

*Feature*

The Why and Wherefore of the Trading Channel Index ..... 1

*Sections*

Data Maintenance ..... 5

TradingExpert's New Market Breadth Builder ..... 6

Market Review ..... 8

The *Opening Bell Monthly* is a publication of AIQ Incorporated  
David Vomund, Chief Analyst  
P.O. Box 7530  
Incline Village, Nevada 89452

PUTTING IT ALL TOGETHER

## THE MANY TALENTS OF THE TRADING CHANNEL INDEX

By Dr. J. D. Smith

In 1980, Donald Lambert introduced an indicator called the Commodity Channel Index in an article in *Commodities* magazine. Personal computers were not yet widely used in personal trading, so this indicator was designed for a Texas Instrument TI-59 hand held calculator. The Commodity Channel Index (CCI) is also included in version 3.0 of TradingExpert for Windows.

This new indicator was designed for detecting the beginning and ending of regular price movements. I'm not sure exactly what Lambert meant when he said regular, but that's how he described it.

The four steps in calculating the CCI are shown in **Box 1** (next page). The first step is to compute what Lambert calls the typical price for the day. It is an average of the high, low and close for the day — in other words, an average of the price bar.

Next, he computes the moving average of

the typical price. The length of the moving average depends on the contract, or market, used in the calculations.

His third step was to compute a mean deviation of typical prices around the moving average. Here, Lambert used the absolute deviation between the typical price and his

DR. J. D. SMITH

average price as a measure of dispersion.

The last step was to compute the index by dividing the difference between typical price and average typical price by the mean deviation times 0.15.

The number 0.15 is a scaler constant which specifies the expected range of deviation.

The values of the resulting Commodity Channel Index are distributed around zero, with extreme values greater than 100 and less than minus 100. Interpretation of the CCI is the location of the current period's typical price within the computed deviation channel, or trading channel. Values of 100 or greater

*“When AIQ developed TradingExpert, I wanted a channel-type indicator on the charts but I felt that CCI was too volatile. So I took Lambert's concept, modified it, and called the index TCI — the Trading Channel Index.”*

PUTTING IT ALL TOGETHER *continued* . . .

mean the typical price is at or near the upper channel boundary and values at or near 100 mean prices are at the lower channel boundary. The important signal is the change in direction of CCI when the index is at the maximum values.

When TradingExpert was being developed, I wanted a channel-type indicator on the charts but I felt that CCI was too volatile. It was designed for trading commodities, and my interest was trading equities. So I took Lambert's concept, modified it, and called the index TCI – the Trading Channel Index.

The five-step computation for the Trading Channel Index is shown in **Box 2**. I retained Lambert's idea of using typical price, as shown in step 1. But instead of computing a moving average, I used an exponential average. I prefer the exponentially smoothed average because of the heavier weights applied to more recent data – the moving average uses equal weights for all data regardless of the age of the data.

The exponentially smoothed average is a bit more responsive. As shown in step 3, I used the absolute deviation as a measure of dispersion as did Lambert but I again used the exponential average instead of a moving average. The formula for the Commodity Index portion, step 4, is the same. But I added a new exponential average on the Commodity Index in step 5 to get to my Trading Channel Index.

The difference between these two

**Box 1**

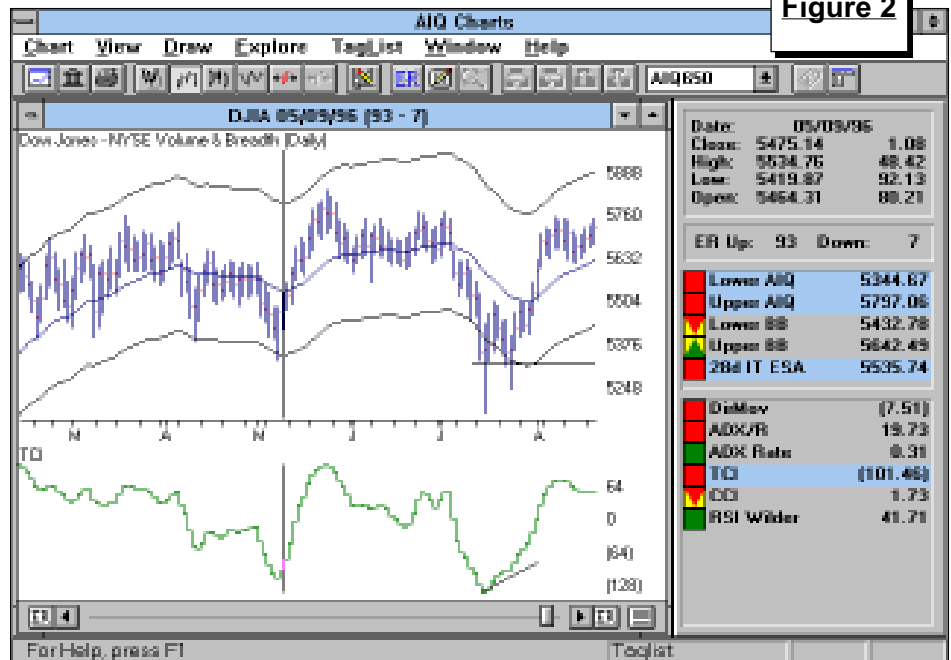
**Four Steps to Compute CCI**

- 1)  $X_t = (H+L+C) \div 3$       compute typical price
- 2)  $\bar{X} = \frac{1}{n} \sum X_t$       compute moving average
- 3)  $MD = \frac{1}{n} \sum (X_t - \bar{X})$       compute mean deviation
- 4)  $CI_t = (X_t - \bar{X}) \div 0.15 MD$       compute Channel Index

**Figure 1**



**Figure 2**



**PLEASE SEND CORRESPONDENCE TO:**

Opening Bell Monthly  
G.R. Barbor, Editor  
P.O. Box 7530  
Incline Village, NV 89452

AIQ Opening Bell Monthly does not intend to make trading recommendations, nor do we publish, keep or claim any track records. It is designed as a serious tool to aid investors in their trading decisions through the use of AIQ software and an increased familiarity with technical indicators and trading strategies. AIQ reserves the right to use or edit submissions.

For subscription information, phone 1-800-332-2999 or 1-702-831-2999.

© 1993-1996, AIQ Systems

PUTTING IT ALL TOGETHER *continued* . . .

indexes is shown in **Figure 1**. The TCI is smoother and less volatile because of the exponentially smoothed average. The TCI is, however, used the same as the CCI. Watch for changes in direction of the index when at extreme values.

In the examples which follow, I demonstrate how TCI can be used for market signal confirmation, sector rotation, group analysis, stock selection, and exit strategies.

### Market Timing and Sector Rotation

The first use of TCI is as a market timing oscillator measuring oversold and overbought situations. When used with the Dow Jones Industrial Average (DJIA), extreme values will be in the neighborhood of plus or minus 100.

In **Figure 2**, the vertical Date Line designates May 9, 1996. On the prior day, May 8, TradingExpert issued an Expert Rating of 99 to the upside for the DJIA. Also on May 8, the TCI turned up, providing confirmation for the Expert Rating.

On May 24, the TCI turned down, signaling the coming weakness in the market. No Expert Rating was generated at that time.

Figure 2 also illustrates the use of TCI divergences against price. A divergence occurred in mid-July. The market was making a short period double bottom. On the second drop to the support level, TCI showed a continuation of the bullish movement starting on July 17. That upturn in TCI confirmed an upside Expert Rating three days prior.

Sector rotation is easily seen when using TCI on weekly data. A good example is shown in **Figure 3**. In this case, TCI is used to determine the intermediate trend.

In using TCI on sectors and groups, the critical, or extreme, value is plus or minus 60. Watch for changes in TCI when near or above plus 60 or close to or below minus 60. The reason for this change in the critical value for TCI is that a group or sector is already an average and as a result has less inherent volatility. The intermediate trend is shown by the general direction of the TCI on the weekly chart.

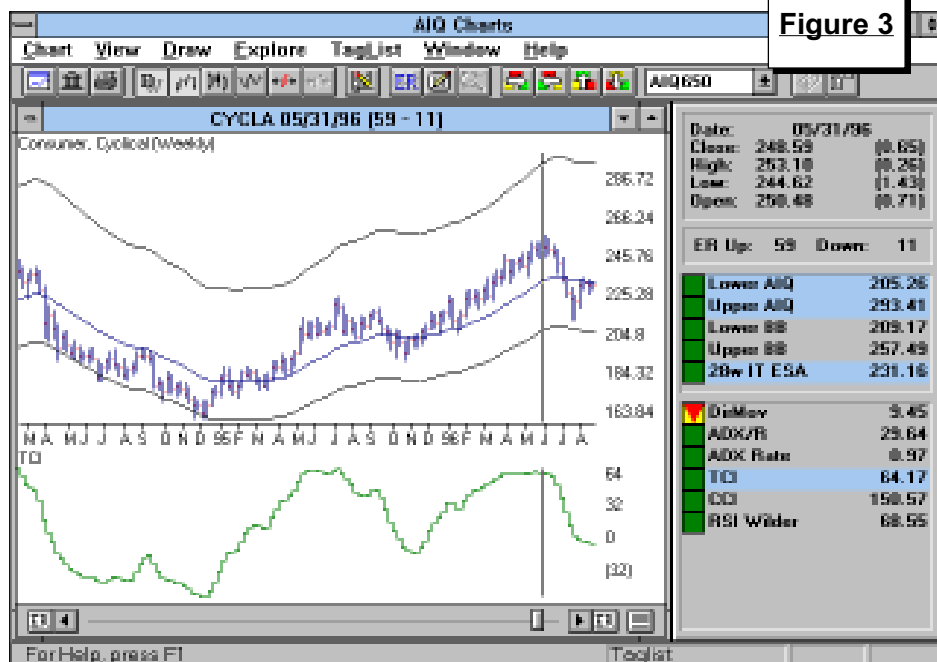
*Putting It All Together continued on page 4*

### Box 2

#### Five Steps to Compute TCI

- 1)  $X_t = (H+L+C) \div 3$  compute typical price
- 2)  $E_t = \alpha X_t + (1 - \alpha) E_{t-1}$  compute exponential average
- 3)  $D_t = \alpha (E_t - X_t) + (1 - \alpha) D_{t-1}$  compute average deviation
- 4)  $CI_t = (X_t - E_t) \div 0.15 D_t$  compute Channel Index
- 5)  $TCI_t = \beta CI_t + (1 - \beta) TCI_{t-1}$  compute TCI

### Figure 3



### Figure 4



PUTTING IT ALL TOGETHER *continued* . . .

### Stock Selection with Bollinger Bands

D. W. Davis in a September 1993 article for *Technical Analysis of Stocks & Commodities* recommended the use of the Commodity Channel Index and Bollinger Bands in a two indicator trading system. My initial reaction was skepticism, as both the Commodity Channel Index and Bollinger Bands are measuring essentially the same thing, albeit in different ways.

CCI as we have shown uses an average of typical daily price where the Bollinger Band uses closing price. CCI measures dispersion using absolute value where the Bollinger Band uses the square. But essentially both are measuring the extent of price variation around an average price in determining trading bands.

But Davis made a good case, so I thought that I would try the Trading Channel Index with Bollinger Bands. The purpose of this two indicator system (which I will refer to as the TCI/BB combo) is to determine objectively when a price correction or reversal is most likely. The TCI/BB combo has three requirements:

- 1) Prices should be at or near the outer limits of the Bollinger Bands.
- 2) A change in direction of TCI should occur. Extreme values are not needed here. The Bollinger Band takes care of that requirement.
- 3) Subsequent break in a price trendline confirms the signal.

Examine closely **Figure 4**, which shows Sara Lee with standard Bollinger Bands (a 20 day moving average and two standard deviation bands). The first signal is at the far left on the chart, about the middle of July. TCI turns down and prices are at the upper Bollinger Band. Two weeks later, a price break occurs as prices move to the lower band and continue to slide south until the second week of August. At that point, the TCI turns up and prices advance to the upper Bollinger Band and continue up until mid-September. TCI again changes direction and the price advance stops.

The cycle occurs again in October. Prices advance to the upper Bollinger Band until mid-November. TCI turns down and prices stabilize for about a week. A

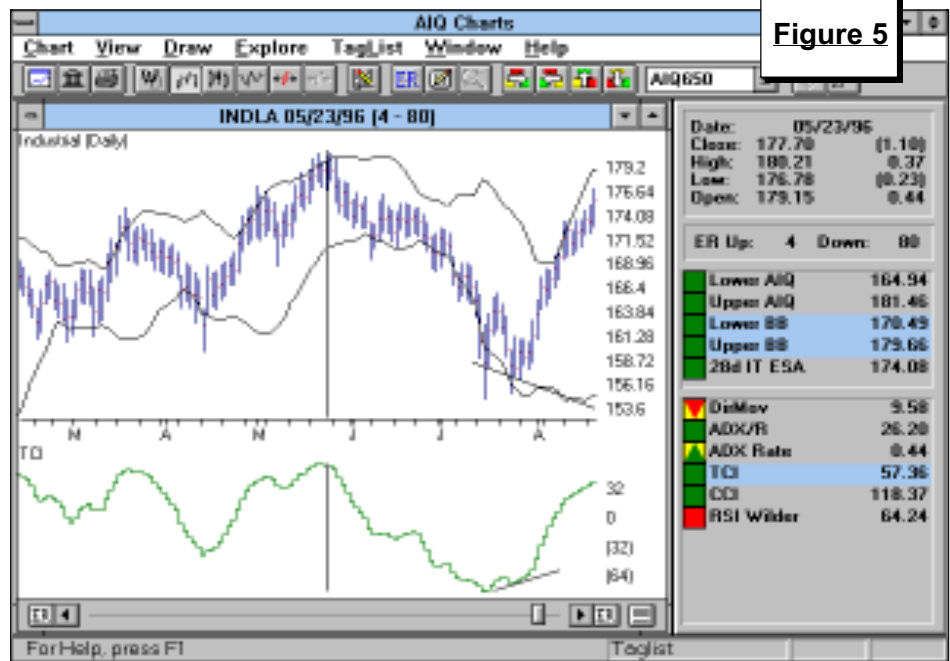


Figure 5



Figure 6

trendline under this support is not broken. Prices continue to advance to new highs the first part of December. At that point, the TCI is diverging from the new higher prices and subsequently there is a price decline.

In order for this TCI/BB combination to work, all three requirements must be met. Prices have to be at the outer limits of the Bollinger Bands, there must be a change in direction of the TCI, and to

protect against false signals a trendline through recent prices must be broken in order to confirm the exit or entry opportunity.

**Figure 5** is the Industrial Sector from the AIQ Pyramid. It is an example of how the TCI/BB combo may be used for sector rotation and stock selection. Notice the divergence between prices and TCI in late July. The sector average is forming a double bottom similar to the overall market

PUTTING IT ALL TOGETHER *continued* . . .

and TCI is showing a bullish divergence. But I digress.

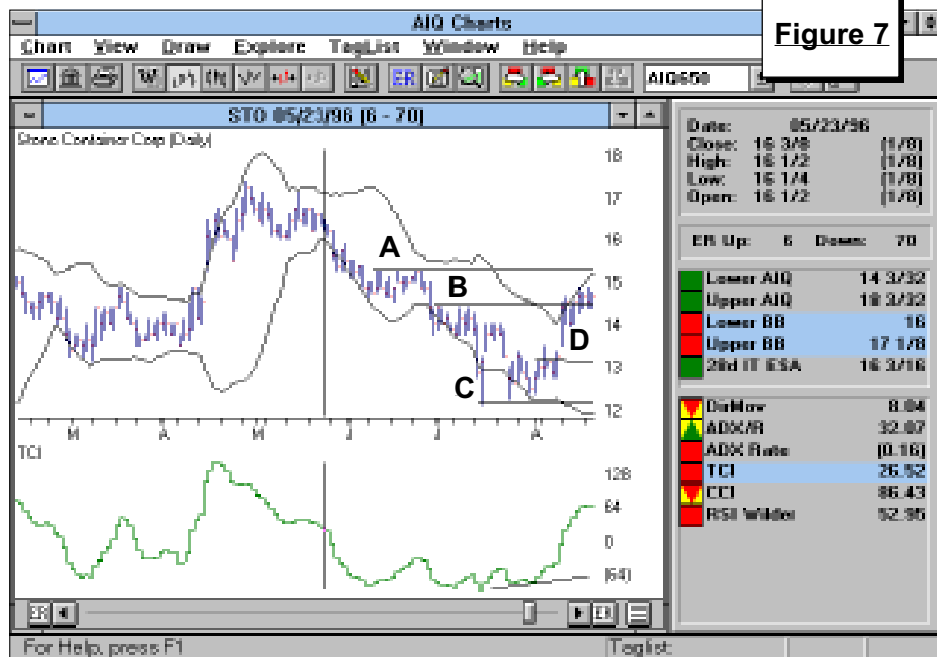
On May 23, Figure 5 shows that the sector average is at the upper Bollinger Band and TCI is turning down. **Figure 6** is the Containers & Packaging Group from the Industrial Sector for the same day. The same pattern has already occurred. A trendline under recent group averages has been broken. This is a bearish sign.

Exploring the stocks in this group, we find Stone Container Corp. (STO), shown in **Figure 7**. On that same day, May 23, the stock has a very bearish profile. With a bearish group and a bearish sector, the STO stock looks good for a short position.

**Exit Strategies**

Figure 7 also shows the use of the TCI/BB combo in exit strategies. As this would be a short position, I am looking for prices at the lower band and an upturn in TCI. I will take this as a warning sign and an excuse to put a trendline just above recent highs. This will cause an exit if indeed prices reverse, but also allows me to ride out any false signal and retain my position.

The first reversal signal occurs in the first week of June (Figure 7). I place a trendline at position A. Prices drift sideways and then down with no break in



**Figure 7**

the trendline. A month later, it tries again.

The first week in July, there is another TCI upturn and a trendline is placed at position B. By August, a consolidation seems to be occurring. The support level at position C is a good initial stop for a long position, and position D is a proper stop for the short position. At the same time in the month of August, the group shown in Figure 6 and the sector shown in Figure 5

are also bullish.

Not bad for an indicator originally designed 16 years ago for a hand held calculator. I'm not ready to throw away my trading process and start a new one based on the Trading Channel Index and Bollinger Bands, but it sure appears worthy of some additional study and review. ■

**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
Northland Cranber	CBRYA	2:1	09/03/96	Archer Daniels Midland	ADM	5%	09/17/96
Orthodontic Ctrs.	OCAI	2:1	09/06/96	Sturm Ruger	RGR	2:1	09/17/96
MLF Bancorp	MLFB	3:2	09/09/96	Evergreen Bancorp	EVGN	2:1	09/17/96
Paxar Corp	PXR	25%	09/10/96	Reynolds & Ren.	REY	2:1	09/18/96
Snap On Inc.	SNA	3:2	09/11/96	SY Bancorp	SYBA	2:1	09/18/96
Anheuser Busch	BUD	2:1	09/13/96	Green (AP) Inds	APGI	2:1	09/23/96
Claire's Stores	CLE	3:2	09/13/96	CORE Staff Inc.	CSTF	3:2	09/23/96
Hershey Foods	HSY	2:1	09/16/96	AT&T Corp	T	.326:1	10/01/96
NeoPharm Inc.	NPRM	2:1	09/16/96	Analysts Int'l	ANLY	2:1	10/01/96
Viasoft Inc.	VIAS	2:1	09/16/96	Astronics Corp	ATRO	5:4	10/01/96
Regal Cinemas	REGL	3:2	09/17/96	Richfood Holdings	RCHF	3:2	10/01/96
Barnet Banks	BBI	2:1	09/17/96				

**Trading Suspended:**

Acme Cleveland (AMT)	Allegheny Ludlum (ALS)
Cray Research (CYR)	Eaton Vance (EAVN)
Guest Supply (GEST)	Hayes Wheels Int'l (HAY)
Int'l Colin Energy (KCN)	Morrison Knudsen (MRN)

**Name/Ticker Changes:**

Software Developers (SDEV) to Netegrity Inc. (NETE)
General Public Utilities (GPU) to GPU Inc. (GPU)
Dial Corp (DL) to Viad Corp (VVI)
SafetyTeck (SAFE) to Invivo Corp (SAFE)

MARKET ANALYSIS

# AIQ'S NEW MARKET BREADTH BUILDER- MORE TESTING RESULTS

By David Vomund

DAVID VOMUND

In last month's *Opening Bell Monthly*, we began a study based on the new Breadth Builder feature available in TradingExpert for Windows version 3.0. For this study, we used the Breadth Builder to create markets from the AIQ Pyramid industry sectors. We then looked at the performance of the Expert Ratings generated for these "sector markets" over a two year period of time.

This month, we have updated the study to include the July market decline and most of the August rally. We performed the test on all of the Pyramid sectors.

Using the new Breadth Builder, breadth data was created for the Pyramid sectors using the stocks that are associated with each sector. This allows us to use indicators such as the Advance Decline Oscillator and the New Highs/New Lows indicator when charting the sectors. Of greater importance, this breadth data enables us to use AIQ's market timing model to generate market Expert Ratings for the sectors.

To briefly review our testing procedures, we looked for Expert Ratings of 95 or greater confirmed by the Price Phase indicator. Anytime a buy signal of 95 or greater was registered, we bought the sector when the Phase indicator began to increase (or on the day of the signal if the Phase was already increasing).

Conversely, we sold when a sell signal of 95 or greater was confirmed by a decreasing Phase indicator. The extended time period used for this second test was January 1994 to August 15, 1996.

Last month, we compared the effectiveness of the Expert Ratings generated by the regular timing model to the Expert Ratings that are generated using Breadth

Builder and the AIQ market timing model. The Expert Ratings using the market timing model were so superior that we discontinued the comparison with the regular timing model.

This is simply a test of market timing based on Expert Ratings vs.

buy-and-hold and not a test of an actual trading strategy. Therefore, we assume that we can buy at the close on the day the

signal is confirmed. Commissions and slippage are not included.

After completing the test on all the Pyramid sectors, the trading results have

improved over last month's study but the conclusions remain the same. The correction in July actually

improved the Expert Rating trading performance. **Table 1** shows the Pyramid sectors and the results of trading the sectors

*"Breadth data enables us to use AIQ's market timing model to generate market Expert Ratings for the sectors."*

**Table 1**

**Average Annual Rate of Return (%)  
(01/01/94 - 08/15/96)**

	Breadth Builder	
	Trading	Buy & Hold
Basic Materials	7.25	9.72
Consumer-Cyclical	9.53	0.33
Financial Services	7.66	19.07
Food	10.98	19.11
Health & Pharm.	10.53	32.40
Industrial	44.71	29.28
Insurance	9.87	8.27
Leisure	5.04	0.64
Metals	18.36	2.87
Oil-Prod. & Services	18.18	12.83
Retailing	37.57	11.00
Technology	21.78	23.56
Transportation	6.14	2.13
Utility	0.37	1.45
<b>Average</b>	<b>14.86</b>	<b>12.33</b>

MARKET ANALYSIS *continued . . .*

by applying Breadth Builder compared to buy-and-hold.

We see that Expert Rating trading performed extremely well for some Pyramid sectors such as Industrial, Metals, and Retailing. There were other cases where trading badly underperformed such as Financial Services and Health & Pharmaceuticals. Overall, the results from trading are about the same as buy-and-hold results. The trading results would be lower after commissions.

The problem with market timing is that some rallies are missed. The Expert Ratings tend to be countertrend, so if a buy signal is not registered when a sector is near a low and beginning to rally, then it is not likely that a buy signal will occur as the sector enters its strong advance.

While the trading results are even with a buy-and-hold strategy, we found that when the sectors are on buy signals, they tend to outperform. The annualized return of the average trade based on the Breadth Builder model is greater than the annualized buy-and-hold return.

**Table 2** lists the average return and the average holding period for each buy signal. The second column annualizes the first column. The final column shows the annual (buy-and-hold) return for each sector.

We see that in 10 of the 14 cases, the annualized return for an Expert Rating buy period is greater than the annual buy-and-hold return. Even some of the sectors that badly underperformed buy-and-hold on the mechanical trading basis outperformed when they were on buy signals. These sectors underperformed on a mechanical trading basis because there were times that they were on a sell signal while the sector rallied. They didn't catch every move but when they were on a buy signal, they outperformed.

### Summary

Applying market timing based on Expert Ratings to the AIQ Pyramid sectors worked well for some of the individual sectors (Consumer-Cyclical, Industrial, Leisure, Metals, Oils, and Retailing). However, our mechanical system that only uses Expert Ratings confirmed by the

**Table 2**

### Breadth Builder Test Results (01/01/94 - 08/15/96)

	ER Trading % Gain per Trade	ER Trading Annual (%)	Buy & Hold Annual (%)
Basic Materials	1.31% in 36 days	13.43	9.72
Consumer-Cyclical	1.67% in 30 days	20.66	0.33
Financial Services	1.53% in 18 days	31.91	19.07
Food	0.74% in 25 days	10.98	19.11
Health & Pharm.	1.93% in 25 days	27.95	32.40
Industrial	2.19% in 32 days	24.82	29.28
Insurance	0.68% in 25 days	9.89	8.27
Leisure	0.24% in 21 days	4.23	0.64
Metals	0.89% in 12 days	28.25	2.87
Oil-Prod. & Services	3.27% in 41 days	29.47	12.83
Retailing	2.80% in 27 days	37.57	11.00
Technology	3.34% in 29 days	41.75	23.56
Transportation	1.32% in 40 days	11.93	2.13
Utility	0.09% in 27 days	1.23	1.45
	<b>Average</b>	<b>21.01</b>	<b>12.33</b>

Phase showed overall results that are about even with a buy-and-hold strategy.

The Expert Ratings are a powerful tool for the short-term trader who wants to buy an outperforming sector. When a sector is on a buy signal, its average return (on an annualized basis) exceeds its average annual buy-and-hold return. ■

*Note:* The results and conclusions of our sector testing do not apply to the overall market or individual stocks. For market timing studies, see the *Opening Bell Monthly* June '95 and April '94. For a stock timing study, see *Opening Bell Monthly* April '95.

*In addition to managed accounts, David Vomund publishes two advisories for stock and sector fund investing. For information, phone 702-831-1544.*

### Annual Lake Tahoe Seminar

Hyatt Regency Hotel,  
Incline Village, Nevada

Thursday through Saturday  
October 3, 4, & 5, 1996

Broad new seminar agenda  
includes AIQ Windows products

Wednesday, October 2 –  
Options Workshop (optional)

**For reservations** or for more  
information, call:

**1-800-332-2999**

### JIM YATES

With great sadness we note the passing of Jim Yates on August 28, 1996. Jim's AIQ seminar options workshops were highly regarded, and he was a valued contributor to this newsletter. He will be greatly missed.



MARKET REVIEW

# CLASSIC INDUSTRY GROUP ROTATION TAKES PLACE IN AUGUST

By David Vomund

After a wild July, Wall Street decided to take the month of August off. Volatility decreased and volume dried up. During the month, the market continued its post-correction rally and the Dow came within 45 points from closing in new high ground. The smaller company stocks are still off their highs as the Russell 2000 is about 7% below its old high.

The AIQ timing model was on a buy signal for most of the month until a 98 sell signal was registered on August 29. Just before the sell signal, over 80% of the stocks giving confirmed and unconfirmed signals were on the sell side (using a database of the AIQ Pyramid stocks). At the time of the sell, the percentage of stocks giving confirmed signals was still bearish while the percentage of stocks giving unconfirmed signals turned neutral.

We saw a classic illustration in industry group rotation during the month and how it can be tracked using TradingExpert. It used to be that a high Delta Trend Score (DTS) on the group report was the first indication that a lagging group is about to outperform. I'm finding an earlier indication is the Price Volume

Divergence report. **Figure 8** shows the divergence report for stocks in early August. Notice the number of oil related companies showing positive divergences. Groups of oil related companies were also listed as having a positive divergence in the Price Volume Divergence report for groups.

The next indication of a group that is beginning to outperform is a high DTS score on the group report. In **Figure 9**, we are showing the groups in the lower half of the report. Notice it is the oil related groups with the positive DTS values.

The final step in identifying outperforming groups is that they rise to the top of the group report. In **Figure 10**, three of the top six groups are oil related. At the

top of the report, most of the groups have a DTS of 0. That is because their momentum has leveled out. They can still be increasing in value but the rate of change is the same.

Just because a group is near the top of the report does not mean it's in a topping process. Groups near the top of the report can, and often do, outperform. It's only when they fall in the report and have negative DTS scores that you know their rotation cycle has been completed. ■

Figure 8

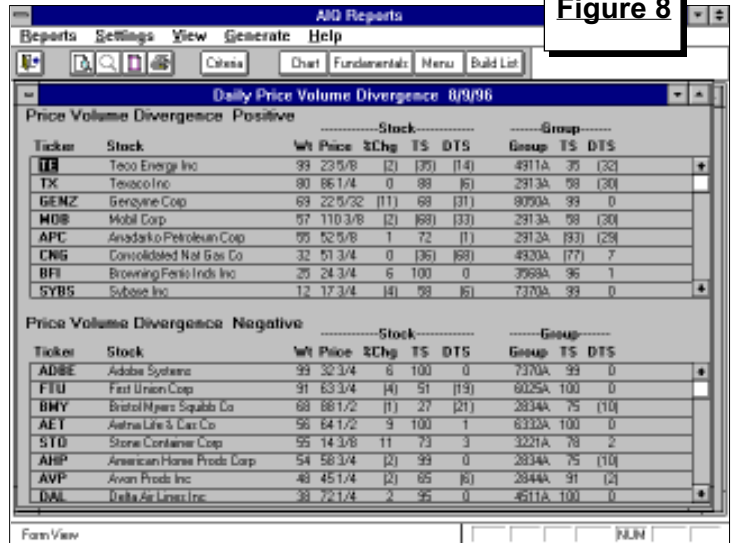


Figure 9

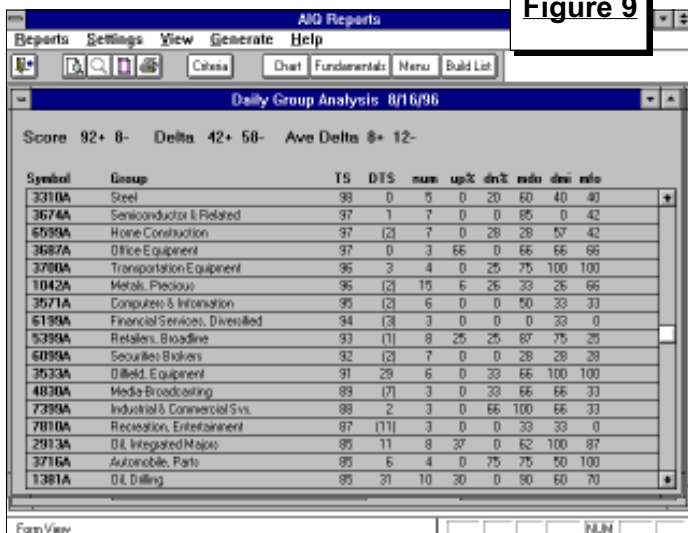


Figure 10

