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PORTFOLIO SIMULATIONS

HOW MUCH MONEY WOULD YOU MAKE TRADING A SYSTEM? NEW SIMULATOR TELLS YOU!

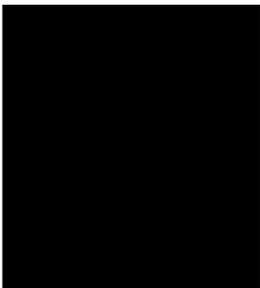
By David Vomund

Creating the Expert Design Studio (EDS) module was an important step for AIQ. In addition to the ability to run pre-built reports and follow Expert Ratings, EDS enabled users to create their own personal trading systems. Now with TradingExpert's new Portfolio Simulator, EDS has become an even more powerful tool.

After creating a trading system, the most important question is "does the system work?" EDS answers that question by comparing the return on each stock trade to an equivalent trade in the market. If the average stock trade outperforms an equivalent trade in the market, then the system has value.

The next important question then becomes "how much money would I have made trading this system?"

Until the release of the new Portfolio Simulator, TradingExpert couldn't answer this question. An EDS backtest simply looks at all qualifying stock trades and makes inferences based on the average return and holding period.



DAVID VOMUND

That doesn't represent real portfolio conditions, especially since it assumes every trade is acted on. In the Portfolio Manager module of TradingExpert's 6.0 version,

users can run Portfolio Simulations that include capitalization rules.

That is, users can specify how much money is placed in each stock trade and new positions cannot be purchased unless there is sufficient cash in the portfolio. A test using the new Portfolio Simulator closely reflects real trading conditions.

"Users can run Portfolio Simulations which include capitalization rules...A test using the new Portfolio Simulator closely reflects real trading conditions."

Backtesting a system by looking at an average of all trades can yield different results than backtesting a system using strict capitalization rules. Let's look at an extreme example using the Citizen Kane EDS model that we covered in the April 2000 *Opening Bell*.

In quick review, the Citizen Kane EDS model looks for stocks that have corrected by at least 30% sometime in the last 10 to 50 days. In addition, their Volume Accumulation Percent (VaPct) indicator must be above zero and trending higher.

In [Figure 1](#) we see an EDS backtest of this system for the year 1998. The results are very impressive. With a 14-calendar day holding period, the average trade using an S&P 500 database made 6.79% compared to an equivalent trade of 3.18% for the S&P 500. The Average Annual ROI shows a 174% return!

Now let's look at the return of this model for the same time period computed with the new Portfolio Simulator. For our example, we will assume that the account starts with \$100,000 and each stock purchase represents 10% of the entire portfolio. Under these

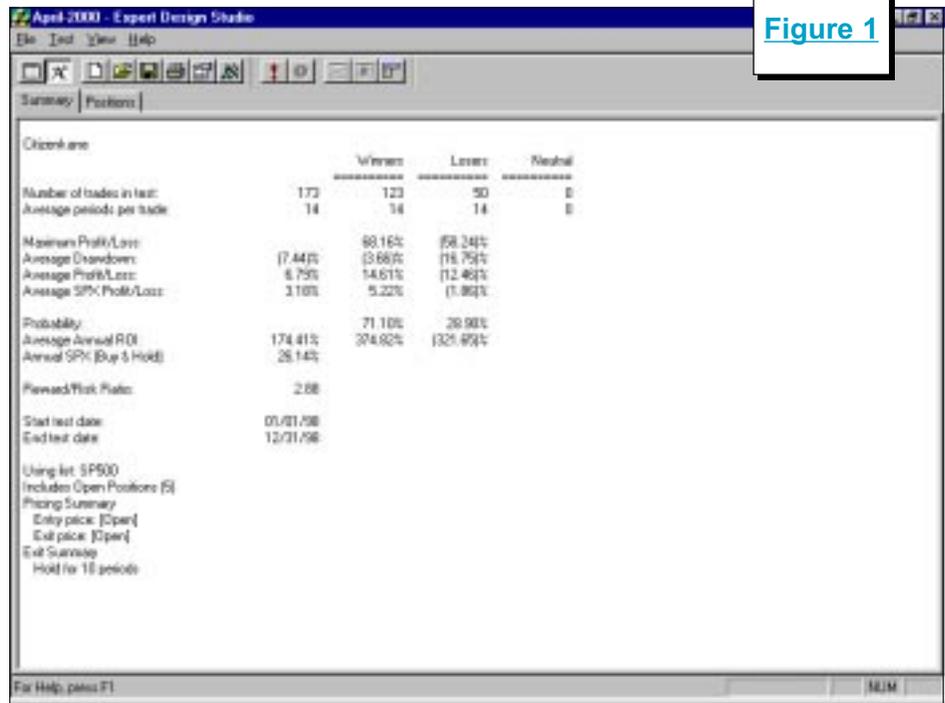


Figure 1

constraints, we find that the return is dramatically lower. In [Figure 2](#) we see the \$100,000 account grew to just \$101,148, a return of only 1.15%.

model buys stocks that have corrected 30%. As the market corrected many stocks passed the model. These trades turned very profitable when the market rallied.

How can one backtest show a 174% return on investment when another test shows a 1.1% return on investment? The answer is that the EDS backtest assumes all trades are acted on, whereas the Portfolio Simulator only buys stocks when the account has cash available.

“How can one backtest show a 174% return on investment when another test shows 1.1%? The answer is that the EDS backtest assumes all trades are acted on, whereas the Portfolio Simulator only buys stocks when the account has cash available.”

In [Figure 1](#) we saw there were 173 trades during 1998. Upon closer examination of the trades we found that there were

only 16 trades from January through July. When the market corrected in October, more stocks passed the screening. In the month of October alone there were 82 trades. Most of these trades were profitable because they came at the market low. Then again, at the market low even a dart throwing system would be extremely profitable.

The problem with this test is

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PORTFOLIO SIMULATIONS *continued* . . .

that you wouldn't be able to act on all the 82 stock trades in October. Eventually, the portfolio is fully invested. That's why the Portfolio Simulator provides a more realistic representation of how a trading system would perform. Using the Portfolio Simulator, only 19 of the 82 trades in October were acted on.

I specifically chose this model and the time period tested to show an extreme situation. Most often, EDS and Portfolio Simulator backtests agree much more closely. Yet this example clearly demonstrates the differences between the two backtesting methods and it shows how the more realistic Portfolio Simulator approach better reflects the return one might see from a particular trading system.

In order to perform a Portfolio Simulation, you first need an EDS screening model. You can either create a model or download one of the models that we've featured in past *Opening Bell* issues from AIQ's web page at www.aiqsystems.com.

Once you have decided on an EDS model, you are ready to set up

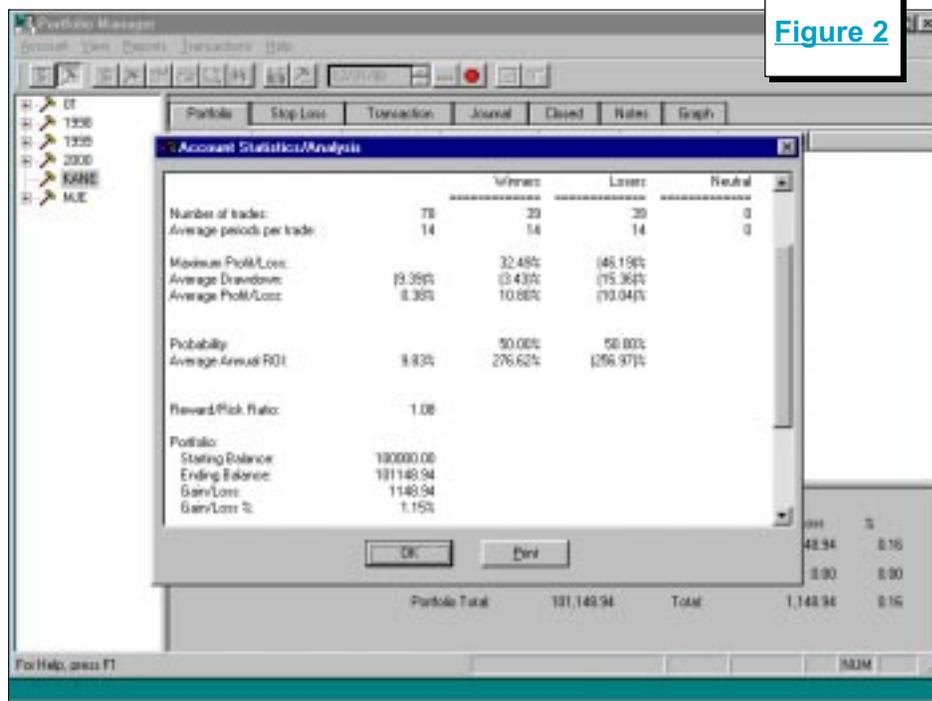


Figure 2

the backtest. Open TradingExpert's Quick Launch Menu and select the *Portfolio Manager* module. In *Portfolio Manager*, click the *New Simulation* icon (the fourth icon from the left). In the first box on the Portfolio Simulation screen, enter a name for the simulation test.

If you wish, use the Description and Comments boxes to enter additional information. Select a broker from the pull-down menu. Commission rates are determined by the broker you select.

Under the Strategy box click *New*. The Strategy screen that appears is where you select the EDS file that contains the entry rules and any other statements that you will need to implement the strategy. In the Strategy Name box, input a name that identifies the strategy. The name should include a description of the strategy's stock entry criteria.

To select the EDS file that you want to use, click the button with three dots (...). Then use the Open box to find and highlight the file name. Then click *Open*. When the Strategy box reappears, click *Next*.

The next few screens are used to specify exit and entry rules and capitalization criteria. The capitalization screen is shown in [Figure 3](#). For our test we stated that each stock position shall represent 10%

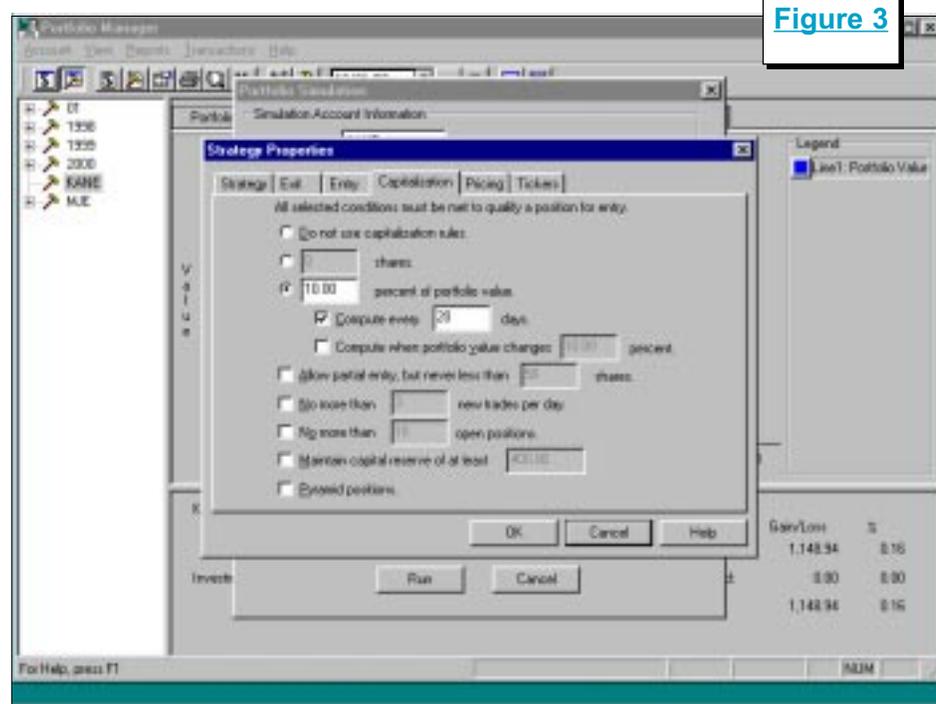


Figure 3

Portfolio Simulations continued on page 4

of the portfolio value at the time of purchase. This implies that a fully invested portfolio contains 10 stocks. In addition, we specified that portfolio value is to be recomputed every 20 days.

Users also have the ability to allow for partial entry, to specify a maximum number of trades per day, and to specify minimum reserves. We left these boxes unchecked.

After clicking *Finish*, the Portfolio Simulation Screen reappears. Enter the starting cash balance, the start date of the backtest, the end date of the backtest, and an index to compare results to. To run the simulation click *Run*.

Editors Note: a more detailed description of this process is found in TradingExpert's *User Reference Manual* beginning on page 469. A detailed step-by-step procedure is found on page 480.

In our simulation there were many occasions where stocks passed our screening but could not be purchased because of insufficient funds in the portfolio. For example, 10 stocks passed the screen but only two could be purchased. In such cases, the system picks which stocks are purchased. The default method is simply alphabetical order. Obviously there are better tie breaker systems.

For a more sophisticated tie breaker system, Portfolio Simulation allows you to create indicator based tie breaker rules through the use of User Defined Functions. A User Defined Function is a rule created by the user that includes the *is* identifier. To use an indicator as part of a tie breaking process, simply insert a User Defined Function in the EDS model.

For example, if we wanted to

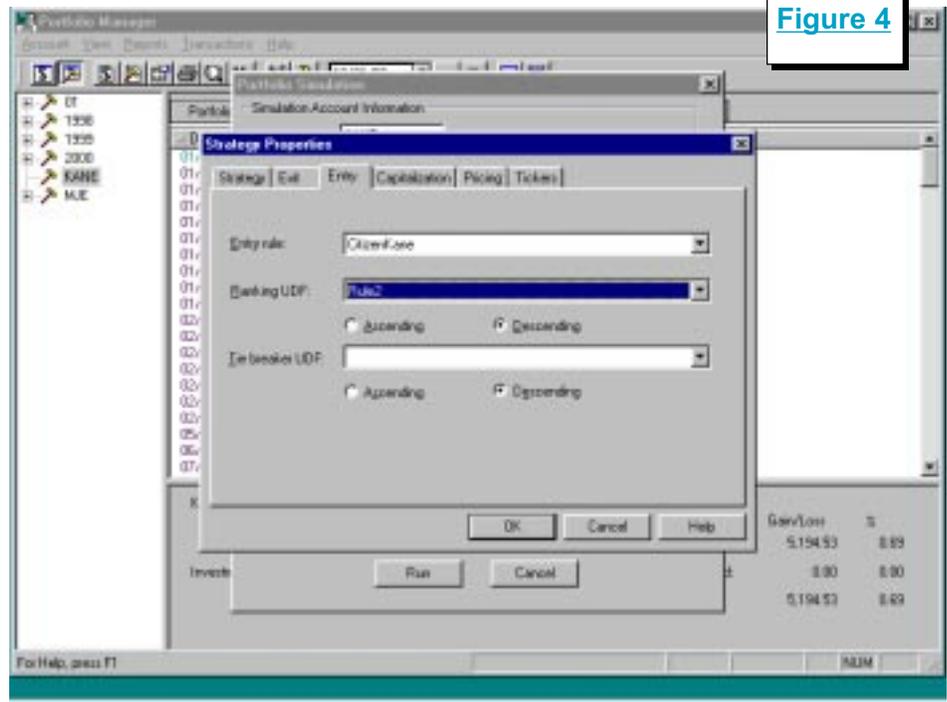


Figure 4

select which stocks were purchased based on the level of their Volume Accumulation Percent indicators, then the following User Defined Function would be inserted in the EDS model:

“Using a technical indicator to determine which stock to buy when there are insufficient funds to buy all stocks that pass a screening is obviously a better method than simply buying those stocks that appear near the top of the alphabet.”

Rule1 is [Va pct].

If we wanted to use the 45-day slope of Volume Accumulation Percent as the tie breaker, then the EDS model would include the following function:

Rule2 is Slope([Va pct],45).

With the User Defined Functions created, we can modify our

Portfolio Simulation to include the new tie breaker rule. To modify our previous simulation, open the Portfolio Manager and on the left section of the screen double-click the strategy name. On the Portfolio Simulation Screen click *Edit*. Click the *Entry* folder. The Entry Rule may already contain the EDS rule name that is associated with the buy strategy.

We enter our tie breaker rule under the next section, Ranking UDF (Figure 4). By clicking on the arrow, the User Defined Function rule name should appear. Click *Ascending* if a low score is what you desire or click *Descending* if a high score is better.

Using a technical indicator to determine which stock to buy when there are insufficient funds to buy all stocks that pass a screening is obviously a better method than simply buying those stocks that appear near the top of the alphabet.

We ran the same backtest but in tie breaker situations we wanted

PORTFOLIO SIMULATIONS *continued . . .*

the system to pick the stock with the highest slope of the Volume Accumulation Percent indicator. Therefore, in the Strategy Properties screen we selected Rule2 listed above and clicked *Descending*. As a result, our overall return increased by 4%.

Our focus in this article has been on the use of the Portfolio Simulator but that doesn't imply that the backtesting functions in the Expert Design Studio should be ignored. Because it looks at the activity of every stock that passes the screening, the Expert Design Studio's backtesting function is often a better choice when creating a model.

Once a model is created, then it should be tested using the Portfolio Simulator. It will tell you how the model would have performed during the time period selected.

Be careful not to tweak models too much based on Portfolio Simulator results. Since the simulator only buys stocks when cash is available, its test will have fewer trades than a test in the Expert Design Studio and it is easy to over-optimize a strategy, leading to poor future results. ■

David Vomund publishes VIS Alert, a weekly investment newsletter. For a sample copy of the newsletter, call (775) 831-1544 or go to www.visalert.com.

Please Note

The information in this newsletter is believed to be reliable but accuracy cannot be guaranteed. Past performance does not guarantee future results.

STOCK DATA MAINTENANCE

The following table shows stock splits and other changes:

| Stock | Ticker | Split | Approx. Date |
|------------------------|--------|-------|--------------|
| Advance PCS | ADVP | 2:1 | 11/05/01 |
| Amer Business Fin. | ABFI | 10% | 11/06/01 |
| Koss Corp | KOSS | 2:1 | 11/06/01 |
| MEDTOX Sci. | TOX | 10% | 11/12/01 |
| Summit Financial Corp. | SUMM | 5% | 11/12/01 |
| Fuller (HB) Co. | FULL | 2:1 | 11/19/01 |
| Brown & Brown | BRO | 2:1 | 11/22/02 |
| Multi-Coor Corp. | LABL | 3:2 | 12/03/01 |

Trading Suspended:

Alliance Forest Prod. (PFA)
 Cheap Tickets Inc. (CTIX)
 CMI Corp. (CMI)
 Euphonix Inc. (EUPH)
 Exodus Communic. (ETA)
 Galileo Int'l (GLC)
 IBP Inc. (IBP)
 Picture Tel Corp (PCTL)
 Polaroid (PRD)
 Prime Retail (PRT)
 Telescan (TSCN)
 Texaco Inc. (TX)

Name Changes:

Chevron Corp. (CHV) to Chevron Texaco Corp (CVX)
 Kansas City Power & Light (KLT) to Great Plains Energy (GXP)
 Professional Detaining Inc. (PDII) to PDI Inc. (PDII)
 Riddell Sports (RDL) to Varsity Brands (RDL)
 SciQuest.com Inc. (SQST) to SciQuest Inc. (SQST)

S&P 500 Changes

Changes to the S&P 500 Index and Industry Groups:

TECO Energy (TE) replaces Global Crossing (GX). TE is added to the Electric Companies (ELECTCOM) group.

Equity Office Properites (EOP) replaces Texaco Inc. (TX). EOP is added to the Real Estate Investment Trusts (REITRUST) group.

Ecolab Inc. (ECL) moves from the Diversified Commercial Services (SERVICED) group to the Specialty Chemicals (CHEMICAS) group.

Chevron (CHV) is changed to Chevron-Texaco (CVX).

THROUGH SEPTEMBER, 2001 -- 'DOGS OF THE OEX' STOCKS UP AN AVERAGE OF 8.67%

By David Vomund

In the mid 1990's, the Dogs of the Dow investing strategy gained great popularity. Mutual funds were formed that follow that specific strategy. Its popularity waned in the late 1990's as growth investing became the rage. The Dogs of the Dow strategy is a value strategy, and it underperformed badly at the height of the bubble.

Just as investors gave up on the strategy, the technology bubble burst and value investing began to outperform growth investing. The Dogs of the Dow strategy began to outperform again.

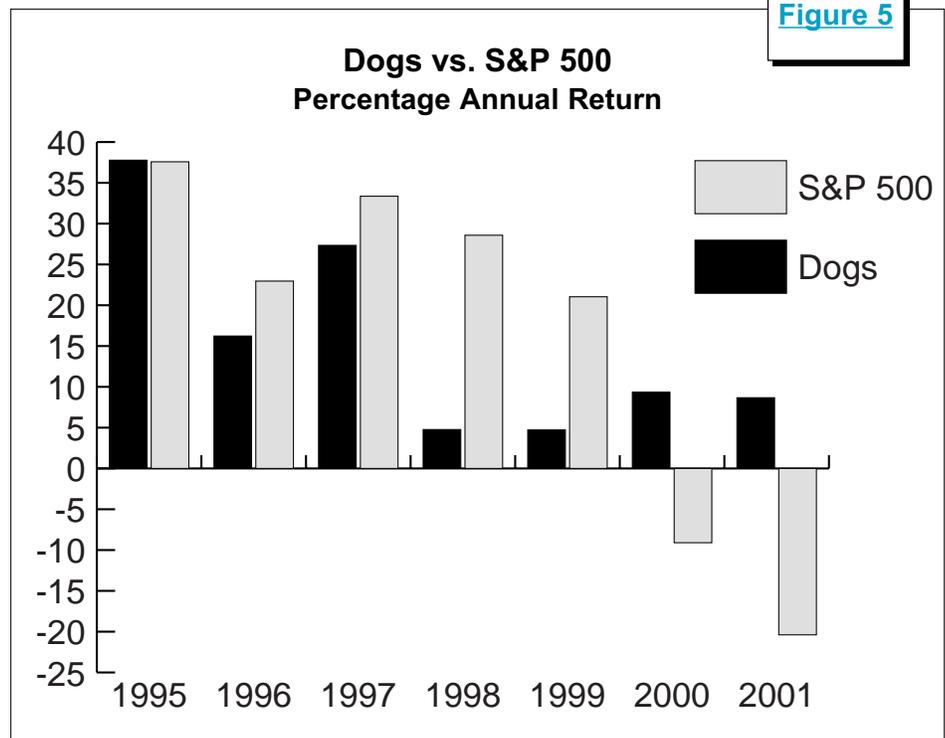
To quickly review the Dogs of the Dow strategy, on the first trading day of each year, you buy the ten highest yielding Dow stocks and hold them for the rest of the year. The portfolio is rebalanced using the same strategy at the start of every year.

In the March 1998 *Opening Bell*, we took the concept of the Dogs of the Dow strategy and modified it to non-Dow stocks. Our concern was

Table 1

Percentage Returns

| Year | Dogs | S&P 500 |
|-----------|-------|---------|
| 1995 | 37.78 | 37.58 |
| 1996 | 16.23 | 22.96 |
| 1997 | 27.34 | 33.36 |
| 1998 | 4.77 | 28.58 |
| 1999 | 4.72 | 21.04 |
| 2000 | 9.35 | -9.10 |
| 2001 | 8.67 | -20.39 |
| Average = | 15.55 | 16.29 |



that because too many people were following the Dogs of the Dow strategy it would stop working.

We also did not know the reason for the good historical results of this strategy. Was its success due to the fact that only Dow stocks were purchased or was it because high yielding stocks were purchased?

If the success was due to the Dow stock limitation then we wouldn't be able to successfully change the strategy. We suspected that the important part of the strategy was that the stocks had

a high yield.

In fact, James O'Shaughnessy in *What Works on Wall Street* found that buying high yielding large-cap stocks is an effective strategy. The

stocks don't necessarily have to be in the Dow, but they must have a large capitalization.

Our goal was to apply this strategy to a set of large-cap stocks that weren't neces-

sarily Dow stocks. We decided to run a test of the stocks in the S&P 100 index, otherwise known as the OEX.

On January 2 of each year, we

STRATEGY UPDATE *continued* . . .

purchased the 10 highest yielding stocks in the OEX and held them for an entire year at which time a new list of high yielding stocks was purchased.

Table 1 and **Figure 5** show the annual returns from this strategy compared to the S&P 500 index. Dividend yields are included in both return figures. We see that the average return from our Dogs of the OEX strategy is 15.55%, just slightly below the S&P 500's return.

The results of our test don't necessarily mean that the strategy is ineffective. This is a conservative strategy. It typically holds conservative stocks and the standard deviation of the portfolio is less than that of the market. Its return is about in line with the market's return but it has not had a losing year. The return is more conservative (i.e., less volatile).

In 2001 through September 28, the Dogs of the OEX stocks are up an average of 8.67%. **Figure 6** is a chart of an industry group containing this year's portfolio. The portfolio performed extremely well through much of the year until the



Figure 6

September terrorist attacks. Although results are still positive, most of the year's gains were given back in September.

In order to follow this strategy, you have to create a list file of the S&P 100 stocks and then sort them based on their dividend yields. To

get a list of the S&P 100 stocks, go to Standard & Poor's web site at www.spglobal.com. You can also get a list of the S&P 500 stocks and their corresponding industry groups at this site.

For a listing of the yield for each S&P 100 (i.e., OEX) stock, we used *The Wall Street Journal*. But looking up each stock in the newspapers is not a fun process. An easier method is to use AIQ TradingExpert's Fundamental Module at the start of each year to sort the S&P 100 stocks by their yields. It is important to do this at the start of the year because you can't get historical fundamental data with AIQ.

To use TradingExpert to download the yield data, choose the *Fundamental Module* from the Quick Launch Menu. In the Fundamental Module, click *Fundamentals* and then *Specify Strategy*.

On the Specify Dial/Data Strategy screen, the left section shows the available field choices and the right side shows which

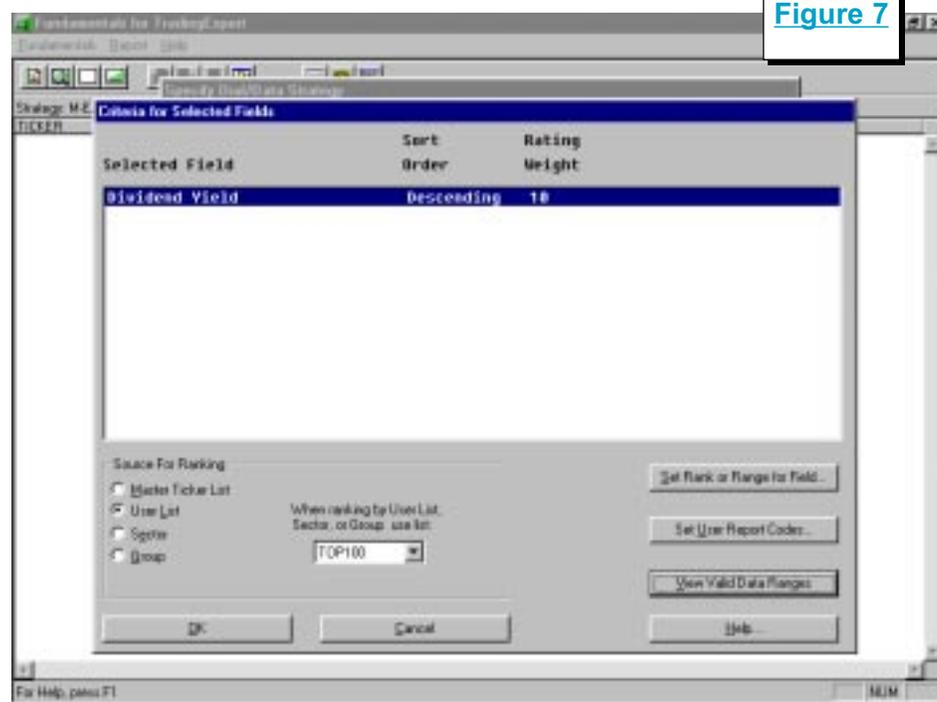


Figure 7

fields that you actually want to use. Since we are only interested in dividend yield data, move all the fields to the left section and then move *Dividend Yield* to the right section.

Next, we tell the model that we are interested in high yielding stocks. Under the Selected Fields section, click *Dividend Yield* and click *Set Criteria For Selected Fields*. On the Criteria For Selected Fields screen, click *Set Rank or Range For Field*. Then check the *Rank Field*

Dividend Yield box and click *Descending*. Click OK.

Under Source For Ranking, click *User List* and select your created S&P 100 list. The screen should now look like [Figure 7](#).

With this done, go to TradingExpert's Communications. In the Update section of the Data Retrieval Options page, check the box next to *Fundamentals*, and download the fundamental data for the S&P 100 list. You can then go to the Fundamental Module and see a

list of all the stocks sorted by their dividend yields. The 10 highest yielding stocks are the ones that are purchased.

At the start of next year, we'll update this year's performance and list the new set of Dogs of the OEX stocks that we'll follow throughout the year. ■

MARKET REVIEW

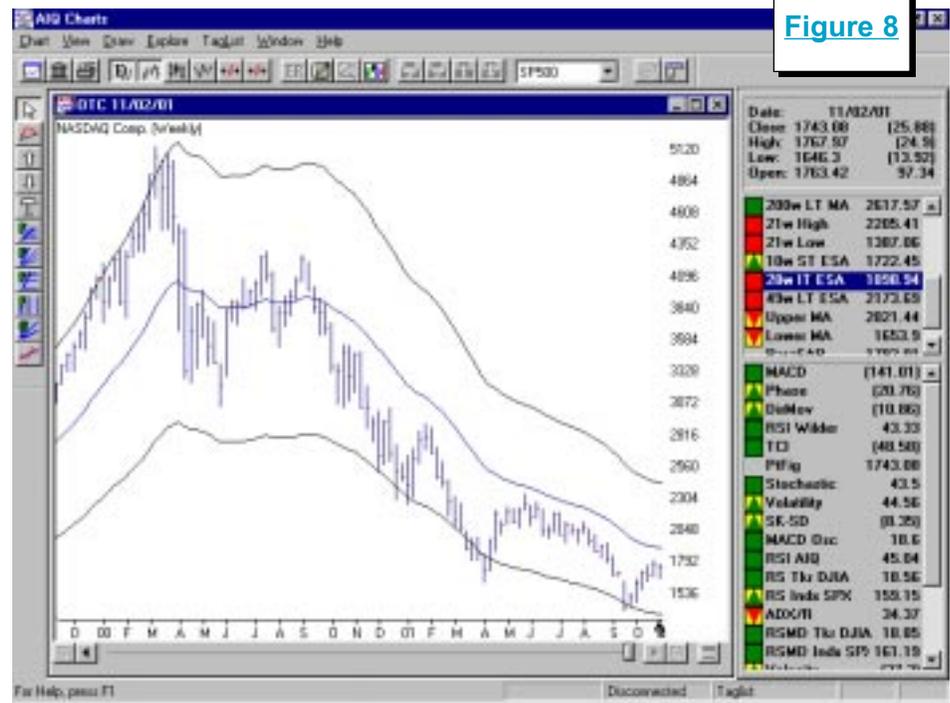
October is typically the worst month for the market. This October, despite anthrax cases and fears of more terrorist attacks, the market rose. The S&P 500 increased a modest 1.8% but the Nasdaq rallied 12.8%. Despite the strong rally, the Nasdaq simply moved back to its early September level.

With the strength of the Nasdaq we know that technology stocks led the advance. Within the technology sector, Semiconductors rose 35%, Computer Storage rose 32%, Application Software rose 28%, and Internet Software & Services rose 23%.

There were weak industry groups as well. Consumer Finance fell 30%, Photographic Products fell 21%, Insurance (Life/Health) fell 17%, and Retail (Drug Stores) fell 17%.

The AIQ timing model was on a buy signal at the start of October and it registered an additional 97 buy signal on October 10. On October 30 the system turned bearish, registering a confirmed 100 sell signal. In October the Nasdaq Composite's weekly RSMD SPX indicator moved higher, favoring the Nasdaq over the S&P 500.

Sometimes it is good to stand



back and see the forest instead of the trees. In [Figure 8](#) we see the Nasdaq's weekly chart instead of the more conventional daily chart. This chart puts October's rally in perspective. The rally was impressive but it wasn't strong enough to move the Nasdaq above its 28-week moving average. From a long-term perspective, the trend was still down.

Many chartists expect a retest of the lows. A move to the 28-week moving average followed by some

selling pressure is normal activity. It is important, however, that the market indexes remain above the lower AIQ band if/when it does retest. The retest most often comes several months after the first low.

We saw this type of activity at the end of the 1974 and 1990 bear markets. You can't count on a retest, however. In 1982, the market made a low and never looked back. ■