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TESTING AIQ'S MARKET TIMING - PART I

AIQ USER'S BACKTESTING STUDIES CONCLUDE: 'MARKET TIMING WORKS'

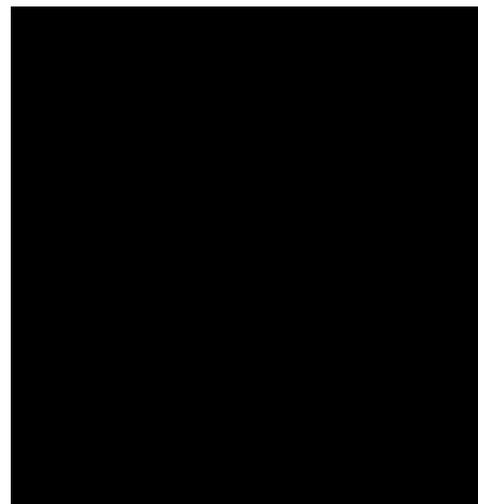
By Paul Luebbe

We are pleased to present the work of AIQ power user Paul Luebbe. Mr. Luebbe used the Expert Design Studio package to create some thorough and insightful backtests of the AIQ market timing model.

Mr. Luebbe, who has a master's degree in electrical engineering from the university of Pittsburgh, spent most of his career in the high tech industry, in hardware and software sales. An AIQ user since 1993, he pursues his objective of trading using a series of purely mechanical systems with end-of-day data. He currently trades systems for stocks, mutual funds, options, and index futures. His average holding period is approximately one month.

Mr. Luebbe spends about 30 minutes a week executing his systems, and devotes the rest of his analysis time to researching and developing new systems.

To a market timer, the key questions are "what signals to use and what confirmation to use for entry and exit?" For users of AIQ's TradingExpert Pro, the questions become "what is the best confirmation of the market Expert Ratings (ERs)" and "should the same confirmation be used on exit as on entry?"



Paul Luebbe

Much of the literature from AIQ cites performance studies that assume symmetrical confirmations of market ERs on entry and exit (i.e., no confirmation on both entry and exit, or Price Phase confirmation on both). I wondered which confirmation technique generated the best results, whether the confirmations had to be the same on entry and exit, and whether there were other useful confirmation techniques.

Even larger issues than these center on the purpose of market timing in

Testing continued on page 2

Table 1

Market Timing Model Comparison

Model	Entry Conf.	Exit Conf.	Prob of Profit %	Number of Trades	Periods per Trade	Avg. % Profit	% ROI	% Max Loss	Avg % Profit Winner	Avg % Loss Loser	Tax-bearing % ROI	Tax-deferred % ROI
1	No Conf.	No Conf.	66.96	112	45	3.17	17.77	-12.70	5.68	-1.93	11.89	15.86
2	MDO Inc.	No Conf.	68.75	112	44	3.06	17.14	-14.06	5.39	-2.05	11.48	15.24
3	Phase Inc	No Conf.	64.29	112	43	2.96	16.63	-9.36	5.52	-1.63	11.13	14.73
4	MDO Pos	No Conf.	62.14	103	42	2.67	13.48	-10.55	5.51	-1.97	9.09	11.63
5	No Conf.	MDO Dec	66.67	108	47	3.32	17.91	-12.70	5.93	-1.92	11.99	15.99
6	MDO Inc.	MDO Dec	68.52	108	47	3.21	17.28	-14.06	5.62	-2.04	11.58	15.37
7	Phase Inc	MDO Dec	63.89	108	45	3.11	16.76	-9.36	5.77	-1.61	11.22	14.87
8	MDO Pos	MDO Dec	60.78	102	43	2.73	13.58	-10.55	5.74	-1.93	9.17	11.73
9	No Conf.	Phase Dec.	66.06	109	47	3.25	17.70	-12.70	5.92	-1.93	11.86	15.79
10	MDO Inc.	Phase Dec.	66.97	109	46	3.14	17.04	-14.06	5.68	-2.00	11.43	15.14
11	Phase Inc	Phase Dec.	63.30	109	45	3.05	16.56	-9.36	5.76	-1.64	11.10	14.67
12	MDO Pos	Phase Dec.	58.82	102	43	2.73	13.56	-10.55	5.97	-1.90	9.16	11.71
13	No Conf.	MDO Neg.	64.15	106	50	3.01	15.71	-12.80	5.87	-2.11	10.57	13.83
14	MDO Inc.	MDO Neg.	64.15	106	49	2.90	15.06	-14.06	5.70	-2.12	10.15	13.19
15	Phase Inc	MDO Neg.	63.21	106	48	2.80	14.58	-9.36	5.57	-1.98	9.81	12.72
16	MDO Pos	MDO Neg.	58.59	99	46	2.44	11.58	-10.55	5.77	-2.26	7.86	9.76
	Buy & Hold						13.52				11.81	11.22

general: can it actually beat a buy-and-hold strategy and can market timing help in my equity model returns. Given my personal commitment to technical analysis and Trading Expert, I set out to answer these questions for myself through an

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empirical study. Given my hard bend towards mechanical systems, I took advantage of AIQ's Expert Design Studio (EDS) to do much of the work for me. This article is the result of my work.

Methodology

My study compares the relative performance of 16 market timing models over the past 20 years. All of the models are based on the Expert Ratings on the DJIA, which incorporates the NYSE breadth indicators. The models differ only in the technique used for signal confirmation. Four different confirmation techniques were used: 1) no confirmation; 2) 1-day MACD Oscillator increase/decrease (i.e., increase for entry confirmation, decrease for exit confirmation); 3) 1-day Price Phase increase/decrease; and 4) 1-day MACD Oscillator positive/negative. Using these 4 techniques for both entry and exit confirmation in every combination

possible resulted in 16 different models.

Generally speaking, these confirmation techniques range from fast to slow, in the order listed. For each model, only long positions were taken, only the first ER in one direction was considered, only ERs greater than or equal to 95 were selected, and the confirmation could occur on the same day as the ER or any number of days following. The time frame for testing was 1/3/79 to 1/15/99.

I used EDS as a tool to define the entry and exit conditions, and to define the "trades". The security used for all trading is the S&P 500 index (ticker SPX). **Table 1** presents a comparison of the returns from the 16 market timing models and includes a buy-and-hold comparison. The EDS Summary Tab provided the data for Probability of Profit, Number of Trades, Periods per Trade, Avg. Profit/Loss, Max Loss Loser, Avg. Profit Winner, and Avg. Loss Loser.

Rather than use the ROI figures computed by EDS, I calculated the ROI statistics based on the trades shown in the EDS Position Tab. Because these trades are taken in strict sequence, I was able to calculate an annual compound ROI assuming that all proceeds from each trade are reinvested in subsequent trades (transaction costs, taxes, and money market interest received are not factored in). This is in contrast to the EDS ROI calculation for a backtest which derives the Average Annual ROI from the annualized percent per trade and the annualized number of days held.

The EDS methodology is appropriate for a stock-picking strategy where a varying number of multiple stock positions can be open simultaneously. However, because each of our market timing trades is taken one at a time and in strict sequence, the actual annual compound ROI is more relevant.

The annual compound ROI for the performance of each model and for the SPX buy-and-hold reference were calculated in the same manner. The formula for the annual compound ROI is:

$$ROI = (P_y/P_0)^{(1/y)} - 1$$

Where:

P_y is the final value

P_0 is the initial value

y is the period of the investment in years (in this case 20.05 years)

As an example, for the SPX buy-and-hold comparison:

$$ROI = (1243.26/97.80)^{(1/20.05)} - 1 = 13.52\%$$

After Tax ROI will be discussed later.

Model Comparison

The parameters for comparing the performance of the various models are primarily ROI, followed by Average Profit Per Trade, and Probability of Profit. The best performing model is model #5. It uses no confirmation on entry and a 1-day decrease in the

MACD Oscillator on exit. Of the 16 models, it has the highest ROI and the highest Average Profit Per Trade. A close second is model #1 that uses no confirmation on either entry or exit.

Notably, the top three models all have no confirmation on entry (models #1, 5, and 9). Further, all models that incorporate no confirmation on entry significantly outperform other models with other entry criteria. On the exit side, all models that incorporate the MACD Oscillator moving below zero as confirmation significantly lag the performance of all other exit criteria.

“we can conclude that, generally speaking, the faster the confirmation on entry or exit, the better the performance.”

The four worst performing models (models #4, 8, 12, and 16) all incorporate the MACD Oscillator moving above zero on entry, the slowest of the entry confirmations.

From this we can conclude that, generally speaking, the faster the confirmation on entry or exit, the better the performance. The exception is the MACD Oscillator decreasing when used for exit confirmation. These four models (#5 thru #8) all slightly outperform the no-confirmation-on-exit models.

As a comparison, a buy-and-hold strategy produced an ROI of 13.52% vs. the best market timing model ROI of almost 18%. In fact, 14 of the 16 models tested outperformed the buy-and-hold model over the 20-year test period. The buy-and-hold ROI was calculated from the percentage gain on the S&P 500 across the tested range (see above).

It should be noted that some of the trades in some of the models should actually be 1-day trades. EDS currently limits the shortest holding period, when exiting on a rule, to 2 trading days. Statistically, this limitation has no real effect on the

model performance parameters.

EDS Code and Further Work

There are, of course, other possible market timing models that can be analyzed. Additional indicators can be used for confirmation and the ER signal basis could be changed to something other than greater or equal to 95. Additionally, one might also want to test using different ER values for up and down signals. The EDS code that I used for this analysis is rather complex and is too lengthy to publish here. It is available on the AIQ website at www.aiq.com. Click on *Educational Products* and then *Opening Bell*.

The complexity in the code arises from the need to find the first ER of a type (up or down) in a series, checking to see if confirmation takes place since the ER, all while appropriately negotiating market holidays. The EDS file is documented internally, and is structured so that a user can create and test various confirmation techniques. (Thanks to AIQ user Ted Reback for reviewing this code prior to publication.)

What is the Purpose of Market Timing?

We now have a model (or models) that appears to beat the market. How do we use it? Market technicians generally see two purposes for market timing. First, it is a way to “play the market” (i.e., to move funds into and out of index-based securities based on market timing signals). Examples of index-based securities would be S&P 500 mutual funds, index-tracking stocks such as Spiders, and OEX and SPX options and futures.

The second purpose of market timing is to define a favorable period for purchasing equity-based securities. This month our focus is on the first purpose, playing the market. Next month, we’ll discuss how incorporating market timing improves equity trading.

Testing continued on page 4

Using Market Timing to 'Play the Market'

Before concluding which, if any of these models might be appropriate to play the market, let me first state what I look for in a mechanical system. A good mechanical system, by my definition, will have the following attributes:

- 1) A probability of success greater than 60-65%, at a minimum (75% would be terrific!)
- 2) An average profitable trade greater than an average losing trade
- 3) A Return on Investment (ROI) noticeably greater than a standard benchmark, such as the S&P 500

Depending on what securities are traded and how much leverage is used, I might also consider issues such as drawdowns, maximum losing trade, maximum sequence of losing trades, and liquidity.

But for starters, let's just consider the three points above.

Looking again at the 16 models in Table 1, the top models have a probability of profit greater than 65%, the average profitable trade is close to 6% while the average loss is less than 2%. Finally, the top models have an ROI almost 5 percentage points above the benchmark S&P ROI of 13.52%. In brief, many of these models meet the criteria and appear to be able to make money.

Taxes

Before we get too excited about having an easy way to beat the market, making real money in the market means paying real taxes, and where we trade (i.e., in what type of account) is just as important as how we trade. For post-tax considerations, let's consider several scenarios.

Given the short-term nature of the trades, I calculated a "Tax-Bearing ROI" for the market timing models assuming that the trades are executed in a tax-bearing account and that 1/3

of the profits and losses are set aside for taxes at the close of each trade. All remaining funds are reinvested in the next trade.

The buy-and-hold Tax-Bearing ROI assumes that the index was purchased at the beginning of the test, sold only at the end of the test, and profits taxed at the long-term rate of 20%.

I've also considered trading in a tax-deferred account such as an IRA or 401(k), assuming that all profits are reinvested and that the entire account is taxed at the 28% rate at the end of the period under test. While this final

"With a market timing model, we can also play the downside of the market... Two means of shorting the market would be to short the SPX Spiders or to buy the Rydex URSA fund."

scenario is not likely (the entire liquidation and taxing part) and recognizing that I'm not a tax advisor, this now puts all models on equal footing, with all trades moved to cash and all taxes paid.

Looking again at Table 1, suddenly we appear to have a different picture. On a pre-tax basis, all models but one outperformed the S&P 500. Yet, on a post-tax basis in a tax-bearing account, only three models beat the index - but not by much - and we haven't factored in transaction costs. However, in a tax-deferred account, our better market timing models outperformed the post-tax S&P 500 by more than 4 percentage points - and here again, all models but one beat the post-tax benchmark.

Trading Vehicles

When timing the market, we must also consider what we trade. The above analysis assumes that a "trade" is accomplished by buying the S&P 500 on a dollar-for-point basis; meaning that one dollar buys you one point on the index, or that a 1% gain

in the index gets you a 1% gain in your investment. This kind of investment is termed to have a beta of 1. A security that is designed to track the S&P 500 with a beta of 1 is the SPDR (SPY), which trades on the American Stock exchange just like a stock. For information on this product, go to www.nasdaq-amex.com.

Index mutual funds which track the S&P 500 can also be used to time the market. These funds are available through many mutual fund families including Vanguard and Fidelity. Trades on mutual funds take place at the close the day after the market timing signal so results will be slightly different than what our backtest reports.

Most index funds have a beta of 1. For those interested in more volatility, an attractive alternative is a high-beta mutual fund. The Rydex NOVA fund (800-820-0888) is a mutual fund that has a beta of 1.5. With this fund, a 1% increase in the index results in a 1.5% gain in the security. However, a 1% decline in the index results in a 1.5% decline in the security. And then there are always the really high beta securities called index futures.

Playing the Downside

With a market timing model, we can also play the downside of the market (i.e. trying to capitalize on market declines while the market timing model is bearish). Two means of shorting the market would be to short the SPX Spiders or to buy the Rydex URSA fund. The URSA fund has a beta of -1, meaning that a 1% decline in the SPX would yield a 1% increase in the value of the fund.

Because these market timing models are defined to be either bullish or bearish, and nothing in between, we can also consider a "stop and reversal" (SAR) strategy, which means that we would always be fully invested in the model - either 100% bullish or 100% bearish. We would invest in the positive-beta securities

TESTING AIQ'S MARKET TIMING - PART I *continued* . . .

when the model is bullish, and invest in the negative-beta securities when the model is bearish.

Table 2 shows the results of these scenarios for market timing model #1 only (i.e., no confirmation on either entry or exit). Interestingly, the bullish-only scenario with a beta of 1.5 outperformed the buy-and-hold benchmark in a tax-bearing account by almost a 50% margin (17.86% vs. 11.81%). Remarkably, in the tax-deferred account, it outperformed the benchmark by more than a 2-to-1 margin (24.64% vs. 11.22%). At first glance, the bearish only scenario (beta = -1) performed rather poorly, considering only a 2.9% ROI before taxes, and between 1%-2% after taxes. However, if your general philosophy is to play the long side of the market and to sit out the short side, then adding a couple of percentage points from the downside of the market could be seen as "found money".

Interestingly, in the bearish-only scenario, the tax-deferred account underperformed the tax-bearing account. This is because, in my assumptions, the tax-bearing account

pays a capital gains tax of 20%, where the tax-deferred account pays tax on all moneys at 28%. In this case, the gains from the trading are not significant enough to offset the increased tax burden. The same math applies to the buy-and-hold model. (Again, I am not a tax professional, and these tax rates are used as examples only. Please consult a professional for an analysis of your own situation.)

I have also considered two stop-and-reversal (SAR) models, where we play both sides of the market being either long or short with 100% of the money, depending on whether the market timing model is bearish or bullish. The first model assumes a beta of 1 during bullish periods and a beta of -1 during bearish scenarios. The second model assumes betas of 1.5 and -1 respectfully.

These two SAR models are, essentially, the combination of either the first or second bullish model with the bearish model. The results are simply outstanding. On a full tax-bearing basis, the SAR models outperform the benchmark 14.14% and 20.23% vs. 11.81%. Incredibly, the

SAR models outperformed the benchmark in a tax-deferred scenario by almost 2-to-1 and 3-to-1 (19.21% and 28.25% vs. 11.22%).

Further Work

The playing-the-market scenarios with market timing, the results of which are tabulated in Table 2, have utilized only one market timing model — that of an ER \geq 95 and no confirmation on entry or exit. Additionally, I have given no real consideration to other important performance parameters, such as maximum loss, average drawdown, average drawdown of losers, etc. Considering the really high beta strategies (i.e., S&P 500 index futures), I would seriously examine these other parameters that highlight the exposure to loss.

Other market timing model parameters can also be considered, such as other forms of confirmation, 2-day confirmations, and trailing stops.

Conclusion

Market timing works, and depending on what you trade and your individual tax situation, you can handily beat the market by a significant margin.

There is the additional benefit of lower risk. A portfolio that incorporates market timing will be less volatile than a buy-and-hold portfolio. In fact, our no-confirmation market timing model spent 30% of the 20-year period in cash.

The next time that a columnist in the business section of your Sunday morning newspaper says that market timing doesn't work or that nobody can time the market, smile quietly to yourself and go make some money! ■

Next Month: Using market timing to determine favorable periods for buying equities.

Table 2

ROI Comparison - Market Timing Trading Average Annual Percent Return

Scenario	No Tax Consid	Tax Bearing	Tax Deferred
Bullish only Beta=1	17.77	11.89	15.86
Bullish only Beta=1.5	26.70	17.86	24.64
Bearish only Beta=-1	2.90	2.01	1.22
SAR Beta=1/-1	21.18	14.14	19.21
SAR Beta=1.5/-1	30.37	20.23	28.25
Buy&Hold	13.52	11.81	11.22

TELESCAN DATA

TESTING THE ACCURACY OF MARKET TIMING SIGNALS USING TELESCAN DATA

By David Vomund

DAVID VOMUND

Once every few years we feel it is important to address the issue of market timing Expert Rating signals that are generated for people who use Telescan as a data vendor. The market timing Expert Ratings for Telescan users are different than the market timing ratings for those who use myTrack, Dial Data, or Interactive Data Corp.

The main difference between Telescan compared to the other vendors is that Telescan reports the actual high and low values for the Dow (DJIA). The other vendors report the theoretical high and low values.

Theoretical high and low prices differ from actual price data. The theoretical high for the DJIA is the price that would be reached if all 30 Dow stocks traded at their daily high prices at the same time. The theoretical low price for the DJIA is the price if all 30 stocks traded at their daily low prices at the same time.

The actual high and low price is simply the highest/lowest price that the Dow actually traded on a given day. Since stocks rarely reach their daily high price at the same time, the actual high price for the DJIA will be lower than the theoretical high price.

David Vomund Interview

The October issue of *Technical Analysis of Stocks & Commodities* magazine will feature an interview with *Opening Bell* publisher David Vomund. *Technical Analysis of Stocks & Commodities* is available at most large news stands.

Conversely, the actual low price on the DJIA will be higher than the theoretical low price.

While the actual high and low prices make more intuitive sense, the theoretical values have been the standard. It wasn't until the mid-1990s that *The Wall Street Journal* began reporting the actual high and low values along with the theoretical high and low values.

All of the research in developing the AIQ expert system was based on theoretical high and low values for the Dow and that is what we are using today. When we list the market timing signals in the *Market Review* section of this newsletter (including Mr. Luebbe's article), we are reporting signals that are generated using theoretical high and low values for the DJIA. That is, the signals we report are the same as those generated using Dial Data or myTrack.

How accurate are the signals using Telescan data? To find out we tested AIQ's market timing model using both theoretical values and actual values. We assumed you could buy the S&P 500 index the day a 95 or greater buy signal was registered and sell the day a 95 or greater sell signal was registered. No confirmation is used and money market interest is not factored in.

Table 3 shows the yearly trading results. We see that in most years the results are fairly close. There are a few years, such as this year, where Telescan users are better off but overall the signals using Dial Data or myTrack are a few percentage points higher.

A detailed breakdown of the signals is found in **Table 4**. Examining

the data, we see that the signals are often in agreement but there are times when one model is on a buy and the other is on a sell. For Dial Data and myTrack users, the average buy signal gains 2.87% in 44 days. For Telescan users, the average buy signal gains 2.41% in 41 days.

Users often ask whether the difference in market timing Expert Ratings is large enough to warrant switching vendors. That is an individual decision but this article enables people to make informed decisions. Overall, the timing signals seen for each data vendor are more accurate than most six figure Wall Street professionals!

Table 3

Annual Trading Results For Two Different Data Sources

	Theoretical Values	Actual Values
1992	6.45	4.76
1993	4.69	0.27
1994	3.89	6.82
1995	23.80	22.43
1996	25.96	23.84
1997	29.69	19.69
1998	28.45	20.07
1999*	3.59	7.61
Average	15.82	13.19

* Through August 30, 1999

S&P 500 Changes

Lexmark Int'l (LXK) replaces Raychem Corp (RYC). LXK is added to the Computers-Peripherals (COMPUTEP) group.

TELESCAN DATA *continued* . . .

Table 4

**Comparison of Market Timing Signal Effectiveness
Percent Change S&P 500 Index**

Theoretical High/Low Values			Actual High/Low Values		
Entry Date	Exit Date	% Change	Entry Date	Exit Date	% Change
12/31/91	02/24/92	-1.16	12/31/91	02/28/92	-1.05
04/10/92	05/15/92	1.43	03/13/92	03/23/92	1.00
05/29/92	06/05/92	-0.45	04/10/92	08/06/92	4.03
06/22/92	07/20/92	2.57	09/02/92	09/08/92	-0.85
07/27/92	08/06/92	2.20	09/10/92	09/17/92	0.00
08/14/92	09/08/92	-1.30	09/18/92	11/04/92	-1.38
09/10/92	09/22/92	-0.67	11/18/92	01/07/93	1.86
09/28/92	12/14/92	3.89	04/08/93	04/20/93	0.74
12/18/92	01/07/93	-2.39	06/24/93	07/02/93	-0.17
01/12/93	02/16/93	0.67	07/06/93	07/21/93	1.30
07/06/93	10/26/93	5.18	10/01/93	10/07/93	-0.46
12/17/93	02/04/94	0.74	12/17/93	02/04/94	0.74
02/28/94	03/24/94	-0.60	02/25/94	03/24/94	-0.37
03/28/94	06/20/94	-0.98	03/25/94	06/20/94	-1.11
06/27/94	08/05/94	2.19	06/27/94	08/05/94	2.19
08/23/94	09/19/94	1.36	08/12/94	09/16/94	2.00
09/26/94	09/29/94	0.31	10/10/94	10/20/94	1.70
10/10/94	10/20/94	1.70	11/25/94	03/07/95	6.60
11/07/94	04/20/95	9.12	04/21/95	07/19/95	8.36
04/21/95	06/16/95	6.16	08/24/95	10/19/95	5.95
08/25/95	10/02/95	3.86	11/16/95	12/18/95	1.59
10/12/95	10/19/95	1.29	01/16/96	03/08/96	4.12
11/16/95	12/18/95	1.59	03/11/96	04/08/96	0.66
01/16/96	04/03/96	7.80	04/18/96	05/02/96	-0.04
04/15/96	04/17/96	-0.14	05/07/96	06/07/96	5.49
05/08/96	06/07/96	4.42	07/09/96	08/29/96	0.40
07/09/96	08/29/96	0.40	09/09/96	01/06/97	12.64
09/09/96	01/06/97	12.64	01/07/97	01/24/97	2.30
01/07/97	03/13/97	4.82	03/07/97	03/13/97	-1.91
03/21/97	08/08/97	19.60	03/21/97	07/18/97	16.73
09/02/97	11/18/97	1.15	07/30/97	08/08/97	-1.97
12/29/97	01/08/98	1.79	08/18/97	10/16/97	4.69
01/12/98	04/17/98	19.54	10/20/97	11/18/97	-1.82
06/02/98	06/10/98	1.76	11/20/97	11/24/97	-1.28
06/16/98	07/21/98	7.12	12/29/97	04/23/98	17.44
07/29/98	09/03/98	-12.70	06/02/98	06/10/98	1.74
09/08/98	10/05/98	-3.41	06/12/98	07/21/98	6.03
10/08/98	12/03/98	19.88	07/27/98	09/03/98	-14.38
12/29/98	01/13/99	-0.60	09/08/98	12/10/98	13.83
01/25/99	02/25/99	0.89	12/29/98	01/13/99	-0.60
04/16/99	06/09/99	-0.30	02/10/99	02/23/99	3.89
06/29/99	07/20/99	1.90	06/17/99	07/20/99	2.78
08/02/99	08/18/99	0.36	08/02/99	08/18/99	0.36

Average Gain Per Trade = 2.87%
Average Holding Period = 44 days

Average Gain Per Trade = 2.41%
Average Holding Period = 41 days

MARKET REVIEW

The market headed into August on a sell signal and moving lower. In early August, the S&P 500 fell to the 1275-1280 level, formed a bottom and then rallied. The 1275-1280 level is significant because it acted as resistance in January and February, then acted as support in late May. The mid-month rally brought the S&P 500 back to May high point but near the end of August selling resumed as the S&P 500 began heading back toward the 1280 support level.

During this period, AIQ registered a 99 buy signal on August 2. It wasn't until August 11 that the Phase indicator moved higher, confirming the signal. The market was oversold and this was revealed by the Market Log statistics. The day the buy signal was

registered, the Market Log report showed a US score of 97-3. That means of all the stocks giving unconfirmed signals, 97% were on the buy side. Many of those unconfirmed buy signals became confirmed by the time that the market buy signal was confirmed.

On August 11, the day the market timing buy signals became confirmed, the US score had a bullish reading of 90-10 (90% of the stocks with unconfirmed signals were on the buy side) and the WAL score was 85-15 (85% of stocks with confirmed signals were on the buy side). After the confirmation date, the S&P 500 rallied 6% and the Nasdaq Composite rallied over 9%.

During the market rally, a 96 sell signal was registered on August 18. It wasn't until August 27 that the Phase

indicator moved lower, confirming the signal. Looking at the Market Log, it was still in a bullish mode when the initial signal was registered. On August 18, the WAL score was 74-26. That is, of the stocks giving confirmed buy and sell signals, 74% were on the buy side. By the time confirmation came, the Market Log had turned more bearish with a 25-75 reading.

At month end, the timing model was still on a sell and the S&P 500 was in the middle of the 1280 to 1380 trading range. Should it fall below 1280, it will have formed a head-and-shoulders top pattern where April is the left shoulder, July is the head, and August is the right shoulder. ■

STOCK DATA MAINTENANCE

The following table shows past and future stock splits and large dividends:

Stock	Ticker	Split/Div.	Approx. Date	Stock	Ticker	Split/Div.	Approx. Date
Amazon.com	AMZN	2:1	09/02/99	Cohu Inc.	COHU	2:1	09/16/99
Church & Dwight	CHD	2:1	09/02/99	Micrel Inc.	MCRL	2:1	09/16/99
Performance Techs Inc.	PTIX	3:2	09/02/99	Lattice Semiconductor	TSCC	2:1	09/17/99
Gateway Inc.	GTW	2:1	09/08/99	Archer Daniels Midland	ADM	5%	09/21/99
Tribune Co.	TRB	2:1	09/10/99	Concord EFS	CEFT	3:2	09/23/99
4 Kids Ent.	KIDE	2:1	09/14/99	Ross Stores	ROST	2:1	09/23/99
First Bancorp NC	FBNC	3:2	09/14/99	Mity-Lite Inc.	MITY	2:1	09/24/99
Semtech Corp.	SMTC	2:1	09/15/99	Reliance Steel & Alum.	RS	3:2	09/27/99
Timberland Co.	TBL	2:1	09/16/99	Medtronic Inc.	MDT	2:1	09/27/99

Trading Suspended:

American Bankers Ins. Grp. (ABI), BEC Energy (BSE), Browning-Ferris Ind. (BFI), Coach USA (CUI), Commonwealth Energy System (CES), General Nutrition (GNCI), Gulfstream Aerospace (GAC), Level One Communic. (LEVL), Medical Manager (MMGR), Nevada Power (NVP), Quantum corp (QNTM), Rally Hamburgers Inc. (RLLY), Raychem Corp (RYC), Varlen Corp (VRLN)

Name/Ticker Changes:

PC Quote Inc. (PQT) to HyperFeed Technologies Inc. (PQT)
 Rochester Gas & Elect. (RGS) to RGS Energy Group (RGS)
 @Home Corp (ATHM) to Excite@Home (ATHM)
 InterVoice Inc. (INTV) to InterVoice-Brite (INTV)