

DEPARTMENT OF AGRICULTURAL ECONOMICS

Technical Analysis of Commodity Markets: Emphasis on Bar Charts

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Supply and demand ultimately determine commodity prices. Conceptually, there is an equilibrium or “market-clearing” price at which the quantity producers supply to the market equals the quantity buyers are willing to take. Demand and supply are balanced at P_E .

dollar that influence the cost of U.S. cotton, corn, wheat, or beef, etc.

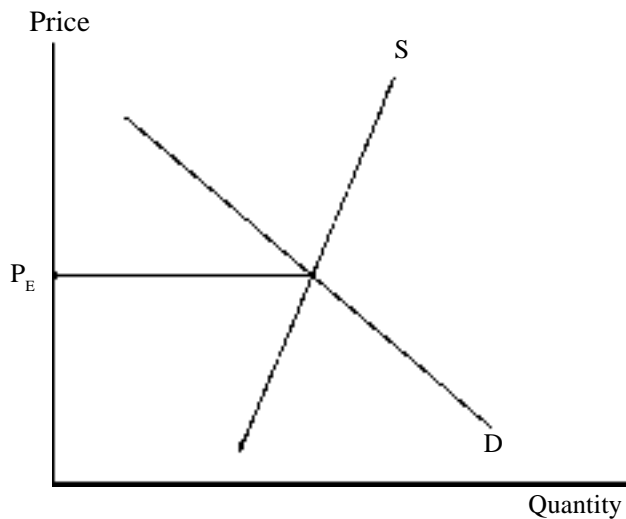
Over time, a chart of prices for December cotton futures or for June live cattle (the fed cattle futures) will show patterns as the price discovery process responds to actual or

perceived changes in supply and/or demand. Study of those chart patterns is called *technical analysis*. Such analysis is based on the notion that price and price patterns in the past are useful in forming expectations on what price will do in the future. Technical analysis is especially useful in determining when to enter and exit the markets in programs designed to manage a firm’s exposure to price risk.

Technical analysis can be complex. Sophisticated mathematical models can be used to help identify changes in the direction of price trend. Econometric models are used by large hedgers and full-time speculators looking for a competitive edge. But when used with discipline, some simple and basic techniques can make big contributions to price risk management programs.

The *trend line* can be used to signal a change in price direction. Connecting two daily price lows in a rising market or highs in a declining market, preferably at least 10 trading days apart, can help establish the trends. As seen in Figure 2, a few days after the daily low at B, the two daily lows at A and B can be connected, and an uptrend line can be drawn and extended up and to the right. This upward trend in price is expected to continue until the market closes below the extended trend line as seen in the area enclosed in the “box.” The manager with no price protection might

Figure 1.

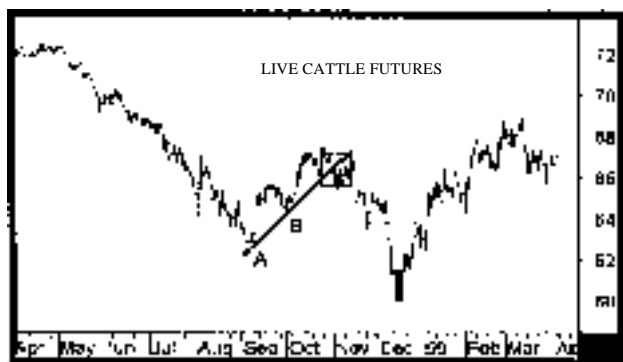


One of the functions of futures markets is to discover an “equilibrium price” for a future time period. However, supply and demand levels are fuzzy and are not known with certainty months or even years into the future. The discovered prices vary across a wide range, as estimates of supply and demand are adjusted for changes in weather; economic conditions in Asia that will influence export buying; or changes in the U.S.

consider hedging by selling futures or buying a put option when prices move below the uptrend line.

The *sell signal* generated by the close below the trend line will be seen worldwide by every trader and potential trader who is monitoring the chart. Perceptions of the fundamental demand-supply balance will not support still higher prices, and price direction turns negative. Short hedges placed above \$66 protect the cattle feeder from prices that then plunged to the \$60 level.

Figure 2.



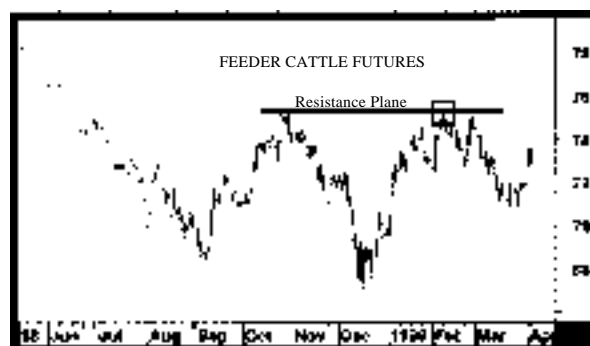
The trend line approach is effective in markets that show sustained trends. Experienced producers often move to becoming *selective hedgers* and look for a later downtrend line drawn across two daily highs. A close above the downtrend line is a *buy signal*, an indication to the selective hedger to buy back or get out of the hedge. It is easy to visualize a downtrend line across the October and November highs on the chart (Figure 2). A buy signal is generated early in 1999 as the downtrend is broken. Another uptrend line could be drawn across the December and February lows, and a sell signal is generated when the uptrend is broken in early March. This approach to managing exposure to price risk can be effective in the livestock markets where price cycles still appear and in grains, oilseeds, or cotton when buffer stocks are not large and weather developments prompt sustained price moves.

Resistance and Support Planes can also be important guides to producers' pricing actions. The feeder cattle chart in Figure 3 shows a rally reaching above \$75 in October.

The late October price highs will provide major resistance if price can climb back to those levels and sell orders placed just below that resistance plane constitute an excellent forward pricing opportunity for the stocker operator looking to lock in a price. Notice that later, in early February, the prices climb to within

a few cents per hundredweight of that late-October high. There will often be a huge set of sell orders--by hedgers and speculators--placed near that resistance plane. The selling pressure turns the market lower again. Like the trend line approach, this is something of a self-fulfilling prophecy and reflects the fact that the market has a hard time going to prices above prior failures. The high near \$75.50 will be major resistance. Some significant change in the underlying supply-demand balance will be required for the market to move up through this resistance. Note that being prepared to forward price on rallies to the resistance at contract highs will typically capture higher prices than will the trend line approach.

Figure 3.



In a market that is working lower because of negative or bearish supply-demand fundamentals, there will be important intermediate-level resistance planes. Typically, markets that move down from some high will move too far and then correct the overreaction. Analysts watch for 38, 50, and 62 percent corrections. The correction leaves a daily high and, when the market later tries to rally, there will be resistance along the plane across that high. The wheat futures contract in Figure 4 shows this pattern.

Figure 4.



The selling pressure will be less intense than at contract highs, but there will be hedgers and speculators looking for opportunities to sell the market. It is wise to place the sell order below the plane to increase the probability that the sell order will be reached and filled. Note that the mid-March price advance was turned back by selling pressure 2 to 3 cents below the plane.

It is clear at this point and throughout the discussion that a well-informed position on the fundamental supply-demand balance is very important. Is the outlook bearish, extremely bearish, neutral, or what? An informed position will help decide whether a challenge of the resistance plane across the most recent high is possible or likely, or whether it is more likely that the market will only be able to correct part of the price decline.

The wheat futures contract in Figure 5 can be used to show the tendency of a bearish market to record corrections. Note the series of "C" labels. The market is trending lower, but occasionally it moves higher and corrects or retraces part of that move. After a brief correction, the market moves down again. Only in February and March was the market able to challenge the prior resistance plane. Sell orders placed just under the prior high would not have been filled in December, May, June, or July. In a decidedly bearish market like this one, monitoring for signs of selling pressure on a 38, 50, or 62 percent correction (50 percent is most widely seen) and being ready to sell on that corrective rally will be important.

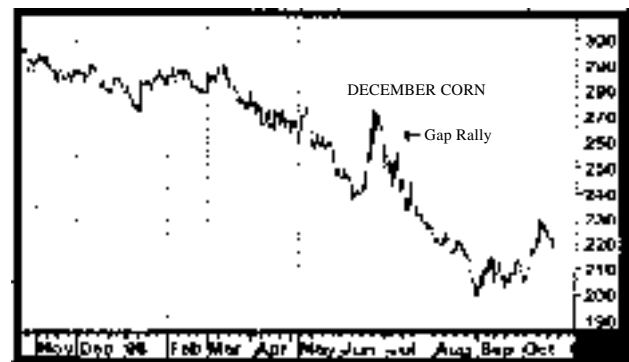
The appearance of *chart gaps* can be useful as seen in Figure 6. In early May and again in late June, the December corn futures recorded gaps. A price gap occurs when the high for the day is below the previous day's low, or the low for the day is above the previous

Figure 5.

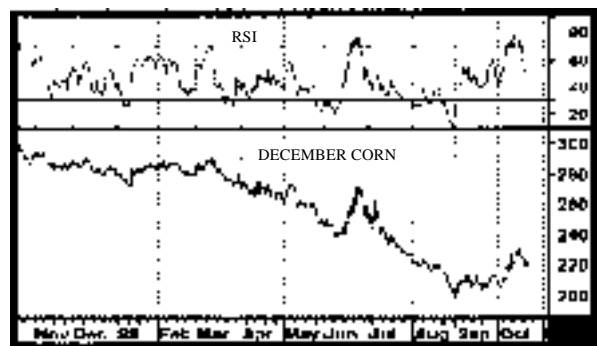


day's high. The market's reaction to gaps is somewhat like nature's reaction to a vacuum--it tries to "fill" them. Note the early May gap was filled by the mid-June price rally. It is the late-June gap that is more typical, and this pattern offers an opportunity. Sell orders placed near the bottom of the gap have a good chance of being filled before the market continues down. Experienced hedgers and speculators will place sell orders at the bottom of the gap. A gap will typically stop a correction or an attempt to challenge the resistance across a prior high. In this example, the rally into the gap area gave the producer one last chance to get short hedged before the price downtrend continued.

Figure 6.



The *relative strength index* shows when the market is "overbought" and "oversold" and helps determine when the market has "corrected" as much as is likely. Threshold levels of 70 and 30 are used. Note in Figure 7 the surge to above 70 by the widely used 9-day RSI during late June when the December corn futures rallied to the prior resistance plane. This "overbought" condition helps assure decision-makers that prices will turn back down. The RSI will also help avoid panicky selling on the lows. The late-August lows came in an oversold market, and at least some rally is imminent. Waiting for a better price is in order, but being patient is hard when the financial integrity of the business is being threatened. The RSI can help bring resolve and discipline to these scenarios.

Figure 7.

Producers using ag commodities as inputs can simply turn this reasoning around. Long hedges are placed on closes above downtrend lines, on dips to important support planes, or on dips to the top of a gap left in an upward trending market. Whether the need is for price or cost protection, being able to “read” the charts gives a significant advantage and gives the producer a level playing field. Processors, exporters, and large speculators use technical analysis to help guide pricing actions. The producer can too.

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