

Fundamental Stock Investment Strategies for Bull and Bear Markets

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Abstract

This research paper provides a stock investment model using both value and growth strategies for bull and bear markets. The model is based on fundamental principles of finance and can be efficiently used by individual investors and professional stock portfolio managers, in markets with high or low volatility, in the U.S. and internationally. The author initially developed the model primarily as a teaching tool, to demonstrate a profitable use of financial ratio analysis. The model and other findings of this research paper could also be useful to finance teachers of stock investing and their students.

I. Introduction

As the author was writing this paper in early March, 2009, we were experiencing a long and severe bear market in stocks, which started in October, 2007, and has seen the S&P 500 stock market index in the U.S. decline by almost 60%, to a level not seen since October, 1996 (Associated Press, 2009). Many investors appear to be ignoring fundamentals. Many appear to be focused on short-term trading rather than long-term investing. Many have substantially reduced their stock investments or cashed out of the stock market, to obtain the safety of low-risk money market accounts paying low returns.

It seems like a particularly good time to provide investors with my stock investment model, based on fundamental principles of finance, to encourage people to invest in undervalued growth stocks to earn high returns, as long-term investors. The model provides lower risk to help investors stay invested in stocks during both bull and bear markets.

Some of the fundamental principles used include:

- * the weak form of the efficient markets hypothesis
- * international portfolio diversification
- * optimal asset allocation
- * dollar-cost averaging
- * rebalancing
- * minimize transactions costs
- * minimize taxes
- * value investing strategies
- * growth investing strategies
- * portfolio risk management
- * long-term investment planning and forecasting
- * time in the market outperforming market timing.

Currently, there is no widely-accepted, standard model for stock investing. The author first developed this model about ten years ago, and has modified it several times, based on both ongoing academic research and investment results. Some of the stock selection criteria were chosen from those recommended by legendary stock investors Peter Lynch and Warren Buffett, well-known stock analysts James O'Shaughnessy and David

Dreman, and successful stockbroker Brett Machtig (Machtig & Behrends, 1997; O'Shaughnessy, 1998; Dreman, 1998; Lynch & Rothchild, 1989; Hagstrom, 2001). In recent years, several previous research papers written on this stock model by the author for the Academy of Finance have convinced the author to exclude technical analysis and exclude macroeconomic variables from the model, while adding qualitative screening variables and changing some of the parameter values for some quantitative criteria. While only including the most important variables, this model is more of a full-information model than most individual and professional investors use to make buy and sell recommendations for common stocks.

This internationally diversified stock portfolio model includes strategies for both value investing and growth investing, while managing risk, transactions costs, and taxes. The stock selection criteria include quantitative financial ratio analysis, and qualitative screening considerations. Buying and selling is used to maximize returns, with a minimum recommended investment period of five years.

The author cannot document the long-term stock market performance of this model, because important changes in the model have been made in recent years. Some recent empirical evidence is provided showing that a sample stock portfolio that fits the model did outperform the market over a 10-month period in 2009. Other empirical evidence is provided to highlight how the model usually outperforms the market, by screening out the biggest losers, while including some of the biggest winners.

The model makes sense financially and is strategically designed to outperform the market, while taking less risk than that incurred by the average stock investor. Previous versions of the model have successfully identified many valuable stock investments, including takeover targets just prior to profitable mergers and acquisitions announcements. Investors using this model will likely earn more than they could earn by investing in index funds and/or exchange-traded funds, and will learn more about how to profitably invest and manage an internationally diversified stock portfolio than they would learn by investing passively in professionally-managed equity mutual funds (Goetzmann and Massa, 2003). Investing using this model is also substantially less risky and less time consuming than buying and managing your own business, but you still earn the profits created by many successful businesses. Investing in an individual stock portfolio, using this model, could also be used to complement an individual's other investments in equity investments, including equity mutual funds, exchange-traded funds, and/or index funds (Schwab, 2001; Weldon, 1997).

In addition to helping stock investors, this research paper could also be used by finance professors to teach their students how to use the model to profitably invest in stocks and manage a stock portfolio. The author has taught these stock investment strategies to many students in his MBA core finance classes for many years. Most students have particularly valued and enjoyed this useful learning.

II. Quantitative Stock Selection Criteria

In searching for stock picks, the current values of the following financial ratios can be found on financial websites, usually in the order presented in my model (Key Statistics, n.d.;

Ratios, n.d.; Analysts Estimates, n.d.; Estimates, n.d.). The common stock investor doesn't have to calculate these values himself or herself. Some financial websites also provide stock screening, where the investor can specify the values of some financial ratios, and screen through all the stocks in a given database, to identify stocks with selected ratio values (Stock Screener, n.d.).

There are no widely-accepted standard criteria for selecting common stocks for a profitable stock portfolio. A combination of research and investment experience have led me to select the following financial ratio criteria and their respective limit values (Keown, Martin, Petty, and Scott, 2005).

* quick ratio or acid test ratio = $(\text{current assets} - \text{inventory}) / (\text{current liabilities}) > \text{or} = 0.8$

The quick ratio is a measure of liquidity. The 2008 liquidity crisis highlights the financial risk to companies that do not have sufficient liquidity to pay their expenses, including their accounts payable and debt service payments on short-term debt, particularly during periods of negative net cash flows. Ideally, a company would have a quick ratio that's high enough to provide it the funds needed to meet its liquidity needs, without having much excess liquidity, since current assets pay a lower rate of return than longer-term assets.

* accounts receivable turnover = $(\text{credit sales}) / (\text{accounts receivable}) > \text{or} = 6$

Accounts receivable turnover is a measure of operating efficiency. Offering credit to finance sales helps to increase sales and profits, so long as the buyers are creditworthy. The lower the turnover, the less-restrictive the credit policy, but that increases the credit risk to the company and the problems of bad debts on uncollected accounts receivable. If accounts receivable turnover is at least six times per year, credit risk is well-managed, without credit being too restrictive.

* return on total assets (ROA) = $(\text{net income}) / (\text{total assets}) > \text{or} = 5\%$

* return on equity (ROE) = $(\text{net income}) / (\text{stockholders' equity}) > \text{or} = 10\%$

ROA and ROE are measures of profitability. The model screens out companies that have been unprofitable in the recent past, but does not screen out companies that were successfully turned around from being unprofitable in previous years. The model favors companies that efficiently use debt financing to increase ROE relative to ROA. So long as the level of debt is manageable, for a profitable company, debt financing also helps to lower the after-tax cost of financing. A separate debt/equity ratio criterion was recently deleted from the model, partly because good data was unavailable.

* EPS growth (EPSG) = $(\text{projected long-term average annual growth in earnings per share}) > \text{or} = 10\%$

EPS growth is the compound rate of return that the investor expects to earn in purchasing or holding a given stock. This criterion restricts investments to growth

companies and aggressive growth companies. It also makes the model forward-looking, since this is a forecast of future earnings growth. Projected average annual EPSG for the next five years is an intermediate term forecast, but it is the most forward-looking estimate provided by expert institutional analysts in the set of financial ratios on financial websites. Once you've requested a stock quote, this data is available under the link to "analysts estimates" or "estimates" (n.d.). It's best to use the mean forecast of all professional analysts covering the stock. Some successful value investors advise against investing in growth stocks, and advise against relying on analysts' forecasts of future earnings (Dreman, 1998; Tier, 2005).

The remaining financial ratios are price-to-value ratios, for measuring shareholder value to new equity investors.

* price-earnings ratio (P/E) = (common stock price per share)/(earnings per share)
< or = 20

This is the stock price per share divided by the earnings per share. A lower ratio value is better (Greenwald, Kahn, Sonkin, & Van Biema, 2001). A common stock with a P/E > 20, is likely to be overvalued. When available, it's better to use a forward P/E than a trailing P/E. A trailing P/E uses the earnings per share for the last twelve months; a forward P/E uses the projected earnings for the next twelve months. These two P/E ratios can differ significantly for the same company in some time periods. However a new investor in the stock cannot receive last year's earnings. For the 1881-2000 period, 16 was the average historical value of this financial ratio for stocks in the S&P Composite Index (Shiller, 2000, p. 8).

* price-sales ratio (P/S) = (common stock price per share)/(sales revenue per share)
< or = 2.0

This selection criterion prevents the investor from paying too much for a stock relative to its sales revenue. Once you've bought stock in the company, you can earn income from both current sales and all future sales. In his research of 45 years of market data, O'Shaughnessy found the P/S ratio to be the best criterion for identifying undervalued stocks (O'Shaughnessy, 1998, p. 36).

* price-book ratio (P/B) = (common stock price per share)/(net worth per share)
< or = 4.0

The market price per share of stock is measure of its economic value; book value per share is a measure of its accounting value. In a bull market, the average stock trades for a multiple in excess of four times book value. Dreman's research found that stocks in the Compustat database with the lowest P/B ratios significantly outperformed stocks with higher P/B ratios, in the 1973-1996 period (Dreman, 1998, p. 122).

* dividend yield = (annual dividend per share)/(market price per share)
> or = 2%

When available, it's best to use a forward estimate of the dividend yield. In principle, a stock that pays a dividend isn't necessarily better than one that doesn't, everything else equal. Long-term investors who aren't living off dividend income, are primarily interested in capital gains, which are usually higher for companies that reinvest their profits to grow their earnings. However, having to pay dividends helps to discipline financial managers to focus on maximizing shareholder returns. Historically, dividends have accounted for about 40% of the total return to stockholders, on average (Fonda & Kapadia, 2009). Dividend-paying stocks are also less risky. The dividend helps to stabilize the stock price during bull and bear markets. However, dividends aren't guaranteed and could be unexpectedly cut to reduce cash outflows from a company (Lepro, 2009).

* price/cash flow (P/CF) = (price per share of common stock)/(net cash flows per share) < or = 15

One fundamental principle of finance is that "cash – not profits -- is king" (Keown, Martin, Petty, and Scott, 2005, p. 14). For a financially well-managed company, the P/CF ratio is highly-correlated to the P/E ratio. Consequently, including this selection criterion may seem redundant. However, including it can protect the investor from investing in a company that is burning through cash, while growing its managed earnings, to hit its earnings forecast. In that event, the company could periodically restate its earnings, causing the stock price to plummet.

III. Qualitative Stock Selection Criteria

After finding stocks that fit the parameter values of the quantitative financial ratios in the model, consider deleting any stocks of companies that have one or more of the following qualitative problems, if these problems are likely to significantly reduce the company's expected future profits. If a company has these problems, you can often discover and learn about them on a financial website, by asking for a stock quote, then clicking on "headlines" or other "news and information links" (n.d.). Recent news may not have been considered by analysts in their long-term EPS growth forecasts.

- * Lawsuits (e.g., class action personal injury or patent infringement)
- * Government regulatory investigations (e.g., SEC or IRS)
- * Labor market problems (e.g., impending labor union strike)
- * Principal-agent problems (e.g., excessive executive compensation)
- * Company specific risk (e.g., poor quality management or high legacy costs)
- * Industry problems (e.g., increasing competition or excess supply)
- * Domestic or foreign economic problems (e.g., slowdown in economic growth)

IV. Other Fundamental Principles Required In The Model

The following fundamental principles of investing are also important selection criteria in my model.

- Choose an optimal asset allocation among stocks, bonds, money, and other assets that best fits your investment time horizon and risk tolerance. Some researchers have concluded that investors' asset allocation decision could determine over 90% of their average annual portfolio return (Schwab, 2001, p. 21; Machtig and Behrends, 1997, p. 129). Make investments consistent with your risk preferences – conservative, moderate, or aggressive (Siegel, 1998, p. 37). Per Warren Buffett, the risk of earning a lower return than your required return is a better measure of risk than a stock's beta or a portfolio's beta (Greenwald, Kahn, Sonkin, and Van Biema, 2001, p. 169). The model provided in this paper focuses on the common stocks, but it's important for most investors to also invest in other types of assets.
- Rebalance periodically (e.g., annually) or whenever your asset allocation differs significantly from your desired asset allocation. Rebalancing can help investors achieve their investment return goals, by maintaining their optimal asset allocation (O'Shaughnessy, 1998, p. 51). Rebalancing will also increase the cumulative return, by buying low and selling high.
- Diversify your stock investment portfolio, by industry, by market cap, and internationally, to reduce portfolio risk to a comfortable level, consistent with your risk tolerance (Dreman, 1998, p. 170). International portfolio diversification, globally, can substantially reduce investors' portfolio risk (Machtig and Behrends, 1997, p. 217). While O'Shaughnessy recommends stock portfolio diversification across 25-50 stocks; Buffett recommends holding a less diversified portfolio, concentrated in twelve stocks or less (Tier, 2005, p. 16-17; O'Shaughnessy, 1998, p. 51-53).
- Buy low and sell high, globally (Lynch, 1989, p. 293; Greenwald, Kahn, Sonkin, Van Biema, 2001, 171; Siegel, 1998, p. 90). The model provided in this paper recommends only buying stocks that are temporarily undervalued, and recommends selling them when they are temporarily overvalued.
- Use dollar-cost averaging to lower the average cost of your stock investments. By investing periodically a fixed amount of money or a fixed percentage of pay, throughout up and down markets, investors can usually lower their average cost per share of stock, especially in volatile markets (Johnson and Krueger, 2004).
- Have a minimum stock investment period of five years, so that you can give your stock portfolio time to recover in value, if the market goes through a long bear market. The longer your investment period, the lower your risk of earning less than you could have earned on alternative investments. Staying in the stock market also helps to lower your transactions expenses (Machtig and Behrends, 1997, p. 68-73). There is no requirement that you hold any individual stock for any period of time.

- Don't try to "time the market" through frequent short-term trading of your stocks. Frequent trading will likely reduce your returns, while increasing your trading expenses and taxes. Most investors who try to sell at the peak and buy at the trough, are unlikely to get the timing right. Mistakes in timing are likely to be costly. Being out of the stock market during just a small percentage of the market's best days could substantially lower investors' returns (Barber and Odeon, 2000; Bogle, 2001, p. 88-89; Machtig and Behrends, 1997, p. 71; O'Shaughnessy, 1998, p. 24-26).
- Don't chase investments that have earned unusually high returns in the recent past; they're more likely to underperform in the near future. Over time, the return on most stocks tends to regress to the mean (Hong and Stein, 1999; Machtig and Behrends, 1997, p. 68).
- Don't use technical analysis to analyze stocks, per the weak form of the efficient market hypothesis (Johnston, 2006). Fundamental analysis is useful, given that most empirical evidence fails to support the stronger forms of the efficient market hypothesis (Gu, 2004; Adrangi., Chatrath, and Shank, 2002). The principles developed by behavioral finance researchers interestingly highlight ways in which stock investors are not always rational and stock markets are not always efficient (Belsky and Gilovich, 1999; Shiller, 2000). Most active stock market professional investors also contend that stock markets are often inefficient enough to permit the profitable use of fundamental analysis (Dreman, 1998, p. 59-64; Bogle, 2001, p. 50; Lynch and Rothchild, 1989, p. 34-35; Hagstrom, 2001, p. 158-159).
- Don't buy and sell stocks in response to frequent headline news reporting of recent past changes in macroeconomic data values, such as economic growth, unemployment, inflation, interest rates, and foreign exchange values. Since the data is reported with a lag, and may be substantially revised, ignoring it will keep the investor forward-looking, with a long-term focus. Headline news articles and broadcasts inefficiently encourage investors to frequently and sometimes substantially reallocate their funds among their different types of assets (Johnston, 2006). Don't engage in day trading. Frequent trading in response to changing macroeconomic market conditions, at home and/or abroad, would inefficiently increase investors' tax liabilities and transactions expenses, for a given expected return (Bogle, 2001, p. xviii; Schwab, 2001, p. 31-32).
- Use an online discount broker to research stocks and reduce your transactions cost of buying and selling stocks. The author currently uses www.tdameritrade.com and has been happy with their services. Stock investors can compare and contrast the costs and benefits of competing discount brokers online to find the best one for them. With access to high-quality data, analysis, research tools, a profitable model for picking stocks, and low-cost transactions costs for trading, even small individual investors can invest and trade online.
- Minimize your taxes, for a given portfolio return, by investing in tax-sheltered retirement accounts and annuities (Alltizer and Hamill, 1999; Greenwald,

Kahn, Sonkin, and Van biema, 2001, p. 170). In taxable accounts, less frequent trading will reduce your tax liability. Most of the return from stock investments will be in the form of capital gains, which have a maximum marginal tax rate of 15% . Stock market gains are not taxable until realized by selling. Taxable gains can be netted against losses. If a net loss on stock investments occurs in some year, the net loss can be used to shelter other personal income, up to \$3000 per year, with additional losses carried forward.

- Increase your savings rate to finance your investments by paying yourself first, by automatically transferring part of each paycheck to your savings account or brokerage account.

V. Sell Rules

The following sell rules are used in my model:

- Sell stocks that no longer fit the model.
- Sell stocks to raise cash to buy better stocks.
- Sell stocks, when needed to rebalance your stock portfolio.
- Sell stocks to manage your tax liabilities.
- Sell stocks during bull markets, when needed to raise cash for other purposes.

VI. A Sample Of Stocks That Fit The Model

Provided below is a sample of stocks of companies that met all the quantitative ratios of my model, as of March 6, 2009. In parentheses are the stock symbols. The author used two financial websites, <http://finance.yahoo.com> and <http://www.reuters.com/finance> to identify these stock picks, by searching through the financial ratios of the stocks of sixty large-cap U.S. multinational companies.

- United Technologies (UTX).
- Microsoft (MSFT)
- Texas Instruments (TXN)
- Intel (INTC)
- The Gap (GPS)
- Nike (NKE).

Stocks that fit the model are not limited to large-cap stocks and are not limited to U.S. stocks, but these six demonstrate that there are stocks that fit the model, even though most don't. The model is designed to be very selective, to protect the investor from downside risk, while providing the investor with growth stock investments that are temporarily undervalued by the market. Large-cap growth stocks of U.S. multinationals corporations are the most likely to be fairly valued, in the global market economy, since they are the most widely-held and most heavily analyzed and traded.

While professional equity mutual fund managers could add all of these stocks to their internationally diversified stock portfolios, an individual investor with little money to invest

in a given month could buy just one. Buying one stock per month would allow individual investors to accumulate an internationally diversified stock portfolio of 12 stocks in a year and 24 stocks in two years, if they continued to fit the model.

VII. Empirical Evidence

The following table provides empirical evidence demonstrating that the small portfolio of stocks recommended by the model on March 6 significantly outperformed the benchmark S&P 500 index for the short-term period through the end of the year. The March 6 price is the purchase price (Get Quotes, n.d.). The December 31 price is the closing price (Historical Prices, n.d.). This investment period provided unusually high capital gains for both the market index and the stock portfolio, following a long bear market (Twin, 2010). The stocks recommended by the model also earn a dividend yield that exceeds the market average.

Company Name and Stock Symbol	Stock Price on 3/6/09	Stock Price 12/31/09	Capital Gain 3/6/09 – 12/31/09
United Technologies (UTX)	\$38.54	\$69.41	80%
Microsoft (MSFT)	15.28	30.48	100%
Texas Instruments (TXN)	14.71	26.06	77%
Intel (INTC)	12.41	20.40	64%
The Gap (GPS)	9.85	20.95	113%
Nike (NKE)	38.94	66.07	70%
Average for All Stocks			84%
S&P 500 Index			65%

Any small sample of stock investments during a non-representative investment period could provide biased results, and is insufficient to prove that the model will usually outperform the market. No model will always outperform the market in every short-term period.

It's not unusual for the portfolio of stocks that fit the model to beat the market, in the long-run, through bull and bear markets. The model is strategically designed to achieve that goal. One way that the model helps investors to earn more than the average stock market return is by screening out the stocks of companies that will most likely be the biggest losers, including overvalued, unprofitable, and low-growth companies. For example, in the late 1990s, the model screened out the stocks of the Internet companies, including AOL and Amazon.com, that imploded in the 2000-2002 bear market. The model also screened out Enron, Worldcom, and the other overvalued companies whose stock prices plummeted in 2001-2002, after they announced they had substantially overstated their earnings for the last several years. Another way that the model helps investors to outperform the market is by recommending the stocks of undervalued companies that are most likely to be acquired at a substantial premium. For example, the model recommended buying Mobil, before it was merged with Exxon, and recommended buying Chrysler several months before it was acquired, at a substantial premium, by Daimler-Benz. Shortly after the acquisition, the model recommended selling DaimlerChrysler, before the stock price declined.

One suggestion for future research is that other researchers empirically test the model presented in this paper, over different time periods, with different data sets, and compare the results to other models and market indexes. Teachers of finance or investment courses could also have their students test the model, using the investment websites highlighted in this paper, helping them learn to profitably invest in and manage a stock portfolio. The author has done that in his MBA core finance course over many years and most students have highly valued and enjoyed this useful learning.

VIII. Conclusions

This paper provides a model developed by the author that both professional and individual investors could profitably use to develop and manage an internationally diversified portfolio of common stocks. The model is based on fundamental principles of finance and investing, and includes both quantitative and qualitative stock selection criteria used and recommended by some of the most successful professional stock investors. The model uses both value investing and growth investing strategies, while excluding the technical strategies of momentum investors.

The author initially developed this model more than ten years ago, primarily as a tool for teaching students a profitable use of financial ratio analysis. Since then, the author has revised the model on numerous occasions, changing some of the selection criteria and some of their value limits. These changes prevent the author from providing a substantial performance record for the model; although overall performance has encouraged the author and other investors to continue to use and improve the model. In his more than twenty years of researching and investing in stocks, the author has not found a comparable model. Investors who fail to use a well-constructed strategic model and those who use models that violate the principles of finance and investing are unlikely to achieve their goals.

This paper also provides a sample of large-cap stocks of U.S. multinational corporations that currently fit the model, and explains how the author researched these stocks online using popular financial websites. Empirical data for a recent short-term investment period found that the capital gains for most of these stocks and the overall stock portfolio significantly beat the S&P 500 Index benchmark. Other important examples of stocks screened out by the model and examples of stocks recommended by the model are provided to demonstrate how the model can help investors to usually outperform the market. The author suggests that additional empirical tests of this model's performance could be provided by other researchers and/or students in finance or investment courses.

In the global universe of tens of thousands of stocks, investors should have no problem finding stocks that fit the model, even though most stocks fail to fit the model. The model also provides sell rules. For example, stocks that no longer fit the model should be sold. Important changes in market conditions and important changes in the financial performance of companies create opportunities to buy stocks that previously didn't fit the model, and to sell stocks that no longer fit the model, while continuing to hold other stocks.

By using this model, investors are likely to beat the stock market averages, for comparable portfolios, by investing in profitable growth companies whose stocks are

temporarily undervalued, and avoiding the less desirable stocks of other companies included in index funds, exchange-traded funds, and equity mutual funds. Investors in those other equity-type investments could use this more selective model for a portion of their stock portfolio investments to improve their overall investment performance.

While the model is well-designed and its performance may be sensitive to even small changes, investors using the model could, at their own risk, customize it, in an attempt to improve the model, based on their own research and investing experience.

As the author is completing this paper in early 2009, the stock market indexes in the U.S. and abroad have declined dramatically in the second long and severe bear market in the last decade. Many stock investors have been scared out of the market and are hoping to buy back into the market at the bottom. Others have turned to speculative short-term trading using technical analysis and frequent trading based on short-term momentum trends. Others are buying and holding the whole market, and seeing substantial losses on some stocks more than offset their gains on other stocks. Many are ignoring the fundamentals that determine the financial performance of companies and determine the returns on individual stocks. It seems like a particularly good time to remind investors that to achieve their goals they need to invest long-term, through bull and bear markets, using a strategic model that is based on the fundamental principles of finance and investing.

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