

Risk Management

Technical Analysis: Alternatives To Chart Analysis

Mark Waller, Mark Welch, and Wayne D. Purcell*

Technical analysis uses past price information to form expectations about 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. However, not all producers are comfortable reading a chart. There is also the danger that when one is waiting and watching for a particular price level tied to a chart pattern, that pricing objective may never be reached. That may be the very year a producer needs to forward price, by placing hedges, to maintain financial viability.

An alternative to chart analysis is the use of moving averages. Moving averages are mathematical, objective, simple to use, and very effective. A single moving average is used to determine the likely direction of price trend. A set of two moving averages can generate sell and buy signals as they "cross" each other in the chart.

A 40-day moving average is widely used as an indicator of price trend. Figure 1 shows a 40-day moving average of closing prices on a 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, buy when the closing price moves above the 40-day moving average.* If this approach were used in a selective hedging program for cattle placed



Figure 1. Live Cattle Futures (40-day MA)

in January, the action, 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	Profit (\$)	
		Price (\$)	(Loss)
Sell	1-23	98.95	NA
Buy	1-24	99.78	(\$0.83)
Sell	3-10	101.17	NA
Buy	3-11	101.58	(\$0.41)
Sell	3-13	101.30	NA
Buy	4-10	101.15	\$0.15
Sell	7-11	108.58	NA
Buy	10-31	93.75	\$14.83

As a selective hedger, the cattle feeder would place short hedges on sell signals and remove the short hedges on buy signals. The four round turns in futures trades gained \$13.74 per cwt before commissions. This approach provides a “safety net.” If the cash cattle had been sold at about \$94, the net price before commissions would have been \$107.74. (If you have bought AND sold a futures contract or options

contract, that is referred to as a “round turn” because you’ve gotten into and out of the market.)

When two moving averages are used, the shorter of the two is quicker to respond to a change in price direction. The 9-day and 18-day moving averages are a widely used set. 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 this on the same live cattle futures contract. Actions, dates, prices and profits (losses) to a selective short hedge program are:

Action	Date	Profit (\$)	
		Price (\$)	(Loss)
Sell	1-25	99.90	NA
Buy	2-5	101.70	(\$1.80)
Sell	3-12	101.83	NA
Buy	4-10	101.15	\$0.68
Sell	7-9	109.65	NA
Buy	8-5	106.90	\$2.75
Sell	8-20	105.00	NA
Buy	10-31	93.75	\$11.25

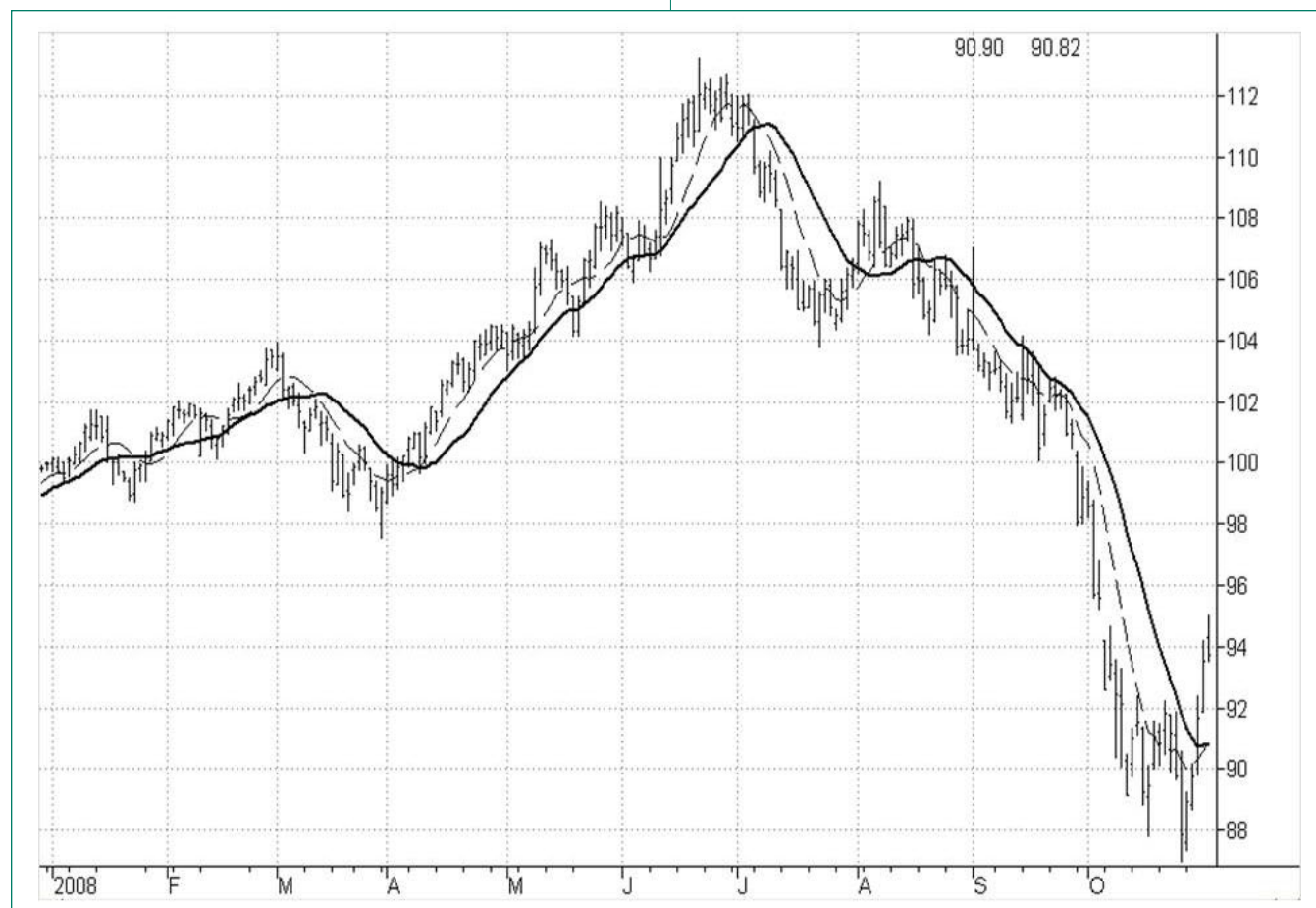


Figure 2. Live Cattle Futures (9-18 day MA)

If the cattle are sold in cash at \$94 in late October, with the short hedge in place, the net price for the cattle before commissions would be $\$94 - \$1.80 + \$0.68 + \$2.75 + \$11.25 = \106.88 . This assumes the last short position is bought back at \$93.75. Note that the Live Cattle futures offered a price just above \$112 as a high between January and October. While the producer did not achieve the highest price, he/she did far better than the \$87 low seen during October.

The cotton futures contract offered the chart reader an excellent selling opportunity when the market rallied in April toward the resistance plane drawn across the February highs (Fig. 3). What if a short hedge was not entered on the price rally? 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	Profit (\$)	
		Price (\$)	(Loss)
Sell	6-30-10	.7615	NA
Buy	8-4-10	.7513	\$0.0102
Sell	11-23-10	.9530	NA
Buy	12-10-10	1.0470	(\$0.094)
Sell	3-17-11	1.4650	NA
Buy	3-29-11	1.4993	(\$0.0343)
Sell	4-21-11	1.4820	NA
Buy	5-26-11	1.4010	\$0.0810
Sell	6-16-11	1.2726	NA
Buy	7-28-11	1.0281	\$0.2445

In July, the net price would be a cash price of $\$1.0281 + .0102 - .094 - .0343 + .0810 + .2445 = \1.2355 if the cash-future basis is near zero and the cotton

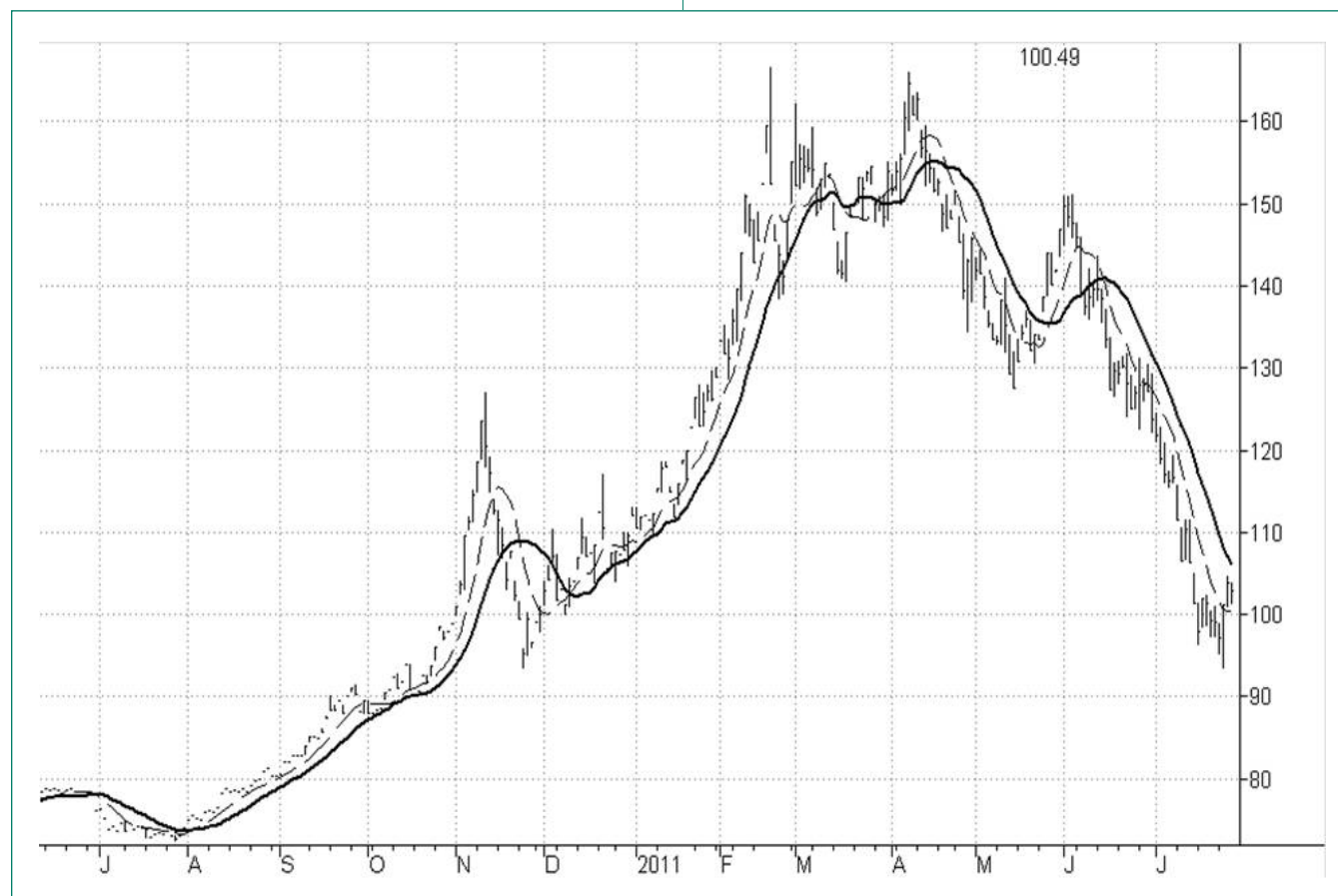


Figure 3. Cotton Futures (9-18 day MA)

is sold at \$1.0281 on or near the date the last short hedge is bought back.

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, here are the actions, dates, prices and profits (losses) for an 18- and 40-day set of moving averages used on the same cotton futures chart:

Action	Date	Profit (\$)	
		Price (\$)	(Loss)
Sell	12-9-10	1.0348	NA
Buy	12-31-10	1.1205	(\$0.0857)
Sell	5-3-11	1.4143	NA
Buy	6-13-11	1.3958	\$0.0185
Sell	6-24-11	1.2692	NA
Buy	7-28-11	1.0281	0.2411

Figure 4 shows later signals, fewer trades, less commissions, and only one round turn trade that lost money. The net addition to a \$1.0281 cash selling

price would be \$0.1739 for a net price of \$1.202, and commission costs would be less.

As a contrast, Figure 5 shows what can happen when using much shorter moving average combinations, such as a 4- and 9-day set of moving averages. A table of detailed trades is not shown here because there would have been many round turn trades with several having an entry 1 day, and an exit in the next 1–3 days. In an attempt to reduce the number of false signals getting the user in and out of trades so quickly, some analysts will suggest using a filter such as a minimum penetration, or multiple closes before the signal is accepted.

The corn futures (Fig. 6) offered rallies to various resistance planes in July, August and September 2008, and again in June 2009 and sell orders just under those planes would have been filled and short hedges set. But if the chart opportunities were missed, the 40-day moving average shown in Figure 6 would have been effective in helping to lock in some price protection in this quick market decline. An early sell signal on March 19 at \$5.1850 would



Figure 4. Cotton Futures (18-40 day MA)

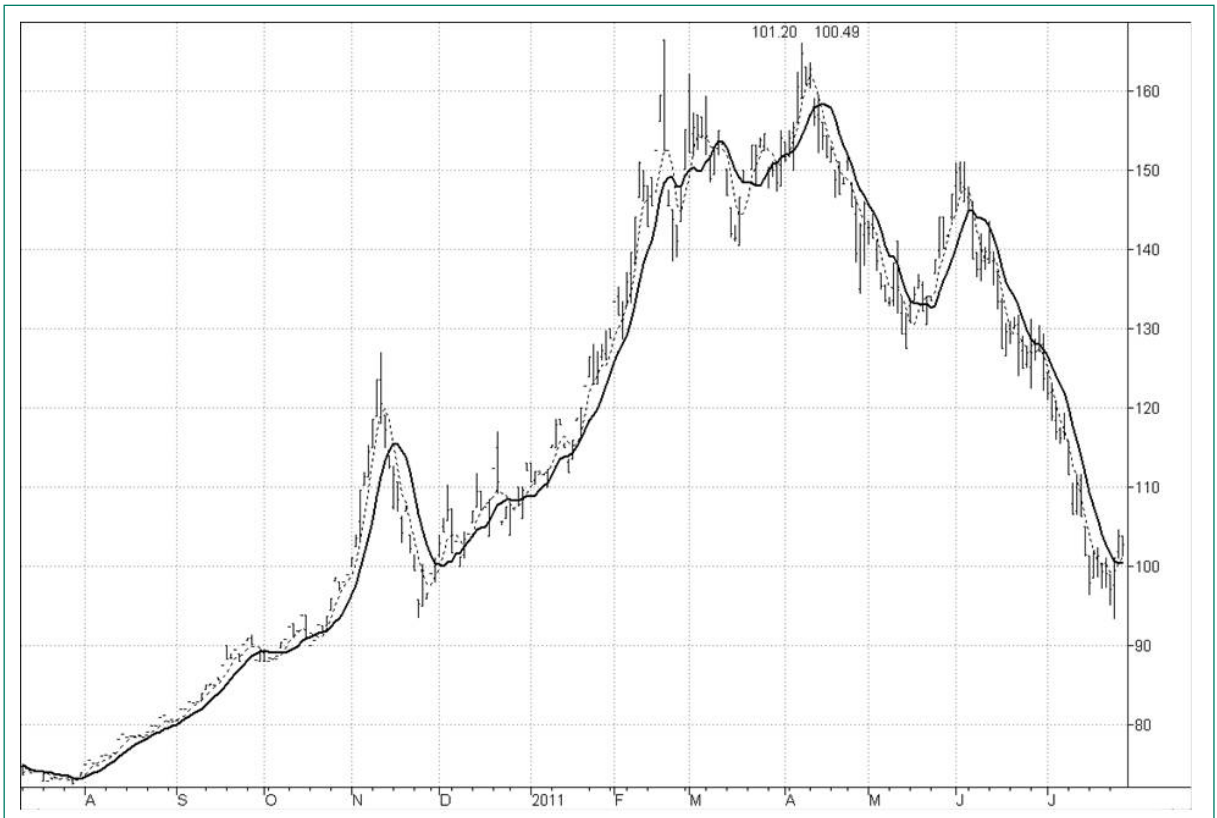


Figure 5. Cotton Futures (4-9 day MA)



Figure 6. Corn Futures (40 day MA)

have set short hedges to early initially, and that short hedge position would have been lifted on a buy signal on March 25 at the closing price of \$5.39. A better sell signal on July 17, 2008, on a close below a declining 40-day moving average would have replaced the short hedges at \$6.42. In all, 13 trades would have been generated by the time the December corn futures contract closed out at \$3.92 in December 2009. A table of the trades is not provided because such a large number were generated. The net price would have been (assuming zero basis for simplicity) $\$3.92 + 1.8775 = \5.7975 . The market offered brief, and early opportunities to sell at a price around \$7.00 on the first rally after the contract high, but that would have been impossible to capture with a moving average that lags the price.

The 18- and 40-day moving averages are less effective in getting the highest total price in this type of market with a mix of trending and choppy periods. The signals, dates, price and profit (loss) for the 18- and 40-day moving averages are shown in the table below and in Figure 7. The advantage of the

18-40 day over the 40 day moving average method is that the 18-40 day method will generate fewer trades meaning less commissions and slippage.

Action	Date	Profit (\$)	
		Price (\$)	(Loss)
Sell	7-24-08	6.16	NA
Buy	9-11-08	5.79	\$0.37
Sell	9-16-08	5.65	NA
Buy	1-02-09	4.5625	\$1.0875
Sell	2-04-09	4.0175	NA
Buy	3-25-09	4.175	(\$0.1575)
Sell	4-29-09	4.2175	NA
Buy	5-14-09	4.4925	(\$0.275)
Sell	6-25-09	4.015	NA
Buy	10-1-09	3.405	\$0.61

There would be 5 round turns, with a combined \$1.635 profit before commissions. The net price would have been (assuming zero basis for simplicity) $\$3.92 + 1.635 = \5.555 .



Figure 7. Corn Futures (18-40 day MA)

Whether a producer watching for chart signals would have fared better is not clear. The moving average systems impose a type of discipline in that they are based on arithmetic measures of the closing prices and are objective.

The moving average strategies have obvious application to the user of agricultural commodities. Selective long hedge strategies tied to moving averages

will be particularly effective in an upward trending market such as the corn markets that can emerge in dry years. *When major and unexpected market moves develop, the moving average strategy a moving averages system is advantageous whether the producer is looking for protection against plummeting prices or skyrocketing feed costs.*

Partial funding support has been provided by the Texas Corn Producers, Texas Farm Bureau, and Cotton Inc.—Texas State Support Committee.

Produced by Texas A&M AgriLife Communications
Extension publications can be found on the Web at AgriLifeBookstore.org

Visit the Texas AgriLife Extension Service at AgriLifeExtension.tamu.edu

Educational programs of the Texas AgriLife Extension Service are open to all people without regard to race, color, sex, disability, religion, age, or national origin.

Issued in furtherance of Cooperative Extension Work in Agriculture and Home Economics, Acts of Congress of May 8, 1914, as amended, and June 30, 1914, in cooperation with the United States Department of Agriculture. Edward G. Smith, Director, Texas AgriLife Extension Service, The Texas A&M System.

Revision