

Constructing Winning Stock Screens

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Article Highlights

- A stock screen narrows the universe of companies with the characteristics you desire.
- A good screen incorporates your primary criteria and uses secondary criteria to eliminate companies that don't embody the traits you seek.
- Examples of primary and secondary criteria used in AAIL screens are listed.

Over the years, we have studied the works of many famous and successful investors.

Our goal has been to learn from the winning strategies and techniques of investment legends, modern day investment professionals with a proven record of long-term success and even prominent academic research on investing. We have found that it is easy to come up with a list of meaningful screening criteria, but building and applying a cohesive set of criteria can be challenging.

Screening is the application of quantitative criteria to a broad universe of stocks in order to narrow the list down to a few companies. It allows you to focus your attention on a smaller but more promising group of stocks. It also forces you to use a consistent framework to decide which stocks to add or remove from your portfolio. Discipline is a common trait shared with the successful investors that we have studied. It is too easy to let our emotions such as greed, fear and even pride take over the decision-making process and ignore the rational side of investing.

We illustrate how these approaches can be translated into a series of practical rules or screens that our members can use to build stock portfolios. AAIL's *Stock Investor Pro* and the Stock Screens area of AAIL.com have over 50 different approaches that you can follow. But how do you pick an approach that is right for you, and how did we construct the mix of criteria that make up each screen? This article provides an overview of the stock screening process and illustrates how to design or select a stock screen that makes practical sense.



It is best to look at screening as a multi-stage process:

- You must first clearly define the objective of your screen.
- Next, you must construct primary criteria that locate the stocks that match your desired characteristics.
- Then, you will need to construct a set of secondary criteria that ensure the companies passing the primary screen did so because they truly meet your objective and not by coincidence.
- Keep in mind that even the best screen represents a starting point for in-depth analysis.
- And last, you may wish to construct a set of criteria to highlight companies in your portfolio that no longer match the objective of your screen.

Defining a Clear Objective and Approach

An objective should always be established before constructing a screen. The objective should reflect your return objectives, risk tolerance and investment philosophy. Return objectives encompass not only the total return, but the relative contribution of dividend income versus capital gains. Risk tolerance refers to how easily you can cope with volatility in an absolute and relative sense. Relative risk deals with the performance of a stock in relation to the market; whereas, absolute risk is concerned with the performance of a stock independent of the market. Investment philosophy encompasses the style an investor uses to select stocks.

For example, a young couple usually has little accumu-

Primary and Secondary Screen Examples

Value Screening

Objective: To identify companies whose market price is low relative to value measures based upon factors such as sales, earnings, dividends, cash flow or assets.

Price-Earnings Emphasis

Primary Screen Examples

Current price-earnings ratios can be computed using historical (trailing) earnings or projected (forward) earnings. Benjamin Graham and Robert Shiller have even used an average of past earnings for the construction of the price-earnings ratio:

- Price-earnings ratio below an absolute level
- Price-earnings ratio below firm's historical average ratio
- Price-earnings ratio below industry norm
- Price-earnings ratio below market average
- Percentile rank of price-earnings ratio is below a given measure (i.e., percent rank less than or equal to 20%)
- Price-earnings relative below historical norm
- Relate price-earnings ratio to historical or expected earnings growth rate (PEG ratio)

Secondary/Conditioning Screen Examples

Focus on the earnings potential of a company:

- Require minimum level of historical or expected earnings growth
- Require minimum level of historical or expected sales growth
- Require positive historical earnings

Focus on company operations and profitability:

- Require increasing or stable profit margin over time
- Require profit margin above industry norm
- Require positive cash flow
- Require strong or improving return on assets or return on equity

Focus on financial strength:

- Specify maximum level of debt to assets, capital or equity

- Specify minimum level of current or quick ratio
- Require improvements in financial leverage or working capital
- Company has consistent record of paying a dividend

Price-to-Book-Value Emphasis

Primary Screen Examples

Current price-to-book-value ratio can be computed with or without intangible assets:

- Price-to-book-value ratio below an absolute level (i.e., below 1.0)
- Price-to-book-value ratio below the firm's historical average ratio
- Price-to-book-value ratio below market average
- Percentile rank of price-to-book-value ratio is below a given measure (i.e., percent rank less than or equal to 10% of the firms trading on the NYSE)

Secondary/Conditioning Screen Examples

Focus on quality of book value:

- Low ratio of intangible/goodwill to book value

Focus on growth potential, profitability and financial strength of firm:

- See secondary/conditioning variables for price-earnings emphasis

Dividend Yield Emphasis

Primary Screen Examples

Current dividend yield is computed with the expected dividend payout over the next four quarters (indicated dividend):

- Current dividend yield above the stock's long-term average yield
- Current dividend yield above the industry average yield
- Current dividend yield above the market average yield
- Current dividend yield high relative to bond interest yield
- Current dividend yield above an absolute level (i.e., greater than 2%)

lated wealth and a long time horizon. They are seeking to build wealth and are willing to accept greater short-term risk (volatility) for the prospect of greater long-term returns. They might choose to focus their investment on smaller companies that have greater growth potential. On the other hand, a retired couple will likely have a shorter time horizon and will be more concerned with preserving their wealth. Therefore,

they might choose to focus on stocks that pay greater dividends and have lower price volatility.

Clear, focused, narrowly defined objectives lead to the best screens. Some common broad screening objectives include seeking growth stocks, value stocks or even stocks with positive price momentum. But before the stock screening process is started, these broad objectives should be further refined to

reflect the specific type of stocks that you are seeking and the best way to identify these stocks. The young couple in our example may decide to seek growth stocks in the expansion stage of their life cycle with strong earnings momentum, understanding that the portfolio will have to be monitored carefully and the portfolio turnover is likely to be high. The retired couple in our example might seek out our undervalued companies

Secondary/Conditioning Screen Examples

Focus on maintenance and growth of dividend payment:

- Specify maximum level of payout ratio of dividends relative to earnings or cash flow
- Specify minimum level of earnings or cash flow growth
- Specify minimum level of interest coverage
- Specify minimum number of dividend increases annually
- Require no history of dividend reductions

Focus on growth potential, profitability and financial strength of firm:

- See secondary/conditioning variables for price-earnings emphasis

Price-to-Sales Emphasis

Primary Screen Examples

Price-to-sales levels tend to be tied to profit margins and growth rates:

- Price-to-sales ratio below firm's historical average ratio
- Price-to-sales ratio below industry norm

Secondary/Conditioning Screen Examples

Focus on conversion of sales into profits and cash:

- Require increasing or stable profit margin over time
- Require profit margin above industry norm

Focus on company size:

- As companies get larger, their price-to-sales ratios normally get smaller. If the primary price-sales ratio screen is not compared against the company's average, then a maximum size may be specified.

Focus on growth potential, profitability and financial strength of firm:

- See secondary/conditioning variables for price-earnings emphasis

Growth Screening

Objective: To identify companies in a stage of rapid and expanding growth with earnings momentum. Growth investors also tend to focus on price momentum.

Primary Growth Screen Examples

Focus on earnings growth:

- Specify minimum absolute level of historical earnings per share growth
- Specify minimum absolute level of forecasted earnings per share growth
- Specify growth rate above industry average growth rate
- Specify industries that are expanding at rates above that of the economy
- Require positive increase in annual earnings for each of the individual periods of analysis
- Require increasing growth rates in earnings from period to period
- Require year-over-year quarterly earnings increases
- Require acceleration in year-over-year quarterly earnings growth
- Require improvement in consensus earnings estimates

Focus on price momentum:

- Company price increasing faster than market price increase (high relative price index)
- Company price increasing faster than other stocks (high relative price percentile rank)
- Company price hitting new 52-week high levels
- Short-term relative price strength greater than long-term relative price strength

Secondary/Conditioning Screen Examples

Focus on expanding level of sales to support earnings:

- Specify minimum growth rate in sales

Focus on competitive advantage of company:

- Require profit margin above industry norm
- Require increasing profit margins over time

Focus on retention of earnings to support future growth:

- Specify minimum level of sustainable growth [return on equity $\times$ (1 – payout ratio)]
- Require strong or improving return on assets or return on equity

paying above-average dividends, understanding that the portfolio will likely lag the market during strong bullish periods, but should decline less during bear markets. With either strategy there will be periods during which the portfolio underperforms other approaches. It is important to have conviction in the soundness of your approach to avoid jumping to last year's hot trend just as it has already run its course.

Primary Screening Criteria

The primary screening criteria should flow naturally from your objective and should attempt to filter only those companies that meet your objective. If you are a growth investor, your primary screen should provide you with a list of companies that are in the growth stage of their life cycle, not mature cyclical firms. If you are a value investor,

it does not make sense to spend time looking at stocks with uber-growth if they cannot be purchased at attractive prices. Good companies do not always make for good stock investments.

Screening criteria filter stocks by comparing a company's numerical ("quantitative") figures against some base figure. When defining your criteria, you will need to decide if you wish to compare on absolute or relative con-

ditions. Relative conditions compare a company's figure against a number adjusted for the current level of a company, industry or market benchmark. For example, you may be screening for companies whose price-earnings ratio is less than that of the S&P 500 index. As the S&P 500's price-earnings ratio goes up, the screen will get less restrictive, allowing stocks with higher price-earnings ratios to pass.

Some criteria should only be used on a relative basis. Ratios such as price-to-sales, profit margins and turnover are very industry-specific and become meaningful only when compared to the norm for an industry or against a company's own historical norm. Price-to-sales ratios have shown an ability to highlight attractively priced stocks, but the test for stocks with low price-to-sales ratios is tied to the normal profitability level for the industry in which a firm competes. A screen for stocks with low price-to-sales ratios will highlight industries with low profit margins.

Screens that compare company data to other company elements or historical averages can also be useful. Because of growth prospects, some companies normally trade at a higher price-earnings multiple. Screening just for companies with price-earnings ratios below that of the market may lead to a collection of stocks with poor prospects and high risk that deserve low price-earnings ratios; such companies are not really underpriced. Using a relative screen that compares a company's price-earnings ratio against its historical norm or against its expected growth (PEG ratio) may be a better way to point out potentially mispriced stocks that warrant a closer look.

Alternatively, you can choose to compare a company figure against some constant that does not fluctuate over time. An example would be a screen for companies with a price-to-book-value ratio below 1.0. As higher overall market levels lead to higher valuations for all stocks, the number of companies passing the price-to-book-value ratio will decrease. If market levels go to extremes, no suitable investments may

pass the screen. Some value investors use absolute screens such as this to modify their exposure to the markets. During periods in which the market is priced rich, fewer attractive investments appear to replace the overvalued securities that have been sold, which leads to a net reduction in the equity allocation within the portfolio.

One of the biggest mistakes in criteria construction is having a list of criteria that are reasonable individually, but when combined turn out to be contradictory. If you are looking for potentially emerging high-growth companies in the early stages of their life cycle, then you should not team up a requirement for high earnings growth with a requirement for a high dividend yield. Companies that are truly growing usually need to use cash for expansion and can't afford to pay high dividends. Combining the criteria in this way will negate the objective of the screen, probably leaving you with a list of oddball stocks that don't really fit into any category.

By the same token, it is also a mistake to combine too many criteria filtering for the same type of companies. If you are looking for contrarian or out-of-favor stocks, screening for low price-earnings, price-to-book or price-to-cash-flow ratios will, for the most part, list the same type of stocks. Your screening efforts would be better spent focusing on the criteria that best indicate the type of companies you are seeking and on criteria that you really understand well. Each primary filter has its own nuances and tendencies. With clear-cut primary screening criteria, you can then add secondary criteria to capture the type of companies you are seeking.

The box on pages 26 and 27 displays sample primary screening criteria used in the many stock screens built into *Stock Investor Pro* and incorporated into the screens presented on AAIL.com.

Secondary or Conditioning Screens

Even with a clear objective and

well-built primary filter, you can expect a number of companies to slip past your screen that do not embody the type of company you are seeking. Your high dividend yield screen will probably contain some companies ready to cut their dividend, and your historical earnings growth screen will probably capture some mature cyclical companies examined during their normal cyclical upturn.

While screening is designed to be a preliminary stage in the security selection process, the screening process should include a secondary, or conditioning screen. The conditioning screen should help establish that companies passing the primary screen did so because they meet the screen's ultimate objective. These differ from the primary screening criteria in that, if used by themselves, they would not identify companies that meet your primary value or growth objective.

A primary screen for high-dividend-yield stocks may include a criterion for companies whose dividend yields are above that of the company's five-year average high yield. This will lead to a list of companies with relatively high dividend yields. A conditioning screen would analyze those companies to help establish that the dividend is secure and poised to continue to grow, as opposed to being at risk of being reduced. The conditioning screen might include a criterion that specifies a maximum payout ratio (dividends per share divided by earnings per share) of 50% to seek out companies that are not paying out more than half of their earnings in the form of dividends. It is a conditioning screen for the dividend yield scan because, by itself, it does not indicate if the dividend yield is high or low, nor will it indicate if the stock is priced attractively.

Most screens should include conditioning screens that look for a minimum level of growth, profitability and financial strength. The box on pages 26 and 27 also lists sample conditioning criteria for a range of value and growth screens.

Monitor Your Holdings

Screening provides a quantitative

mechanism for selecting stocks, but it can also provide a decision framework for pruning your stock holdings. The criteria used to highlight passing stocks can be adjusted to highlight stocks in your portfolio that might be sell candidates. The factors for selling should be decided in advance to avoid the emotional traps of selling, which range from “falling in love” with a company to avoiding the sale of a stock that is down because it forces you to admit that you made a mistake. Good companies can become bad stock holdings if they no longer match the objective of your investment approach.

The purchase and sale rules of the AAll Model Shadow Stock Portfolio help to illustrate this process. The Model Shadow Stock Portfolio focuses on value-oriented micro-cap stocks. The Shadow Stock screen uses price to book value as its primary value factor. The price-to-book level is set to match the stocks within the lowest decile (lowest 10%) of stocks trading on the New York Stock Exchange (NYSE). NYSE-listed stocks are used to establish valuation levels, but all exchange-listed stocks (NYSE, NASDAQ and Amex) are considered for purchase.

The cutoff is adjusted over time based upon the market valuation levels. The maximum initial price-to-book-value criterion has ranged from 0.60 to 0.85. Currently, the price-to-book-value ratio must be less than 0.80 to pass the initial screen. Stocks are sold not when they exceed the initial price-to-book cutoff, but when their price-to-book-value ratios go three times above the initial criterion.

The primary size factor for the Shadow Stock screen is determined through market capitalization. Here, the screen looks for companies that have a market cap among the lowest 10%, as defined by stocks listed on the New York Stock Exchange. Currently, the screen looks for NYSE, NASDAQ

and Amex-listed stocks with market cap below \$200 million. This figure has edged up over time. The original cutoff in 1993 was \$55 million. Stocks are sold if the market capitalization goes above three times the initial maximum criterion.

Conditioning criteria for the Model Shadow Stock Portfolio focus on liquidity and financial strength. It is important to eliminate stocks that are in danger of being delisted and do not have an adequate market for the individual investor to take a position. To help ensure adequate liquidity, stocks must have minimum market capitalization of at least \$17 million. Bulletin board and pink-sheet stocks are filtered out. Stocks must have a price above \$4 per share. Stocks with low average daily volume are bypassed.

Financial conditioning criteria for the Model Shadow Stock Portfolio focus on profitability. First, the company must report on a timely basis, and the screen eliminates any company that failed to file a 10-Q (quarterly) report in the last six months. A stock is required to have positive earnings from continuing operations over the last quarter and trailing 12 months. The Model Shadow Stock Portfolio avoids any stock that was sold from the portfolio in the last two years. These are likely marginal stocks that are forever marginal, creating high transaction costs. The Shadow Stock screen avoids foreign stocks due to the potential for different accounting procedures. Financial stocks and limited partnerships are excluded because high levels of acceptable liabilities make it difficult to make meaningful comparisons of popular ratios. The price-to-sales ratio must be less than 1.2.

Beyond exceeding value and size limits, stocks are sold from the Model Shadow Stock Portfolio if they have negative earnings from continuing operations for a protracted period.

The lesson here is that your quanti-

tative sell rules should grow out of your objective and investment philosophy and will likely be related to your original rules used to select the stocks.

All Screens Are Preliminary

When designing stock screens, keep in mind that there are no miracle screens that produce lists of only guaranteed winners. A well-designed screen, however, should provide you with a preliminary list of stocks that hold some promise. A screening system also provides you with a framework to ask intelligent questions about the stocks you are considering as well as the stocks you currently own.

In developing a screen, keep the following points in mind:

- Develop a clear, narrowly defined objective, keeping in mind the types of stocks that will meet your investment objective and philosophy.
- Construct primary screening criteria that will locate stocks matching your objective. In constructing primary screening criteria, avoid using rules that cancel each other out or that are redundant.
- Develop a set of conditioning criteria that will help ensure that a company passed the primary screen for a fundamentally sound reason and not just by chance.
- Look toward your primary and secondary screening filters as guidance for monitoring your portfolio to ensure that the reason you selected a stock still holds true.
- Remember that even the best designed screen is only a preliminary search for investments using a small set of quantitative factors. A complete in-depth analysis that explores quantitative and qualitative factors should be employed. The fewer stocks that you hold in your portfolio, the closer you should examine and monitor each stock. ▲

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