

Planes, Trains and Automobiles

A Study of Various Market Thrust Measures

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PLANES, TRAINS AND AUTOMOBILES

Market rallies have been appropriately compared to the launch of a rocket. In order for a rocket to have enough momentum to exit the earth's atmosphere, the ship must be launched with enough initial force to defy the earth's gravity and penetrate the earth's atmosphere. The theory is the market has an atmosphere of boundaries as well, made up of old trading ranges, resistance lines, and the tendencies of investors to pocket short term profits. If the market is to have a chance of overcoming its own atmospheric constraints, the initial rally must be propelled with a thrust adequate in force to send the market through the levels of resistance that thwarted previous such launches. Studies (ref 1) have shown that the vast majority of Bull Markets in the last 50 years have been launched with an initial surge that is of the 4 standard deviation (or once every 4 years) from the norm variety.

After over a decade without a lot of guidance from traditional market breadth thrust indicators, such as a ten day 2/1 NYSE Advance/Decline ratio, there were three sightings in 2009 and a renewed interest in their historical significance. The intent of my initial research effort was to revisit the current applicability of these once treasured signals. The results of my research led me to a refinement of some old trading approaches, and more importantly, some new discoveries that are described in this paper. The genesis of my research effort was "If I am going to incorporate these signals into my work, what will I trade if they decide to go AWOL again at some point in the future. I discovered that just as there are several modes of transportation that can be used to help us travel from point A to point B, there are several different measures of stock market internals that are equally adept at thrusting the market from one location to another. Planes, Trains and Automobiles are all capable of getting us go our destination.

BACKGROUND

This research can be summarized in the five stages below.

1. Revisit the significance of Breadth (Adv/Dec) Thrust in launching major market moves.
2. Evaluate the utility of evaluating market momentum via measures other than Breadth.
3. Study the statistical significance of Reverse Thrust, commonly referred to as capitulation.
4. Study the significance of lack of Thrust signal sightings over extended periods.
5. Combine all the above research into an Intermediate time frame trading model .

MEASURES OF MARKET MOMENTUM

My approach was to evaluate several measures of market momentum from several angles of tape activity over time periods from 1 to 100 days and identify those that were highly reliable in signaling intermediate (6-12 month) moves in the S&P 500. I studied Breadth (Advances vs. Declines), Up vs. Down Volume, Price Change, Trin (Volume in Advancing vs Declining issues), Number of Issues making New 12 Month Highs and 12 Month Lows. Provided in this paper is a summary of what I consider the most interesting and statistically significant results, at least from the perspective of Thrust Signals, and a tape trading model reflecting the findings.

BREADTH THRUST ANALYSIS

The Cumulative Advance Decline Line on the NYSE is the traditional measure of market breadth. It is customarily used because it yields a very broad measure of the number of predominantly blue chip issues participating in either upward or downward moves. Similar analysis could and has successfully been performed with other indices as well as derivations of the NYSE.

The breadth measure I have gravitated towards is simply the percent of daily Advances over an N day period as a percentage of both Advances and Declines (or Issues Traded minus Unchanged) during that same period. I found when using the traditional NYSE data set, all time frames from 1 to 20 days resulted in some degree of statistically significant breadth thrust results at certain levels of measurement. For the purpose of presentation and consistency across tape measures, the time frame I eventually narrowed my focus on is five days. The reason for the selection of five days will hopefully be evident momentarily, but was primarily due to its consistency across the various tape measures I evaluated.

This Advance Decline Thrust (ADT) statistic can theoretically range from 0 to 100 with 50 being the measure of equilibrium. For an example of the calculation, ADT on March 18, 2009 was instrumental in launching the 2009 rally in equities and could be calculated as follows.

Example of ADT Calculation

Date	Advances	Declines
090312	2864	0284
090313	1976	1118
090316	1767	1338
090317	2422	0669
090318	2510	0601

$$\text{Sum of Advances} = 2864 + 1976 + 1767 + 2422 + 2510 = 11539$$

$$\text{Sum of Declines} = 284 + 1118 + 1338 + 669 + 601 = 4010$$

$$\text{ADT} = A/(A+D) = 11539 / (11539+4010) = 74.21\%$$

Many market technicians use the ratio of Advances to Declines, but I prefer this percentage calculation because it has some “Normal” distribution properties that can be useful in statistical analysis.

Table 1 below, contains a summary of the average 252 day (appx 12 mt) S&P 500 move across the range of levels of the Five Day ADT reading for data for the past 40 years (1970 through 2009).

TABLE 1. FIVE DAY ADT VS 12 MT S&P 500 PERFORMANCE

ADT A/(A+D)%	NUMBER UP	NUMBER DN	PERCENT UP	AVG SP500 252DAY%CHG
10.00-14.99	2	0	100.0	10.85
15.00-19.99	9	0	100.0	21.45
20.00-24.99	19	6	76.0	15.59
25.00-29.99	71	35	67.0	9.11
30.00-34.99	222	105	67.9	8.44
35.00-39.99	526	211	71.4	9.75
40.00-44.99	1014	408	71.3	7.94
45.00-49.99	1409	553	71.8	7.92
50.00-54.99	1775	704	71.6	7.73
55.00-59.99	1457	498	74.5	8.12
60.00-64.99	613	196	75.8	8.00
65.00-69.99	139	52	72.8	8.31
70.00-74.99	49	4	92.5	18.63
75.00-79.99	14	0	100.0	22.90

The average annual return for the S&P 500 Index over the time period evaluated was 8.0%. ADT readings in the middle of the range (25-70) appear to be statistical noise, but the further you get from the mean, the more statistically bullish the measures become. Measures between 70 and 75 have a statistically significant bullish bias (18.63%/year) above the norm, with readings above 75 having a perfect record for forecasting higher equity prices 252 trading days ahead.

One's first instinct might be to expect extremely low readings to have the exact opposite effect of extremely high readings, but market bottoms generally occur after what is referred to as a selling capitulation or selling climax. As you can observe, Five Day ADT readings between 20-25, appear to have a statistically significant bullish bias (15.59%) as well, with extremely low readings of less than 20 leading to higher prices 12 months later 100% of the time over the data set studied.

Table 2 shows the S&P results for all ADT readings above 73.66 and below 19.05. 73.66, represents the level at which 0.2% (or 1 in every 500 trading days) of the defined five day ADT readings fell above. 19.05 corresponds to the level at which 0.1% (1 in every 1000 trading days) of readings fell below. Subsequent readings meeting these requirements within 5 days of a previous reading were considered repeats and not included in the Table of results. I chose these thresholds (0.2% and 0.1%) because 1) they worked and 2) they were levels that were consistently significant across several forms of tape measures. Acknowledging there is some overlap in 12 month periods in the signals represented in Table 2, they were net 18-0 for an average gain of 23.38%, including the last 5 signals that have not had time to fully terminate.

The primary shortfall of our Five Day ADT signal is that there were none observed for a 21 year period from November 1987 through October of 2008 and breadth thrust analysis dropped off the radar for many tape readers. Even the traditional ten day 2/1 A/D breadth thrust measure had a 15 year lapse during this period. But she has returned with a vengeance, as there were six timely signals in the 12 month period between October of 2008 and September of 2009. However, it was this periodic absence in signals that led me to investigate the utility of using other tape measures in pursuit of thrust guidance during time periods void of ADT assistance.

TABLE 2. HISTORY OF FIVE DAY ADT < 19.05% OR > 73.66%

DATE	ADT	63	126	252
	A/(A+D)%	DAY	DAY	DAY
		SP%CHG	SP%CHG	SP%CHG
700525	18.48	12.80	18.02	43.76
700602	75.81	04.73	12.02	28.73
711201	74.70	12.48	14.76	22.09
741011	77.10	01.64	20.33	23.99
750106	73.84	13.06	31.62	30.27
760106	74.05	10.67	10.70	13.01
781020	13.49	01.99	03.70	03.73
820820	75.09	22.40	30.45	44.71
821011	77.27	09.16	15.38	27.03
840806	73.66	02.96	10.92	17.23
870108	76.46	15.54	19.53	01.47
871019	18.69	10.89	14.71	22.94
081008	18.75	-07.64	-13.03	08.18
081120	18.78	02.75	20.98	45.04
081128	74.41	-22.31	05.41	22.25
090106	78.61	-12.75	-05.90	19.30*
090318	74.21	14.65	34.55	40.38*
090910	76.53	04.96	06.80*	06.80*
NUM UP - NUM DOWN		15-3	16-2	18-0
AVERAGE S&P % CHANGE		5.44	13.94	23.38

* DENOTES STILL IN PROGRESS, STATS THROUGH DEC 31, 2009

Before we leave the subject of Breadth Thrust, Table 3 shows the performance of the S&P after the rare event of two breadth thrust signals within a three month time span. Acknowledging that the last three could be considered repeats of the double signal on Nov 20, 2008, the 12 month performance after twin signals is a gaudy 30.43% with the smallest 12 month gain after any of the double signals, a respectable 19.30%, with the last two signals subject to additional gains.

TABLE 3. SECOND ADT SIGNAL WITHIN 3 MTS

DATE	ADT	63	126	252
	A/(A+D)%	DAY	DAY	DAY
		SP%CHG	SP%CHG	SP%CHG
700602	75.81	04.73	12.02	28.73
750106	73.84	13.06	31.62	30.27
821011	77.27	09.16	15.38	27.03
081120	18.78	02.75	20.98	45.04
081128	74.41	-22.31	05.41	22.25
090106	78.61	-12.75	-05.90	19.30*
090318	74.21	14.65	34.55	40.38*
NUM UP - NUM DOWN		5-2	6-1	7-0
AVERAGE S&P % CHANGE		1.33	16.29	30.43

* DENOTES STILL IN PROGRESS, STATS THROUGH DEC 31, 2009

UP/DOWN VOLUME THRUST (UDT) ANALYSIS

Market Breadth is not the only tape measure useful in identifying important market thrust occasions. “Lowry Reports” (ref 2) has well documented research going back to the 70’s, supporting the significance of single days where Up Volume leads Down Volume by a Nine to One ratio. In my research, I again found that a five day calculation of Up Volume vs. Total Volume (minus unchanged) yields extremely useful information as well. Analogous to our work on ADT, Table 4 shows a summary of the results of the S&P after UDT readings above 77.88% and below 16.41%. In order to avoid the appearance of selecting threshold levels to fit a particular measure’s results, these two thresholds were again chosen to represent the 0.2% and 0.1% occurrence levels, respectively.

TABLE 4. FIVE DAY UDT < 16.41% OR > 77.88%

DATE	UDT U/(U+D)%	63	126	252
		DAY SP%CHG	DAY SP%CHG	DAY SP%CHG
700427	16.38	-04.47	02.36	27.73
700525	14.53	12.80	18.02	43.76
700602	79.50	04.73	12.02	28.73
700824	78.17	03.37	18.64	22.55
711201	79.42	12.48	14.76	22.09
771111	79.00	-06.38	02.90	-01.26
781019	16.22	00.42	01.91	04.31
820823	80.11	18.03	27.49	41.25
821008	78.22	10.82	16.63	29.94
840803	81.95	03.15	10.01	17.93
870107	77.96	16.20	20.74	01.39
871019	11.79	10.89	14.71	22.94
900823	16.10	02.92	19.08	27.44
911227	78.28	00.73	-00.74	08.20
970505	79.52	14.45	10.16	34.37
081009	16.01	-02.15	-05.63	17.76
081120	15.43	02.75	20.98	45.04
081128	80.61	-22.31	05.41	22.25
090318	79.10	14.65	34.55	40.38*
NUM UP - NUM DOWN		14-5	17-2	18-1
AVERAGE S&P % CHANGE		4.82	12.72	24.04

* DENOTES STILL IN PROGRESS, STATS THROUGH DEC 31, 2009

If you compare the UDT statistics (Table 4) to the ADT statistics (Table 2), you will see a great deal of correlation between the table of results, both in regard to performance and the signal dates. However, note **that the UDT stats provided valuable signals in 1990, 91 and 97 in the middle of a 20 year void of ADT thrust signals** in what was a very bullish decade that you did not want to sit out. With the exception of the one small blemish (1.26%) on the 12 month performance for the Nov 11, 1977 observation, the net results are comparable to the ADT results.

S&P 500 PRICE THRUST (SPT) ANALYSIS

I studied several other measures of tape activity relative to thrust measures. Most were statistically significant at certain measurement levels. For example, you could have made a strong case for including the number of issues making New 12 Month Highs or Lows to our set of thrust tools, but only one other tape angle that I studied yielded results comparable in bullish predictive accuracy to the two previous studies outlined. The third and last thrust tape measure I will discuss is simply the percent change in the S&P 500 (SPT) over a five day period. Table 5 shows the results for the S&P 500 index after all five day 10.05% advances and 13.85% declines, again chosen to represent the 0.2% and 0.1% occurrence levels.

TABLE 5. S&P 500 AFTER A -13.85% OR +10.05% FIVE DAY MOVE

	PREVIOUS 5 DAY	63 DAY	126 DAY	252 DAY
DATE	%CHGSP	%CHGSP	%CHGSP	%CHGSP
700601	10.80	05.16	10.39	27.99
741010	12.06	04.04	20.62	26.62
820823	11.53	18.03	27.49	41.25
821011	10.67	09.16	15.38	27.03
871019	-27.33	10.89	14.71	22.94
871102	12.33	-00.07	02.83	09.08
020730	13.17	-01.39	-04.26	09.40
021015	10.36	04.19	-00.15	18.78
081007	-14.47	-08.99	-17.17	06.16
081031	10.49	-13.44	-06.70	07.65
081120	-17.43	02.75	20.98	45.04
081128	19.11	-22.31	05.41	22.25
081208	11.45	-20.70	03.24	20.03
090313	10.64	25.14	37.91	47.48*
NUM UP - NUM DOWN		8-6	10-4	14-0
AVERAGE S&P % CHANGE		0.89	9.33	23.69

* DENOTES STILL IN PROGRESS, STATS THROUGH DEC 31, 2009

The results are very highly correlated to the two previous studies, but note that **the SPT signal yielded two very important signals in 2002 that neither the ADT or UDT signals picked up.** Also note that the worst 12 month performance after any of the 14 SPT signals is a respectable 6.16%.

COMBINING THE SIX THRUST SIGNALS

What I discovered in my research is that no particular tape measure had cornered the market on identifying momentum thrust signals. Planes, Trains and Automobiles were all capable of getting us to our destination. The key in the measure of most of the statistics was; did the market have enough testosterone to generate a 3.5 – 4.0 standard deviation move from the norm.

Now let's get rid of all the repeat signals that are troubling some of our statistical purist. Table 6 shows the results for the S&P 500, one year (252 trading days) after any of the previously described six signals. Any time within the 252 day thrust signal period that a new signal from any of the three sources was observed, the long exposure was extended an additional 252 days. For example, in the third period listed, an initial price thrust was observed on 741010 and then breadth thrust were observed on 741011, 750106 and 760106 extending the exit date to 770107, 252 days after the last signal on 760106.

TABLE 6. COMBINED RESULTS FOR SIX THRUST SIGNALS

DATE ENTRY	SIGNAL TYPE**	ENTRY S&P500	DATE EXIT	EXIT S&P500	S&P500 PCTCHG
700427	BVP	081.46	710824	0100.40	23.25
711201	BV_	095.44	721201	0117.38	22.99
741010	B_P	069.79	770107	0105.01	50.47
771110	_V_	094.71	791023	0100.28	05.88
820820	BVP	113.02	831012	0169.62	50.08
840803	BV_	162.37	850807	0187.68	15.59
870107	BV_	255.33	881101	0279.06	09.29
900823	_V_	307.06	910823	0394.17	28.37
911227	_V_	406.46	921229	0437.98	07.75
970505	_V_	830.29	980506	1104.92	33.08
020730	_P	902.78	031017	1039.32	15.12
081007	BVP	996.23	*****	1115.10*	11.93*

* DENOTES STILL IN PROGRESS, STATS THROUGH DEC 31, 2009

** B=BREADTH, V=VOLUME, OR P=PRICE IN FIRST 3 MONTHS OF SIGNAL PERIOD

Thrust Signal Observations

1. All twelve thrust periods were profitable with two having returns over 50%.
2. The indicator was long 40.0% of the days in the 40 year analysis.
3. The average annualized return for the longs was 17.12% vs. 8.00% for buy and hold.
4. The average return for each of the 12 buy signal 'periods' was 22.82%.

BEARISH WARNING SIGNALS

Since 1970, the S&P 500 index has been up 72% of calendar years by an average of 8.00% annually (dividends not considered). Indebted greatly to the inherent long term upward bias in the equity markets, infallible bear market signals are more difficult to identify than bullish signals. In reference to thrust signals, I was able to identify some circumstances that give an indication of bearish warning signals or at least substantially below normal performance.

ABSENCE OF THRUST SIGNALS FOR EXTENDED PERIOD

As we have identified, the sweet spot for playing the long side of the market is the year after one of our previously defined thrust signals. However, if the thrust is powerful enough, the momentum generated can often carry the market beyond the first 12 months after the initial signal. For example, in Table 6 above, if you looked at the first year after the 12 month signal coverage had dropped, you would find that the S&P still returned a respectable 10.9% that following year and was up 10 of those 12 second years. Not the kind of odds you want to bet the house on, but above the 8.0% annual average and certainly not a period you want to rush into short positions. But the longer the market goes without a thrust signal, the more vulnerable the market becomes. Cases in point, in descending chronological order;

2007 The market peaked on October 19, **five years and three months** after the last thrust signal on July 30, 2002. A seventeen month, 56.8% decline followed.

2000 The market peaked on March 24, **nineteen months** after the last signal on August 31, 1998. A nineteen month, 49.14% decline followed.

1987 The possible exception. The market peaked on August 25, 1987, only **eight months** after the last thrust signal on January 8. A very short, but painful, two month 33.24% decline followed. The January 8 thrust signal was very accurate for the three, six, and nine month time frames, but eventually succumbed to the four rounds of Fed tightening by September. Thrust signal advocates will argue it was indeed the strong momentum of the market that allowed it to fight the forces of the Fed for as long as it did, and will also point out that even with the 2 month crash included, the signal was still able to post a 1.47% one year gain.

1981-82 The market peaked on November 28, 1980, **three years** after the last thrust signal given on November 11, 1977. A nineteen month, 37.2% decline followed.

1976-77 The market peaked on September 21, 1976, **two years** after the last thrust signal on Oct 9, 1974. A seven month, 16.6% decline followed.

1973-74 The market peaked on Jan 11, 1973, **thirteen months** after the last thrust signal on Dec 01, 1971. A twenty one month, 48.15% decline followed.

Absence of a Thrust Signal for an extended period is not a guarantee of an impending bear market, but is often an indication that the market is in the late innings.

STOCKS GOING IN DIFFERENT DIRECTIONS

Our analysis presented so far, suggest when the market has a tremendous “unified” surge in either direction over a short period (five days) of time, it tends to be very constructive long term for equities. The opposite scenario would be a long period in which the troops are divided with an unusual number of issues going in both directions. One measure of division would be when there is an abnormally large number of issues making both new 12 Month Highs and Lows at the same time. This would imply either a very confused market or an extremely very narrow trailing 12 month trading range, either of which tends to be negative for stocks.

Where we have defined thrust as a tremendous burst over a short period of time (1-10 days), market tops are put in place more inconspicuously. I am now interested in a more extended period where the players are going in different directions. I use a daily measure of the minimum of the number of stocks making new 12 month lows or issues making new 12 month highs. I then smooth the data daily with an exponential factor of 0.05 to give it a chronologically smoothed one month measure effect. Since the number of NYSE issues traded each day has nearly doubled over the last 40 years, it is important to divide by the number of issues traded each day. High readings would occur when there are lots of stocks going in different directions and vice versa. Norman Fosback coined his version of this statistic, the High Low Logic Index, several decades ago (ref 3). I will refer to my version henceforth as MHL. A MHL reading of X indicates that there has been an average of at least X% of issues making “both” New Highs or New Lows for approximately one month. The ratings have ranged from 0 to 2.60% over the last 40 years with a mean of 0.85% meaning on a normal day you will see near 1% of the issues traded making both New Highs and New Lows. Notice in Table 7, readings below 0.85% have been followed by above the average 8.0% annual S&P performance. Readings above 0.85 have been followed by below average performance and readings above 1.80% tend to be followed by negative S&P performance.

TABLE 7. MHL INDICATOR VS ONE YEAR S&P PERFORMANCE

MHL RATING	SP ONE YEAR LATER		PCT	SP 500
	# UP	# DOWN	% UP	% CHG
0.00-0.19	509	53	90.6	14.11
0.20-0.39	918	148	86.1	11.94
0.40-0.59	1251	309	80.2	10.87
0.60-0.79	1220	442	73.4	10.72
0.80-0.99	1412	528	72.8	9.17
1.00-1.19	1010	499	66.9	5.46
1.20-1.39	524	293	64.1	2.79
1.40-1.59	244	201	54.8	-0.74
1.60-1.79	133	117	53.2	-0.40
1.80-1.99	39	92	29.8	-3.02
2.00-2.19	44	74	37.3	-0.92
2.20-2.39	15	12	55.6	1.22
2.40-2.59	1	9	10.0	-9.31

Rather than simply using one year as my exit rule and measure of performance, I discovered I had a much more reliable short trade by going short the S&P on MHL measures above 1.80 and incorporating the previously defined bullish thrust signals for trade exits. Table 8 shows the results of selling short the S&P 500 on a MHL reading of 1.80 or higher and holding the position for a minimum of two years (504 trading days) or until a Bullish Thrust reading, whichever came first. The fourth signal on 800211 was the only signal to be terminated via two year time expiration. The remaining six were terminated via one of our previously defined initial 12 thrust signals.

TABLE 8. MHL SELL SIGNALS USING THRUST SIGNALS FOR EXITS

DATE ENTRY	MHL	ENTRY S&P500	DATE EXIT	EXIT S&P500	S&P500 PCTCHG
710611	1.81	0101.07	711201	095.44	-05.57
720412	1.84	0110.18	740904	068.69	-37.66
770512	1.85	0098.73	771110	094.71	-04.07
800211	1.80	0117.12	820225**	113.21	-03.34
891206	1.80	0348.55	900823	307.06	-11.90
980713	1.84	1165.19	020730	902.78	-22.52
051114	1.84	1233.71	081007	996.23	-19.25

** Two Year Termination. All others were ended via thrust signal.

Minimum High Low (MHL) Signal Observations.

1. All 7 short positions were profitable
2. The indicator was short 32.7% of the days under analysis.
3. The average return for each short signal was +14.11%
4. The annualized return for the short positions was 7.55% vs. -8.0% for Sell and Hold.

TRADING THE BULLISH AND BEARISH SIGNALS

Incorporating all the insight gathered from the four tape measures (Breadth, Volume, Price and New High/Lows) studied, I wanted to simulate the results of

1. Going 100% Long on bullish thrust signals
2. Going Flat when MHL and the amount of time since the last thrust indicated caution was warranted and then
3. Going 100% Short when MHL and the amount of time since the last thrust signal indicated that the market was in a precarious spot.

I accomplished this by initially setting 2.1 on the MHL as my Sell Short point, but moving it down 0.10 each year that transpires after a thrust has been observed. The Danger or Caution area for the market at which time Longs are neutralized is always 0.5 below the calculated Sell Short point. After a short is taken, I used a MHL reading of 0.25 to indicate the market was moving into potential thrust signal territory and went flat. I then went long when a thrust signal was observed. It sounds complicated, but the rules can be summarized as follows.

If you are Flat,

Go Long on a capitulation or momentum thrust
Five day ADT < 19.05 or ADT > 73.66
Five day UDT < 16.41 or UDT > 77.88
Five Day SPT < -13.85 or SPT > 10.05

Go Short on a MHL reading of $2.1 - 0.1 * (\text{number of years since last thrust})$
The Sell Short threshold is not to be less than 1.3

If you are Long,

Go Flat on a MHL reading of 0.5 less than the sell short point, not to be less than 0.8

If you are Short,

Go Flat on a MHL reading of 0.25 or lower.
Go Flat two years after the last sell signal, the first day MHL is < 0.8 (late innings)
Go Long on one of the thrust signals defined above

TABLE 9. TAPE MODEL TRADING RESULTS

POSITION	ENTRY DATE	ENTRY S&P500	EXIT DATE	EXIT S&P500	BALANCE	BALANCE			SPT	MHL	SIGNL DAYS
						%CHG	ADT	UDT			
FLAT	700102	93.00	700427	81.46	10000.0	0.0	22.4	16.4	-5.1	1.07	0
LONG	700427	81.46	710603	101.01	12400.0	24.0	59.2	61.0	1.4	1.53	196
FLAT	710603	101.01	711201	95.44	12400.0	0.0	74.7	79.4	5.9	0.67	0
LONG	711201	95.44	720407	109.62	14242.3	14.9	58.2	65.3	2.3	1.62	88
FLAT	720407	109.62	720417	109.51	14242.3	0.0	49.4	53.9	0.1	2.15	0
SHORT	720417	109.51	740827	70.94	20878.0	46.6	29.2	27.5	-5.4	0.36	504
FLAT	740827	70.94	741010	69.79	20878.0	0.0	73.3	72.6	12.1	0.19	0
LONG	741010	69.79	770325	99.06	29634.2	41.9	37.5	33.9	-2.7	1.49	307
FLAT	770325	99.06	771110	94.71	29634.2	0.0	71.9	77.9	4.4	1.00	0
LONG	771110	94.71	780522	99.09	31004.7	4.6	51.8	57.7	0.3	1.55	131
FLAT	780522	99.09	781019	99.33	31004.7	0.0	19.1	16.2	-5.3	0.41	0
LONG	781019	99.33	791226	107.78	33642.3	8.5	46.8	51.9	-0.5	1.49	297
FLAT	791226	107.78	800213	118.44	33642.3	0.0	49.1	55.8	2.4	2.02	0
SHORT	800213	118.44	800626	116.19	33906.2	0.8	54.7	60.8	1.3	0.25	87
FLAT	800626	116.19	820820	113.02	33906.2	0.0	75.1	76.4	8.8	1.05	0
LONG	820820	113.02	860724	237.95	71385.3	110.5	49.0	53.6	0.8	1.43	495
FLAT	860724	237.95	870107	255.33	71385.3	0.0	72.5	78.0	4.9	0.84	0
LONG	870107	255.33	870930	321.83	89977.5	26.0	50.6	55.6	0.2	1.53	183
FLAT	870930	321.83	871019	224.84	89977.5	0.0	18.7	11.8	-27.3	1.20	0
LONG	871019	224.84	891113	339.55	135882.7	51.0	58.1	62.6	2.1	1.45	514
FLAT	891113	339.55	891213	352.75	135882.7	0.0	50.5	54.9	1.2	1.91	0
SHORT	891213	352.75	900823	307.06	153838.5	13.2	20.4	16.1	-7.6	1.08	162
LONG	900823	307.06	911219	382.52	191644.3	24.6	48.9	47.5	0.3	1.49	335
FLAT	911219	382.52	911227	406.46	191644.3	0.0	71.3	78.3	6.3	1.38	0
LONG	911227	406.46	921109	418.59	197363.6	3.0	49.6	51.3	-1.0	1.53	219
FLAT	921109	418.59	970505	830.29	197363.6	0.0	71.3	79.5	7.4	1.01	0
LONG	970505	830.29	971218	955.30	227079.0	15.1	50.9	49.1	0.0	1.55	159
FLAT	971218	955.30	991209	1408.11	227079.0	0.0	41.1	45.5	-0.1	1.86	0
SHORT	991209	1408.11	020730	902.78	311975.6	37.4	63.4	66.1	13.2	1.08	15
LONG	020730	902.78	050928	1216.89	420522.8	34.8	49.1	52.5	0.6	1.38	743
FLAT	050928	1216.89	051114	1233.71	420522.8	0.0	49.3	54.4	0.9	1.84	0
SHORT	051114	1233.71	081007	996.23	472669.0	12.4	24.0	18.3	-14.5	0.75	67
LONG	081007	996.23	091231	1115.10	529067.8	11.9	51.5	44.8	-0.5	0.14	78

OBSERVATIONS

1. All 18 of the position trades were profitable with a total net cumulative return of 5190%.
2. The average annual return during days when trades were on was 14.93%.
3. The average return for the 13 long positions was 28.5%.
4. The average return for the 5 short positions was 22.1%.
5. The model was long 48.9% of days, short 22.2% and flat 28.9%.
6. The historical returns could be enhanced if alternative investments were applied during flat periods.

TABLE 11. TAPE MODEL ANNUAL RETURNS

YEAR	% CHG	YEAR	% CHG	YEAR	% CHG	YEAR	% CHG
1970	13.12	1980	00.78	1990	22.05	2000	05.94
1971	17.25	1981	00.00	1991	18.87	2001	09.93
1972	-00.88	1982	24.44	1992	00.36	2002	20.03
1973	18.02	1983	17.27	1993	00.00	2003	26.38
1974	32.18	1984	01.40	1994	00.00	2004	08.99
1975	31.55	1985	26.33	1995	00.00	2005	-00.82
1976	19.15	1986	12.62	1996	00.00	2006	-12.90
1977	-07.44	1987	38.51	1997	15.06	2007	-05.83
1978	00.82	1988	12.40	1998	00.00	2008	25.79
1979	12.14	1989	21.97	1999	-04.22	2009	23.45

THRUST RESEARCH CONCLUSIONS

1. Thrust signals are a very important tool for gauging the potential for sizable intermediate market moves.
2. The well documented NYSE 10 day Advance/Decline Thrust indicator is still very reliable when triggered, but did not give any signals from 1994 to 2008.
3. Other tape measures, besides breadth, can also yield additional insight into Market Thrust potential. In particular, Up Volume vs Down Volume and simple Price movement.
4. All three measures (Breadth, Up vs Down Volume and Price) had a strong positive correlation with forward intermediate market moves when observed at the 99.8% occurrence level.
5. Extreme occurrences of Reverse Thrust (capitulation) are very constructive for the market as well, and also had a strong positive correlation with forward intermediate market moves when observed at the 0.1% level.
6. The longer the market goes without a sign of thrust, the more vulnerable the market is to a sharp move to the downside .
7. An unusual number of issues making both New 12 Month Highs and Lows can yield some additional insight into the market's lack of ability to produce a future thrust.
8. It is expected this trading strategy would spend 20-30% of time in a cash position, thus reducing the risk or Beta factor of being fully invested in equities at all times.

AUTHOR'S NOTE ON MODELING OF THRUST

It is the author of this research paper's professional opinion it is highly probable that the trading strategies outlined in this paper will outperform a buy and hold strategy over the next 40 years with less risk involved than B&H, but that it is highly unlikely that the results demonstrated over the past 40 years will be reproduced and that occasional maintenance and adjustments of the trading rules will be needed over several decades time.

The respectable trading results from the tape model outlined in this research paper can be shown to be enhanced additionally by :

1. Incorporating a simple moving average cross over strategy (such as 200 day) during periods when positions are not being taken and
2. Rather than a trinomial model (long, flat or short), taking varying degrees of exposure based on the quantity and magnitude of the thrust signals.

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