David Stendahl

David C. Stendahl — Trading SPX & OEX

David Stendahl is President of the SPX Trader and the OEX Trader services. As a registered investment advisor, he focuses his full attention on index related investments, including SPX index mutual funds and OEX options. In addition to providing trading recommendations, David has presented several national educational seminars on market/option trading.

Barron's recognizes David as a leading options analyst. *Technical Analysis of Stocks and Commodities, Traders' Catalog and Resource Guide,* and *Pinnacle Magazine* have all published his articles. On-line computer services such as Prodigy, Signal, Bonneville and DTN carry his market commentary under the *Wall Street Edge* and *Market Line* headings. In cooperation with RINA Systems Inc., David also provides customized program development providing software programs for traders.

Topic: Trade System Evaluation Methods

System developers all too often design systems that produce excellent returns on paper, while disregarding real world influences. David will present a few of his own personal trading programs and discuss how to properly evaluate their returns.

The seminar will review the following systems: **Dynamic Zones, Average RSI, VIX, Best Day system, Trix** and the **KST System.** David will disclose the programming code for most of the systems discussed. The evaluation of these systems will center on statistical methods which highlight the strengths and weaknesses of any trading system.

David will also discuss his favorite trading instruments: OEX options and the Rydex Nova and Ursa mutual funds. He will summarize his relatively conservative approach to trading the general market through the use of these investment vehicles.

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Seminar Outline – David C. Stendahl

Trading Systems:

- Trix
- KST
- Average RSI
- Williams %R
- Dynamic Zones
- Best Days
- Short-term ROC
- Detrend

System Statistics:

- TradeStation
- RINA Statistics
- Additional Statistics

OEX Trading Rules:

S&P Index Investment Products:

- S&P Futures
- OEX/SPX Options
- AMEX Spiders
- Rydex Mutual Funds

Recommended Reading:

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Trading Systems:

We follow the KISS *(keep it simple stupid)* system of trade design, hence the simplicity of some of our trading systems. We feel that it is better to fully understand how a system operates, rather then to blindly follow a system which is overly complex. We are completely satisfied as long as a system generates above average returns with limited risk. We have designed a few 100% mechanical systems for the TAG 95' seminar. However that does not mean that we follow them 100% of the time. Our goal is to design systems that assist investors in finding high probability trading signals. However it's up to the investor to act on those signals.

Trix

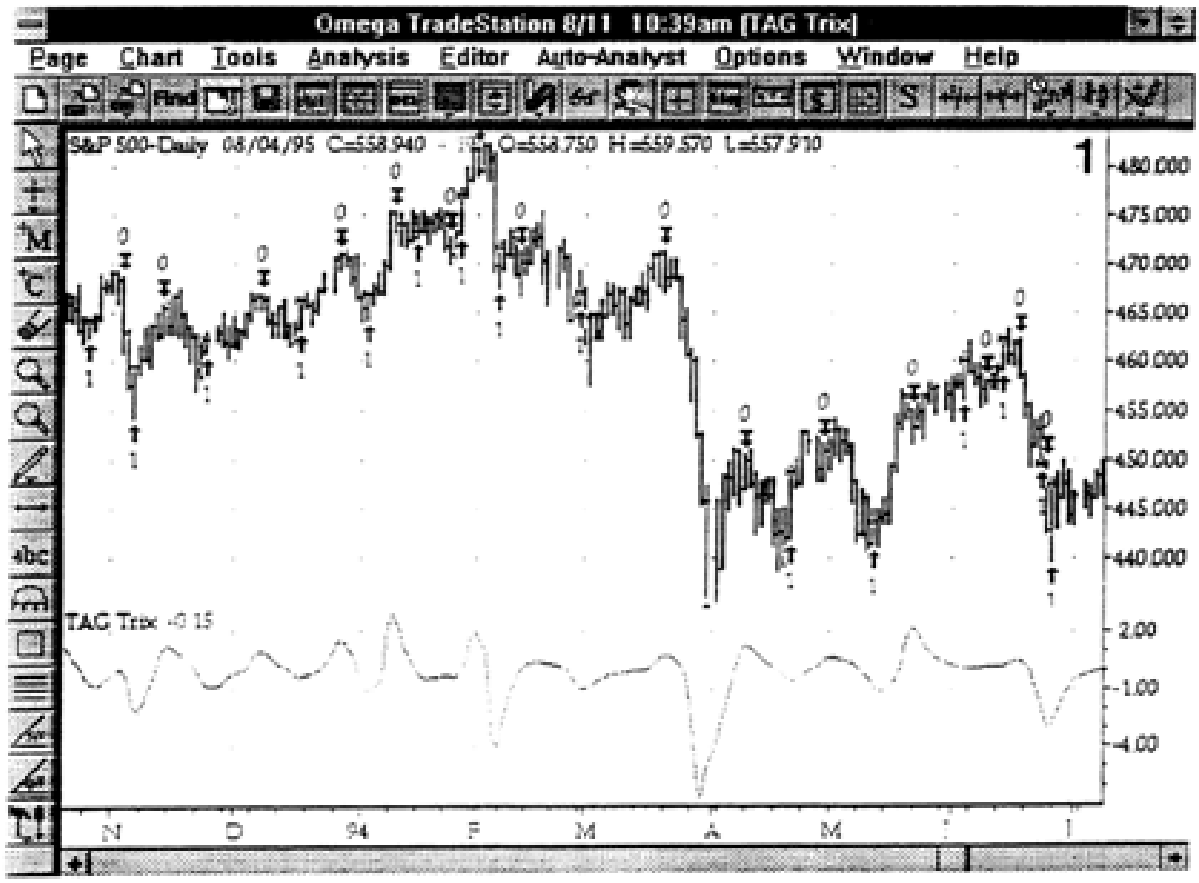
System Description: Trix is a moving average system that acts like an oscillator. Trix actually stands for *triple exponential moving average*. However, we have found that the *adaptive moving average (AMA)* works better when trading the S&P 500 Index. For this reason our code does not use the exponential average. The concept is the same, only the implementation is different. We suggest experimenting with various moving averages to generate the best trading results for your market.

TradeStation Code:

```
Input: X1(2), X2(5), X3(3), M1(1);
Vars: Avg1(0), Trix(0);

Avg1 = Amafunc2(Amafunc2(Amafunc2(C,X1),X2),X3);
Trix = Momentum(Avg1,M1);

Begin
        If Trix > Trix[1] and Trix[1] < Trix[2] then buy on close;
        If Trix < Trix[1] and Trix[1] > Trix[2] then exitlong;
end;
```



Performance Summary: All Trades

Total net profit	$ 2933.80	Open position P/L	$ 0.00
Gross profit	$ 5287.00	Gross loss	$ -2353.20
Total # of trades	162	Percent profitable	56%
Number winning trades	91	Number losing trades	71
Largest winning trade	$ 184.40	Largest losing trade	$ -122.30
Average winning trade	$ 58.10	Average losing trade	$ -33.14
Ratio avg win/avg loss	1.75	Avg trade(win & loss)	$ 18.11
Max consec. winners	7	Max consec. losers	5
Avg # bars in winners	6	Avg # bars in losers	3
Max intraday drawdown	$ -228.80		
Profit factor	2.25	Max # contracts held	1
Account size required	$ 228.80	Return on account	1282%

Trading Tactics: This system is best used in trading markets as opposed to trending markets. It is designed to catch the tops and bottoms of intermediate and long-term trading waves. Users should note that this system has a tendency fail in markets that traditionally trend.

Source: Stocks and Commodities Magazine.

KST

System Description: The KST indicator uses the Rate-Of-Change (ROC) formula to create a trading system that is surprisingly smooth. When used with weekly data, this momentum driven system performs like a trend following system. We have chosen to trade only long positions with this system due of the markets long-term bullish nature. The system is designed to exit the market when the risk/reward ratio is no longer in the traders favor.

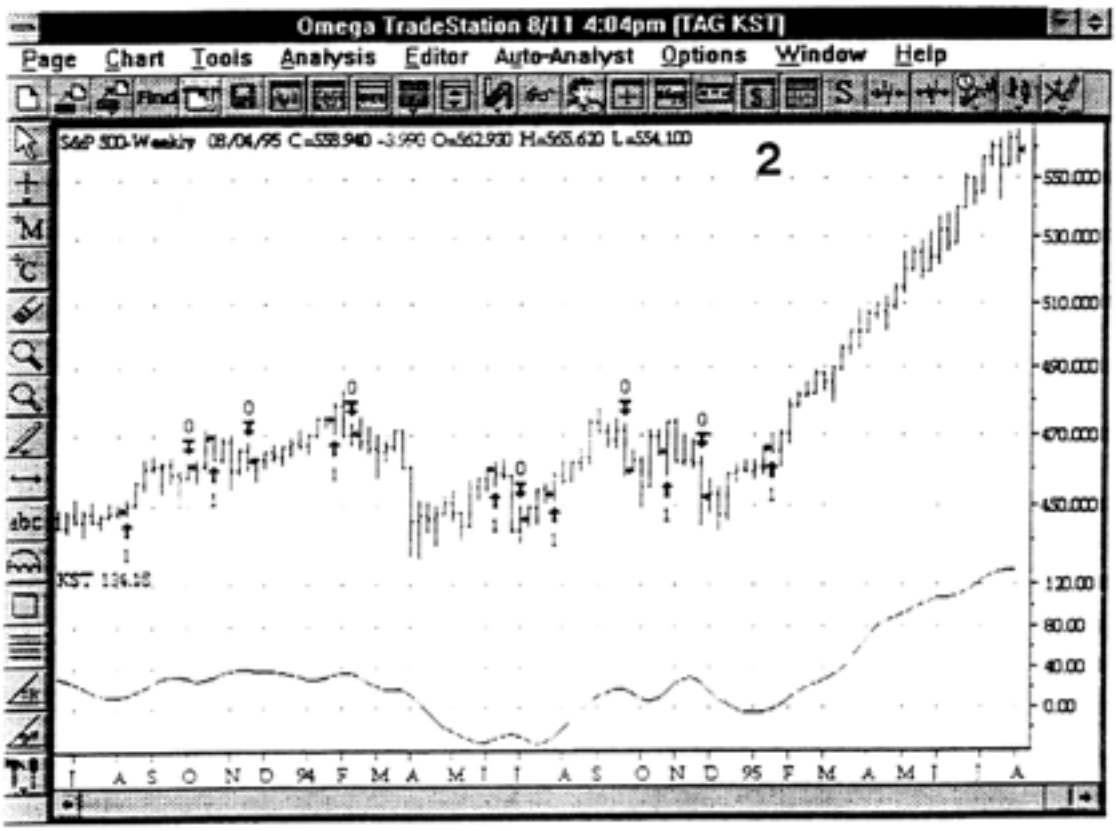
TradeStation Code:

```
Inputs: MD(4),D1(15),D2(17),D3(17),D4(24),Avg1(3);
Vars: KST(0),R1(0),MAR1(0),R2(0),MAR2(0),R3(0),MAR3(0),R4(0),MAR4(0);

R1 = ROC(C,D1);
MAR1 = average(R1,MD);
R2 = ROC(C,D2);
MAR2 = average(R2,MD);
R3 = ROC(C,D3);
MAR3 = average(R3,MD);
R4 = ROC(C,D4);
MAR4 = average(R4,15);

KST  = Average(MAR1 + (MAR2 * 2) + (MAR3 *3) + (MAR4 * 4),Avg1);

If KST > KST[1] and KST[1] < KST[2] then buy at market;
If KST < KST[1] and KST[1] > KST[2] then exitlong;
```



KST S&P 500-Weekly 01/02/87 - 08/04/95

Performance Summary: All Trades

Total net profit$	2250.20	Open position P/L	$ 0.00
Gross profit	$ 3199.90	Gross loss	$ -949.70
Total # of trades	30	Percent profitable	57%
Number winning trades	17	Number losing trades	13
Largest winning trade$	929.70	Largest losing trade	$ -139.30
Average winning trade$	188.23	Average losing trade	$ -73.05
Ratio avg win/avg loss	2.58	Avg trade(win & loss)$	75.01
Max consec. winners	4	Max consec. losers	3
Avg # bars in winners	9	Avg # bars in losers	2
Max intraday drawdown$	-395.10		
Profit factor	3.37	Max # contracts held	1
Account size required$	395.10	Return on account	570%

Trading Tactics: This system rarely picks the exact top or bottom of any market, but it does seem to capture the majority of the markets general trend. Mutual fund traders or conservative stock investors are well suited to this long-term trading system.

Source: Martin Pring

Average RSI

System Description: This momentum system uses a smoothed RSI formula to trade the long side of the market. Signals are generated based on the crossings of specific buy and sell levels. Each buy and sell level is composed of two zones. These zones are differentiated by the lower case h (High Zone) or l (Low Zone). If the indicator falls to a lower level then normal, the buy signal is issued based on the lower crossing rather then having to wait for the higher level crossing.

TradeStation Code:

```
Input: Len(6),Avg(3),BZh(35),BZl(25),SZh(85),SZl(70);
Vars: Ind(0);

Ind = Amafunc2(RSI(C,LEN),Avg); {Note: Amafunc2 is a special user function.}

IF Ind crosses over BZl or Ind crosses over BZh Then Buy on Close;
IF Ind crosses below SZl or  Ind Crosses below SZh Then exitlong;
```

DCS RSI Double S&P 500-Daily 01/03/89 - 08/04/95

Performance Summary: All Trades

Total net profit$	2087.30	Open position P/L	$ 0.00
Gross profit	$ 2556.10	Gross loss	$ -468.80
Total # of trades	27	Percent profitable	85%
Number winning trades	23	Number losing trades	4
Largest winning trade$	517.30	Largest losing trade	$ -291.00
Average winning trade$	111.13	Average losing trade	$ -117.20
Ratio avg win/avg loss	0.95	Avg trade(win & loss)$	77.31
Max consec. winners	7	Max consec. losers	1
Avg # bars in winners	25	Avg # bars in losers	52
Max intraday drawdown	$ -610.10		
Profit factor	5.45	Max # contracts held	1
Account size required$	610.10	Return on account	342%

Trading Tactics: This system is best used by individual trader looking to trade on an occasional basis. With only 27 trades in the last few years this system is designed for its accuracy and not for repetitive trading. This system should be used primarily in trading markets.

Source: Welles Wilder

Williams %R

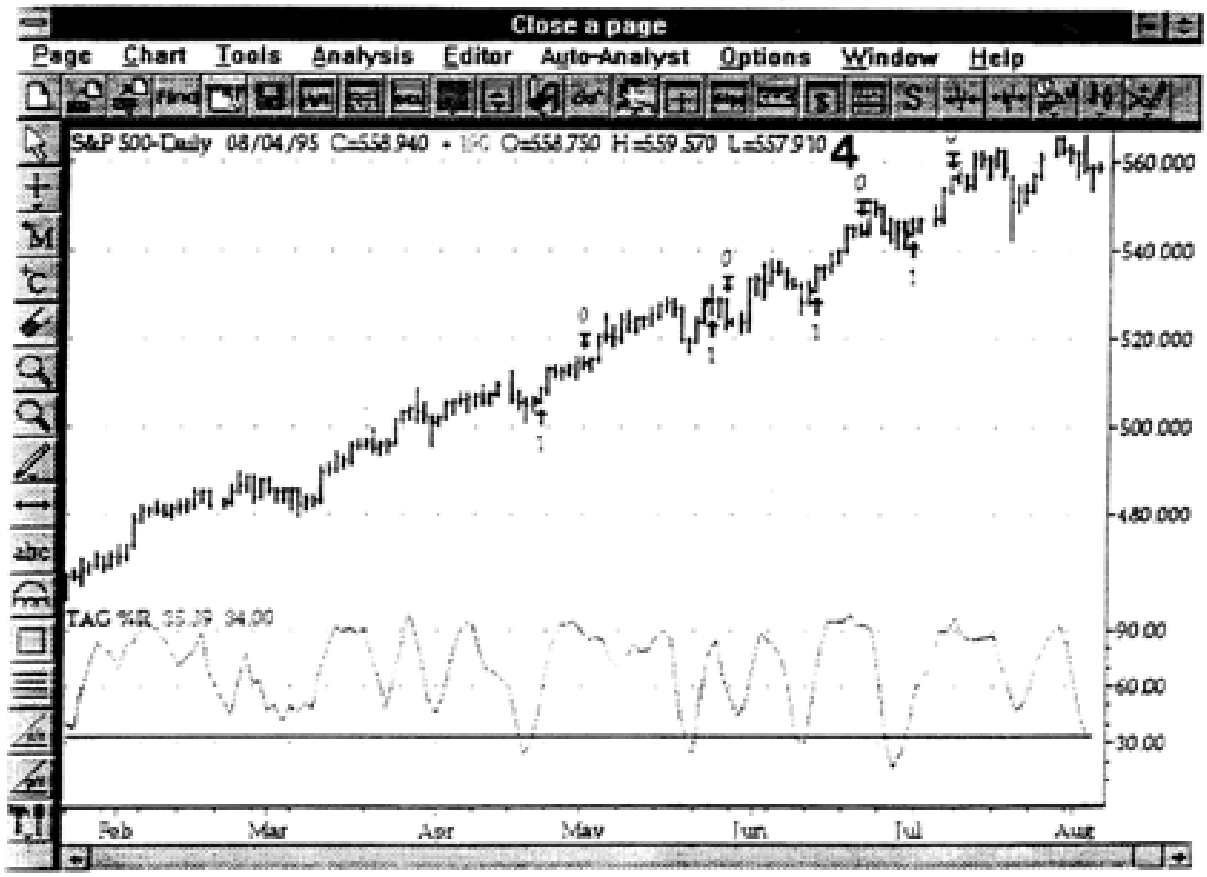
System Description: This system uses the %R momentum indicator to generate long positions. Once the indicator crosses above the buy zone (BZ) the position is initiated – any reversal of the indicator liquidates the trade. Over the years this effective system consistently makes the grade.

TradeStation Code:

```
Input: Len(5),Avg(3),BZ(34);
Vars: Ind(0);

Ind = Average(PercentR(Len),Avg);

If Ind > Ind[1] and (Ind < BZ) or (Ind[1] < BZ) then buy on open;
if Ind < Ind[1] and Ind[1] > Ind[2] then exitlong;
```



DCS %R S&P 500-Daily 01/02/90 - 08/04/95

Performance Summary: All Trades

Total net profit$	1729.90	Open position P/L	$ 0.00
Gross profit	$ 3167.30	Gross loss	$ -1437.40
Total # of trades	100	Percent profitable	55%
Number winning trade	55	Number losing trades	45
Largest winning trade$	151.40	Largest losing trade	$ -111.00
Average winning trade	$ 57.59	Average losing trade	$ -31.94
Ratio avg win/avg loss	1.80	Avg trade(win & loss)$	17.30
Max consec. winners	6	Max consec. losers	9
Avg # bars in winners	4	Avg # bars in losers	2
Max intraday drawdown	$ -374.30		
Profit factor	2.20	Max # contracts held	1
Account size required$	374.30	Return on account	462%

Trading Tactics: As with any momentum indicator, the %R system has a tendency to fail during extended trending markets. This system is best used as a five to seven day directional gauge for the market.

Source: Larry Williams

Dynamic Zones

System Description: Extreme investing employs the use of oscillators to exploit tradable trends in the market. This style of investing follows a very simple form of logic: only enter the market when an oscillator has moved far above or below traditional trading levels. However, these oscillator trading systems, lack the ability to evolve with the market because they use fixed buy and sell zones. Traders typically use one set of buy and sell zones for a bull market and substantially different zones for a bear market. Herein lies the problem.

Once traders begin introducing their market opinions into trading equations by changing their zones, they negate the trading system's mechanical nature. The objective is to have a system automatically define its own buy and sell zones and thereby profitably trade in any market -- bull or bear. Dynamic Zones offer a solution to the problem of fixed buy and sell zones for any oscillator trading systems.

An indicator's extreme levels can be quantified using statistical methods. These extreme levels are calculated for a certain period of time and serve as the buy and sell zones for the trading system. The repetition of this statistical process creates values that

become the Dynamic Zones. These zones are calculated in such a way that the probability of an indicator value rising above, or falling below, the Dynamic Zone is equal to a given probability input set by the trader.

To better understand Dynamic Zones, let's first describe them mathematically and then explain their use in a trading example.

The Dynamic Zone definition:

Find V such that

for Dynamic Zone Buy: $P\{X<V\}=P^*$
for Dynamic Zone Sell: $P\{X>V\}=P^*$

Where P^* is the probability set by the trader, X is the value of the indicator for the selected time period, and V represents the value of the Dynamic Zone. (See sidebar, Calculating "Dynamic Zones.")

The probability input P^* can be adjusted by the trader to encompass as much or as little data as the trader would like. The smaller the probability, the fewer data values above and below the Dynamic Zones. This translates into a wider range between the buy and sell zones. If a 10% probability is used, only those data values that make up the top 10% and bottom 10% for an indicator are used to construct the zones. In other words, 80% of the values will fall between the two extreme levels. Because Dynamic Zone levels are penetrated so infrequently, traders know that the market has truly moved into overbought or oversold territory. Figure 1 illustrates the buy and sell zones for the S&P 500 market using the 9-day RSI indicator. Notice the area above and below the Dynamic Zones constitute the upper and lower 10% boundaries. The zones appear to evolve with the market because they use a 100-day moving average of indicator values in their construction. The moving average insures a realistic market fit for the zones.

Trading Example

As an example, let's say a 9-day RSI trading system has been profitable over the last few years using the generally accepted fixed buy and sell zones of 20/80. The system buys the market as the RSI crosses above the 20 level and sells when it crosses below the 80 level. The system remains in the market 100% of the time. Using these set parameters, the RSI oscillator performs well in a bull market, but it begins to break down during a bear market phase. The system's temporary failure may not be entirely due to the indicator itself, but rather may be caused by the system's buy and sell zones. In this case the zones should be altered to fit the declining market. In a bear market the buy and sell zones of 20/70 may work more efficiently.

The Dynamic Zones work in a similar fashion, except they adjust themselves automatically – increasing for the bull and decreasing for the bear. The parameters that construct the RSI indicator remain constant, but the zones adjust themselves to better reflect the current trading environment. This dynamic adjustment is accomplished by using a 100-day moving average of indicator values in the calculation of the zones. The key after all is to have the mechanical system make its own decisions.

Indicator Comparison

The trading principles behind the Dynamic Zones can be used with any oscillator trading system. The chart below lists three popular indicators, comparing the trading results of fixed zones to Dynamic Zones. An eight year time period (1/2/87 - 12/30/94) was used to test the indicators based on the S&P 500 Index. All of the indicators used a 9-day time period in their construction.

	Fixed 20/80 Zones				Dynamic Zones			
	Profit	Win%	Profit Factor	Account Return	Profit	Win%	Profit Factor	Account Return
%R	99.61	63%	1.21	67%	295.03	71%	2.08	404%
RSI	18.51	71%	1.15	14%	194.54	73%	2.08	218%
CCI	(97.85)	43%	0.85	(50%)	117.13	50%	1.24	161%

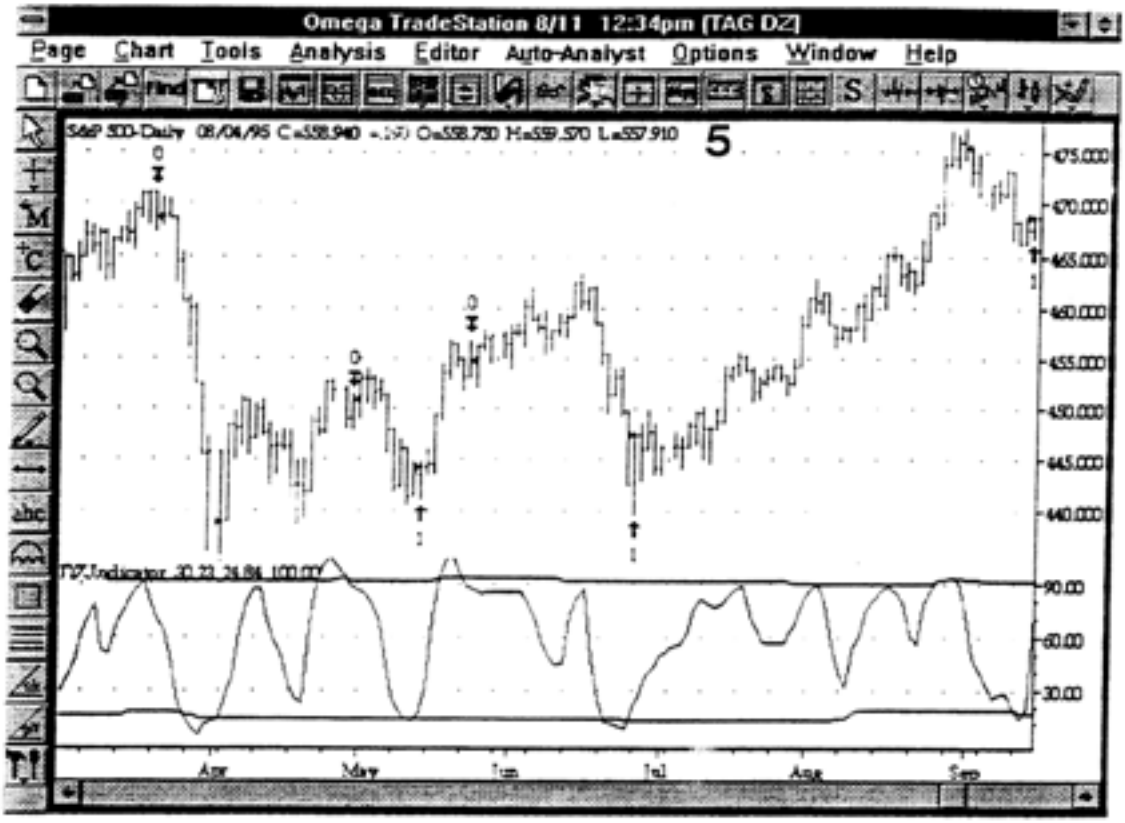
Any oscillator system that attempts to trade a market that consists of bullish, bearish and neutral periods should benefit from the Dynamic Zones. The trading results from the three trading systems confirm these findings. Indicators that have the ability to adjust their own buy and sell zones should in fact outperform those indicators that use fixed zones. Of course further refinements can be made to the Dynamic Zone systems to improve the trading results. These improvements include: separate probability inputs for the two zones, various exit signals other than an extreme reading, and the use of money management techniques. Dynamic Zones are limited only by the imagination of the trader.

TradeStation Code: *Partial code only.*

```
Inputs: Par1(6),Par2(3); {Inputs: DZ = 90,.09}

Indicator =Amafunc2(PercentR(Par1), Par2);

IF Indicator > BuyZone and  Indicator[1] < BuyZone Then Buy on Close;
IF Indicator < SellZone and Indicator[1] > SellZone Then ExitLong;
```



Dynamic Zones S&P 500-Daily 01/02/87 - 08/04/95

Performance Summary: Long Trades.

Total net profit$	2805.60	Open position P/L	$ 118.50
Gross profit	$ 3760.40	Gross loss	$ -954.80
Total # of trades	49	Percent profitable	76%
Number winning trades	37	Number losing trades	12
Largest winning trade$	396.80	Largest losing trade	$ -164.40
Average winning trade$	101.63	Average losing trade	$ -79.57
Ratio avg win/avg loss	1.28	Avg trade(win & loss)$	57.26
Max consec. winners	6	Max consec. losers	2
Avg # bars in winners	18	Avg # bars in losers	10
Max intraday drawdown$	-221.50		
Profit factor	3.94	Max # contracts held	1
Account size required$	221.50	Return on account	1267%

Trading Tactics: Dynamic Zones offer traders a slightly different perspective on the typical trading systems. The use of probabilities insures that extreme indicator readings are quantified to allow for the comparison of all values during a controlled period of time. Markets are constantly changing, and if oscillator trading systems are to remain competitive, they must learn to evolve with the markets. Fixed zone trading systems can only guess at extreme levels. On the other hand, Dynamic Zones, can actually quantify the extremes and thereby improve the trading process.

Source: The OEX Trader & RINA Systems, Inc.

Best Day Trading System

System Description: This system is used to find trading days that offer historical high probability trading situations. It specifically looks at a day of the month in conjunction with the day of the week and computes its profit potential. The signal buys on the open and sells on the close.

TradeStation Code:

```
IncludeSystem:"BestDayExit";
Input: DayNum(1), dayw(1);
Vars: prevdayw(0), dt(0);

If date >870101 then begin {note: any day in the past can used.}
If month(date)<>month(date[tomorrow]) then
        value1=-1;
value1=value1+1;
If dayw>1 then
        prevdayw=dayw-1;
If dayw=1 then
        prevdayw=5;
If value1=DayNum-1  and dayofweek(date)=prevdayw then begin
        Buy next bar at market;
end;
end;
```

Note the best day system calls another file at beginning of the code called "BestDayExit". The following code appears in that file:

ExitLong this bar on close:

BestDay S&P 500-Daily 01/02/87 - 08/04/95

Performance Summary: All Trades

Total net profit$	620.40	Open position P/L	$ 0.00
Gross profit	$ 715.80	Gross loss	$ -95.40
Total # of trades	33	Percent profitable	76%
Number winning trades	25	Number losing trades	8
Largest winning trade$	75.00	Largest losing trade	$ -32.80
Average winning trade$	28.63	Average losing trade	$ -11.93
Ratio avg win/avg loss	2.40	Avg trade(win & loss)$	18.80
Max consec. winners	10	Max consec. losers	2
Avg # bars in winners	0	Avg # bars in losers	0
Max intraday drawdown$	-70.30		
Profit factor	7.50	Max # contracts held	1
Account size required$	70.30	Return on account	883%

Trading Tactics: Suggested uses would include high probability intraday trading of the S&P Futures or the fine tuning of monthly contributions to mutual fund accounts.

Source: The OEX Trader & RINA Systems, Inc.

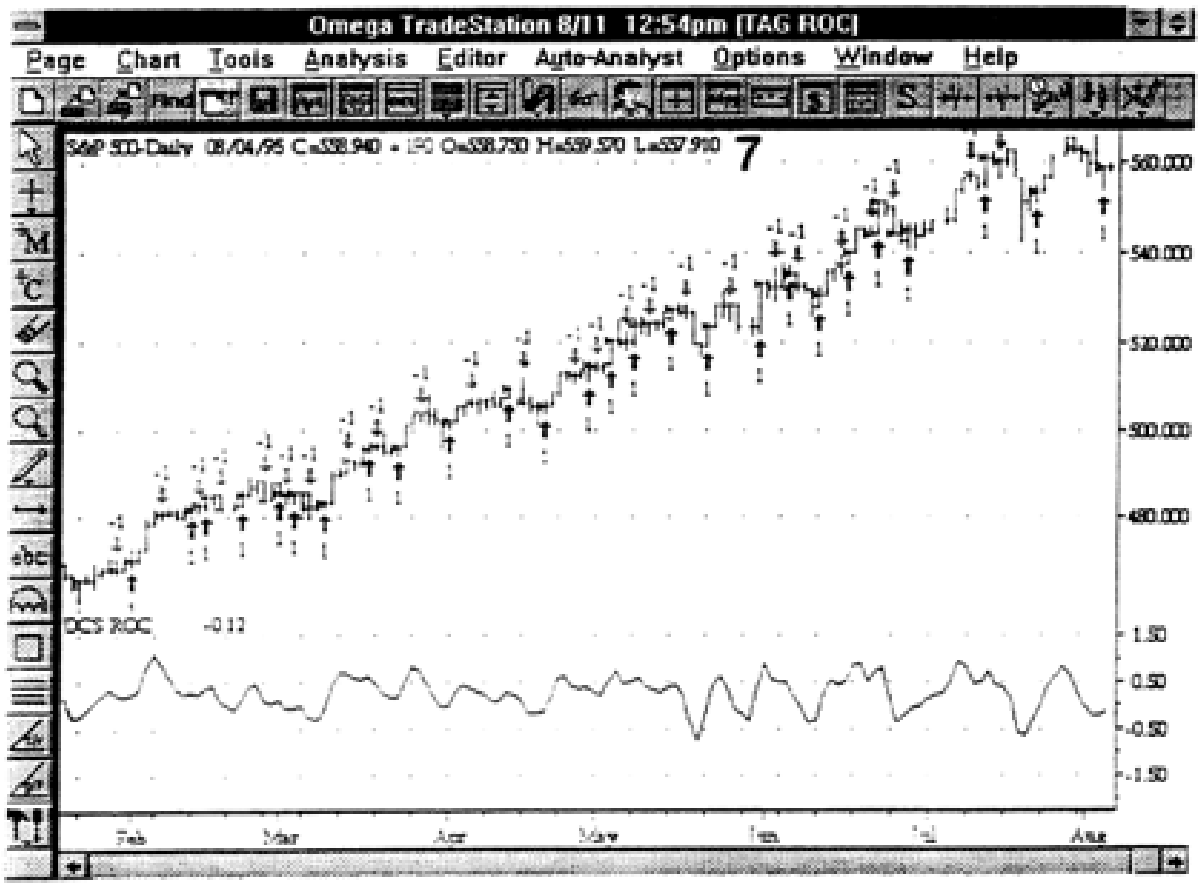
Short-term ROC

System Description: This short-term momentum driven system uses a ROC indicator to confirm buy and sell signals. When the indicator changes direction a trade signal is generated. The system is in the market 100% of the time and it generates a great deal of trades.

TradeStation Code:

```
Inputs: Len(2),Xavg(5);
Value2 = Xaverage(RateofChange(C,Len),Xavg);

begin
        If Value2 > Value2[1] and Value2[1] < Value2[2]  then buy on close;
        If Value2 < Value2[1] and Value2[1] > Value2[2]  then sell on close;
end;
```



DCS ROC S&P 500-Daily 01/02/90 - 08/04/95

Performance Summary: All Trades

Total net profit	$ 3262.20	Open position P/L	$ 1.90
Gross profit	$ 10548.70	Gross loss	$ -7286.50
Total # of trades	512	Percent profitable	46%
Number winning trades	236	Number losing trades	276
Largest winning trade	$ 178.00	Largest losing trade	$ -120.60
Average winning trade	$ 44.70	Average losing trade	$ -26.40
Ratio avg win/avg loss	1.69	Avg trade(win & loss)	$ 6.37
Max consec. winners	11	Max consec. losers	9
Avg # bars in winners	4	Avg # bars in losers	2
Max intraday drawdown	$ -488.80		
Profit factor	1.45	Max # contracts held	1
Account size required	$ 488.80	Return on account	667%

Trading Tactics: This simple trading system is best used either alone by short-term traders or in conjunction with other longer-term trading systems. The primary use of this system is its short-term directional bias, not for its actual trading decisions.

Source: Stock and Commodities

Detrend

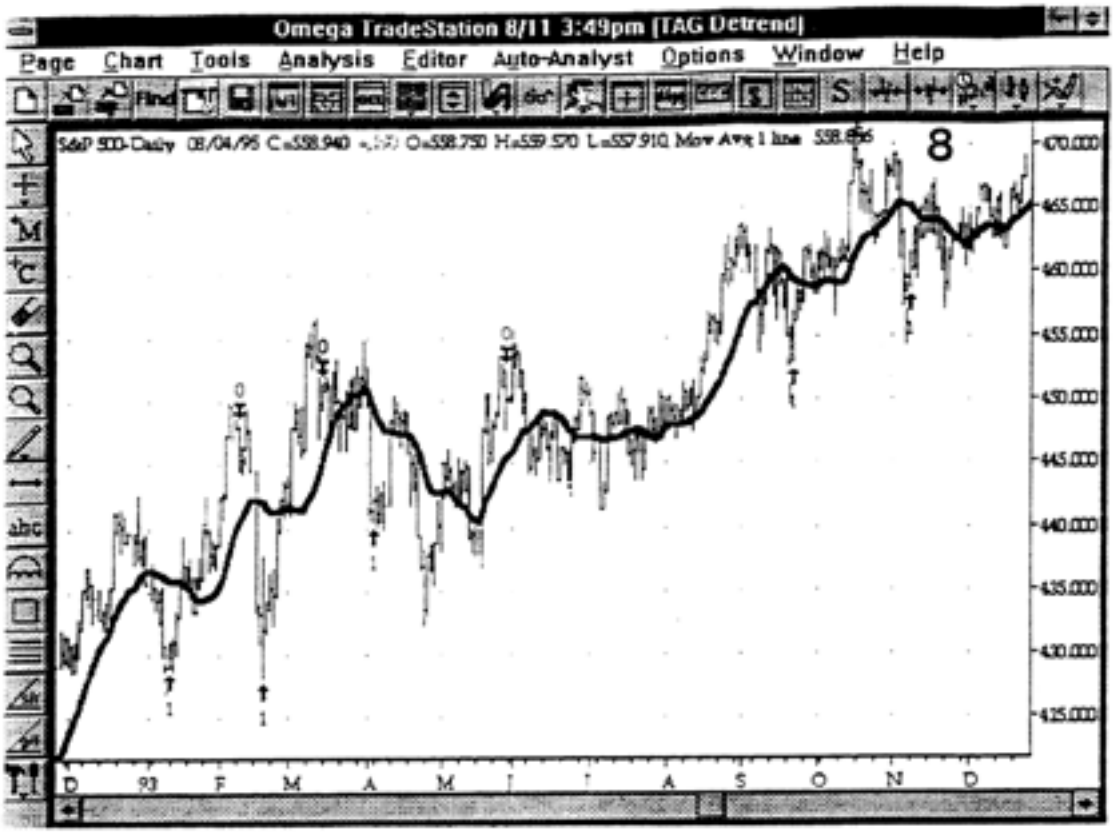
System Description: The detrend system uses price extremes to determine when a markets reversal is likely. A signal is generated when the pricing action moves too far either above or below a specific average. The detrend system acts like an oscillator but uses a simple moving average as it major component.

TradeStation Code:

```
Input: DTavg(18), DTbuy(8), DTsell(8.5);
Vars: DH(0), DL(0), Detrend(0);

Detrend = Average(C,DTavg);
DH = H - Detrend;
DL = L - Detrend;

begin
if -DL > DTbuy and -DL[1] < DTbuy then buy market;
if DH < DTsell and DH[1] > DTsell then exitlong;
end;
```



Detrend S&P 500-Daily 01/02/90 - 08/04/95

Performance Summary: All Trades

Total net profit	$ 2847.80	Open position P/L	$ 0.00
Gross profit	$ 3344.60	Gross loss	$ -496.80
Total # of trades	21	Percent profitable	90%
Number winning trades	19	Number losing trades	2
Largest winning trade	$ 418.40	Largest losing trade	$ -430.80
Average winning trade	$ 176.03	Average losing trade	$ -248.40
Ratio avg win/avg loss	0.71	Avg trade(win & loss)	$ 135.61
Max consec. winners	13	Max consec. losers	1
Avg # bars in winners	26	Avg # bars in losers	65
Max intraday drawdown	$ -609.30		
Profit factor	6.73	Max # contracts held	1
Account size required	$ 609.30	Return on account	467%

Trading Tactics: This system works best in a trading market by finding the extreme levels above and below a set moving average. It doesn't trade that often, but when is does it is usually profitable. Find enough systems like this and you can trade on a regular basis with the trading odds on your side.

Source: The OEX Trader

Additional Systems:

Momentum Breakout: This system, designed by Jack Cahn from Creative Breakthrough, Inc. shows great promise for the intraday trader. As its name suggests this breakout system exploits of trading range type markets. We have included this system performance report to give traders an idea what an above average intraday trading system looks like. Contact Creative Breakthrough, Inc. at (407) 863-8282 for more information.

MoBrkOut#7d $SPX-4 min 06/05/95 - 06/08/95

Performance Summary: All Trades

Total net profit$	966.00	Open position P/L	$ 124.00
Gross profit	$ 1045.00	Gross loss	$ -79.00
Total # of trades	23	Percent profitable	83%
Number winning trades	19	Number losing trades	4
Largest winning trade$	235.00	Largest losing trade	$ -49.00
Average winning trade$	55.00	Average losing trade	$ -19.75
Ratio avg win/avg loss	2.78	Avg trade(win & loss)$	42.00
Max consec. winners	7	Max consec. losers	1
Avg # bars in winners	12	Avg # bars in losers	7
Max intraday drawdown$	-64.00		
Profit factor	13.23	Max # contracts held	1
Account size required$	64.00	Return on account	1509%

Adaptive Moving Average: The user function *Amafunc2* was used in the *Trix, Average RSI and Dynamic Zone* trading systems to improve their performance results. This new moving average is much more flexible then traditional averages because it is able to quickly following a markets reversal. For comparison reasons we have posted the performance results for the Average RSI using a simple average. The performance results for the Average RSI system using the Adaptive Moving Average can be found in an earlier section. The results listed below are good, but as you can compare the improvements are well worth the minor change. Contact Jurik Research at (408) 688-5893 for more information.

DCS RSI Double S&P 500-Daily 01/03/89 - 08/04/95

Performance Summary: All Trades

Total net profit$	**1741.20** *(S2087.30)*	Open position P/L	$ 0.00
Gross profit	$ 2288.10	Gross loss	$ -546.90
Total # of trades	27	Percent profitable	**81%** *(85%)*
Number winning trades	22	Number losing trades	5
Largest winning trade$	**362.10** *(S517.30)*	Largest losing trade	$ -297.30
Average winning trade$	104.00	Average losing trade	$ -109.38
Ratio avg win/avg loss	0.95	Avg trade(win & loss)$	64.49
Max consec. winners	8	Max consec. losers	2
Avg # bars in winners	23	Avg # bars in losers	54
Max intraday drawdown$	-616.40		
Profit factor	**4.18** *(5.45)*	Max # contracts held	1
Account size required$	616.40	Return on account	**282%** *(342%)*

Statistical Analysis

TradeStation comes with a barrage of statistics to help investors determine just how well they have designed their trading system. The performance summary is broken into long, short and a combination of all trades. This performance breakdown is a great asset in assessing the strengths and weakness of any system. Listed below are the main statistics we use in the initial evaluation of any trading system.

Level One Evaluation: *TradeStation performance report.*

- **Total net profit:** Was any money made?
- **Percent profitable:** How accurate is the system?
- **Ratio average win/loss:** How profitable is the system in comparison to its losses?
- **Consecutive winners:** How many winning trades occurred in a row?
- **Consecutive losses:** How many losing trades occurred in a row?
- **Profit Factor:** What was the gross profit/gross loss?
- **Return on account:** What was the net profit/Max drawdown?
- **Open Position:** Keep an eye on this number during the optimization process as it can greatly affect the outcome.

Level Two Evaluation: *RINA Systems, Inc. statistics program.*

Performance summaries offer investors some distinct advantages. However, they can also make an investor very lazy. TradeStation's performance summary is just the beginning. It's better to fully understand a system in the testing stage, rather then discover system flaws when real money is on the line.

Robustness: Eventually investors attempt to optimize their trading system. If the optimization process is used then the robustness of that process must be considered. All too often investors, new to optimizing, select the trading variables that generates the greatest profit. On paper this sounds great, however the majority of the profits could come from a single trade which could substantially limit future profit potential.

Optimized trading results should be weighted with respect to how closely they relate to the variables performance. As an example let's optimize a system with a single variable. The greatest profit comes from using 20, however variables 19 and 21 generate losses. A small change to the single variable, causes a dramatic fluctuation in the systems profitability. In this case the system is ***NOT*** robust. On the other hand, if variables 30 - 35 generate consistent profits, although lower than variable 20, the investor should consider these results to be more robust or reliable. This is a simple concept that is often overlooked.

Annual Performance Breakdown: The trading results of a system should be broken down on an annualized basis for further analysis. This helps to quantify exactly what type of market the system trades best. The TradeStation code for the ROC system is listed below with the addition of the *Yr* variable. Optimize on this variable to test the system on an annualized basis (i.e. 90 .. 95.)

```
Inputs: Len(2),Xavg(5), Yr(0);
Value1 = RateofChange(C,Len);
Value2 = Xaverage(RateofChange(C,Len),Xavg);

If Year(date) = Yr then
begin
        If Value2 > Value2[1] and Value2[1] < Value2[2]  then buy on close;
        If Value2 < Value2[1] and Value2[1] > Value2[2]  then sell on close;
end;
```

DCS ROC 1a S&P 500-Daily 01/02/90 - 08/04/95 *Results optimized for 1994.*

Performance Summary: All Trades

Total net profit$	1304.70	Open position P/L	$ -980.80
Gross profit	$ 2118.00	Gross loss	$ -813.30
Total # of trades	83	Percent profitable	58%
Number winning trades	48	Number losing trades	35
Largest winning trade$	185.90	Largest losing trade	$ -102.90
Average winning trade$	44.13	Average losing trade	$ -23.24
Ratio avg win/avg loss	1.90	Avg trade(win & loss)$	15.72
Max consec. winners	9	Max consec. losers	5
Avg # bars in winners	4	Avg # bars in losers	2

Max intraday drawdown$	-1104.90		
Profit factor	2.60	Max # contracts held	1
Account size required$	1104.90	Return on account	118%

Expanded Performance Summary: Systems that appear great on paper may in fact have serious design flaws just below the surface. A few extra calculations can separate the good system from the bad. Analyzing the trade by trade information supplied by TradeStation can shed some statistical light on the performance figures. Simply put, Standard Deviation and Coefficient of Variation can summarize the potential strengths and weakness of any system. The performance figures for two systems have been processed using the RINA Systems, Inc. statistics program, their results are listed below:

Trix S&P 500-Daily 01/03/89 - 08/04/95
Performance Summary: All Trades. 68% confidence interval.

Total net profit from	$ ******** to ********		
Gross profit from	$ 1206.353 to 9367.646		
Gross loss from	$ ******** to -569.712		
Total # of trades	162	Percent profitable	56%
Number winning trades	91	Number losing trades	71

Average winning trade	**from $ 13.257 to 102.941**	**Coef. of Variation 77.182%**
Average losing trade	**from $ -58.263 to -8.024**	**Coef. of Variation 75.790%**
Average trade(win & loss)	**from $ -40.718 to 76.938**	**Coef. of Variation 324.837%**

Detrend S&P 500-Daily 01/02/90 - 08/04/95
Performance Summary: All Trades. 68% confidence interval.

Total net profit from	$ -698.836 to 6394.436		
Gross profit from	$ 1455.461 to 5233.740		
Gross loss from	$ ******** to 19.105		
Total # of trades	21	Percent profitable	90%
Number winning trades	19	Number losing trades	2

Average winning trade	**from $ 76.603 to 275.460**	**Coef. of Variation 56.483%**
Average losing trade	**from $ -506.353 to 9.553**	**Coef. of Variation 103.846%**
Average trade(win & loss)	**from $ -33.278 to 304.497**	**Coef. of Variation 124.539%**

The primary information centers on the average winning and losing trades. After all, the object is to make as much profit as possible while simultaneously trading with some degree of consistency. The larger the coefficient of variation the less consistent the system performs. As an example if two trading systems generate approximately the same winning average, but one is more consistent, most traders would gravitate towards the consistent system. After all, a low coefficient of variation naturally implies a relatively stable trading performance. The RINA Systems, Inc. statistics program allows for quick and easy access to these bottom line figures.

Level Three Evaluation: *Additional Statistics.*
Once a system reaches level three its overall design is no longer in question. At this level developers are simply trying to fine tune the results. The criteria listed below offer investors added assurance that they fully understand the intricacies of their trading system.

Percent in the market: If you are comparing systems and find that both offer the same return, then consider the time it took to generate the return. If you receive the same return with half the time (risk), then you know which system is theoretically better.

Average return after a loss: How does the system bounce back after a loss. Calculate the average return after two, three or four losses in a row. You might just find that the best time to initiate a trade is after a number of consecutive losses.

Consistency: What is the average number of winning trades in a row. This is separate from TradeStation's max consecutive winning trades because in this instance we are looking for consistency. The bigger the average the more consistent the system.

Patience Factor: Calculating the longest flat period for the system may not improve its performance, but it can provide additional insight. Specifically it will make the investor more secure in knowing the system may be susceptible to prolonged period of down time. If this is to be expected investor may be less inclined to prematurely jump into trades.

Buy Hold Return: Is the system even worth the risk. All too often investors fail to calculate the buy/hold return for their system. If a system cannot keep pace with a buy/hold return then its probably time to go back to the drawing board. Comparison in this case should be made to systems that remain in the market at least 95% of the time.

OEX Trading Rules:

Timing the market with a trading system is one thing. Profiting from that system is completely different. Options trade in anticipation of the market. Therefore, accurate forecasting of the market increases your profit potential but does not assure it. A brief description of our high probability trading philosophy is listed below.

- Buy options don't sell them – unless they are covered or hedged.
- Buy options that are "in" or "at-the-money."
- Buy options with approximately 45 days until expiration.
- Liquidate positions no later then 25 days before expiration.
- Price the option at the time of purchase to avoid overvaluation.
  (see the attached **Volatility Index** article for more OEX pricing information.)
- Time the market following a well tested trading system.
- Use a broker that truly understands the intricacies of trading options.

S&P Index Investment Products:

S&P Futures – (312) 930-1000
OEX/SPX Options – (800) OPTIONS
AMEX Spiders – (800) THE-AMEX
Rydex Mutual Funds – (800) 820-0888

Recommended Readings:

Introductory Books

Fosback, Norman G., **Stock Market Logic.** (Dearborn)
Fullman, Scott H., **Options: A Personal Seminar.** (NYIF)
Kolb, Robert W., **Options: The Investors Complete Tool Kit.** (NYIF)
Murphy, John J., **Technical Analysis of the Futures Markets.** (NYIF)
Pring, Martin J., **Technical Analysis Explained.** (McGraw Hill)
Weinstein, Stan, **Secrets for Profiting in Bull and Bear Markets.** (Dow Jones)
Zweig, Martin, **Winning on Wall Street.** (Warner Books)

Advanced Books

Bressert, Walter, **The Power of Oscillator/Cycle Combinations.** (Traders Press)
Chande, Tushar S., & Kroll, Stanley, **The New Technical Trader.** (Wiley)
Daigler, Robert T., **Advanced Option Trading.** (Probus)
DeMark, Thomas R., **The New Science of Technical Analysis.** (Wiley)
Elder, Alexander, **Trading for a Living.** (Wiley)
Eng, William, **Options - Trading Strategies That Work.** (Dearborn)
Eng, William, **The Technical Analysis of Stocks, Options, & Futures.** (Probus)
Krause, Robert P., **The Volatility Handbook.** (Traders Press)
Le Beau, Charles, **Computer Analysis of the Futures Market.** (Traders Press)
McMillan, Lawrence G., **Options as a Strategic Investment.** (NYIF)
Murphy, John, J., **Intermarket Technical Analysis.** (Wiley)
Nison, Steve, **Japanese Candlestick Charting Techniques.** (NYIF)
Plummer, Tony, **Forecasting Financial Markets.** (Wiley)
Pring, Martin, **Market Momentum.** (Probus)
Shaleen, Kenneth H., **Technical Analysis and Option Strategies.** (NYIF)
Wagner, Gary S., & Matheny Bradley L., **Japanese Candlestick Charting.** (Wiley)
Wilder, Wells J., **New Concepts in Technical Trading Systems.** (Trend Research)
Wilmott, Paul, & Dewynne, Jeff, **Option Pricing.** (Oxford Financial Press)

Newspapers/Magazines

Futures Magazine
Investor's Business Daily
Technical Analysis of Stock's and Commodities Magazine
Wall Street Journal

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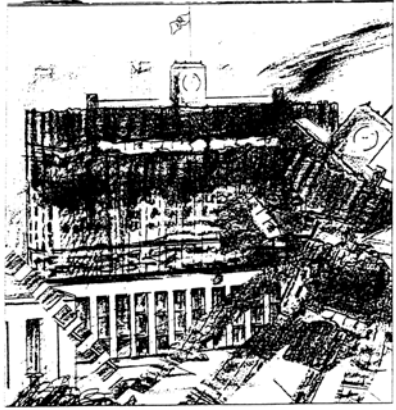


The Volatility Index

David Stendahl explains the volatility index (VIX), which measures volatility based on the implied values of eight Standard & Poor's 100 options from which the weighted volatility index is derived when combined.

by David C. Stendahl

The volatility index (VIX) is a measurement of the market's volatility. It specifically measures volatility based on the implied values of eight Standard & Poor's 100 (OEX) options that when combined calculate the weighted volatility index. The Chicago Board of Options Exchange (CBOE) has been using this index for five years and has only recently made it publicly available.

THE BASICS

In its basic form, the VIX can help determine if OEX options are undervalued or overvalued. Nothing frustrates an option trader more than accurately predicting the market's direction, only to lose money buying an overvalued option. Even if the market moves in the trader's direction, he can still lose money if the option was overvalued when purchased. The premium of the option declines in value simply due to supply and demand factors. Unfortunately, many option traders spend more time analyzing the market's direction than they do pricing the specific option. Time constraints and a lack of computer power make it virtually impossible for the independent trader to price an option accurately.

The VIX overcomes those drawbacks by allowing traders access to a real-time assessment of the market's volatility. Any broker with access to a quote machine can bring up a current valuation of the index. To make money in the options market, traders must be aware that volatility direction is just as important as price direction. Simply, if traders ignore the market's volatility, they are dramatically stacking the odds against themselves.

INTERPRETATION

I use daily data for the volatility index from data vendor Dial Data. I then plot 20-day Bollinger bands around the data to help quantify the level of the market's volatility. Bollinger bands are simply two standard deviations

CHRISTINE MCINTOSH

using a lookback period of 20 days, plotted above and below the 20-day moving average. This is not a foolproof valuation method, but it does offer traders a method by which to measure the market's volatility on a real-time basis.

When used with Bollinger bands, the VIX (Figure 1) is easy to understand and gauge. The VIX moves between the upper and lower bands, stopping periodically at the 20-day moving average for support or resistance. When the index is near the upper band, option prices are considered to be overvalued. This should be considered a selling opportunity. However, when the index is near the lower band, options are considered to be undervalued or at least fairly priced.

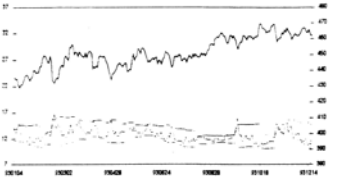


FIGURE 1: VOLATILITY INDEX AND BOLLINGER BANDS. *Notice how the market tended to reverse direction when the volatility index reached the upper band.*

An option trader should consider situations such as these to be buying opportunities. Other popular technical tools, such as Gerald Appel's moving average convergence/divergence (MACD) and J. Welles Wilder's relative strength index (RSI), offer traders further insight into the market's valuation.

TRADING EXAMPLE

A trading situation occurred in September 1993, when Boris Yeltsin was fighting with the Russian parliament. Those of us who held put options at the time made a profit not only because the market fell in value, but more so because the market's volatility increased. Options quickly became overvalued as speculators bid them up above normal levels. The VIX moved into overvalued territory, presenting traders with a perfect selling opportunity.

In this case, the volatility worked like a rubber band on the options, causing them to prematurely stretch or increase in value. When market conditions push options to these levels, *sell*. At a minimum, traders should recognize these areas as poor buying opportunities.

OPTION SCREENING DEVICE

The VIX can also be used as a screening indicator. A conservative trader might choose to go long the OEX options market only if the VIX is close to the lower band. This will prevent traders from jumping on board every trading opportunity regardless of price. A quick look at the VIX should advise most traders when to pass on a trading situation and wait for a better opportunity. The bottom line is that the risk/reward ratio is always against you when options are in overvalued territory.

The better strategy is to wait for the options market to stabilize before blindly jumping into an unprofitable trade. Most investors who trade the long side of the market lose simply because they do not correctly price their options. The VIX offers OEX traders a potent real-time pricing model without having to rely on massive computer power.

During the 1993 trading year, it was easier to make money trading puts than calls. Calls that looked attractive from a chart basis were usually overvalued. The reverse occurred in trading puts; the options were often fairly valued when technical indicators pointed to the downside. Although the VIX is still relatively new to the trading community, it has become an important component of my trading programs, and it could become equally important in yours.

David C. Stendahl, the president and chief options analyst of The OEX Trader Inc., an option advisory service that specifically trades OEX stock index options, can be reached at 513 575-9128 or by fax at 513 575-4325.

REFERENCES

Appel, Gerald [1985]. *The Moving Average Convergence-Divergence Trading Method*. Advanced Version. Scientific Investment Systems.

Bollinger, John [1992]. "Using Bollinger bands." *Technical Analysis of* STOCKS & COMMODITIES. Volume 10: February.

Wilder, J. Welles [1978]. *New Concepts in Technical Trading Systems*. Trend Research.

Wilmott, Paul, Jeff Dewynne and Sam Howison [1993]. *Option Pricing: Mathematical Models and Computations*. Oxford Financial Press.

The OEX Trader Inc., 5942 Wood Point Dr., Milford, OH 45150, 513 575-9128, fax 513 575-4325.

VIX System

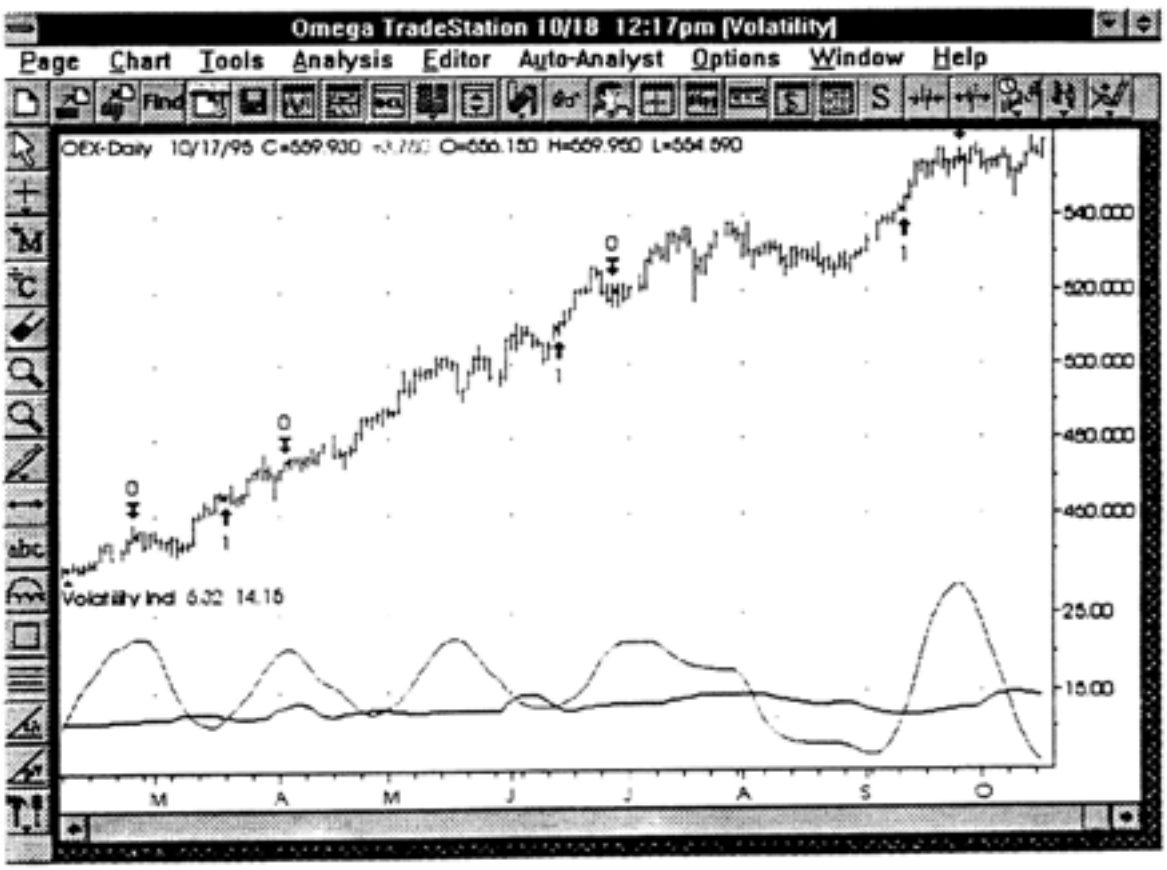
System Description: This system trades based on the market's own volatility. Specifically, the system buys the market during periods of increased volatility and quickly liquidates the traded at the first sign of consolidation. The key element to this system is the crossing of the Volatility Index (VIX) with the markets historical volatility (Hvol).

TradeStation Code:

```
Input: Len1(21),Len2(15),Avg1(12),Avg2(3);
Vars: Vix(0),Hvol(0), Btest(false);

Vix = Amafunc2(C of data2,Avg1);
Hvol = Amafunc2(((StdDev(C,Len1)*Len2)/C)*100,Avg2);
Btest = Hvol > Hvol[1] and Vix < Vix[1];

If Hvol crosses above Vix and Btest = true then buy market;
if Hvol < Hvol[1] and Hvol[1] > Hvol[2] then
begin
        exitlong;
        Btest = false;
end;
```



Vol/VIX OEX-Daily · 01/02/86 - 10/16/95

Performance Summary: All Trades

Total net profit$	1350.50	Open position P/L$	0.00
Gross profit $	1847.70	Gross loss	$497.20
Total # of trades	36	Percent profitable	64%
Number winning trades	23	Number losing trades	13
Largest winning trade$	385.80	Largest losing trade $	-86.50
Average winning trade$	80.33	Average losing trade $	-38.25
Ratio avg win/avg loss	2.10	Avg trade(win & loss)$	37.51
Max consec. winners	7	Max consec. losers	2
Avg # bars in winners	9	Avg # bars in losers	6
Max intraday drawdown$	-199.20		
Profit factor	3.72	Max # contracts held	1
Account size required$	199.20	Return on account	678%

Trading Tactics: This trading system can be used by option and mutual fund traders alike, to find high probability trading opportunities. Option trades in specific can profit from the knowledge that as these functions near their crossing, the market has a tendency to become more volatile. This added volatility can occur just before or just after the crossing, so the VIX and Hvol functions should be closely monitored over time. We suggest reviewing our Volatility Index article in the May 1994 issue of Stocks and Commodities for additional information concerning the VIX Index.

Source: The OEX Trader

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Dynamic Zones: evolving indicators

Extreme investing employs the use of oscillators to exploit tradable trends in the market. This style of investing follows a very simple form of logic: only enter the market when an oscillator has moved far above or below traditional trading levels. However, these oscillator based systems, lack the ability to evolve with the market because they use fixed buy and sell zones. Traders typically use one set of buy and sell zones for a bull market and substantially different zones for a bear market.

Herein lies the problem. Once traders begin introducing their market opinions into trading equations, by changing the zones, they negate the system's mechanical nature. The objective is to have a system automatically define its own buy and sell zones and thereby profitably trade in any market – bull or bear. Dynamic Zones offer a solution to the problem of fixed buy and sell zones for any oscillator based systems.

An indicator's extreme levels can be quantified using statistical methods. These extremes level are calculated for a certain period of time and serve as the buy and sell zones for the trading system. The repetition of this statistical process creates values that become the Dynamic Zones. The zones are calculated in such a way that the probability of an indicator value rising above, or falling below, the Dynamic Zones is equal to a given probability input set by the trader.

To better understand Dynamic Zones, let's first describe them mathematically and then explain their use in a trading example.

The Dynamic Zone definition:

Find V such that

$$\text{for Dynamic Zone Buy: } P\{X<V\}=P^*$$
$$\text{for Dynamic Zone Sell: } P\{X>V\}=P^*$$

Where P^* is the probability set by the trader, X is the value of the indicator for the selected time period, and V represents the value of the Dynamic Zone.

The probability input P^* can be adjusted by the trader to encompass as much or as little data as the trader would like. The smaller the probability, the fewer data values above and below the Dynamic Zones. This translates into a wider range between the buy and sell zones. If a 10% probability is used, only those data values that make up the top 10% and bottom 10% for an indicator are used in the construction of the zones. In other words, 80% of the values will fall between the two extreme levels. Because Dynamic Zone levels are penetrated so infrequently, traders know that the market has truly moved into overbought or oversold territory. Figure 1 illustrates the buy and sell zones for the S&P 500 market using a smoothed 6-day %R indicator. Notice the area above and below the Dynamic Zones constitute the upper and lower 10% boundaries. The zones appear to evolve with the market because they use a rolling 90-day period of indicator values in their construction.

Trading Example:
As an example, let's say a 14-day RSI system has been profitable over the last few years using the generally accepted fixed buy and sell zones of 20/80. The system buys the market as the RSI indicator crosses above the 20 level and sells when it crosses below the 80 level. The system remains in the market 100% of the time. Using these set parameters, the RSI oscillator performs well in a bull market, but breaks down in bear markets. The system's temporary failure may not be entirely due to the indicator itself, but rather may be caused by the system's strict buy and sell zones. In this case the zones should be altered to fit the declining market. In a bear market the buy and sell zones of 20/70 may work more efficiently.

The Dynamic Zones work in a similar fashion, except the zones adjust themselves automatically – increasing for the bull and decreasing for the bear. The parameters that construct the RSI indicator remain constant, but the zones adjust themselves to better reflect the current trading environment. This dynamic adjustment is accomplished by using a rolling average of indicator values in the calculation of the zones. The key after all is to have the mechanical system make its own decisions.

Indicator Comparison:
The principles behind the Dynamic Zones can be used with any oscillator that ranges between the 0 and 100 levels. An eight year time period (1/4/88 - 9/15/95) was used to trade the S&P 500 Cash index. Each indicator based system used a 14-day time period parameter that remained in the market 100% of the time. The chart below lists several popular indicators, comparing the trading results between Dynamic Zones and fixed zones. The Dynamic Zones used 100 days of data with a probability factor of 10%. The fixed zones used the traditional 20/80 levels. These systems were designed for comparison purposes only and are not recommended for actual trading.

	Win%	Win/loss Ratio	Profit Factor	Account Return	Max. Drawdown
DZ %R	68%	.69	1.43	147%	$853.40
Fixed %R	63%	.68	1.14	45%	$1099.80
DZ RSI	70%	.64	1.51	126%	$935.20
Fixed RSI	60%	.78	1.17	16%	$1263.30
DZ FastK	68%	.67	1.45	154%	$853.40
Fixed FastK	63%	.68	1.14	45%	$1099.80

Any oscillator system that attempts to trade a market whether it be bullish, bearish or neutral, should benefit from the use of Dynamic Zones. The trading results from these three trading systems confirm these findings. Indicators that have the ability to adjust their own buy and sell zones should in fact outperform those indicators that use fixed zones. Of course further refinements can be made to the Dynamic Zone systems to improve the trading results. These improvements include: separate probability inputs for the two zones, various exit signals, and the use of money management techniques. Dynamic Zone trading systems are limited only by the imagination of the trader.

Real Life Investing:
Facts and figures make for an interesting articles, but let's take a look at an actual trading system and really put a Dynamic Zone system to the test. The system we have created uses the William's %R indicator (parameter 1) smoothed by a special adaptive moving average (AMA) (parameter 2) compliments of Jurik Trading. The system is simple and straight forward buying and exiting the S&P 500 Cash index as the indicator crosses its respective extreme zones.

In this example, the extreme zones are calculated by the Dynamic Zone program using the Time variable of 90 days, and the Probability (sensitivity) factor of 9%. The actual Dynamic Zone program allows users to create indicators using a total of six separate user parameters, in addition to the Time and Probability factors. If necessary each of these parameters can be optimized by TradeStation. The specific Dynamic Zone system outlined below can be used for trading options, futures or even mutual funds. The system is specifically designed to recognize high probability trading points set by the S&P 500 market.

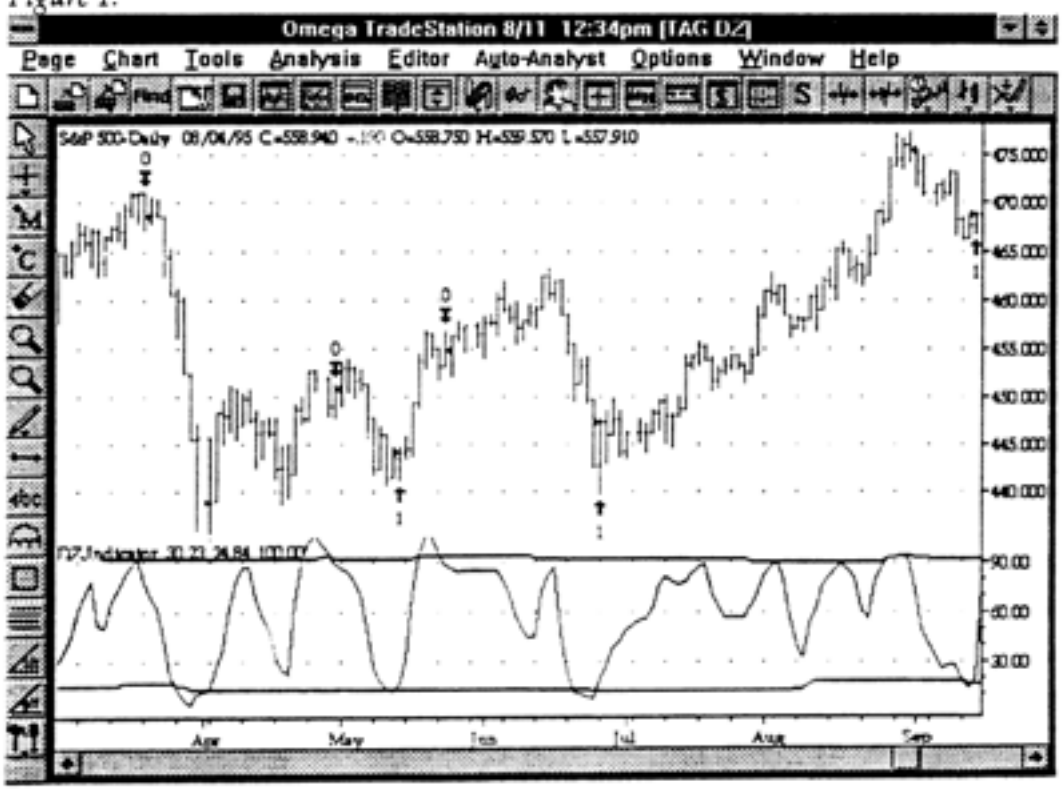
TradeStation Code: *Partial code only.*

Inputs: Par1(6),Par2(3); **{Inputs: 90 day time period, .09 probability factor}**

Indicator =Amafunc2(PercentR(Par1), Par2);

IF Indicator crosses above BuyZone then Buy at the market;
IF Indicator crosses below SellZone then Exitlong;

Figure 1.



Dynamic Zones S&P 500-Daily 01/04/88 - 09/15/95

Performance Summary: All Trades

Total net profit	$ 3342.40	Open position P/L	$ 0.00
Gross profit	$ 3605.40	Gross loss	$ -263.00
Total # of trades	43	**Percent profitable**	79%
Number winning trades	34	Number losing trades	9
Largest winning trade	$ 402.80	Largest losing trade	$ -100.00
Average winning trade	$ 106.04	Average losing trade	$ -29.22
Ratio avg win/avg loss	3.63	Avg trade(win & loss)	$ 77.73
Max consec. winners	9	Max consec. losers	2
Avg # bars in winners	20	Avg # bars in losers	20
Max intraday drawdown	$ -256.60		
Profit factor	13.71	Max # contracts held	1
Account size required	$ 256.60	**Return on account**	1303%

The performance of this system overall is well above average. Now let's dissect the system even further by reviewing the trading results over various time periods. We will begin with an annualized break down of the key performance figures. These results reflect trades that were initiated and closed within the calendar year.

Year	# of Trades	% Profit	Win/Loss Ratio	Profit Factor	Account Return
1988	4	100%	100.00	100.00	295%
1989	6	83%	2.37	11.03	75%
1990	5	60%	4.35	6.52	110%
1991	5	100%	100.00	100.00	249%
1992	5	80%	5.57	22.26	62%
1993	8	75%	7.25	21.77	945%
1994	7	57%	5.53	7.37	202%
1995*	3	100%	100.00	100.00	741%

* *1995 YTD performance figures through September 15, 1995.*

The next chart itemizes the systems performance over extended time periods. The trading results remain extremely consistent through various market conditions.

Years	# of Trades	% Prof.	Win/Loss Ratio	Profit Factor	Return on Act.
1988 - 95*	43	79%	3.63	13.71	1303%
1989 - 95*	36	78%	4.36	15.24	1243%
1990 - 95*	32	78%	1.43	5.10	354%
1991 - 95*	27	78%	6.51	22.78	974%
1992 - 95*	20	75%	5.86	17.57	695%
1993 - 95*	15	60%	4.05	6.07	439%
1994 - 95*	6	83%	1.89	9.44	224%

** 1995 YTD performance figures through September 15, 1995.*

No matter how you slice it, this special William's %R trading system is able to outperform any indicator based system in its class. The trading logic behind the Dynamic Zones can add to any oscillator based trading system.

Conclusion:

Dynamic Zones offer traders a different perspective on the typical trading systems. The markets are constantly changing, and if oscillator trading systems are to remain competitive, they must learn to evolve with the markets. Dynamic Zone based trading systems, can actually quantify the extremes and thereby improve the trading process. And most importantly these trading improvements can be used to increase the profit potential in any market.

Performance Summary *Plus*

Test Data: S&P 500 **Test Period:** 1/1/90 – 12/31/94

Trade Analysis:

Net profit	Percent profitable
Gross profit	Ratio avg. win/loss
Gross loss	Profit factor
Number of trades	Maximum drawdown
Buy/Hold return	Return on account
System return	Annualized return
Average trade	Average trade +/- 1 STD
One Standard Deviation (1 STD)	Coefficient of variation

Recent Trading Breakdown

Trades	% +/- Average P/L	Win/Loss	# Wins	% Profitable
1 - 5				
6- 10				
11 - 15				
16- 20				

Winning Trade Analysis:

Number of winning trades	
Average win	Average win +/- 1 STD
One standard deviation (1 STD)	Coefficient of variation
Largest profit	% Above average
Smallest profit	% Below average

Consecutive Winning Series Data

Consec. Winners	# of Series	Average Gain/Series	Average Loss Next Trade
1			
2			
3			
4			
5			
...			

Losing Trade Analysis:

Number of losing trades

Average loss
One standard deviation (1 STD)

Average loss +/- 1 STD
Coefficient of variation

Largest loss
Smallest loss

% Above average
% Below average

Consecutive Losing Series Data

Consec. Losses	# of Series	Average Loss/Series	Average Gain Next Trade
1			
2			
3			
4			
5			
...			

Time in the market:

Total time in the market (periods)
% time in the market
Longest flat period

Average time in trades
Average time between trades

Average time in winning trades
Average time between winning trades

Average time in losing trades
Average time between losing trades

Equity Curve Breakdown

Average time between equity:

- Peaks
- Troughs
- Peak – Trough
- Trough – Peak

Trading summary:

Rolling Period Analysis

Period	P/L	Win/Loss	# Trades	# Wins	% Profitable
1994					
1993 - 94					
1992 - 94					
1991 - 94					
1990 - 94					
...					

Yearly Analysis

Period	P/L	Win/Loss	# Trades	# Wins	% Profitable
YTD					
12 month					
1994					
1993					
1992					
1991					
1990					
...					

Monthly Analysis

Period	P/L	Win/Loss	# Trades	# Wins	% Profitable
1st Half					
2nd Half					
1st Quarter					
2nd Quarter					
3rd Quarter					
4th Quarter					
Jan.					
Feb.					
Mar.					
Apr.					
May					
Jun.					
Jul.					
Aug.					
Sep.					
Oct.					
Nov.					
Dec.					

TradeStation Software Programs

Dynamic Zone System

This TradeStation add-on program assists traders and investors alike in the development of statistically based trading systems. The Dynamic Zone program has six separate parameter inputs, allowing for complex system designs. Additionally, the Dynamic Zone program comes with two more inputs, Time and Probability. These inputs allow for the testing of different time frames with various data sensitivity. Each of these eight parameters can optimized to help in the creation of a system that can actually evolve with the market.

Users receive five easy to load TradeStation files:
1) User input Function.
2) DZ System.
3) DZ Indicator.
4 & 5) Buy and Sell Zone user functions.

Dynamic Zone System: Cost $99.95.

As a separate offer the Jurik Moving Average (JMA), referred too in our code as the Amafunc2, is also available for sale. This specially designed Adaptive Moving Average offers added profit potential in any TradeStation code that presently uses a moving average. Cost $205.

Performance Summary *Plus*

This TradStation add-on program assists traders in thoroughly evaluating their trading systems. With a few easy key strokes, traders can access a pop-up window, inside TradeStation, with a number of evaluation tools. Our Performance Summary Plus software reads the trade-by-trade information, generated by TradeStation, and organizes it in an efficient format. Specifically this evaluation tool helps to find hidden system flaws as well as the occasional trading improvement. In the near future this program will contain detailed statistical evaluation tools centering on probabilities.

Performance Summary Plus: Cost $149.00
(this is a reduced cost for TAG Seminar participants)

Order information:

Please make checks payable to:
RINA Systems Inc.
5942 Woods Point Drive
Milford, Ohio 45150

Include your TradeStation Block Number for system verification purposes.