

## TRADING TECHNIQUES

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# The 2/20-Day EMA Breakout System



*Moving average systems seek to capture meaningful trends. Here's a modified exponential moving average system that uses pattern recognition as a filter for entry rules.*

*by David S. Landry*

Technical approaches to trading range in complexity from simple chart-based methods to complex neural network algorithms. As technicians, we are all guilty sooner or later of

trying to reinvent the wheel with elaborate technical analysis. We'd all like to find the Holy Grail of an indicator that will make us rich. I have spent countless hours searching for such an indicator, only to rediscover something far less complex. The truth is this: *There is no perfect indicator or system that will lead to riches while avoiding all risk.*

Should you give up? Quite the contrary; the fact is that many simple indicators work well. You can use numerous off-the-shelf indicators and be quite effective as a technician. Let me explain how I rediscovered the moving average and developed a system based on it.

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## **ALWAYS USEFUL**

I've always found the 20-day moving average useful. It represents approximately one month of trading and provides a simple but accurate representation of the trend direction of a commodity market. An exponential moving average (EMA) is even better because it weights the most recent periods heavier than it does previous periods, unlike the simple moving average, which weights each price equally. Early on in my technical studies, I spent a great deal of time working with moving averages but soon became enticed by more complex studies while searching for the perfect indicator.

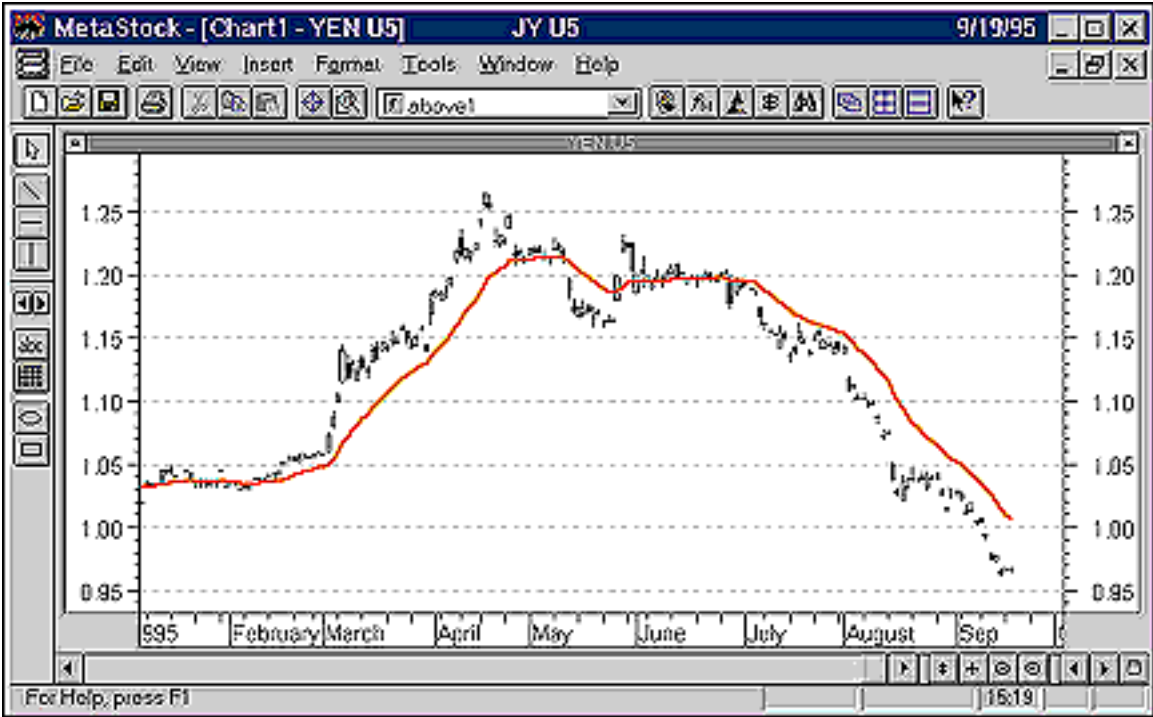
While developing my latest system, I began to get frustrated when the indicator failed to test out. As I pondered how I could make it more complex, I noticed that the 20-day EMA I had plotted as a default seemed to work much better at predicting prices than my latest system did. As time passed, I began to pay more attention to how the prices behaved around the 20-day EMA.

I found it intriguing that the 20-day EMA seemed to perform better than an indicator I had spent months developing. I began an in-depth study of the behavior of prices in respect to their 20-day EMAs; in some cases, I went back as far as 30 years. At first glance I was amazed, as numerous moves involved a simple breakout from the 20-day EMA. Many of these prices stayed above or below the moving average for the majority of the trend.

And as you might have expected, my optimistic eye picked out all of the perfect trades and well-chosen examples. Classic historical moves such as gold in the early 1980s, sugar in the mid-1970s, coffee in 1994 and the yen in 1995 sparked my interest (Figures 1 through 4).



**FIGURE 1: APRIL 1980 GOLD.** A 20-day moving average-based trend-following system can be on the right side of powerful trends, such as the bull market in gold in late 1979 and into early 1980.



**FIGURE 2: SEPTEMBER 1995 YEN.** *The currency markets have offered some very strong trends in the past.*



**FIGURE 3: MARCH 1975 SUGAR.** *Sometimes a trend is so strong that the futures contract will not trade due to exchange-imposed price limits (the dashes) for the trading day.*



**FIGURE 4: DECEMBER 1994 COFFEE.** *Again, the 20-day moving average-based trend-following system captured some nice trends.*

## DEFINING A FILTER

After the initial euphoria of my "rediscovery" wore off, I began to take more of a pragmatic view of the moving average. I noticed that although there were large trends, significant market movements were often preceded or followed by periods of trendless price activity. These were extended periods of sideways movement where the price would penetrate the moving average, only to trade back to and sometimes through it, resulting in what system designers refer to as *whipsawing* †. In many cases, there would be numerous false reversal signals.



**FIGURE 5: AUGUST 1992 FEEDER CATTLE.** During period A, the trend-following system suffered numerous false signals until the breakout at point B. The upward trend stayed above the 20-day moving average all the way to point C.

From this experience, I realized that a breakout filter would be needed in an attempt to avoid false signals. Although by simply buying when prices rose above the moving average and selling when prices fell below would be profitable in the long run, in the short term you could get whipsawed. Further, you could become discouraged, lose your confidence and not take the next trade - and that trade would invariably have been the inevitable big winner. Remember, markets only trend around 30% of the time. Figure 5, showing August 1992 feeder cattle, is a good example.

Continuing my search for a filter, I observed that the price has a tendency to return to the 20-day EMA (technically, this is known as *mean reverting*). As long as there were no breakouts, the price range remains close to or intersects the 20-day EMA.

In most cases, true breakouts occurred only after the entire day's range in price had cleared the 20-day EMA. During an upside breakout, the low of the price bar shouldn't intersect the EMA. For a downside breakout, the high should be lower than the 20-day EMA. Upon further observation, in most cases profitable trends began after the prices

cleared the 20-day EMA for at least two days. Therefore, for a buy alert the last two lows should not intersect the 20-day EMA. For sell signals, the highs should not intersect the 20-day EMA. (See sidebar, "2/20-day EMA breakout system defined.")

## DETAILS

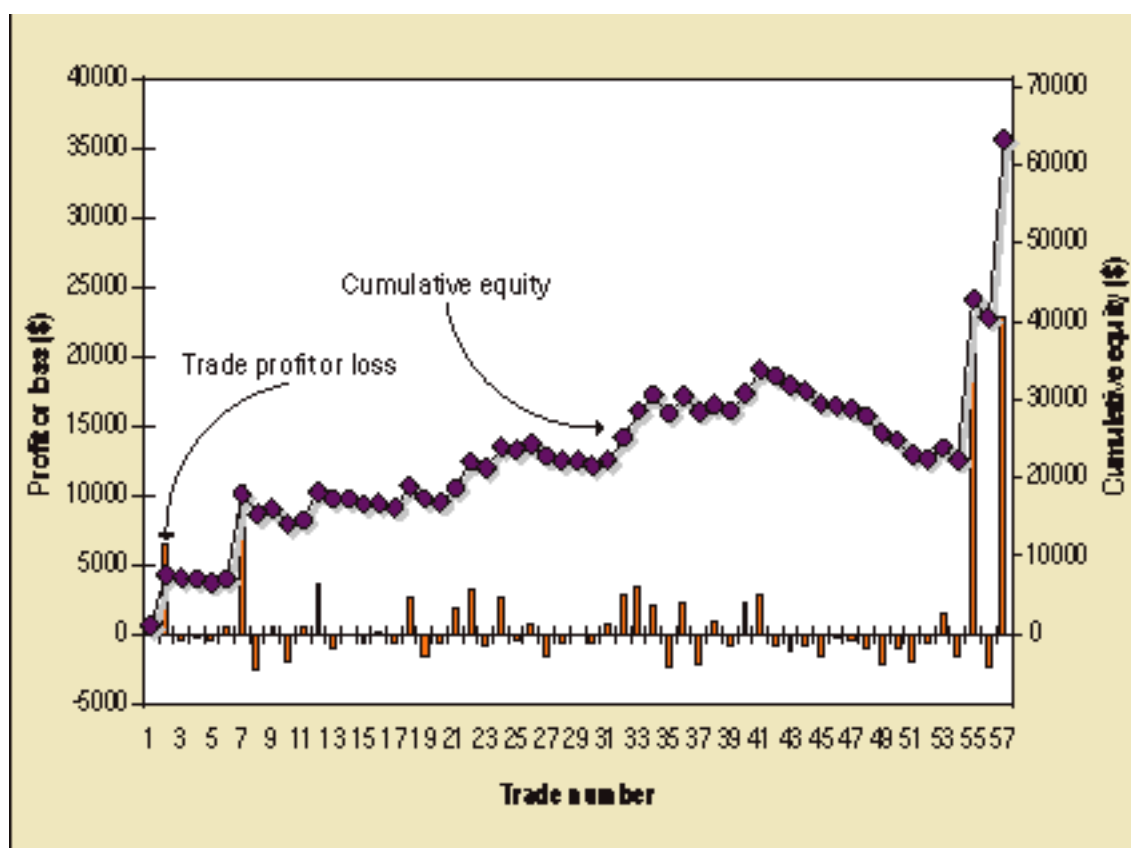
In most cases, after a setup is alerted, prices either break away and begin to trend nicely or move back toward the 20-day EMA to consolidate. To ensure that the trade is placed correctly in the trend direction of the possible breakout, use an open-stop order placed 10 ticks above the highest high in the two-day setup for buy signals or 10 ticks below the lowest low in the two-day setup for sell signals. This is akin to a secondary filter, and is one additional check to avoid whipsaws.

***Setting stops.*** Once in a position, setting stops poses a dilemma. Too tight a stop will almost always be hit and guarantee a loss on a trade. This can be frustrating, as all too often, the commodity resumes its original trend. Too loose a stop, on the other hand, gives the position a chance to work, but puts too much at risk. Because this system is based on a breakout of the 20-day EMA, if the contract trades back to the 20-day EMA, it is a sign of a possible reversal. With this in mind, this is the maximum point at which the stop should be placed to limit the loss.

***Contract selection.*** What contracts to trade? I have found that the system works especially well in contracts such as currencies where breakouts holding for more than two days are usually followed by some intermediate- to long-term fundamentals. Before trading any commodity with this or any other system, you should test it thoroughly. Remember, each market will have its own nuances. What works with one commodity won't necessarily work with others. No system should be blindly applied to all markets.

***Number of contracts to trade.*** This is a breakout system that attempts to catch large moves that may take some time to develop. Catching a longer-term move requires a wider stop (see the paragraph on setting stops). Although a wider stop will increase your potential losses per trade, it should decrease the number of trades and reward you with larger profits once the elusive trend is caught. With this in mind, the idea is to trade fewer contracts in an attempt to catch larger moves. Resist the temptation of maximizing leverage. You can make healthy profits with a good breakout system by trading only singles with one contract per signal.





**FIGURE 6: TRADING RESULTS.** Here are the results of using the trading rules on continuous data for the yen futures contract from January 1990 through October 1995. The line represents the equity and the histograms are the individual profits and losses.

**Results.** The continuous yen futures contract from January 1990 through October 1995 was used as an example of possible results (Figure 6). No commissions or slippage were used; the reader can insert relevant values. Overnight gap openings were taken into consideration by setting the entry equal to the open.

## BEFORE YOU DIVE IN

Before using any system, you should paper-trade it in both historical and real time until you are comfortable with its nuances and risks. Resist the temptation of having your computer do all the work for you. There is no way to simulate the emotions that you will encounter with real money on the line, but at least through hand-testing, you will be forced to look at and question every trade. Just as I have used the two-day breakout as a filter for trading the 20-day EMA, the entire system could be used as a filter in a larger system. Just remember to limit the degree of complexity of the system and don't bother looking for the Holy Grail. What you've got in front of you may well be just what you need.

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### **RELATED READING**

Achelis, Steven B. [1995]. Technical Analysis from A to Z, Irwin Publishing.

## 2/20-DAY EMA BREAKOUT

### SYSTEM DEFINED

**Buy alert:** *If today's low and yesterday's low is greater than the 20-day EMA.* This signal remains valid until the low touches or falls below the 20-day EMA.

**Buy entry:** *Place a stop order 10 ticks above the two-day high.* This will help ensure buying with the new trend and help to avoid false signals. Keep order until filled or as long as the buy alert is still valid.

**Long exit:** *Place a stop equal to the 20-day EMA.* Continue to update this stop daily to form a trailing stop.

**Sell alert:** *If today's high and yesterday's high is less than the 20-day EMA.* This signal remains valid until the high touches or rises above the 20-day EMA.

**Sell entry:** *Place a stop order 10 ticks below the two-day low.* This will help ensure that you will sell with the new trend and help to avoid false signals. Keep order until filled or as long as the sell alert is still valid.

**Short exit:** *Place a stop equal to the 20-day EMA.* Continue to update this stop daily to form a trailing stop.