Using JMP® for Technical Analysis of stocks in highly volatile markets

Bill Gjertsen, SAS Institute Inc., Cary, NC

Abstract

We live in a world of high uncertainty. Internet related stocks that appreciate 300% with no earnings to report have, in some instances, lost 25% in value in the morning and rebound to positive ground before the close! Some day traders are having a field day and are saving the airfare to Las Vegas! Others of us need some sensible rules of when to sell and when to buy. Technical Analysis (i.e. trend lines and oscillators) when properly tuned can help us establish sensible trading rules. This paper shows how you can generate and test your own trading rules with JMP.

Introduction

With the plethora of new IPOs (initial public offerings) making double digit percentage gains or losses per day the question that many traders and portfolio managers are asking is how can I effectively trade these stocks and when the bubble bursts will I have indicators that will give warning. We will address these two questions by examining two high flying Internet stocks (.com companies), YAHOO (stock symbol = YHOO) and America Online (symbol = AOL). The trading rules we discover for YHOO we will apply to AOL to see if we get similar results.

Data Source and Data Cleansing

A good free source of daily close stock data is provided via the Internet at:
http://go.msn.com/bql/stockquotes.asp
You can export a year's worth of daily data directly into Microsoft Excel by choosing "Export Data". Once in Excel, strip off the first 3 rows and Save as with a .txt file extension. Then within JMP choose Import from the File platform and the text file can be directly into JMP. Once within JMP we resort with the earliest dates appearing first and eliminate the holidays that have missing stock data. We will use only the daily close value, CLOSE, and not use

Trading Rules

After examining a stock like YHOO it is apparent that it is capable of rising or falling 20% to 25% within one week. With this in mind it is clear that with trend lines and moving averages we would miss the peaks for selling or the valleys for buying and thus miss the very best trading opportunities. Our first rule then just by looking at closing prices and a moving average line vs. date and discovering all the sell (and buy opportunities missed in a volatile stock. See Figure 1.

Rule 1: (20% up or down rule)

Sell (symbol = S) if within any 4 trading days the CLOSE rises 20% or more from an initial price and continue selling until the price drops below the initial price or up to 10 consecutive sells.
Conversely Buy (symbol = B) if within any 4 trading days the CLOSE drops 20% or more from an initial price and continue selling until the price rises below the initial price or up to 10 consecutive buys.

Also if there's quick reversal (i.e. up 20% and then very soon after down 20%) then selling has preference over buying (if it's both a S and a B choose S).

Rule 2: (3 point trend lines)

Sell (symbol = Sell) if CLOSE drops below a trend line touching 3 bottoms; Buy (symbol = Buy) if CLOSE rises above a trend line touching 3 tops.

Rule 3: (Crossing a 10 period moving average)

Sell (symbol = SELL) if CLOSE drops below a flat or decreasing moving average line; Buy (symbol = BUY) if CLOSE rises above a flat or increasing moving average line.

Rule 4: (Crossing the zero line with PFE, an Oscillator based on CLOSE)

Sell (symbol = s) if PFE drops below 0; Buy (symbol =b) if PFE rises above 0. PFE (Polarized Fractal Estimator) is described by Wagner (1).

Rule 5: (Initial Buy rule)

Buy (symbol =initial buy) as soon as CLOSE is greater than the 10 day moving average and that moving average is increasing.

Rule 6: (Number of shares to buy and sell)

Sell 100 shares for each sell signal (symbol = S, Sell, SELL, or s). Buy 100 shares for each buy signal when CLOSE has appreciated from the initial buy (i.e. CLOSE >= 50). For both YHOO and AOL initial buys are in the low 20's. So we use this rule: All buys (symbol = B, Buy, BUY, or b) where 0<=CLOSE<30 buy 400 shares; where 30<=CLOSE<40 buy 300 shares; where 40<=CLOSE<50 buy 300 shares; 100 shares otherwise. The model behind Rules 5 and 6 is similar to seeding, and fertilizing (both buying), and harvesting (selling). We can view the initial buy as seeding. We must seed a lot if we want a plentiful harvest. In this example we initially buy 2500 shares. The subsequent buys are like fertilizing the soil, In this example, like the farmer, we fertilize early and often. Then as the fruit ripens (stock appreciates) we begin to pick it (sell the stock). However, like the farmer we pick only if the fruit is ripe (sell signal) and harvest is over a period of time since each fruit tree ripens at it's own pace (sell only 100 shares each time).

Figure 2a shows the oscillator and Figure 2b an example of all six rules appearing early in the YHOO vs. Date plot. We also note that the Rules are in order of precedence and that within any Rule if there is a conflict a sell always takes preference over a buy.

Results: Is it worth it?

These trading rule generate a tremendous amount of buys and sells. Is it any better than just buying and holding? Figures 3a, 3b, and 3c show the graph and signals for the complete period of interest 3/98 through 4/99. It appears that we are "seeding" early in 1998 and ""harvesting" at the peaks in 1999 but would it be wiser just to buy and hold? One way to assess this would be to look at the return on investment. For the buy and hold scenario this is just the ratio closing price on 4/30/99 to the buying price on 3/16/98. This ratio is 174.688/21.25=8.4187 or 841.87% profit. Although this is a phenomenal return using these trading rules we almost double this percentage! In fact the percentage is a spectacular 1601.604%. This is arrived at as follows:
Compute Total Net Worth on 4/30/99 divided by Total Investment on 3/16/98. But Total Net Worth is profit from trading plus paper profits from uncompleted trades. Summing the profit column in Distribution of Y in figure 4 we see that trading profits were $760,754.70. Add to this $90,097.30 which are the paper profits on unsold stock and we arrive at Total Net Worth =$850,852. Divide this by $53,125 our initial investment on 3/16/98 and the ratio is 16.01604.

These rules worked for YHOO. Could I expect similar results for an another Internet related stock like AOL? In fact if we use the same trading rules and get amazingly similar results. The period of analysis for AOL is from 5/26/98 to 5/25/99. The ratio of price on 5/25/99 to the buy price on 6/9/98 is 5.41 or 541% for buy and hold. Trading using Rules 1 through 6 we have actual profits of $498,510.10 and paper profits of $108,000.90 giving a Total Net Worth of $606,511. Compare it with our buying price on 6/9 of $55,390 for 2500 AOL shares and the resulting ratio is 10. 94983 or 1094.98%. yield , even more than double the buy and hold yield. Figures 5a, 5b, and 5c show the history of AOL and the buy /sell rules made.

Will this work for other stocks? I don't know. I do think if you have a winning stock (one that goes up in the long run and has a predominantly increasing moving average) and it is volatile then these rules or similar rules will work as well or possibly better than buy and hold. The point is to plot the data first and look to make pattern discoveries. For more traditional stocks like MSFT, CISCO, and DELL Rule 1 might be if it appreciates or drops 15% in 6 days. Look at the graph and try some alternatives!

Summary

We have seen that a combination of trading rules and buy and sell quantity rules can drastically improve, even double the buy and hold yield of high flying volatile growth stocks. We make our rules observing one stock, YHOO, and it works slightly better for another, AOL. Just viewing a stock's history can produce insights for new rules and buying patterns. For instance discovering that YHOO had major movements of 20% or more in a few days of trading enabled us to capture many new trading opportunities. The principles espoused here are:

- Buy a market leader in a volatile sector like Internet stocks.
- Use the seed-fertilizer-harvest, Biblical analogy to investing. Seed is the initial buy, fertilize is the subsequent buys, and harvest is when you sell the stock. You need to seed a lot to get a good harvest so our initial buy if the market climate is suitable should be substantial. Also to continue to harvest it is wise to fertilize i.e. buy when the opportunity presents itself. Then pick the fruit (sell) primarily when the Rule 1 peaks appear.

Reference

1. Wagner, Jerry (1995) Jerry Wagner: Fund Timer. *Technical Analysis of Stocks & Commodities,* Volume 13 January

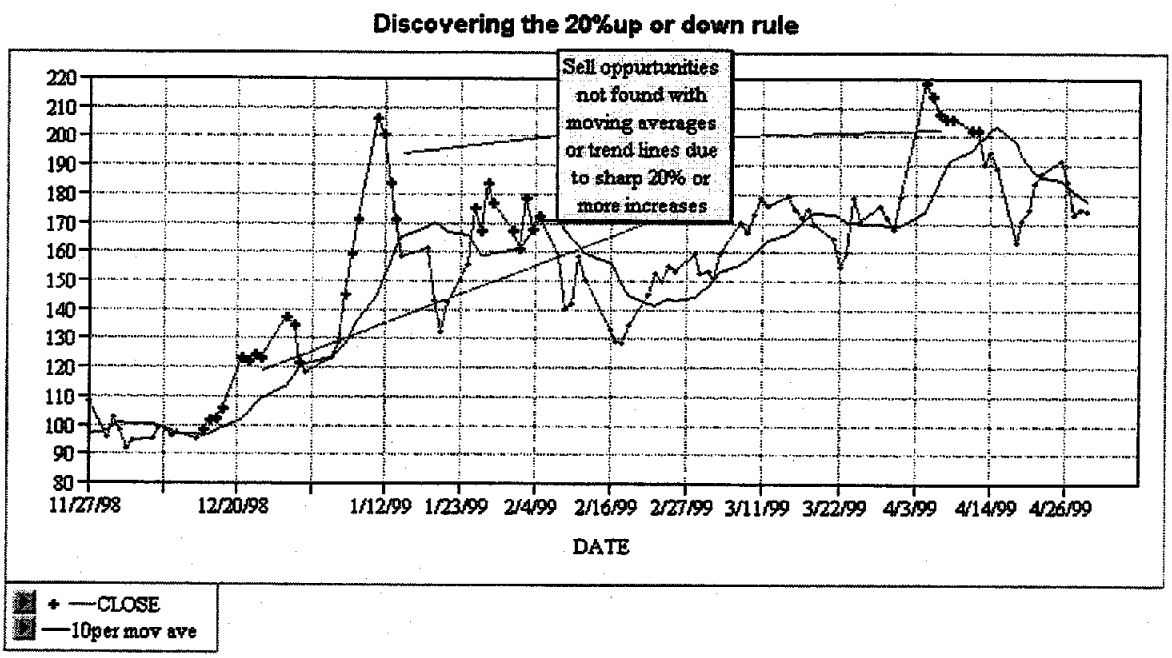

Figure 1: Rule 1 nicely identifies selling peaks.

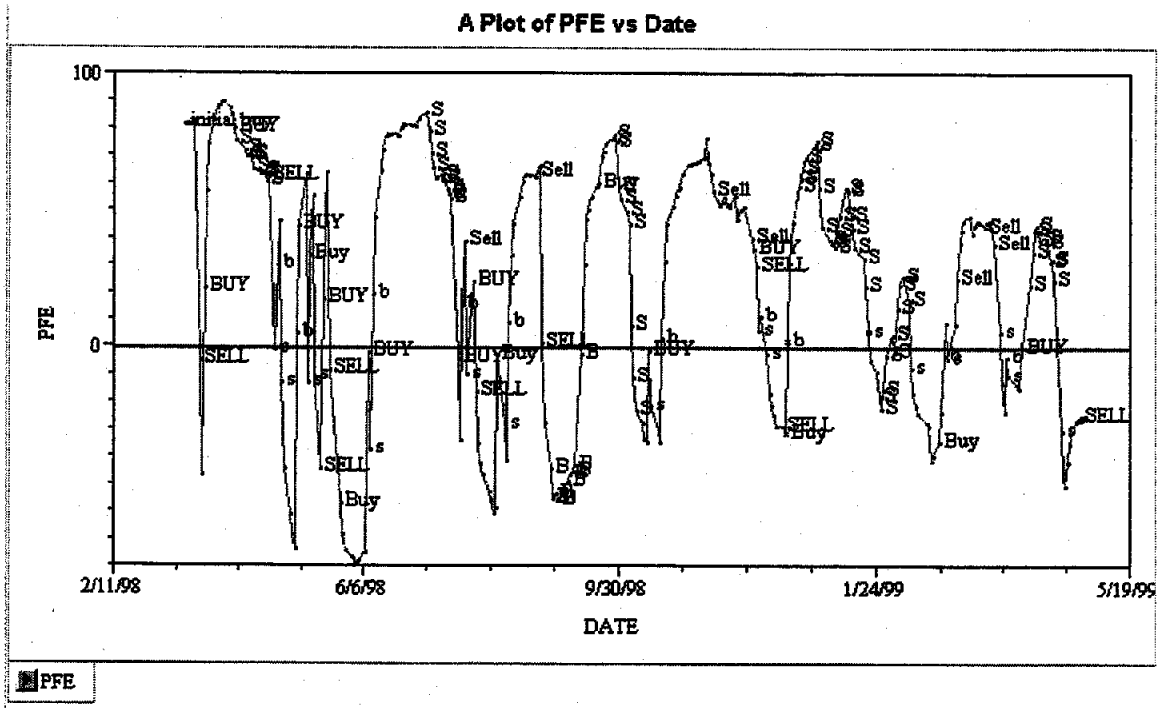

Figure 2a: A plot of our Polarized Fractal Estimator oscillator, PFE, vs. Date. We notice that many of the Rule 4 b and s signals are instead B, BUY, S, and SELL signals. These Rules have precedence. For instance if an oscillator buy rule, b, would naturally occur but it conflicts with a Rule 1 sell, S, the sell takes precedence.

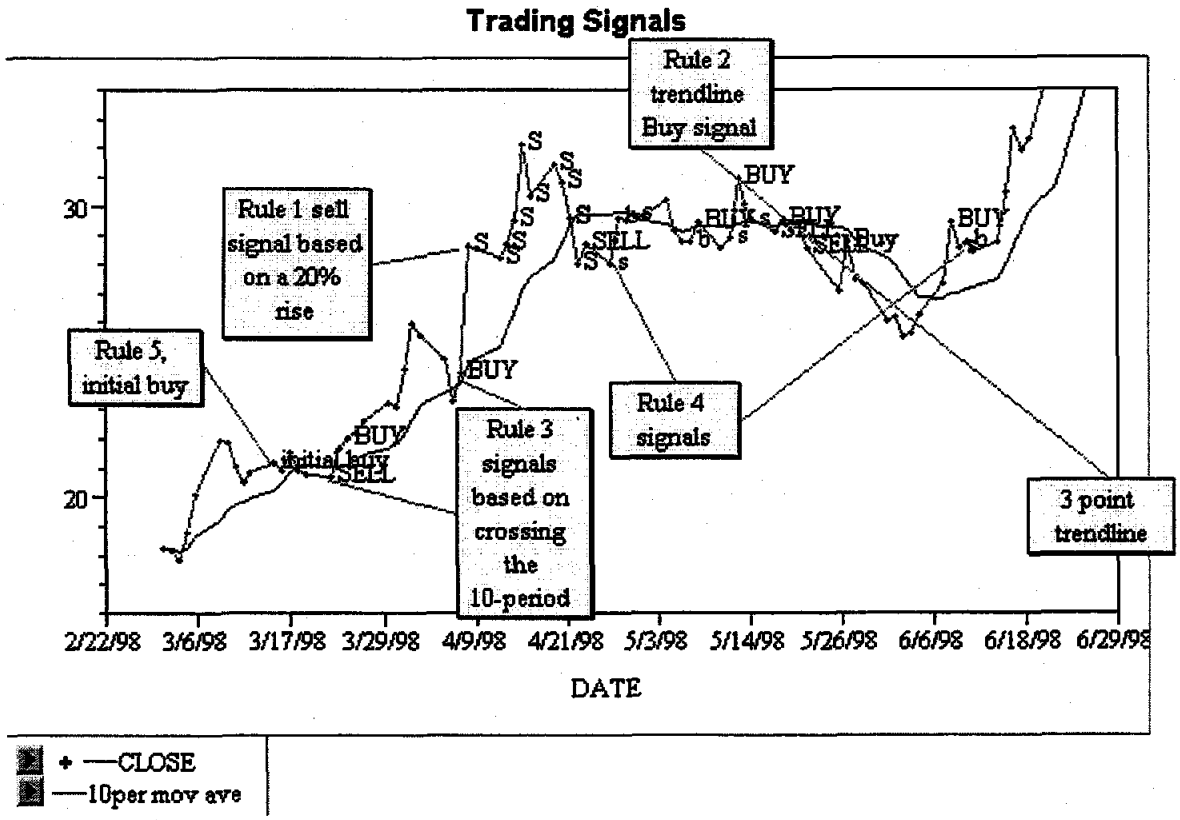

Figure 2b: All the buy and sell trading signals.

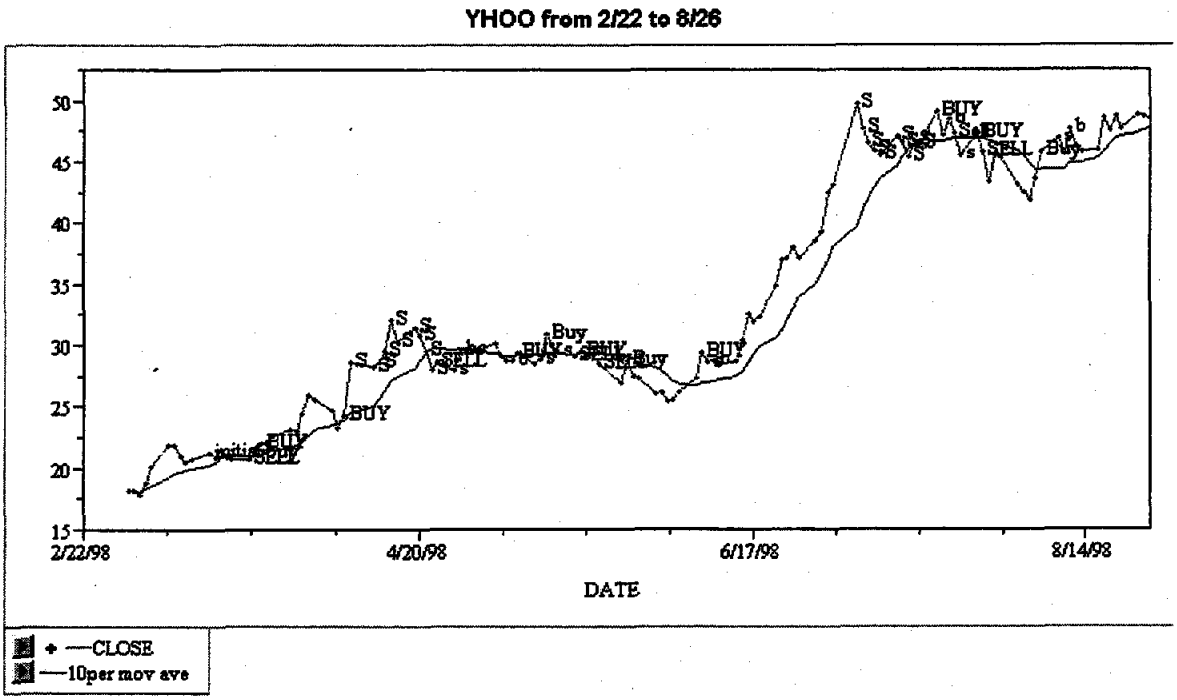

Figure 3a: Two "Rule 1" selling cycles due to 20% increases in April and June.

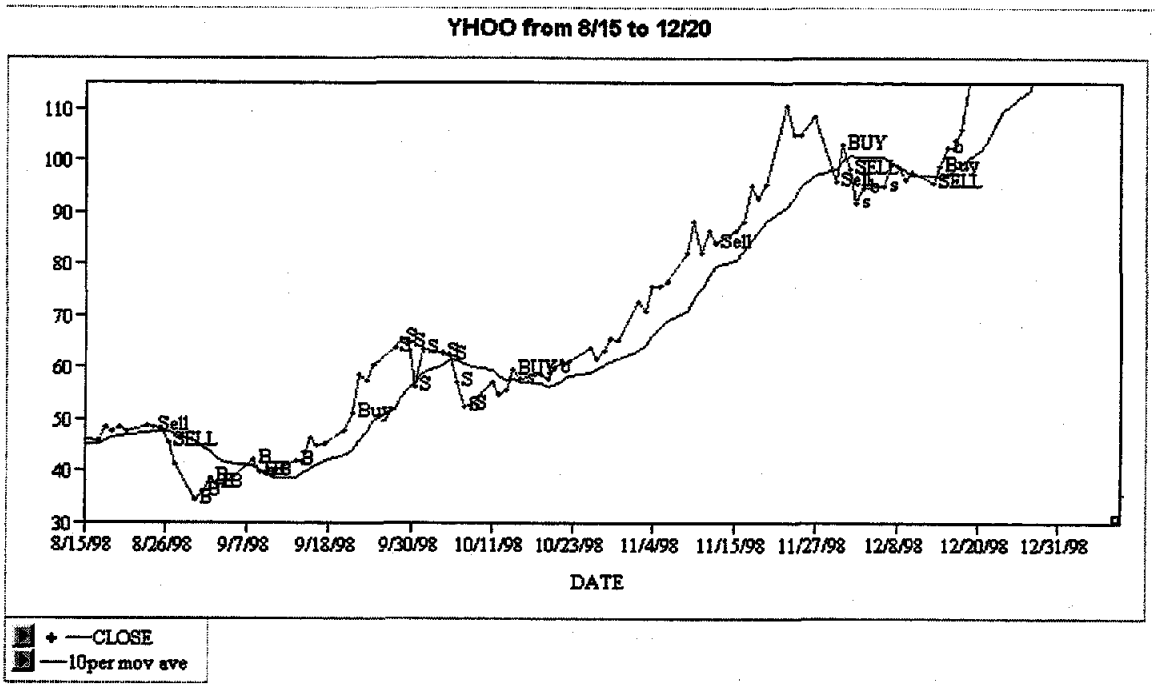

Figure 3b: One buying spree in early September due to a 20% decrease, and one selling spree in late September due to a corresponding 20% increase.

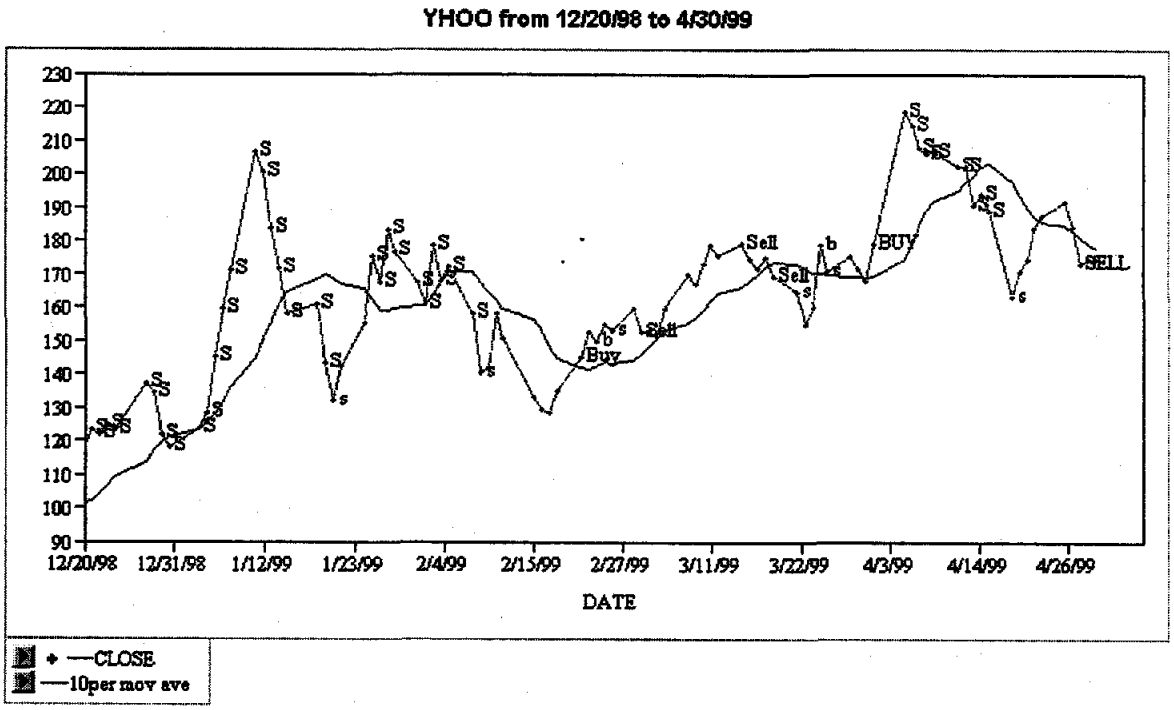

Figure 3c: The real power of Rule 1 selling is shown in this graph as three of our peaks trigger selling cycles giving excellent profits.

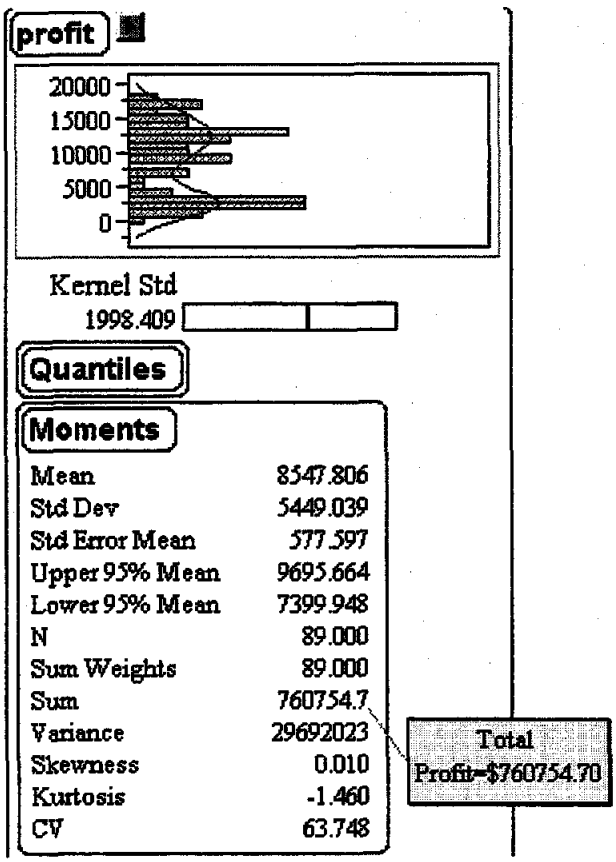

Figure 4: Use **Distribution of Y** to sum profits.

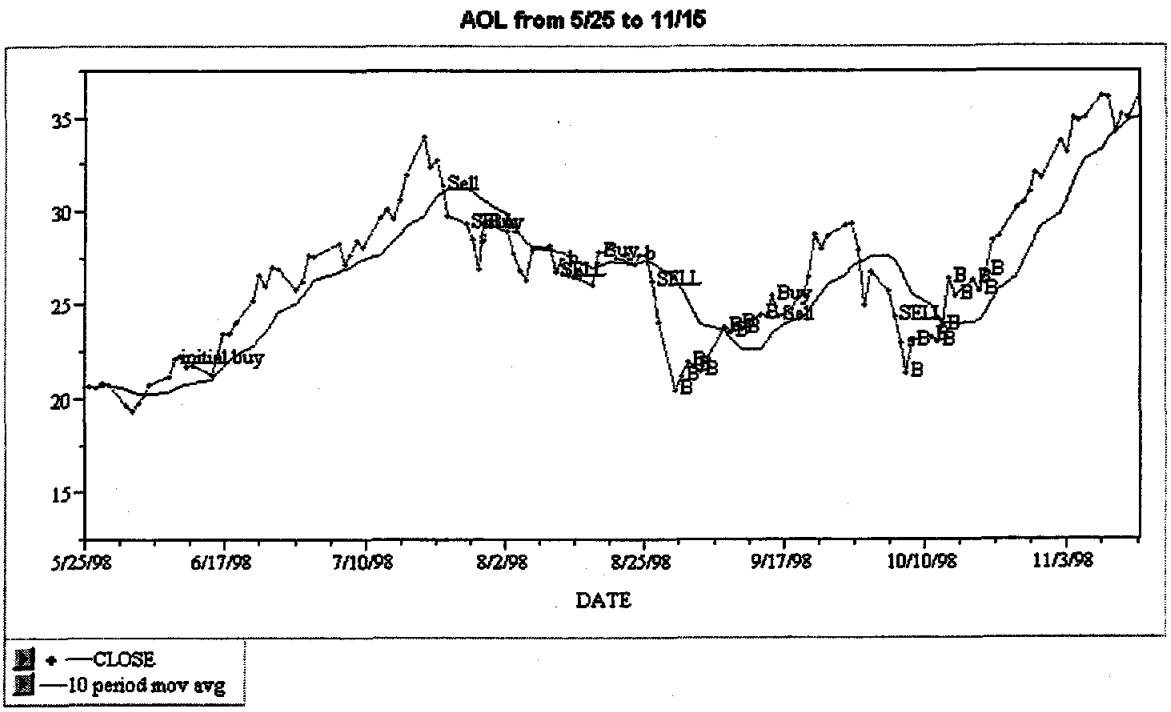

Figure 5a: AOL is weak in September and October and 20% declines trigger two excellent buying cycles.

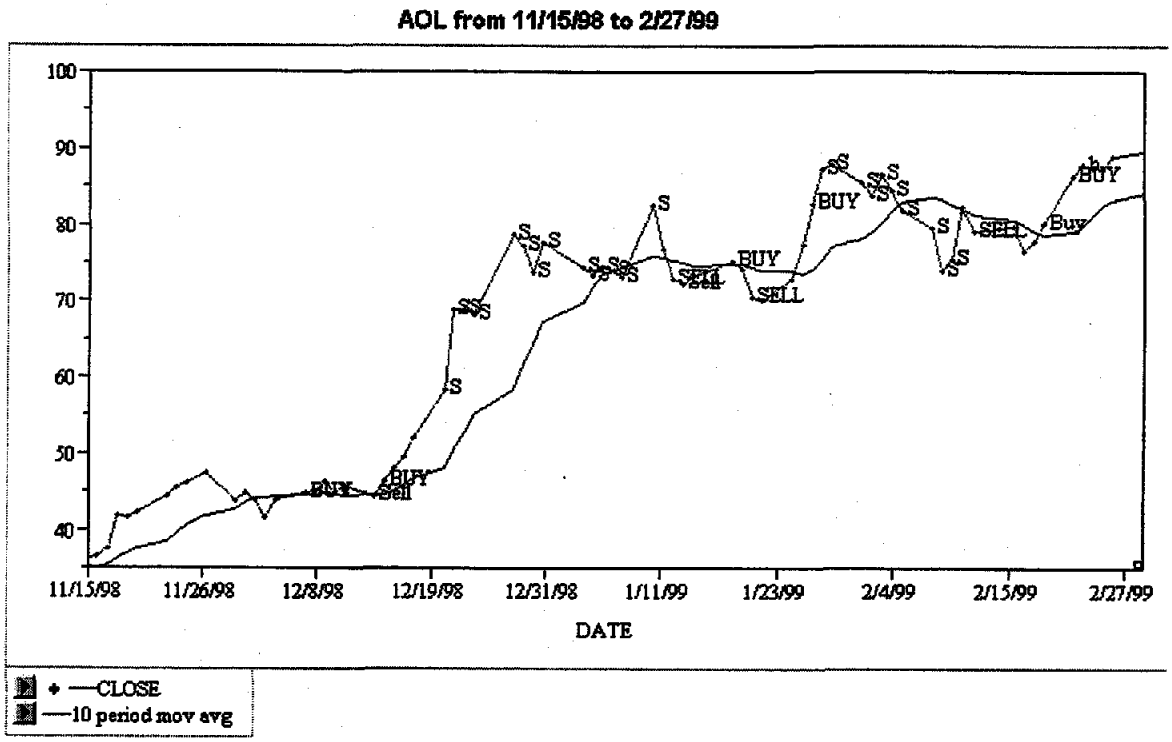

Figure 5b: Two 20% rises produce two selling sprees.

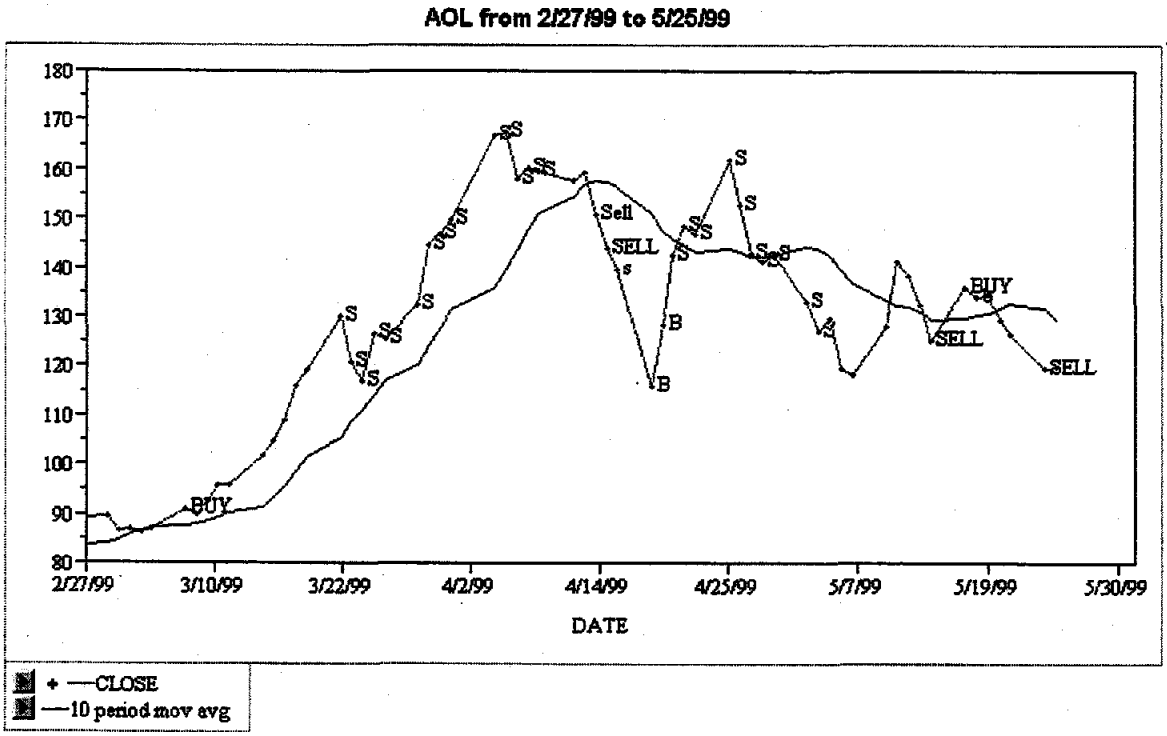

Figure 5c: Both peaks are "harvested" with sells (S) according to Rule 1.