



Screening for Growth and Value Based on “What Works on Wall Street”

By John Bajkowski

A successful stock selection strategy is elusive for many investors. Chasing hot growth stocks often leaves investors burned, while low-priced, “value” stocks often only become cheaper. James P. O’Shaughnessy provides a detailed examination of basic investment strategies in his book “What Works on Wall Street: A Guide to the Best-Performing Investment Strategies of All Time” (McGraw-Hill, \$29.95).

O’Shaughnessy argues that the majority of investors fail to beat market averages because they do not follow a disciplined approach to investing. Instead, investors let the emotions surrounding the market overpower their judgment and push them off their planned investment course. This article examines and implements what O’Shaughnessy terms the “cornerstone” value and growth strategies he developed while testing a range of value and growth strategies using over 40 years of S&P Compustat data.

The Universe

O’Shaughnessy established two base groups of stocks from which to pick investments and to serve as performance and risk benchmarks—all-stocks and those with large capitalizations. The “all stocks” universe was determined by selecting stocks with a market capitalization (shares outstanding times market price) of \$150 million or greater. Rather than use the complete CompuStat database, O’Shaughnessy decided to focus only on stocks that a professional money manager could buy without too much difficulty due to liquidity. O’Shaughnessy based the \$150 million market capitalization cut-off as of December 1994, and adjusted this figure for inflation so that the minimum value was approximately \$26.7 million in 1952. Limiting the analysis to stocks with a market cap above \$150 million effectively

cuts out half the stocks currently traded on the New York, American, Nasdaq National Market, and Nasdaq Small Cap exchanges.

The large cap group was determined by selecting stocks whose market capitalization was greater than the average for the overall universe. Typically only about 16% of the companies pass this filter because few very large firms push up the average market cap. Testing revealed that the large cap group had similar return and risk performance to that of the S&P 500.

O’Shaughnessy’s testing revealed that “micro caps” or stocks with market capitalization below \$25 million beat all other size groups on a risk-adjusted basis, but he argues that it is too difficult to invest in these stocks. A comparison of the O’Shaughnessy all-stocks universe to the large cap universe revealed that the all-stocks group had higher performance, but they also carried more risk, as measured by standard deviation of return. However, the return was sufficiently higher so that the risk-adjusted return exceeded the large cap group.

Value Strategies

O’Shaughnessy tested a number of basic value strategies on both the large cap and all-stocks universe. Value strategies use measures such as price-earnings ratios, price-to-book value ratios, price-sales ratios and dividend yields, to identify out-of-favor investments that are priced attractively in relationship to these measures. Stocks whose prices are low relative to some tangible company factor such as earnings are purchased, while companies with high prices relative to these measures are avoided.

Table 1 provides a summary of the single criterion strategies tested by O’Shaughnessy. O’Shaughnessy used the CompuStat database to construct a portfolio of the top 50 stocks passing a strategy. An equal dollar amount was invested in each security, with the portfolio rebalanced annu-

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Table 1.
O'Shaughnessy's Single Criterion Test Results

	All-Stocks (Market capitalization above \$150 million)	Large Cap (Market capitalization above average)
Value Strategies		
Price-Earnings: Buy 50 stocks with the lowest price-earnings ratios.	While stocks with low price earnings ratios performed better than those with high ratios, the low price-earnings stocks underperformed the all-stocks universe and had higher standard deviation.	Large cap, low price-earnings stocks significantly outperformed both large cap universe and high price-earnings stocks. Although strategy had higher risk, it was attractive on a risk-adjusted basis.
Price-Book Ratios: Buy 50 stocks with the lowest price-book ratios.	Low price-to-book value stocks outperformed all-stocks universe on an absolute basis, but also had higher risk leading to a risk-adjusted return equal for both groups.	Low price-to-book stocks strongly outperform large cap universe with somewhat higher risk. Superior strategy on both a total and risk-adjusted basis.
Price-to-Cash Flow Ratios: Buy 50 stocks with the lowest price-to-cash flow ratios.	Low price-to-cash flow stocks outperformed all-stocks universe on an absolute basis, but higher risks leads to under-performance on a risk-adjusted basis.	Low price-to-cash flow stocks outperform large cap universe on both an absolute and risk-adjusted basis. Best performing large cap value strategy.
Price-to-Sales Ratios: Buy 50 stocks with the lowest price-to-sales ratios.	Best performing value measure for the all-stocks universe. Significantly outperforms universe on an absolute basis and risk-adjusted basis.	Strong and consistent performance. Outperforms large cap universe on both an absolute and risk adjusted basis.
Dividend Yield: Buy 50 stocks with the highest dividend yields.	High-dividend yielding stocks fail to outperform all-stocks universe on an absolute basis and is higher risk.	Strong and consistent performance. Out performs large cap universe with little additional risk.
Growth Strategies		
One-Year Earnings Increase: Buy 50 stocks with the highest one-year earnings per share percentage increases.	Leads to both lower return and higher risk. Some short periods, however, do show strong performance only to be followed by very poor performance.	Results in poor performance and higher risk. Buying stocks with the lowest gains leads to slightly better performance than benchmark, but at higher risk, resulting in risk-adjusted performance just below benchmark.
Five-Year Earnings Growth: Buy 50 stocks with the highest five-year earnings per share increases.	Performance below all-stocks coupled with greater risk levels results in terrible performance.	Performance below large cap index coupled with greater risk results in terrible performance.
Profit Margins: Buy 50 stocks with the highest net profit margins.	Underperformed all-stocks and exhibited slightly higher risk.	Performed below large cap index with roughly the same risk level.
Return on Equity: Buy 50 stocks with the highest return on equity (ROE).	Performance of high ROE stocks was roughly equal to all-stocks index, but risk was higher, leading to weaker risk-adjusted performance.	Performance below large cap index coupled with greater risk levels results in poor performance.
Relative Strength: Buy 50 stocks with the highest one-year price change.	Performance of high relative strength stocks exceeds performance of all-stocks, but at much higher risk. Risk-adjusted return below all-stocks.	Performance of high relative strength stocks exceeds performance of large cap universe, but with higher risk. Absolute and risk-adjusted return above large cap universe.

ally. Dividends were included in the return measurements, but transaction costs were ignored. O'Shaughnessy tested the reverse of a strategy when appropriate. For example, when testing the price-earnings strategy, a portfolio of the top 50 price-earnings companies was established and tracked, as well as a portfolio of the bottom 50.

The test results confirm the conclusions of many studies emphasizing the benefit of following a value-oriented approach in selecting stocks.

Growth Strategies

As indicated in Table 1, O'Shaughnessy's tests of basic growth strategies revealed that with the exception of rela-

tive strength, simple growth strategies do not compensate investors adequately for the risk possible with these strategies. High growth, high margin stocks are often bid up to unrealistic levels. Growth stock investors must watch their portfolios very carefully, quickly selling off issues with any hint of disappointing growth. O'Shaughnessy's tests revealed that growth stocks often underwent significant periods of superior risk-adjusted performance, especially during strong bull markets. However, these gains were eroded over the long run during subsequent market periods.

Relative strength stands out as an effective tool for the stock investor, working consistently over the 40-year test period. Relative strength compares the price performance of a security to that of a corresponding index. Stocks outper-

Table 2.
O'Shaughnessy Cornerstone Screening

Company (Exchange: Ticker)	Price-Earnings Ratio (X)	Price-Book-Value Ratio (X)	Price-Sales Ratio (X)	Dividend Yield (%)	5-Year Earnings Growth Rate (%)	5-Year Sales Growth Rate (%)	Market Capitalization (\$ Mill)	52-Week Relative Strength (%)	Description
Cornerstone Value Stocks (Ranked by Dividend Yield)									
U.S. West Communications (N:USW)	14.0	4.48	1.7	6.0	na	na	17,196.0	-11	Telecommun co. in 14 western states
ARCO Chemical Company (N:RCM)	11.5	2.26	1.2	5.9	5.1	8.6	4,572.4	-26	Intermediate chem. & spec'ty prods
BCE Inc. (N:BCE)	22.5	2.09	0.8	5.6	-11.3	6.0	15,392.0	12	Telecommun servs & equip
RJR Nabisco Holdings Corp (N:NRN)	30.1	1.26	0.7	5.1	17.9	2.9	9,885.8	-12	Produces tobacco & snacks
Imperial Oil Limited (A:IMO)	17.3	2.36	1.1	4.9	-2.1	-3.5	7,010.1	-3	Crude oil, natural gas, & petroleum prods
Southern New Eng. Telecom (N:SNG)	na	5.37	1.2	4.9	-42.4	2.8	2,379.1	-29	Telecommun prods
Chrysler Corporation (N:C)	7.2	2.19	0.4	4.7	37.5	15.9	23,887.7	-3	Cars, trucks, & accessories
Ford Motor Company (N:F)	10.3	1.50	0.3	4.7	31.0	7.0	36,643.1	-15	Sells cars, trucks & accessories
Deluxe Corporation (N:DLX)	31.4	3.43	1.4	4.6	-12.3	5.6	2,605.0	-21	Check printing & electr funds transfer servs
NYNEX Corp. (N:NYN)	16.7	3.31	1.7	4.6	-30.7	-0.3	22,659.4	-19	Telecommun co. in northeastern U.S. & worldwide
Brascan Limited (A:BRS.A)	7.8	1.00	na	4.4	na	na	2,460.5	15	Mining & metals, forest products, oil & gas
MacMillan Bloedel Limited (M:MMBLF)	9.0	0.66	0.5	4.4	42.2	11.8	1,694.4	-14	Forest prods co.
Atlantic Richfield Co. (N:ARC)	12.7	2.78	1.1	4.3	-7.1	-1.6	20,102.5	-8	Petroleum liquids, crude oil, natural gas, & coal
Bankers Trust NY Corp. (N:BT)	14.2	1.75	1.2	4.3	-23.6	1.0	7,418.8	13	Bank holding co.
J.C. Penney Company, Inc. (N:JCP)	14.7	2.02	0.5	4.3	8.7	5.1	11,129.5	-16	Apparel, shoes, home furnish & jewelry retailer
Moore Corporation Ltd. (N:MCL)	20.1	1.45	0.9	4.3	14.7	-1.2	2,212.4	-9	Business forms, printing servs, labels
Bell Atlantic Corp. (N:BEL)	16.4	4.06	2.3	4.2	7.7	1.4	30,260.8	-16	Telecommun co. in Mid-Atlantic region
GTE Corporation (N:GTE)	na	6.48	2.2	4.0	-25.8	0.8	45,085.3	-12	Telecommun prods/servs
Dun & Bradstreet Corp. (N:DNB)	19.9	3.94	1.0	4.0	-7.5	2.3	4,171.3	-27	Info. services; credit ratings, investor info
Occidental Petroleum Corp. (N:OXY)	19.4	2.31	0.8	3.9	17.4	-0.8	8,428.3	-11	Crude oil & natural gas
Cornerstone Value Median	14.5	2.19	1.1	4.6	5.1	2.9	9,885.8	-12	
Large Cap Median	20.7	2.93	1.6	1.4	13.1	8.0	3,333.0	-3	
Cornerstone Growth Stocks (Ranked by Relative Strength)									
Brightpoint Inc. (M:CELL)	49.2	5.96	0.9	0.0	55.0	86.3	447.2	86	Distrib wireless telecommun devices
Insight Enterprises, Inc. (M:INSIT)	25.8	2.31	0.5	0.0	37.0	40.9	210.6	86	Direct mrkts microcomputers
Watsco, Incorporated (N:WSO)	33.4	3.15	0.9	0.5	12.3	23.0	337.0	60	Climate control components
PHH Corporation (N:PHH)	18.9	2.62	0.7	1.6	10.8	3.4	1,671.1	54	Integrated management servs
Interface, Inc. (M:IFSIA)	24.8	1.80	0.5	1.1	-13.7	5.2	424.8	42	Interior mrkt prods
Computer Data Systems (M:CDSI)	17.5	2.79	0.7	0.4	21.1	14.1	179.4	37	Info technology servs & prods
Culp, Inc. (N:CFI)	16.8	2.40	0.5	0.7	29.4	15.1	225.7	35	Mfrs & sells upholstery fabrics
Gibraltar Steel Corp. (M:ROCK)	15.5	2.04	0.7	0.0	38.8	21.6	274.2	33	Process value-added steel prods
Alberto-Culver Company (N:ACV)	25.7	3.81	1.0	0.7	15.9	12.7	951.5	29	Health & beauty care prods
Scotsman Industries, Inc. (N:SCT)	14.9	2.09	0.7	0.4	8.6	12.5	292.9	29	Refrig. prods for foodservice industry
Leasing Solutions (M:LSSI)	20.6	3.04	1.4	0.0	na	na	181.4	27	Leasing info procss'ng & communs equip
Spartech Corporation (N:SEH)	16.1	2.70	0.8	1.7	16.5	20.2	306.7	23	Thermoplastic materials & molded prods
AMERCO (M:UHAL)	10.9	1.09	0.6	0.0	na	na	616.2	22	Holding co. for U-Haul
Avery Dennison Corp. (N:AVY)	25.3	5.04	1.3	1.7	94.8	3.8	4,208.2	21	Spec'ty adhesives for labels
Carlisle Companies, Inc. (N:CSL)	19.2	3.46	1.1	1.5	15.5	10.5	994.0	21	Rubber, plastic, & metal prods
Owens-Illinois, Inc. (N:OI)	15.6	4.32	0.7	0.0	23.9	0.8	2,904.0	20	Plastic pkg prods & glass containers
Coachmen Industries (N:COA)	10.5	2.71	0.5	1.0	28.6	13.6	347.7	19	Recreational vehicles & van conversions
Palm Harbor Homes (M:PHHM)	16.6	3.24	0.7	0.0	80.8	30.0	366.1	16	Produce multi-section mfrd homes
Raymond Corporation (M:RAYM)	14.0	1.77	0.7	0.4	45.4	14.1	193.4	16	Materials handling equip
Personnel Grp. of America (N:PGA)	24.9	1.46	0.8	0.0	16.9	6.3	308.3	15	Personnel staffing servs
Cornerstone Growth Median	18.2	2.71	0.7	0.4	22.5	13.9	342.4	28	
All-Stocks Median	19.8	2.62	1.7	0.4	14.2	10.5	562.8	-5	

Exchange Key: N = New York Stock Exchange A = American Stock Exchange M = Nasdaq

Statistics are based on figures as of February 28, 1997.
Data Source: AAI's Stock Investor/Market Guide, Inc. and I/B/E/S

forming the index have positive relative strength, while stocks lagging the performance of the index have negative relative strength. Relative strength measures help to uncover pockets of exceptionally strong or weak performance. It seems that stocks in motion tend to maintain their upward or downward momentum.

Multifactor Strategies

O'Shaughnessy's studies revealed that it was possible to combine a number of the factors to establish selection criteria, superior in risk and return, to the single factor criteria. For example, pairing a value measure such as price-to-sales with a growth filter such as strong relative strength leads to a higher risk-adjusted return than the corresponding single factors. The value screen reduces the chance of paying too much for a growth stock, while the price momentum screen helps to highlight well-priced stocks with market recognized value.

O'Shaughnessy tested a number of combinations and settled on two strategies superior on a risk-adjusted basis: a cornerstone value screen geared towards large cap stocks, and a cornerstone growth screen geared towards the all-stocks universe.

Cornerstone Value

Testing revealed that the value approach was better suited for the large cap universe than the all-stocks universe; perhaps smaller-cap stocks with low valuation ratios do not have the resources to bounce back to glory. Large caps were also less volatile than the all-stocks universe, which fits nicely into the more conservative goal of the cornerstone value screen. O'Shaughnessy established a screen for large cap market leaders and tested a number of value factors to determine which factor produced consistent and strong performance over the long haul.

AII's *Stock Investor* program was used to illustrate the screen. The large cap universe is defined as stocks whose market cap exceeds the average for the complete universe. *Stock Investor's* database covers over 7,500 stocks with an average market capitalization of \$1.3 billion. Establishing a minimum market capitalization of \$1.3 billion reduced our universe to 1,024 companies.

The next cornerstone value filter specifies that a company should have more common shares outstanding than the average stock in the database—a screen for adequate liquidity. We screened for companies with more than 38.2 million outstanding shares, reducing the number of passing companies to 858.

The cornerstone value screen ultimately relies upon the dividend yield to highlight attractively-priced stocks. However, a high dividend yield may also signal the market's expectation of a dividend payout cut. To help screen out these potentially weak companies, O'Shaughnessy specified that the companies should have a cash flow per share

which exceeds the database average. One does not normally screen a single period per share item across a cross section of firms. Per share items are normally studied over time or converted into ratios that can be meaningfully compared across firms. O'Shaughnessy does not reveal if other tests of dividend safety were tested and discarded. An examination of the adequate coverage of dividend payouts from cash flow or earnings is a common dividend strength requirement. We followed the O'Shaughnessy screen and looked for firms with cash flow per share greater than \$1.60, which reduced the number of passing companies down to 646.

O'Shaughnessy also specified that a firm must have total sales 1.5 times the database average. With sales averaging \$930 million in *Stock Investor*, we screened for companies with sales levels greater than \$1.4 billion. This screen cut the list of passing companies to 510. O'Shaughnessy excluded utilities to keep them from dominating the dividend yield screen, leaving us with 450 companies.

O'Shaughnessy recommends the use of dividend yield to build a portfolio for the cornerstone value screen. The top yielding companies significantly outperformed the large cap universe while possessing a similar level of risk. Table 2 presents the 20 top yielding stocks of the cornerstone value screen. The 4.6% yield for this group is significantly above the 1.4% yield of the large cap universe.

Cornerstone Growth

With the exception of relative price strength, the growth strategies tested by O'Shaughnessy were not very promising. O'Shaughnessy's single factor test screened for companies with extreme values—factors such as highest earnings growth, highest margins, and highest returns on equity. By reducing these extreme growth requirements and establishing moderate value requirements, O'Shaughnessy was able to construct a portfolio which had the desired combination of strong price growth and reasonable risk.

The growth stock screen was based upon the all-stocks universe because smaller stocks have greater growth potential than their large cap counterparts. The all-stocks universe looks for stocks with a market capitalization above \$150 million, providing a starting point of 3,476 companies.

The cornerstone growth strategy focused on earnings consistency, rather than relying on high earnings growth levels. A screen for five years of consecutive earnings growth proves to be very restrictive and reduces the number of passing companies down to 455 when applied to the all-stocks universe.

O'Shaughnessy balances the growth requirement by establishing a maximum price-to-sales ratio ceiling of 1.5. When used independently as a value screen, more restrictive ceilings of 0.75 or 1.0 are common. The price-to-sales ratio was loosened to allow more growth-oriented companies to pass, yet not allow them to have valuations that are too extreme. Applying the price-to-sales screen left 132

companies standing.

O'Shaughnessy then screened for the 50 companies with the highest relative price strength over the last year. The top 20 stocks ranked by 52-week relative strength are presented in Table 2.

With the exception of the price-to-sales ratio, the cornerstone value companies tend to have more attractive multiples than the cornerstone growth companies. The results of the screen also highlight that certain ratios can benefit from industry comparison. Brightpoint passes the cornerstone growth screen with a price-to-sales ratio of 0.9, yet it has relatively high price-to-book and price-earnings ratios. Retail and wholesale firms tend to naturally carry low price-to-sales ratios.

The cornerstone growth companies have much stronger earnings and sales growth rates than their value counterparts. The cornerstone value companies are much larger

than their benchmark large cap growth, while the growth companies are smaller than the all-stocks median. Also, as expected, the relative strength of the cornerstone group is significantly higher than the value group. Only three of the cornerstone value stocks have positive relative strength, and their median is significantly below the large cap median—a common characteristic of value screens.

Conclusion

"What Works on Wall Street" provides an interesting examination of investment strategies. O'Shaughnessy argues that the market is far from random and that a sound, disciplined, emotion-free, investment approach is the only way to beat the market over the long term.

(See AAI's forum on America Online for a list of screening fields as used in AAI's Stock Investor program.)



Definitions of Screens and Terms

The following is a short description of the terms used in Table 2

Price-Earnings Ratio: Price per share divided by most recent 12 months' earnings per share. Provides a measure of the market's expectations regarding the firm's earnings growth and risk.

Price-to-Book-Value Ratio: Current price per share divided by book value (common stockholder's equity) per share. A measure of stock valuation relative to net assets. A high ratio might imply an overvalued situation; a low ratio might indicate an overlooked stock.

Price-to-Sales Ratio: Current price divided by the sales per share for the most recent 12 months. A measure of stock valuation relative to sales. A high ratio might imply an overvalued situation; a low ratio might indicate an undervalued stock.

Dividend Yield: Current annual dividend per share divided by share price. A measure of stock valuation relative to dividend payout. A high yield might imply an undervalued situation; a low yield might indicate an overvalued stock.

EPS Growth Rate-Last Five Years: Annual growth in earnings per share from total operations over the last five fiscal years. Used as a measure of how successful the firm has been in generating the bottom line, net profit.

Sales Growth Rate-Last Five Years: Annual growth in total sales over the last five fiscal years. Provides a confirmation of the quality of the historical earnings per share growth rate.

Market Capitalization: Computed by multiplying the last share price by average number of shares of common stock outstanding during the latest quarter.

52-Week Relative Strength: Price performance of a stock relative to an index, in this instance, the S&P 500. A price momentum indicator, it confirms investor expectations and interest by comparing the performance of a stock relative to the market.