INVESTMENT CHARACTERISTICS OF STOCK SCREENING STRATEGIES

By Maria Crawford Scott and John Bajkowski

AAII developed and tracked 15 stock screening strategies based on the investment approaches of well-known, successful investment professionals. Updated performance graphs and other details for many of these screens can be found at our Web site: www.aaii.com.

There's more than one way to skin a cat and more than one way to build a stock portfolio.

In the past few years, the *AAII Journal*'s Stock Analysis Workshops have presented the investment approaches of many well-known and successful investment professionals. These approaches run the spectrum, from those that are primarily value-based to those that focus primarily on growth, with most falling in the middle and emphasizing both growth and value to a degree.

Is it possible to translate these investment approaches into a series of practical rules or screens that individual investors could use as a starting point to build a portfolio?

To find out, AAII's senior financial analyst (and editor of *Computerized Investing)*, John Bajkowski, tracked the results of screens based on these investment approaches. The portfolios were started last September, using AAII's *Stock Investor Professional* software and database program.

A series of primary screens were devised to capture the major elements of each investment approach; all stocks meeting the criteria were included in the initial portfolio. The screens are reapplied to each subsequent month's updated database. Thus, a stock is "sold" (no longer included in the portfolio) if it no longer meets the initial criteria, and new stocks are added if they qualify. The price gains (dividends excluded) for these portfolios have been tracked since September 1997. (A list of stocks that pass each screen each month, the portfolio's performance, and a description of the screens for most of the strategies are available on the AAII Web site at www.aaii.com in the stocks screens area under research.)

It is clearly much too early to make any judgment concerning which approach appears to work best over the long term—that will take at least several market cycles. In addition, stock screening is only a first step in developing a real investment portfolio—these portfolios are merely computer-generated lists, based on our own interpretation of the investment approach, with no further fundamental analysis on each company. They also are revised monthly, and with some strategies that can lead to too-frequent trading, which is expensive in terms of both tax consequences and transaction costs, and may cause you to sell winners too early.

However, examining some of the investment characteristics of stocks passing the screens, as well as how the portfolios have reacted in the current market environment, illustrates a number of practical concerns that may not be obvious when you are trying to develop your own approach to building an investment portfolio.

Table 1 presents a summary of the approaches and some of the investment characteristics of the portfolios, which are grouped based on their approach. At the bottom are several broad market indexes for comparison.

The "total gain" column represents the amount the portfolio has appreciated since September 30 of last year; it is a cumulative total (not annualized) and does not include dividends. Performance is always interesting and usually the first thing investors examine, but keep in mind that the time frame is too short to make any kind of judgment concerning the market-beating abilities of

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TABLE 1. SELECTED INVESTMENT CHARACTERISTICS OF STOCK SCREENING STRATEGIES

Strategy	Total Gain* (%)	Monthly Variability** High (%)	Monthly Variability** Low (%)	Stock Holdings June (No.)	Stock Holdings July (No.)	Stock Holdings Hold-overs (No.)	7/31/98 Portfolio Price-Earnings Ratio (X)	7/31/98 Portfolio 5-Yr. EPS Grth (%)	7/31/98 Portfolio Market Cap. ($ mil)	Primary Screens
Value										
Benjamin Graham: Enterprising	–13.5	6.9	–8.2	6	6	5	7.0	35.1	227	Low P/E; low P/B; strong financials; consistent earn and div growth
Benjamin Graham: Defensive	0.9	11.5	–5.8	16	27	16	12.1	22.8	761	Low P/E; low P/B; strong financials, large cap; adjust stock valuations to interest rates
O'Shaughnessy: Value	1.4	7.6	–5.2	50	50	43	17.5	22.8	20,504	High dividend yield; large-cap universe; above avg cash flow per share; above avg sales
Geraldine Weiss	3.2	9.7	–4.5	7	12	7	17.5	29.0	1,738	High div yld rel to hist avg; consist div & earn grow; consist div paymt; large cap; strong finan'l
Growth & Value										
Warren Buffett: EPS Growth	–11.5	6.2	–8.4	40	38	38	21.4	40.4	14,119	Consist, hi & expanding earn; high profit margin; hi ROE; low price considering historical P/E & EPS growth
Warren Buffett: Sustainable Growth	–8.4	7.8	–6.5	17	19	17	22.2	43.0	22,557	Consist, hi & expand earn; high prof mar, hi ROE; sustainable earnings growth to support 15% return
David Dreman	–0.8	6.3	–8.2	22	21	14	11.9	27.4	1,938	Low P/E; high yield; large cap; strong financials; reasonable growth
Philip Fisher	–7.9	14.2	–15.3	17	29	14	10.9	62.0	273	Low P/E rel to expected growth; hi margins rel to indtry; strong consist sales grow; low or no divs
Peter Lynch	7.3	10.5	–4.2	21	18	14	10.2	37.0	81	Low P/E; low P/E to growth; strong fincls, reason earn growth; smaller cap; high cash
O'Shaughnessy: Growth	10.5	7.4	–3.9	51	50	35	21.1	31.0	5,084	Consist earnings; low price/sales; high relative price strength; no market cap limit
T. Rowe Price	–5.6	9.8	–6.2	53	58	44	14.0	35.6	1,074	Hi earn growth; low P/E rel to hist avg; strong inside own; abv avg margins; hi return on asset
Ralph Wanger	2.0	8.6	–7.7	16	13	12	16.8	31.4	239	Small cap; abv avg margins; strong finance; low P/E rel to grow; consist cash flow; inside owner
Sector										
Benjamin Graham: Utilities	15.0	11.8	–4.2	25	32	25	14.2	5.6	1,444	Low P/E; low P/B; strong financials, large-cap utilities; adjust stock valuations to interest rates
Michael Murphy Technology	–22.1	14.4	–12.9	21	27	18	10.6	38.0	679	High sales growth; high margins; high ROE; high R&D; low price to growth flow
Growth										
William O'Neil's CANSLIM	20.0	11.4	–5.2	25	9	6	35.9	56.6	1,397	Hi & accel quart & ann'l earn; price near hi; hi rel price strength; limited float; some instit owner
S&P 500	**18.3**	**7.0**	**–3.4**	**500**	**500**	**—**	**28.3**	**12.0**	**40,064**	
S&P MidCap 400	**4.3**	**8.2**	**–4.6**	**400**	**400**	**—**	**28.9**	**na**	**2,870**	
S&P SmallCap 600	**–5.6**	**9.0**	**–7.7**	**600**	**600**	**—**	**30.7**	**na**	**732**	

** Cumulative price appreciation from 9/30/97 through 7/31/98; figures are unannualized and do not include dividends or transactions costs.*
*** The highest and lowest monthly gain or loss; figures are unannualized and do not include dividends or transactions costs.*

Source: AAII's Stock Investor Professional these approaches. In fact, the relative rankings of each of these models has varied dramatically from month to month.

The "monthly variability" column reports the highest and lowest monthly gain or loss as an indication of the volatility that occurred over the last 10 months.

The "stock holdings" columns provide data on recent portfolios—the total number of stocks that were in the portfolio for June and July, and the number of stocks in the July portfolio that were holdovers from the June screen, as an indication of turnover.

The "7/31/98 portfolio" columns provide data on the most recent portfolio—the average price-earnings ratio, historical earnings growth rate, and market capitalization (stock price times share outstanding) as an indication of the types of stocks held in the portfolio.

The last column provides a brief description of the types of screens used for each strategy.

THE VALUE APPROACHES

As a general rule of thumb, approaches that focus on value tend to have less portfolio turnover, be less volatile, and tend to outperform other approaches during a bear market. However, they can fall behind other approaches, particularly in the strongest portion of a bull market. With the exception of the Graham Enterprising portfolio, the approaches here have fulfilled that description.

All four value-based approaches normally concentrate on the mid- to large-cap sector, favoring companies with the resources to bounce back during tough economic environments. These screening strategies are all lagging the S&P 500, which during most of this time has been in a strong bull run. On the other hand, their downside swings have tended to be smaller than the other approaches, again with the exception of Graham Enterprising. All of the value-based strategies had portfolios whose compositions changed very little month-to-month—in other words, the screens tended to turn up most of the same candidates each month. Interestingly, both the Weiss screen and the Benjamin Graham Defensive screen turned up a significantly larger number of undervalued candidates in the July portfolio, with the Weiss screen increasing from seven to 12 stocks, and the Graham Defensive screen increasing from 16 to 27 stocks.

The O'Shaughnessy and Weiss approaches both focus on dividend yields as a measure of value rather than price-earnings ratios, so their price-earnings ratios may seem high relative to other value-based strategies. Both portfolios also had among the lowest five-year earnings per share growth rates.

Interestingly, the Graham Defensive portfolio has a higher price-earnings ratio than the Enterprising portfolio. The defensive portfolio makes an adjustment to the price-earnings multiplier based on current interest rates, which at current levels allowed for an upward adjustment in the acceptable price-earnings ratio. On the other hand, its five-year average earnings per share growth rate is among the lowest.

The Graham Enterprising portfolio illustrates some of the pitfalls of stock screening and undiversified portfolios. With a 1.2 maximum acceptable price-to-book-value ratio, the Graham Enterprising screen has effectively been out of the market during the test period. The few stocks passing the screen are typically special situations that do not necessarily capture the spirit of the screen. Only six stocks passed the July screen, with an average price-earnings ratio of 7.0 compared to the S&P 500's 28.3 at the end of July. While a very strict valuation rule may prevent you from buying in overheated markets, it may also leave you with an undiversified group of holdings that have more portfolio volatility than you might have expected.

GROWTH AND VALUE

The growth & value portfolios vary considerably, reflecting different emphases on growth and value.

The Buffett screens reflect the methodology presented in Mary Buffett and David Clark's book "Buffettology" (Simon & Schuster, 800/223-2336). The screen first looks to identify "consumer monopolies"—companies exhibiting high margins, conservative financing, strong and increasing earnings growth, and consistently high return on equity—and then purchases those companies that are priced attractively considering factors such as the normal price-earnings level, historical earnings growth, and the sustainable growth rate.

The screens have led to large-cap portfolios filled with well-known firms such as Hewlett-Packard, Intel, Microsoft, and T. Rowe Price, although there are no screens for size. In fact, the Buffett screens produced two of the three highest market-capitalization portfolios.

In keeping with the buy-and-hold emphasis of Warren Buffett, the screens have exhibited relatively low turnover. However, the price-earnings ratios for the two Buffett screens are among the highest for the growth and value portfolios, and their five-year earnings per share growth rates are also among the highest for this group.

The Dreman portfolio is more value-oriented than some of the other growth and value portfolios; it uses several value screens including both low price-earnings ratios and high dividend yields. It has a very low average price-earnings ratio of 11.9. On the other hand, the portfolio turnover in July was higher than the strict value approaches, with 14 out of 21 holdover stocks, and the portfolio did suffer one of the larger monthly downside returns.

The Philip Fisher screen has produced some curious results. The approach attempts to find companies with a competitive advantage that positions them for long-term growth. The screens look at factors such as above-average profit margins, strong and consistent sales growth, as well as a low forward PEG ratio (price-earnings ratio based on expected earnings divided by expected earnings per share growth).

The July screen produced a portfolio with a very low average price-earnings ratio of 10.9, coupled with the highest average historical earnings growth rate of 62%. Like the Weiss and Graham screens, recent market declines caused significantly more stocks to appear in the July portfolio, while retaining most (14 of 17) stocks from the June screening. The Fisher screen was more volatile than the typical screen or the S&P 500—normally rising higher during bullish periods and falling lower during bearish periods.

The Fisher screen's emphasis on growth, which excluded companies paying dividends, coupled with a focus on reasonably priced growth, tended to turn up smaller-capitalization companies—the July portfolio's average market capitalization was only $273 million, the fourth lowest and well below the average for the small-cap index, represented here by the S&P SmallCap 600, with an average market cap of $732 million. It may be more appropriate to judge this model against a small-cap index, rather than the S&P 500.

The O'Shaughnessy Growth portfolio is also hard to categorize. The approach emphasizes growth, but also has a value component in the form of a low price-to-sales ratio screen. During the past year, the portfolio has had characteristics of both value and growth approaches. It had one of the lowest downside volatilities, but its average price-earnings ratio is much higher than many of the value-oriented portfolios, although at 21.1 it is still below the average for the S&P 500. And its portfolio turnover was higher than most value approaches, with 35 out of 50 holdovers in the July portfolio. This higher turnover is most likely a result of the relative strength criteria, a momentum screen that seeks stocks whose prices are rising faster than the overall market.

The T. Rowe Price screen is a classic "growth at a reasonable price" screen, screening for above-average growth, below-average price-earnings ratio, above-average margins, high return on assets, and a significant level of insider ownership. Lately the screen has resulted in relatively large portfolios—53 stocks in June and 58 in July. Not surprisingly, its average price-earnings ratio is relatively low at 14.0, while its historical average earnings growth is 35.6%, moderate compared to the other growth and value screens but higher than that of the S&P 500.

SMALL-CAP FOCUS

Interestingly, the two approaches that explicitly focus on small-cap stocks are so far doing considerably better than would be expected based on the small-cap indexes. Since October of last year, small-cap stocks have not shared the bullish growth of their larger-capitalization counterparts, but both the Lynch and Wanger portfolios have behaved somewhat differently.

The Lynch portfolio sports a low downside volatility, a very low price-earnings ratio of 10.2, and its portfolio turnover appears to be very low—14 out of 18 stocks in the July portfolio were holdovers from the previous month. Its average market capitalization is the lowest, at a tiny $81 million.

The Wanger portfolio is more growth-oriented, requiring a low price-earnings ratio but one that is adjusted to allow for higher ratios at higher rates of earnings growth. Its downside has been in line with the downside of the S&P Small Cap 600.

SECTOR STRATEGIES

The two sector strategies are at opposite ends of the risk-reward spectrum.

The Graham Utility screen is very similar to the Graham Defensive screen, with only minor financial strength adjustments to accommodate unique industry characteristics. The Graham Utility screens look for attractively priced stocks using factors such as price-earnings ratio and price-to-book-value ratio, but adjust the acceptable levels based upon current interest rates. That has produced an average price-earnings ratio of 14.2 for the portfolio, low but not as low as the other two Graham screens. The utilities portfolio has the lowest historical average earnings growth rate, a meager 5.6%, while at the same time it performed second best over the time period. Utilities are interest-rate sensitive, typically rising as rates fall. They also are viewed as a safe harbor during volatile markets. All of the 25 stocks from the June screen passed the July filter, while an additional seven stocks passed due to the market decline during July. The downside volatility was among the lowest of the screening strategies, in great contrast to the Murphy Technology screen, which had among the highest range of upward and downward monthly price changes.

The Michael Murphy screen looks for stocks with high earnings growth, pretax margins, return on equity, and research & development as a percent of sales, coupled with low price-to-growth-flow ratio (price divided by the sum of earnings per share and R&D per share). The screen tries to capture fundamentally sound technology stocks that have been knocked down too far because of a company stumble. The July portfolio had an average price-earnings ratio of only 10.6, which is particularly low considering the lofty values of many technology stocks.

GROWTH APPROACHES

Growth strategies want to buy growth, period. Their focus is on companies that are rapidly expanding sales and earnings. The approach tends to be more volatile—prices can move up or down substantially, with small changes in expectations—and it tends to perform better on a relative basis late in the bull market or when the economy is slightly down. For these reasons, it requires close monitoring.

William O'Neil's CANSLIM approach is the most pure-growth strategy of the group and, not surprisingly in this current bull market, it has done quite well. Yet it is among the more volatile of portfolios, and it also is a much changing portfolio. The screen looks for strong and increasing quarterly earnings growth, strong and stable annual earnings, a limited float (shares available for trading), minimum institutional sponsorship, and strong price strength. As a momentum approach, it is not surprising to see a tremendous decline in the number of stocks passing the June screen (25 stocks) compared to the July screen (9 stocks) as the market is showing weakness.

A critical element of the CANSLIM strategy that is not captured by our screen is the element of market timing. While it does not impact the selection of specific stocks, the trend of the overall market will have a tremendous impact on the performance of your portfolio. O'Neil finds it difficult to fight the trend, and his approach emphasizes that investors should try to put 25% of their portfolios into cash during bear markets. He also tends to focus on technical measures when determining the overall direction of the marketplace.

EVALUATING PORTFOLIOS

These strategies are based on relatively simple screens that are our own interpretations of the investment approaches advocated by prominent investment professionals. They do not replicate a buy-and-hold strategy, which is the optimal approach for an individual investor.

The strategies do, however, attempt to develop a practical set of rules for each approach, which is the first step in any disciplined investment approach. Examining their investment characteristics reveals many of the practical problems that you may run into when you are trying to develop your own disciplined approach to investing.

Here are some important questions to ask that will help you evaluate any series of screens that seek to capture an investment approach:

- How is the portfolio reacting relative to the current market environment? If it is deviating substantially, what is the cause of that deviation—is it the particular stock picks, or it is perhaps overconcentration in a particular area that is a result of the particular set of screens you have chosen?
- Are the portfolio's characteristics more similar to a value-based or growth-based approach? That may give you a better idea of how the portfolio is likely to behave in the future. Your own approach should match your own needs, abilities, and risk tolerance.
- What is the proper benchmark to measure the performance of your portfolio? It is important to look at the characteristics of your portfolio (market capitalization, industry concentration, growth vs. value) to properly evaluate the performance of your holdings. Are the screens actually capturing the kinds of firms you want to invest in based on your chosen investment approach? Are the screens producing unintentional biases in your portfolio?
- How frequently do your screens cause your portfolio to substantially change? If trading is frequent, you need to consider developing "hold" criteria rather than selling whenever initial criteria is no longer met, which may cause you to sell winners too soon.
- Most importantly, remember that screening is just a first step. There are qualitative elements that cannot be captured effectively by the very quantitative screening process. Further fundamental analysis is necessary for successful investing. ◆

Understanding the Approaches

Refer to these past Stock Analysis Workshops by Maria Crawford Scott for more on the investing approaches of the professionals discussed here. Links to these articles can be found on our Web site at www.aaii.com.

"The Warren Buffett Way: Investing From a Business Perspective," January 1998, page 6.

"Going Against the Crowd: A Look at the Contrarian Investment Strategy" (David Dreman), July 1997, page 2.

"It's Quality That Counts: The Fisher Approach to Stock Investing," September 1996, page 14.

"Value Investing: A Look at the Benjamin Graham Approach," May 1996, page 12.

"The Peter Lynch Approach to Investing in 'Understandable' Stocks," January 1997, page 6.

"Investing in Technology: The Michael Murphy Approach," May 1998, page 13.

"C-A-N-S-L-I-M: A Growth Approach Using Technical and Fundamental Data" (William O'Neil), July 1996, page 12.

"Diversifying Among Investing Styles: The James O'Shaughnessy Approach," November 1997, page 6.

"The T. Rowe Price Approach to Investing in Growth Stocks," January 1996, page 20.

"The Ralph Wanger Approach: Growth at a Reasonable Price," May 1997, page 3

"A Blue-Chip Value Investor: Seeking High-Quality, Out-of-Favor Stocks" (Geraldine Weiss), November 1996, page 16.