AIQ Opening Bell ®

Monthly

EDS ANALYSIS

BASICS OF USING EXPERT DESIGN STUDIO, AIQ'S TRADING SYSTEM DEVELOPMENT TOOL

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By David Vomund

The Expert Design Studio (EDS) is an extremely powerful package that gives users the ability to not only create their own stock screening reports but also allows users to perform thorough backtests on an individual indicator or on a complete trading system. Until now, the ability to test different trading systems and uncover effective strategies was only available to large institutional investors. We can now test before we trade.

An EDS trading system is composed of one or more *rules.* The fact that these rules are input in a language that resembles mathematical formulae can be intimidating to users. Fortunately, the process is made easy because a wide array of pre-built rules is provided which cover most aspects of analysis. Users can create a complex system by simply cutting and pasting the pre-built rules.

Before we cover how to create a trading system using pre-built rules, let's first create a simple screening model. If you know how to create your own rules, the rest of the program becomes much easier.

Creating a simple screening model

In our first example, we'll create a model that screens for:

1. a Stochastic buy signal (Stochastic rising from below 20 to above 20)

2. share price between $10 and $30

The EDS formula for this screening model is shown in **Figure 1**. The model consists of three statements, each defining a separate rule.

- The first rule, labeled **Rule1**, screens for stocks with a closing price that is greater than $10 but less than $30.

- The second rule, labeled **Rule2**, looks for stocks whose Stochastic indicator rose above 20. To accomplish this, it first looks for securities whose Stochastic value one day ago is less than 20 (left side of the equation) and then it looks for securities whose current day's Stochastic is above 20 (right side of the equation). Only

those stocks for which the Stochastic indicator rose above 20 will pass **Rule2**.

- The final rule, which we called **Allworks**, will screen for the stocks that pass both **Rule1** and **Rule2**.

To create the rules in our model and save them in an EDS file, follow these steps:

- Open *EDS* and select **New** from the *File* menu. A blank *Rule Library* page will appear in the main EDS window.

- At the cursor, type in the three rules exactly as they appear in Figure 1.

- Each rule begins with the rule name (i.e., Rule1) and ends with a period.

- The rule name is always followed by the word *if*.

- The remaining characters (those characters after the word *if* and before the period) comprise an expression that can be evaluated with either a True or False result. (This expression is called the ***Rule Body***.)

- Characters enclosed within the "[]" brackets typically refer to an indicator or a component of the stock price. (When a rule is evaluated for a specific stock and date, the value of the indicator or price component on that date is used to evaluate the rule.)

Figure 1

```
system.EDS - Expert Design Studio
File  Edit  Report  View  Help

Rule Library

Rule1 if [close]>10 and [close]<30.
Rule2 if val([Stochastic],1)<20 and [Stochastic]>20.

Allworks if Rule1 and Rule2.

For Help, press F1                                    Ln 1, Col 1        NUM
```
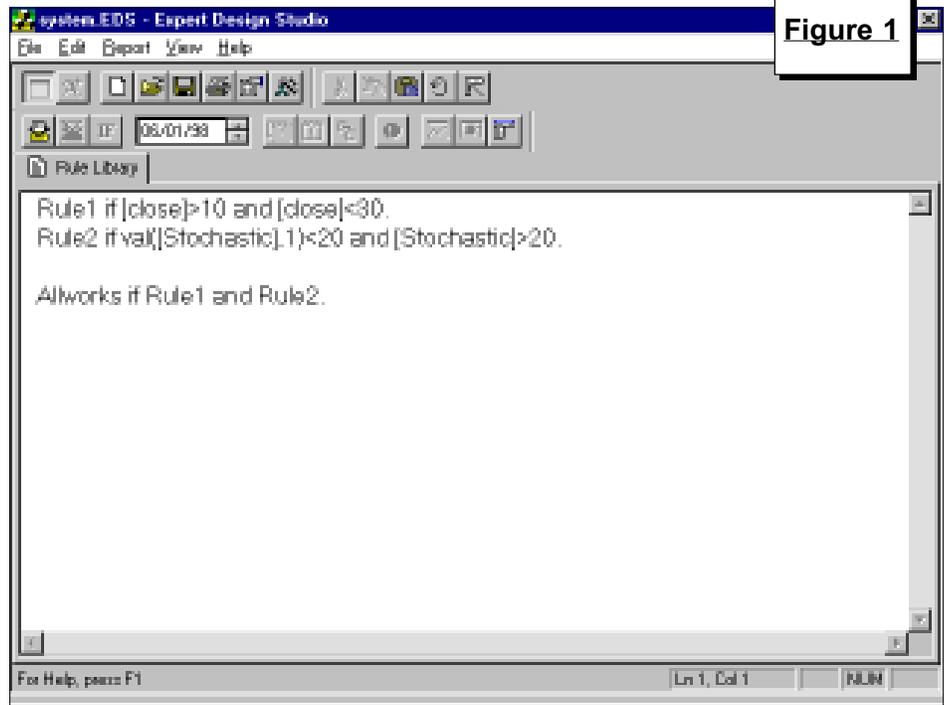
- After entering your three rules, select **Save As** from the *File* menu. In the *Save As* dialog box, enter a name for the file and click **Save**. Before saving the file, the EDS Rule Compiler checks each statement for errors and displays messages describing any errors that may be present. If no errors are found, the rules are compiled and the file is saved.

Note: To see a list of available indicator names, select **Edit** from the menu bar and then choose **Builder**. The *Rule Builder* dialog box will appear. In box #1, Select **Indicator Fields.** A complete listing of the different indicators will appear in box #2.

Creating a Report

Now that our model has been created, the next step is to set up a Report that will list those stocks that pass our screening criteria. A separate Report with its own report tab can be created for any rule in a trading system. Since we are most interested in the stocks that pass the Allworks rule, the only report tab we need to create is one for the Allworks rule.

To create an Allworks report tab, proceed as follows:

1. From the menu bar, choose **Report** and then **Insert**. A dialog box will appear which lists the rules that have been created.

2. Highlight **Allworks** and click **OK**. An Allworks report tab will appear next to the Rule Library tab.

Running a Report

Proceed as follows:

1. To run the Allworks Report, click on its tab.

2. Next, select **Report** from the menu bar and then choose **Run Single**.

3. A list of the ticker symbols that pass the Allworks rule for the date listed on the icon bar will begin to appear on the screen. To display a chart of any stock listed on the Allworks report, simply double click its ticker symbol.

Enhancing the Report

The basic Report lists only the symbols of the tickers that pass the rule. EDS allows you to display additional information by adding columns to the report. For instance, we can list the Closing Price and Stochastic value next to the ticker symbols on the Allworks Report page.

To add columns to the report:

1. With the Allworks tab active, choose **Report** and then **New Column**. The *Fields* dialog box will appear.

2. From the *Category* box, select **Indicator Fields**. The *Items* box will now display an alphabetical list of all indicators.

3. From this list, select **Close** and **Stochastic** and click **OK**. The final report appears in **Figure 2**.

Using Pre-Built Rules

The Expert Design Studio comes with a vast array of Pre-Built Rules and strategies. These pre-built routines will cover most every user's needs. These routines, which are accessed through the EDS *Builder* function (*Edit* submenu), allow you to create systems by simply cutting and pasting the Pre-Built Rules.

As an example, let's say we want to build a system that screens for stocks that just crossed above the 28-day Moving Average at the same time that the Velocity indicator is above zero and increasing.

To create a system using Pre-Built Rules, proceed as follows:

1. Our first step is to tell EDS we want to open a new file. To open a new file, select **File** from the menu bar and choose **New**.

2. Next we want to use the Builder function to select the appropriate Pre-Built Rules. From the menu bar, choose **Edit** and then **Builder**.

3. The *Rule Builder* dialog box that appears contains several boxes. From *box #1, Select Category,* choose **Prebuilt Routines**. (Prebuilt Routines are EDS rules that have been constructed for different technical indicators.)

4. The Items available for selection are listed in *box #2*. When an Item is selected, a description of that item appears in the text box immediately below *boxes #1* and *#2*.

5. In order to build a rule for the 28-
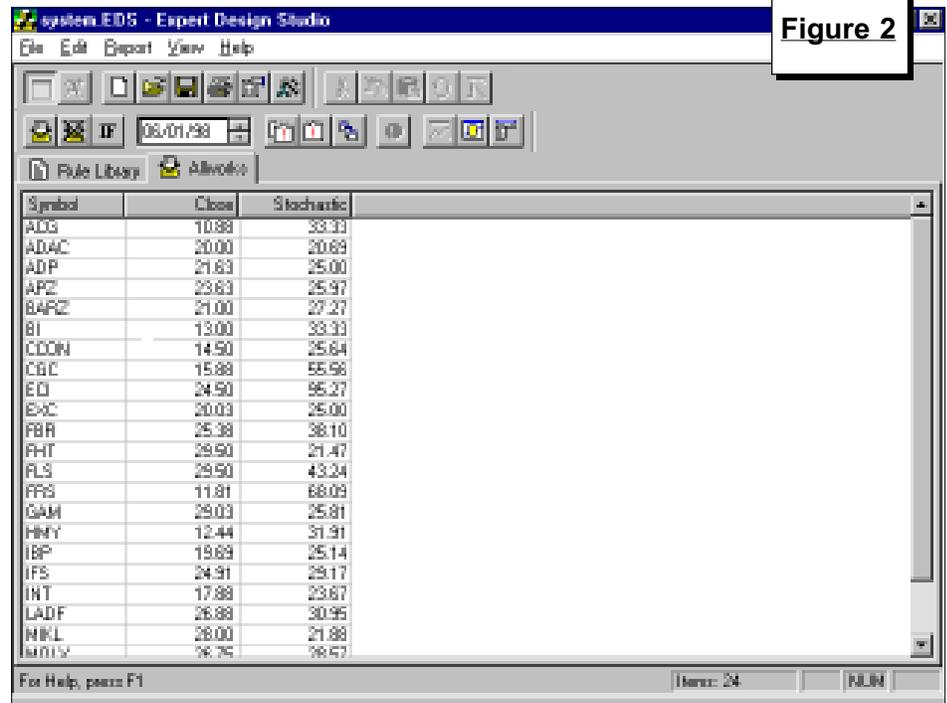
Figure 2

day Moving Average Crossover, click on the **ST MA price cross up** rule.

6. Next, click on **Paste Selected Item Below**. The rule will now appear in *box #4*.

7. Click **OK** to paste the rule to your Rule Library document. Make sure the ST MA in your *Charts* application is set to 28 days.

8. To return to the Pre-Built Rules, select **Edit** from the menu bar, choose **Builder**, and once again, select **Prebuilt Routines**.

9. In order to build a rule for Velocity above zero and increasing, choose the **Velocity Above Zero Slope Up** rule.

10. Click **Paste Selected Item Below** and then click **OK**. Both rules should now appear in the Rule Library.

11. With these rules created, we can now type in the final rule which will be called Allworks. This rule simply states that the two previous rules are true. Our newly created model appears in **Figure 3**.

12. To complete our model, we will create a Report for the Allworks

rule. Select **Report** from the menu bar and choose **Insert**. From the dialog box that appears, select **Allworks** and click **OK**. To run this report, click on the Allworks tab, set the date shown in the tool bar to the proper day, and from the *Reports* menu choose **Run Single**.

Advanced Pre-Built Rules

Being able to create your own screening report is useful but most users will find that everything they need is available in the Pre-Built Rules. Most people's needs are met by simply cutting and pasting the pre-built strategies. To get a good feel for the EDS language, it is useful to scan through the Pre-Built Rules. Here are some examples.

• Price hitting a new 45 day low but indicator above its 45 day low:

! Price new low not confirmed by low in AcmDis

AcmDisLOnon if Loval([close],45)=[close] and LoVal([AcmDis],45)<[AcmDis].

• Security's price is moving lower over the last 60 days but Money Flow is moving higher:

! Moneyflow slope is up while price slope is down

MFupPRICEdn if Slope([Mnyflow],60)>0 and Slope([close],60)<0.

- Security rises above its Intermediate Term Moving Average:

! Price cross up the IT MA

ITMApriceUP if VAL([close],1)<VAL([IT MA],1) and [close]>[IT MA].

- The MACD Phase Line rises above its Signal Line:

!MACDI crossover to the upside

MACDxUP if Val([MACD],1) < Val([MACD Sig Line],1) and [MACD] > [MACD Sig Line].

These are only a few examples of Pre-Built Rules. We can use these rules as is or simply substitute different indicators to create the desired model.

As an example, let's create a model that screens for stocks that 1) have hit a new 21 Day Low but the Positive Volume Index was not at a 21 day low and 2) are moving lower over the last 15 days but the Velocity indicator is moving higher over the same time horizon.
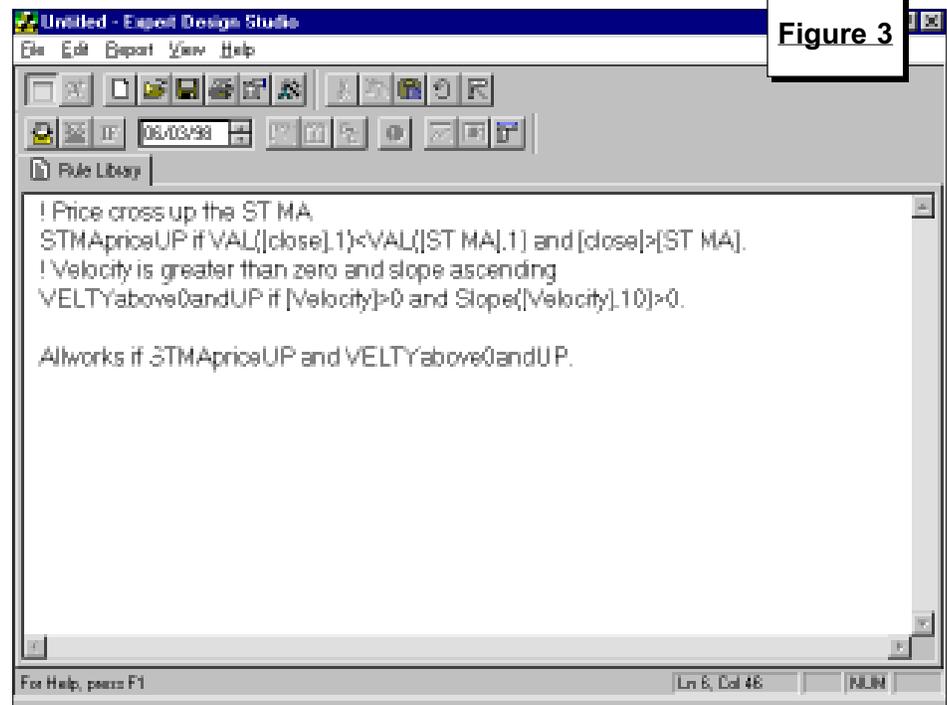
Figure 3

This model sounds difficult to program but we can simply modify two of the pre-built routines listed above. To create a rule that screens for a new 21 Day Low in the stock without an equivalent low in Positive Volume Index, we modify the first of the Pre-Built Rules listed above. Simply substitute the Positive Volume

Index indicator in place of the Accumulation/Distribution indicator and then substitute 21 days instead of the 45 days. Here is the resulting rule:

Rule1 if Loval([close],21)=[close] and LoVal([P-Vol],21)<[P-Vol].

To screen for stocks that have moved lower over a 15 day time horizon at the same time that the Velocity indicator rose, we'll use the second Rre-Built Rule listed above and substitute Velocity in place of Money Flow, and substitute 15 days instead of 60 days. The rule looks like this:

Rule2 if Slope([Velocity],15)>0 and Slope([close],15)<0.

A final rule is created called "Allworks" which states that only those stocks that pass both rules are kept. The resulting EDS file appears in **Figure 4**. Our "complicated" screening technique is created by simply substituting the appropriate indicators and parameters into a pre-built routine.

Running a backtest

The Expert Design Studio not only allows you to create your own trading systems but it also provides a complete and thorough backtester. This
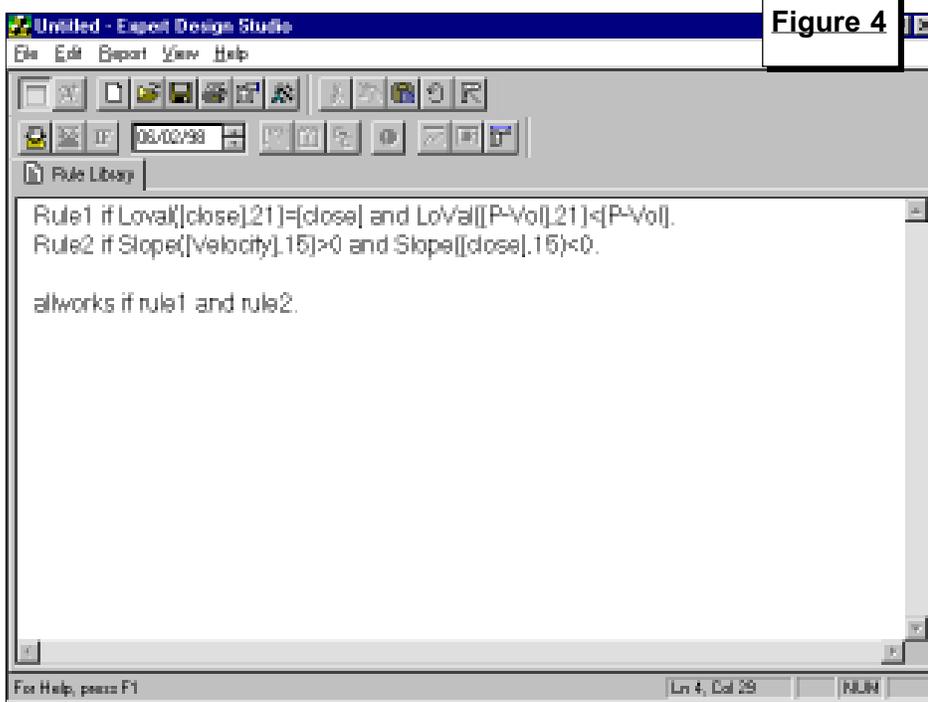
Figure 4

backtester will quickly scan the securities in your database and report the average return per trade using the strategy along with the average holding period. Many other statistics are reported including a listing of how returns compare to equivalent trades in the S&P 500 index.

To demonstrate the backtester, we'll run an historical test on the trading system that was just created. This system screened for stocks that just crossed above the 28-day Moving Average at the same time that the Velocity indicator was above zero and increasing.

To run a backtest, proceed as follows:

1. Click on the Allworks report tab that was created in Step 12 above.

2. Select **Report** from the menu bar and choose **New Backtest**. The first in a series of dialog boxes appears. These boxes are used to set up a backtest for the selected rule.

3. The first box titled *Test Name* shows the default name assigned to the test. Click **Next** to move to the next dialog box.

4. From the next box, titled *Entry*, select **Buy long** and enter **SPX** for the index we want to compare our results to. Click **Next**.

5. In the next box titled *Range*, enter the date range that will be used for the backtest (6/13/96 through 6/12/98). Click **Next**.

6. The last box, *Exit*, is used to set the sell strategy for the test.

   • Select the first choice only if you want to hold all positions for the same fixed time period. The default holding period is 21 days.

   • The second choice, *Trade It*, can be used to employ more active sell strategies. These include a simple trailing stop or stops that allow for entering different percentages for capital protection and profit protection. You can also elect to exit on a sell rule that you create in the Rule Library.
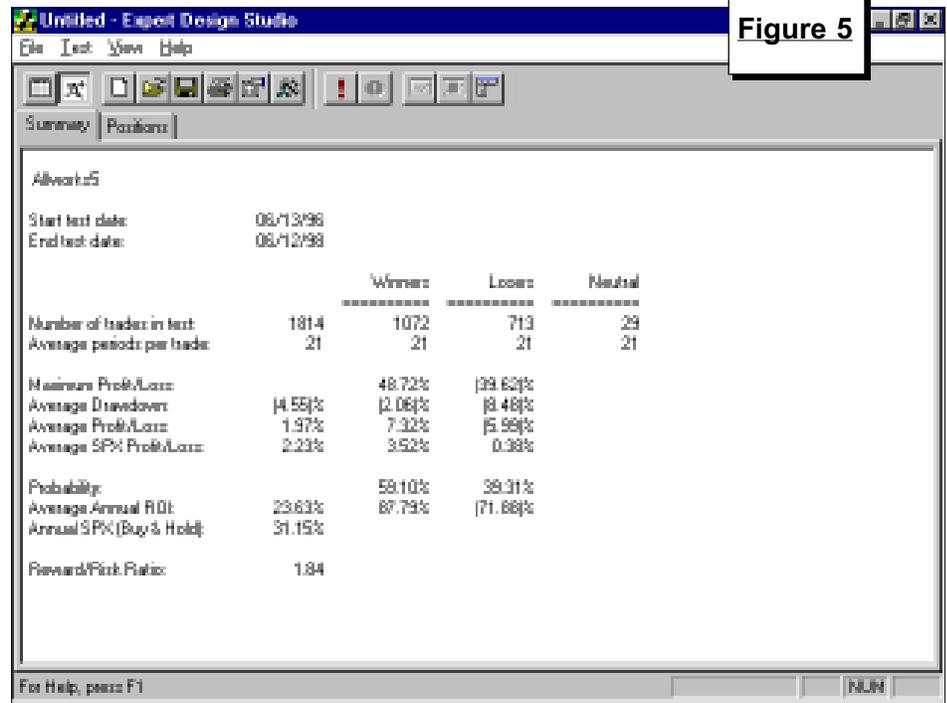
Figure 5

   • For our backtest we will use a fixed stop strategy with a simple 21-day holding period.

7. After completing all entries, click **Finish**. The screen is automatically switched to Test View where tests are run and test reports are viewed.

8. By default, the backtest we have set up will screen all the stocks in our database. You can also run the test on a list, an industry group, or only the mutual funds in your database. To change the default from your entire database, do as follows:

   • From the *File* menu, choose **Properties**.

   • In our test, we'll run the strategy only on stocks that are in the S&P 500. From the *Tickers in List* list box, choose **SP500**.

   • Click **OK**.

9. To run the backtest, select **Test** from the menu bar and choose **Run**. When the test is completed the Summary test report will appear in the main window (see **Figure 5).**

   From the results of the backtest, we see that 1814 trades took place over the two year time period with an average gain of 1.97% for the fixed 21 day holding period. That's a 23.6%

average annual rate of return. If you bought the S&P 500 instead of the stocks, the average gain per trade was 2.23%. The annualized buy and hold return was 31.15%

To see a listing of the individual trades, click on the *Positions* tab.

Note: When you are in Test View, you can return to the report/rule screen by selecting **View** from the menu bar and choosing **Report View**. To return to the test screen, select **View** from the menu bar and choose **Test View**. Before moving to the test screen, a report tab must be active. You can not move to the Test View when the Rule Library is the active tab.

To run a new backtest, move to Test View and select **Test** from the menu bar and then choose **Run**. A dialog box is displayed which allow you to make changes to the testing parameters. Make any changes and click **OK**. When the test is completed, results from the modified backtest will appear. ∎

*David Vomund publishes VIS Alert, a weekly investment newsletter. For a sample copy go to **www.visalert.com** or call (702) 831-1544.*

VETERAN AIQ USER'S POWER STRUCTURE: SIGNALS - CHARTS - INDICATORS

By David Vomund

A t a recent AIQ seminar, I had the privilege of speaking to a veteran AIQ user about his trading style and the pitfalls that those new to technical analysis often encounter. This user, who has asked to remain anonymous, has interacted with many other AIQ users through his active membership in two AIQ User Groups plus attendance at four of our seminars. His own approach has many times been a topic of discussion and he has seen how others use the AIQ TradingExpert program. We are pleased to pass on to you the trading approach of this experienced AIQ user.

Our veteran user emphasizes that there is nothing new to his analysis style. Like many power users, he has read a lot of analysis books and has modeled his approach after top technicians such as John Murphy, Edwards and McGee, Tom DeMark, David Brown, Tony Sagami, and others.

First, let's explain some terms that we will use in this article:

- **Major Trend** – the trend identified using a weekly chart.

- **Short Term Trend** – the trend identified using a daily chart.

- **Lagging Indicators** – indicators that rely upon and follow price movement. They include Moving Averages, Price Phase, MACD, and DirMov.

- **Leading Internal Momentum Indicators** – indicators that measure price and time. They include the Stochastic and RSI.

- **External Momentum Indicators** – indicators that add something other than price and time. Indicators that use volume fit this category. They include On Balance Volume and

Figure 6
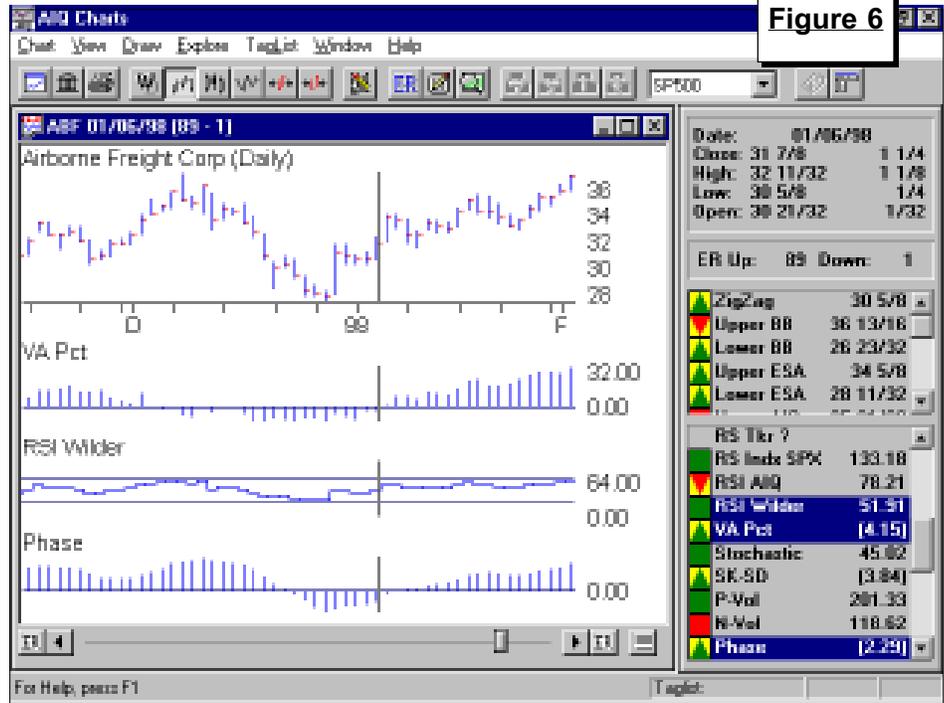
Money Flow. For markets, we also use the Advance-Decline Line and New High/New Low indicator.

The analysis process proceeds in several steps.

1. Buy signal (limited to long positions only).

For market timing, the AIQ market timing signals can be used. For equities, any buy recommendation that the user considers important enough to justify looking at a chart applies. This may be a result of an Expert Rating buy signal, an appearance on one of AIQ's pre-built reports or an EDS (Expert Design Studio) report.

2. Chart analysis.

This stage is more important than indicator analysis. Identifying support and resistance levels is the key (see *Opening Bell* March 1998). Horizontal support or resistance trendlines are more reliable than sloping trendlines. For example, for one and one-half years Coca-Cola

could not get through $45 until 9/94 when it finally broke through this price barrier. This represents one and one-half years of specific repetitive human behavior near the $45 level.

Weekly charts are analyzed first to establish the major trend and then daily charts are used, looking for continuation or reversal formations (see *Opening Bell* October 1997).

3. Indicator analysis.

Indicator analysis starts with a leading internal momentum indicator in order to determine the direction of price momentum. The RSI is the indicator of choice, where a reading above 50 signifies an uptrend and a reading below 50 signifies a downtrend. A cross above 50 serves as an early alert to a possible change in the direction of momentum but it gives no indication as to the extent of the move. Confirmation is needed.

Trading based on leading indicators is dangerous without confirmation from one or two lagging internal

momentum indicators. Applying lagging indicators helps to reduce the number of bad signals.

Finally, we look at external momentum indicators to broaden our perspective. Bringing in elements outside of price action shines a different light on our analysis and keeps us from duplicating our effort.

To demonstrate how indicator analysis is applied, we'll look at the activity in Airborne Freight (ABF), shown in **Figure 6**. On January 6, the RSI Wilder indicator (leading internal momentum indicator) moved from below 50 to above 50. The Phase indicator (lagging internal momentum indicator) moved above zero two days later while the VA Pct indicator (external momentum indicator) moved to positive territory the following day. The stock then rallied to the upper AIQ Band at $41 before retracing back to the 28 day Exponentially Smoothed Average.

After falling to its moving average, the stock found support and began to rally once again (**Figure 7**). The RSI Wilder rose above 50 on March 9. The Phase indicator was already positive but the VA Pct indicator failed to move

Figure 7
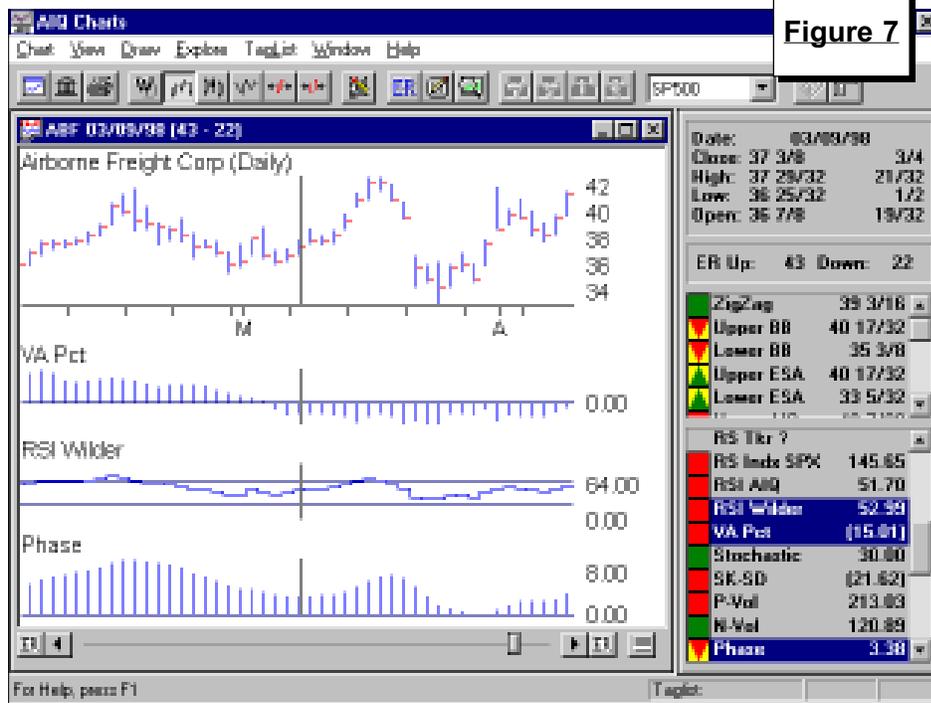
into positive territory, even though ABF rallied for the next seven days. No trade was executed and ABF fell to a new near-term low.

New users often rely too heavily on indicators at the expense of the charts. The indicators are used to confirm the original buy signal. With

so many indicators available, users can get trapped into analysis paralysis. Using three to five indicators is sufficient. By using at least one indicator of each type, we know that we are not duplicating our analysis. ∎

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
Popular Inc.	BPOP	2:1	07/02/98	Progress Software	PRGS	3:2	07/14/98
Coastal Corp.	CGP	2:1	07/02/98	Southern Union Co.	SUG	3:2	07/14/98
Allstate Corp.	ALL	2:1	07/02/98	Tower Automotive	TWR	2:1	07/16/98
Home Depot	HD	2:1	07/06/98	Ralston Purina	RAL	3:1	07/16/98
Cascade Bancorp	CACB	3:2	07/07/98	Arden Group	ARDNA	4:1	07/16/98
State Auto Financial	STFC	2:1	07/09/98	Health Mgmt Assoc.	HMA	3:2	07/20/98
Disney (Walt)	DIS	3:1	07/10/98	Earthgrains Co.	EGR	2:1	07/21/98
Masco Corp.	MAS	2:1	07/13/98	Decorator Ind.	DII	5:4	07/22/98
Tootsie Roll Ind.	TR	2:1	07/14/98	Camco Financial	CAFI	3:2	07/24/98

Trading Suspended:
ITT Corp (ITT), Amax Gold (AU), Digital Equipment (DEC), Dynatech Corp (DYT), Farah Inc. (FRA), Illinois Central Corp (IC), LCI Int'l (LCI), Long Island Lighting (LIL), Lukens Inc. (LUC), OHM Corp (OHM), Satety Kleen Corp. (SK), Showboat Inc. (SBO), Weatherford Enterra Inc. (WII), Zurn Inds (ZRN)

Name/Ticker Changes:
Borland Int'l (BORL) to Inprise Corp (INPR), Boston Edison (BSE) to BEC Energy (BSE), Minnesota Power & Light (MPL) to Minnesota Power Inc. (MPL), Quicksilver Inc. (QUIK) to Quicksilver Inc. (ZQK), RPM Inc. (RPOW) to RPM Inc. (RPM), US West Mecia Group (UMG) to MediaOne Group Inc. (UMG), Williams-Sonoma (WSGC) to Williams-Sonoma Inc. (WSM), Woolworth Corp (Z) to Venator Group (Z)

MARKET REVIEW

Although 1998 is only half completed, we've already seen a little bit of everything. The bears initially had their day as the market fell in the first half of January. Just as quickly as it fell, the market turned around and recovered its losses by the end of the month. The mid-January low turned out to be a spring-board for prices as the market rallied through the end of the first quarter without looking back.

During the rally, an upward sloping trendline could be drawn connecting the market lows (see trendline A in **Figure 8**). This was a steep trendline so we knew it would eventually be broken. A break below an upward sloping trendline signifies the end of the up-trend and either a sideways pattern or a downtrend can follow. When trendline A was broken in mid-April, the S&P 500 entered into a sideways trading range but the broader market corrected. Both the Russell 2000 and the Nasdaq Composite corrected more than 10%.

As the S&P 500 entered into its trading range, horizontal trendlines B and C could be drawn to signify the upper and lower limits. The support trendline C was tested on three occasions without being broken.

Figure 8
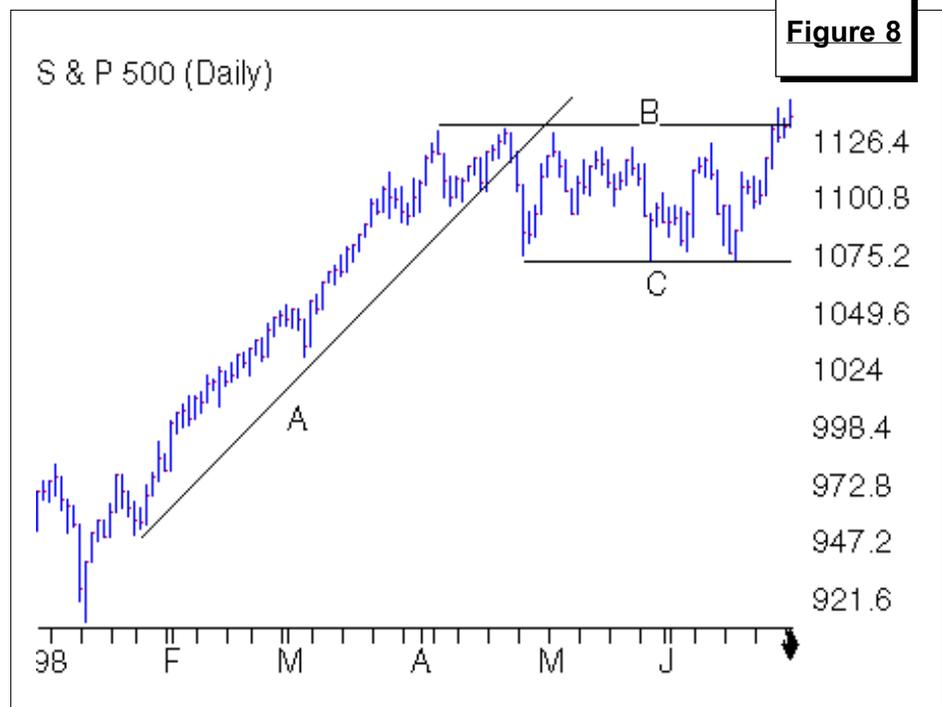
The market timing Expert Ratings have always been very good but this year they have been exceptional. On January 12 the system turned bullish, one day after the market low. The system remained on a buy through the entire advance until April 17 when a sell was registered and the market began a correction. The timing model remained on a sell until June 2, when the S&P 500 fell to trendline C. The market rallied and a sell was registered on June 10. This signal didn't last long but the S&P 500 did correct back to the lower end of the trading range. We are now on a June 16 buy signal, one day after the market low!

People often believe that the market timing model only applies to the Dow or to large-cap stocks. Not true. As we saw from the April 17 signal, the model will turn bearish when the broader market breaks down. After this signal, the Dow and S&P 500 corrected some but most of the damage was done in the small company stocks.

At the end of June, the S&P 500 barely rose above trendline B which may be the signal that the consolidation is over. This is best seen on a Point & Figure chart (**Figure 9**). The chart was drawn using a $12.5 box size on the S&P 500 . To duplicate this chart, input $100 as the value for box size for the price range covering $500 to $2000. Looking at the chart, a triple top buy signal was registered at the end of June. If this were a stock, it would appear on AIQ's Point & Figure Breakout report ■

Figure 9