18-day moving averages shown in Figure 6 follow:

Action	Date	Price ($)	Profit (Loss) ($)
Sell	9/11	3.92	N/A
Buy	10/10	3.97	(.05)
Sell	10/31	3.95	N/A
Buy	12/8	3.83	.12
Sell	12/16	3.66	N/A
Buy	1/21	3.58	.08
Sell	2/13	3.59	N/A
Buy	3/6	3.58	.01
Sell	3/23	3.54	N/A
Buy	5/12	3.22	.32
Sell	5/22	3.22	N/A
Buy	6/11	3.11	.11
Sell	7/7	3.01	Open

There would be 7 round turns, with a combined $0.69 profit before commissions. This assumes the sell at $3.01 is bought back at $2.91 when the wheat is sold at $2.90. Added to the assumed $2.90 at harvest, the net price would have been $3.59.

On the December corn chart in Figure 7, the “gap-filling” rally during June will give the chart watcher an excellent sell/short hedge opportunity — but it gives the moving average systems problems. A 40-day moving average (not shown) gave the first sell signal on December 3 when the $2.87 close drops below a decreasing 40-day average. A total of 3 round turns accumulated gains of $0.50 per bushel. Using the $2.20 at the end of the chart as a harvest period selling price, the net price is then $2.70.

Figure 6.

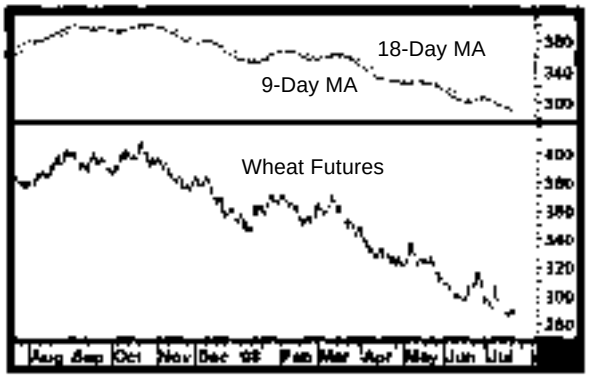
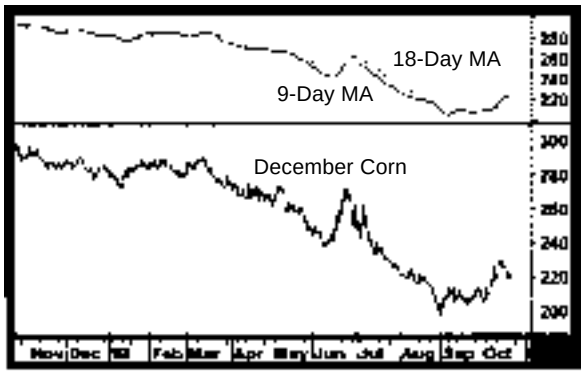


Figure 7 shows the patterns in the 9- and 18-day moving averages for the same corn chart. Actions, dates, prices, and profits (losses) would have been as follows:

Action	Date	Price ($)	Profit (Loss) ($)
Sell	11/5	2.92	N/A
Buy	12/9	2.89	.03
Sell	12/18	2.80	N/A
Buy	1/22	2.84	(.04)
Sell	2/24	2.79	N/A
Buy	3/11	2.88	(.09)
Sell	3/20	2.75	N/A
Buy	6/19	2.63	.12
Sell	7/6	2.54	N/A
Buy	9/16	2.09	.45
Sell	9/24	2.09	N/A
Buy	10/2	2.07	.02

The 6 round turns accumulated futures gains of $0.45 and added to $2.20, generates a net price of $2.65. Whether a producer watching for chart signals would have fared better is hard to say. *The moving average systems impose a type of discipline in that they are based on arithmetic measures of the closing prices and are totally objective in nature.*

Figure 7.



The moving average strategies have obvious application to the user of ag commodities. Selective long hedge strategies tied to moving averages will be particularly effective in an upward trending market like the corn markets that can emerge in dry-weather years. *This feature of providing a safety net when major and unexpected market moves develop is the recurring strong advantage of a moving averages system whether the producer is looking for protection against plum-meting prices or skyrocketing feed costs.*

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