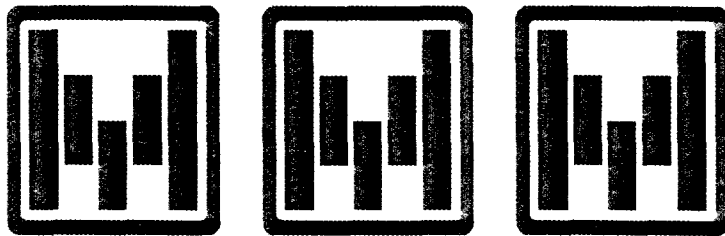


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The High-Low Index as a Tool to Enhance Returns

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Submitted by Harold B. Parker, Jr., CMT

Introduction

The analysis of new 52-week high and low data on the NYSE can provide valuable insight into the near- to intermediate-term trend of the market. These data have been used in a wide variety of ways over the years, but most commonly they are used as a ratio (high divided by low) or as a difference (high minus low).¹ The interpretation of the data has generally fallen into two general categories as well. One method relies on the data to confirm or diverge from the popular indexes such as the Dow Jones Industrials or the S&P 500. The logic behind this method is that a healthy market which is making new highs should be accompanied by a large and/or rising number of individual stocks making new highs as well. New highs in the indexes without new highs in the high-low indicator are considered suspect. The reverse would be true of bottoms. The second general use of the high-low indicator has been as an overbought-oversold indicator. The logic behind this method is that extremes in the indicator point to unsustainable extremes in the market. Most forecasts using these two types of interpretations of high-low data are rather subjective.

The shortcoming of subjectivity of interpreting the high-low index was addressed by Abe Cohen with the Chartcraft High-Low Index. He displayed his High-Low Index on a point and figure chart. The index is constructed by dividing the number of new daily 52-week highs on the NYSE by the sum of new highs and new lows. A simple 10-day moving average of the resulting percentage data ($((\text{Highs}/(\text{Highs} + \text{Lows}))/10)$) is then plotted on a point and figure chart using a box size of 2% and a three-box reversal and bounded on the top by 100 and the bottom by 0. The result is a chart that is elegant in its simplicity and objectivity because it filters out the "noise" of small (<6%) reversals and shows reversal points clearly (the reversal from X's to O's or vice versa is unequivocal). Cohen considered levels below 10% to be oversold and those above 90% to be overbought and a reversal from those extremes to be buy (from oversold) and sell (from overbought) signals.

Cohen's logic seems to go one step beyond that of previous indicators. Using the decision rules in the paragraph above, this indicator gives not only an easily determined indication of extreme overbought and oversold levels, but also provides an objective method for deter-

mining when these conditions are reversing. This significantly enhances the usefulness of high-low data because it allows them to be used as a timing tool for intermediate-term moves. Unfortunately, the market rarely gets to the extreme 10% or 90% levels before reversing, and this can strand the investor in a reversing market without getting a signal from the indicator. Cohen's rules resulted in only two completed signals in the 10-year period studied. When invested, the Cohen method returned a respectable compounded annualized rate of return of 18.9%. However, it was in the market only 16% of the time and captured only a little over a quarter of the total up move. For more useful entry and exit signals, some alteration of the decision rules seems in order.

Method

Testing was done using Cohen's calculation and plotting methods, described above. Only long positions were taken using the following decision rules:

Buy: Indicator reaches 40% or less and reverses up by 6 percentage points.

Exit: Indicator reaches 70% or greater and reverses up by 6 percentage points.

Sell Stop: Indicator reverses prior to the sell signal above and declines to a level below the low of the column of O's preceding the buy signal. The sell stop would be triggered, for instance, if the indicator falls to 38 and reverses up to 44 or greater (creating a bottom at 38) and then falls to 36 prior to rising to 70.

The indicator is illustrated in Figure 1.

FIGURE 1

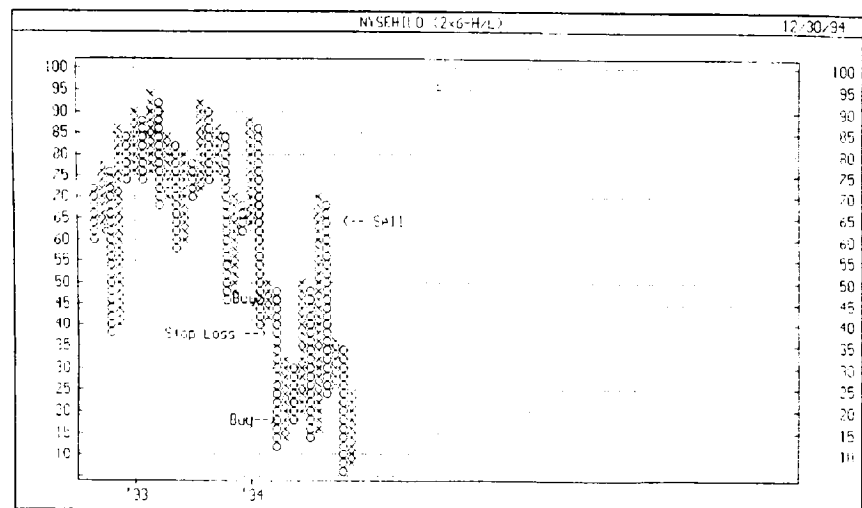


TABLE 1

HIGH-LOW INDICATOR										
Buy Date	S&P 500	Sell Date	S&P 500	Gain/Loss	Days held	% Gain	Annualized	Max Adv	Cumulative	
				Loss		Loss	% Gain/Loss	Excursion	Equity	
12/19/84	167.16	1/4/85	163.68	-3.48	15	-2.08%	-50.66%	2.08%	163.68	
10/2/85	184.06	1/22/86	203.49	19.43	110	10.56%	35.03%	1.19%	180.96	
8/12/86	243.34	9/11/86	236.18	-7.16	29	-3.35%	-42.21%	3.35%	174.69	
9/29/86	232.23	11/18/86	236.78	4.55	52	1.96%	13.75%	1.00%	178.32	
1/2/87	246.45	3/31/87	291.70	45.25	89	18.36%	75.30%	0.00%	211.06	
4/30/87	288.36	5/19/87	278.62	-9.74	19	-3.03%	-58.22%	3.03%	204.66	
6/3/87	293.47	7/24/87	309.27	15.80	51	5.38%	38.53%	0.01%	215.68	
9/24/87	319.72	10/15/87	298.08	-21.64	21	-6.77%	-117.64%	6.77%	201.08	
1/4/88	255.94	3/24/88	263.35	7.41	80	2.90%	13.21%	5.20%	206.90	
6/2/88	265.33	6/27/88	269.06	3.73	25	1.41%	20.52%	0.06%	209.81	
8/29/88	262.33	11/2/88	279.06	16.73	63	6.38%	36.95%	1.52%	223.19	
11/28/88	268.64	2/13/89	292.54	23.90	75	8.90%	43.30%	0.00%	243.05	
11/1/89	341.20	1/15/90	337.00	-4.20	74	-1.23%	-6.07%	2.52%	240.06	
2/8/90	332.96	6/14/90	362.90	29.94	126	8.99%	26.06%	2.65%	261.64	
9/18/90	318.60	5/1/91	380.29	61.69	223	19.36%	31.69%	7.26%	312.30	
12/5/91	377.39	2/25/92	413.84	36.45	80	9.66%	44.07%	0.00%	342.47	
4/14/92	412.39	5/19/92	416.37	3.98	35	0.97%	10.06%	0.96%	345.77	
10/19/92	414.97	12/15/92	432.57	17.60	56	4.24%	27.64%	0.00%	360.44	
4/29/94	450.91	9/12/94	466.21	15.30	133	3.39%	9.31%	2.09%	372.67	
10/17/94	468.96	11/3/94	467.91	-1.05	16	-0.22%	-5.11%	1.73%	371.63	
Average					12.72	08.00	4.29%	22.01%	2.97%	

BUY & HOLD										
Buy Date	S&P 500	Sell Date	S&P 500	Gain/Loss	Days held	% Gain	Annualized	Maximum	Cumulative	
				Loss		Loss	% Gain/Loss	Drawdown	Equity	
12/19/84	167.16	11/3/94	467.91	300.75	3564	179.92%	11.14%	34.23%	467.91	

FIGURE 2

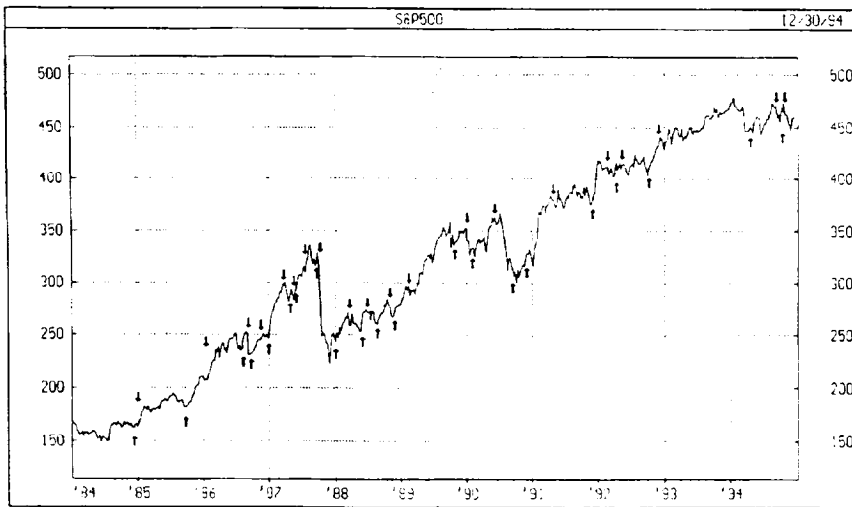
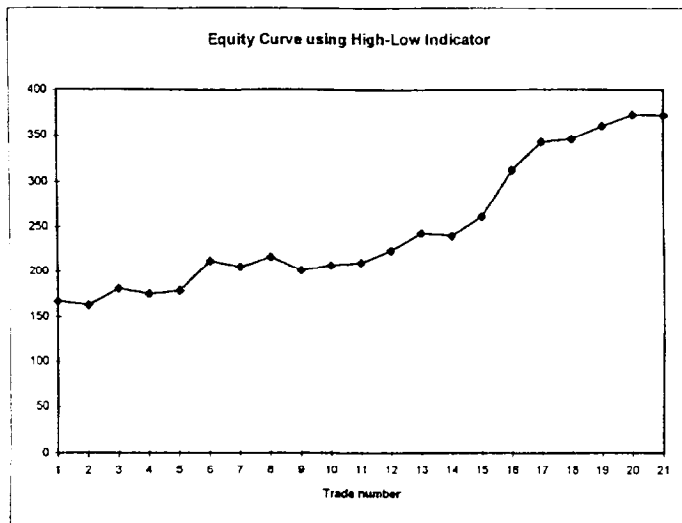


FIGURE 3



These decision rules were established empirically based on the author's experience. The levels of 405 and 705 looked as if they would give a good balance of profitable signals vs. "whipsaws" and would achieve the primary objective of developing a tool to assist an equity investor in achieving results superior to a buy and hold strategy. Therefore, the investor is either long or out of the market for the purposes of the test. A secondary objective as to have drawdowns due to market fluctuations that were significantly less than a buy and hold strategy.

The testing was done over the 10-year period from 1985-1994. This period was chosen because first, the method for reporting the underlying data was consistent, and second, it produced enough signals to give reliable results.²

Results

The results for the study period indicate that the high-low index can be very useful for timing entry into the equity market. The buys and sells are listed and summarized in Table 1 and illustrated in Figure 2.

The high-low index and the decision rules described above resulted in the investor being in the market for a total of 3.76 years out of the 9.74 years between the start of the first signal and the end of the last signal. The compounded annual rate of return³ while invested was 23.57%, excluding dividends. The maximum adverse excursion was 7.26%. (*Maximum adverse excursion is the maximum percentage decline in equity due to market fluctuation of the equity placed into each trade.* This differs from the term *drawdown*, which is the maximum percentage decline in equity due to market fluctuation from the previous peak level of equity.)

The equity curve for using the high-low index during the study period is contained in Figure 3. The starting point for the curve is the S&P 500 level at the beginning of the test period.

If one had instead bought the S&P 500 at 167.16 on December 19, 1984 and sold at 467.91 on November 3, 1994, one would have achieved an 11.14% compounded annual rate of return, excluding dividends, for the 9.74 year period. Using the buy and hold method, the maximum drawdown would have been 34.23%.

Discussion and Conclusion

The High-Low indicator produced reliable signals and performed well versus a buy and hold strategy during a period when buy and hold worked extremely well. The trading signals for the study period had the

following favorable characteristics:

- 70% were profitable (20% with no adverse excursion)
- High annualized rate of return while invested (23.57%)
- Low adverse excursion from entry (7.26% maximum and 2.07% average)
- Ratio of % gain to % loss was very favorable (7.31% avg. gain vs. 2.78% avg. loss)
- Total Gain/Maximum Drawdown ratio was 9.46 vs. a ratio of 2.67 for S&P 500 buy and hold
- A Student's T test of the results indicates that they are highly significant, with only a 1% probability that they were achieved by chance

In addition, the indicator has the advantages of being objective and easily maintained from readily available data.

The indicator gave an average of only two completed signals per year and the exit rules had an investor out of the market for two-thirds of the time studied. These characteristics may be considered to be either a positive or negative depending on one's investment objectives; however, they did result in lower-than-market risk. The most significant disadvantage to the indicator would seem to be that it tends to be early with its exit signals. Examination of Figure 2 reveals that one would have foregone significant upside movement in both 1986 and 1989 by using this indicator as an exit tool. This would suggest that other indicators might be useful adjuncts to more precisely time market exits. It might also be useful to examine some other decision benchmarks in the future. Nevertheless, this indicator, with the current benchmarks, resulted in the investor capturing two-third of the points in the up move in the market during the study period while being invested for only one-third of the time.

¹Pring, Martin J., *Technical Analysis Explained*, p. 232

²Colby, Robert W. and Thomas A. Meyers, *the Encyclopedia of Technical Market Indicators*, p. 504. It should be noted that consistency is an issue because the method that was used by most sources to report daily new highs and lows on the NYSE changed in early 1978. Previously, data between January 1 and mid-March of the current year represented new highs or lows achieved since January 1 of the previous year. Data for the period from mid-March forward represented new extremes reached from January 1 in the current year to the current date. This resulted in high-low data for a base period of from 2-1/2 to 14-1/2 months. The data used in this study follows the new format, i.e., true daily new highs and lows for a trailing 52 week base period.

³Annualized rate of return was used because the author's decision rules resulted in being invested for nearly four years or a little over 1/3 of the total time studied.

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