

Finding Value and Financial Strength Based on “What Works on Wall Street”

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Article Highlights

- This strategy uses criteria that best match the spirit of O'Shaughnessy's value, financial strength and earnings quality composites.
- By combining several factors, investors can achieve better performance.
- Each composite and the process for creating it are both explained.

Investors seem to be programmed by nature to fail at investing, pouring money into last year's hot stock, industry or asset class.

James P. O'Shaughnessy provides a detailed examination of investment strategies in the fourth edition of his book “What Works on Wall Street: The Classic Guide to the Best-Performing Investment Strategies of All Time” (McGraw-Hill, 2011).

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. Investors tend to chase investments with the best recent performance, while ignoring anything that happened more than three to five years ago. Furthermore, O'Shaughnessy makes the case that the markets are not random. The stock market does not move around without any rhyme or reason; it “rewards certain investment strategies while punishing others.”

In the fourth edition of “What Works on Wall Street,” O'Shaughnessy examines a wide range of strategies over more than 80 years of testing to identify which individual factors delivered the best risk-adjusted performance with the greatest consistency. The book extends the analysis of previous editions by examining a wider array of single-factor and multi-factor models and extending the analysis back to 1926. As first discussed in “‘What Works’: Key New Findings on Stock Selection,” (*AAIL Journal*, October 2013), O'Shaughnessy found that there is no best single-factor strategy. While price to sales and EBITDA to enterprise value



compete for the best-performing strategy, the time period under study strongly impacts relative performance. Investors can achieve better long-term performance by combining several factors into a composite ranking that considers price to sales, price to earnings, EBITDA to enterprise value, price to free cash flow to enterprise value and shareholder yield. Additional gains come from also considering the financial strength of companies and their earnings quality.

O'Shaughnessy and his son Patrick were kind enough to examine the data universe of *Stock Investor Pro* (AAIL's stock screening and analysis software) and come up with the stock screening criteria that best match the spirit of the value composite, financial strength composite and earnings quality composite screens that proved to be successful. In this article, we present our implementation of the value composite ranking with additional filtering for financial strength and earnings quality.

Investors wishing to implement this strategy should note that moderate knowledge of Microsoft Excel and familiarity with *Stock Investor Pro* are suggested. Examples of the spreadsheets and the custom fields used are included with the online version of this article on AAIL.com.

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 market capitalizations. The all-stocks universe was determined by selecting stocks with a market capitalization (shares outstand-

Table 1. Stocks Ranking Highest on a Value Composite

Company (Ticker)	Share Price (Feb 14) (\$)	Valuation Composite Percentile Rank (%)	Price-to- Free- Cash-Flow Ratio (X)	Price- Earnings Ratio (X)	Price-to- Sales Ratio (X)	Enterprise Value-to- EBITDA (X)	Share- holder Yield (%)	Financial Strength Percentile Rank (%)	Earnings Quality Percentile Rank (%)
RCS Capital Corp. (RCAP)	22.26	0	0.8	5.3	0.07	nmf	3.2	7	19
RR Donnelley & Sons (RRD)	17.89	0	7.1	nmf	0.31	nmf	5.0	9	3
GameStop Corp. (GME)	35.61	0	7.2	10.5	0.47	7.2	8.0	3	18
hhgregg, Inc. (HGG)	9.25	0	7.6	16.8	0.12	5.2	11.8	9	10
NACCO Industries (NC)	58.36	1	11.2	10.6	0.50	nmf	6.5	15	10
Hewlett-Packard (HPQ)	30.02	1	8.0	11.4	0.51	nmf	4.2	22	17
Nam Tai Electronics (NTE)	6.12	1	4.4	4.0	0.25	nmf	0.3	10	6
EMC Insurance Group (EMCI)	26.99	2	5.2	8.6	0.65	nmf	1.5	11	18
Calamos Asset Mgmt (CLMS)	11.55	3	2.7	19.3	0.81	nmf	7.7	8	4
United Fire Group (UFCS)	27.37	3	4.9	14.7	0.81	nmf	2.9	14	11
Cirrus Logic, Inc. (CRUS)	18.18	3	4.3	9.7	1.48	nmf	3.4	4	12
USA Mobility Inc. (USMO)	13.95	3	8.4	14.2	1.46	4.1	5.2	9	15
Baldwin & Lyons Inc. (BWIB)	23.90	4	7.5	11.0	1.27	nmf	3.7	16	21
VSE Corporation (VSEC)	44.18	4	5.4	9.1	0.51	nmf	(0.1)	17	11
National Western Life (NWL)	213.13	5	3.0	8.3	1.03	nmf	0.2	23	8
Triple-S Management (GTS)	15.54	6	4.3	8.0	0.19	nmf	(2.5)	22	14
Erie Indemnity Co. (ERIE)	70.54	7	5.6	23.8	0.55	nmf	4.7	16	7
Chemed Corp.n (CHE)	76.88	7	9.8	18.0	0.98	7.9	5.1	0	25
Target Corp.n (TGT)	56.06	8	18.3	15.0	0.48	9.3	6.7	24	16
Children's Place Retail (PLCE)	53.20	8	14.6	21.9	0.66	7.2	9.4	2	22
VOXX International (VOXX)	12.58	9	5.0	9.3	0.37	nmf	(3.9)	17	14
Southwest Airlines Co. (LUV)	21.30	9	16.0	20.1	0.84	6.8	5.6	20	17

Source: AAI's Stock Investor Pro/Thomson Reuters. Data as of 2/14/2014.

ing times market price) of \$200 million or greater, and this floor is adjusted for inflation over time. Rather than use the complete stock database, O'Shaughnessy decided to focus only on stocks that a professional money manager could buy without too much difficulty due to liquidity for a diversified \$100 million portfolio. The market cap is adjusted for inflation so that the minimum value is approximately \$29.4 million in 1963 and \$16.8 million back in 1926. Limiting the analysis to stocks with a market cap above \$200 million effectively cuts out half the stocks currently traded in the United States.

The large-cap group was determined by selecting stocks whose market capitalization was greater than the average for the overall universe. Typically only about 17% of the companies pass this filter because a 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 index.

A comparison of the O'Shaughnessy all-stocks universe to the large-cap universe revealed that the all-stocks group had higher performance, but it also carried more risk, as measured by standard deviation of return and downside risk. However, for most strategies, "you're better off fishing in the larger pond of all stocks—which includes many smaller-cap stocks—than exclusively buying large, well-known stocks."

For our universe, we decided to focus on the all-stocks universe of stocks with a market cap greater than or equal to \$200 million. This reduced our starting universe from 7,144 to 3,761 stocks. We then required that stocks be listed on the New York, American or NASDAQ

exchange. We excluded closed-end funds and real-estate investment trusts (REITs). Finally we excluded foreign stocks trading as ADRs because they were lacking some of the ratios needed for the analysis. After all of these filters were applied, we were left with an all-stocks universe of 3,034 stocks using data as of February 14, 2014.

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-to-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

Industry

Investment Services
 Printing Services
 Retail (Technology)
 Retail (Technology)
 Appliances & Tools
 Computer Hardware
 Electronic Instruments & Controls
 Insurance (Property & Casualty)
 Investment Services
 Insurance (Property & Casualty)
 Semiconductors
 Communications Services
 Insurance (Property & Casualty)
 Business Services
 Insurance (Life)
 Healthcare Facilities
 Insurance (Property & Casualty)
 Healthcare Facilities
 Retail (Department & Discount)
 Retail (Apparel)
 Electronic Instruments & Controls
 Airline

factor such as earnings are purchased, while companies with high prices relative to these measures are avoided.

O'Shaughnessy found that single-factor value models had better returns and "batting averages" than pure growth models. There was one exception: Price momentum had success, but even it should be used in connection with a value constraint. The more important finding was that the use of several value factors together in a composited value factor offers much better and more consistent returns than using single-value factors.

O'Shaughnessy created a composite in the following manner. For each combined group of factors, a percentile ranking (from 1 to 100) was assigned for each stock in the universe. If a stock has a price-earnings ratio that is in the lowest 1% of the universe, it receives a

rank of 1; if a stock has a price-earnings ratio in the highest 1% of the universe, it receives a rank of 100. A similar convention is followed for each of the factors—thus, if a stock is in the lowest 1% of the universe based on its price-to-sales ratio, it gets 1; if the stock is in the highest 1%, it gets a 100. If a value is missing for a factor, the factor is ignored; however, O'Shaughnessy requires a value for at least three of the factors in order for a stock to be included in the value composite. For shareholder yield—which is dividend yield plus buyback yield—those stocks in the 1% of the universe with the highest yields will be ranked 1, whereas those within the lowest 1% will be ranked 100. Once a rank is assigned to all the factors, the rankings are averaged and the stocks are assigned to deciles. Those with the lowest scores are assigned to decile one, while those with the highest scores are assigned to decile 10.

To create the composite, we created a view in Stock Investor Pro that listed all of the desired data for our all-stocks universe and then copied the data into Excel. We used the percentrank function in Excel to calculate rankings for each of the value factors. Note that the Excel percentrank begins its percentiles with zero, while O'Shaughnessy's ranking begins at 1%. We then calculated the average valuation ranking for each company that had three or more of the five valuation factors for an overall score. We then re-ranked the average for companies that had three or more of the five valuation factors to compute the percentile ranks, and selected companies from the all-stocks universe with a valuation rank in the lowest decile.

Our value composite consists of the price-to-free-cash-flow ratio, price-earnings ratio, price-to-sales ratio, enterprise-value-to-EBITDA ratio and shareholder yield, and the companies in Table 1 are sorted by their value composite percentile rank.

Price to Free Cash Flow

The price-to-free-cash-flow ratio is a substitution suggested for the free cash flow to enterprise value measure

mentioned in the October 2013 *AII Journal* article. Some investors prefer using ratios based on free cash flow to find bargain-priced stocks because cash flow is considered more difficult to manipulate than earnings. Free cash flow is calculated by subtracting capital expenditures and dividend payments from cash flow from operations. This free cash flow figure is considered to be excess cash flow that the company can use as it deems most beneficial. A growing company must reinvest its cash to maintain its operations and expand. While management may neglect capital expenditures in the short term, there are fundamental negative long-term growth implications to such neglect. With strong free cash flow, debt can be retired, new products can be developed, stock can be repurchased, and dividend payments can be increased. Excess cash flow also makes a company a more attractive takeover target.

O'Shaughnessy found that investors reward stocks with low ratios and punish those with high ones. A more basic price-to-cash-flow ratio was better than the price-to-free-cash-flow ratio as a single factor, but price to free cash flow seems better in a strategy where the interaction effect of other factors comes into play.

Price to Earnings

The price-earnings ratio, or earnings multiple, is one of the most popular measures of company value. It is computed by dividing the current stock price by earnings per share for the most recent four quarters. It is followed so closely because it relates the market's expectation of future company performance, embedded in the price component of the equation, to the company's actual recent earnings performance. The greater the expectation, the higher the multiple of current earnings investors are willing to pay for the promise of future profits. If the market has low earnings growth expectations for a firm, or views earnings as suspect, it will not be willing to pay as much per share as it would for a firm with high and more certain earnings growth expectations.

O'Shaughnessy found that stocks with a lower price-earnings ratio outperformed the all-stocks universe and had a lower standard deviation as well. Between 1963 and 2009, your chance of beating an investment in the all-stocks universe for any five-year period was 92% and increased to 99% for rolling 10-year periods.

Price to Sales

The price-to-sales ratio is the current price divided by the sales per share for the most recent four quarters. Proponents of the price-to-sales ratio argue that earnings-based approaches to selecting stocks are inferior because earnings are influenced by many management assumptions trickling through the accounting books. Temporary developments such as costs incurred in the rollout of a new product or a cyclical slow-down can influence earnings more than sales, often leading to negative earnings. The price-to-sales ratio can provide a meaningful valuation tool when negative earnings render earnings-based models useless.

In the first edition of "What Works on Wall Street," O'Shaughnessy found that the price-to-sales ratio was the best-performing single-factor value measure. It significantly outperformed the universe on an absolute basis and risk-adjusted basis. With the extended analysis in the latest edition of the book, the price-to-sales ratio still performs well as a single factor and in combination with other factors in multi-factor models.

Enterprise Value to EBITDA

The enterprise value to EBITDA ratio helps to measure the value of a stock relative to its earnings potential. Many investors feel that a company's enterprise value to its earnings before interest, taxes, depreciation and amortization (EBITDA) is a better way to measure company value than the price-earnings ratio alone. The ratio is neutral to the company's capital structure and capital expenditures. Note that O'Shaughnessy's book used EBITDA to enterprise value, while we used the inverse enterprise-value-to-EBITDA multiple found in

Stock Investor Pro.

A company's enterprise value represents its economic value, which is the minimum value that would be paid to purchase the company outright. Enterprise value is equal to the market value of equity (including preferred stock) plus interest-bearing debt minus excess cash. Enterprise value takes into account both the market price of equity and the debt used to generate earnings. Companies with debt must pay interest on the debt and eventually pay off the debt. This makes the debt's true acquisition cost higher. Adding debt to market capitalization raises the enterprise-value-to-EBITDA ratio, making a company less attractive. Excess cash is subtracted from enterprise value because the unneeded cash reduces the overall cost of acquiring a business. EBITDA ends up serving as an approximation of the firm's operating cash flow.

In the fourth edition of "What Works on Wall Street," O'Shaughnessy found that stocks with lower enterprise-value-to-EBITDA ratios had the best single-factor performance. They outperformed the all-stocks universe and had lower standard deviation as well. Between 1963 and 2009, your chance of beating an investment in the all-stocks universe for any five-year period was 96%, and was 100% for all 10-year periods.

Shareholder Yield

A stock's shareholder yield is the sum of its buyback yield and dividend yield and shows what percentage of total cash the company is paying out to shareholders, either in the form of a cash dividend or as expended cash to repurchase its shares in the open market. Thus, if a company is paying a 5% dividend yield and has a buyback yield of 10%, its shareholder yield would be 15%.

A stock's buyback yield is determined by comparing the average number of shares outstanding for a fiscal period with the average number of shares outstanding for another fiscal period. In our case, we are comparing the average shares outstanding for the latest fiscal quarter to the average shares outstanding

in the same fiscal quarter a year ago. If a stock currently has 90 million average shares outstanding and it had 100 million average shares outstanding one year ago, the buyback yield would be 10%. Note that the buyback ratio can be negative if the number of outstanding shares has increased.

In using the shareholder yield, one looks for stocks with higher shareholder yields. In testing, the shareholder yield outperformed the all-stocks universe and had lower standard deviation as well. Your chance of beating in investment in the all-stocks universe for any five-year period was 86%, and was 93% for any 10-year period.

Financial Strength Composite

The financial strength composite ranks stocks on the following four factors: the debt-to-equity ratio, the cash-flow-to-debt ratio, external financing and one-year change in debt. The composite is created exactly like the value composite, with stocks with the best levels for each factor receiving a 1 and stocks with the worst levels for each receiving a 100. In the case of the financial strength composite, stocks missing a value for a factor are ignored; to be included in the composite, a stock must have a value for at least two of the four factors.

The debt-to-equity ratio indicates what proportion of a firm's capital is derived from long-term debt as compared to equity. A higher percentage of long-term debt compared to equity increases the volatility of earnings as well as the probability that the firm will not be able to make its interest payments and default on its debt. Long-term debts are liabilities due in a year or more.

The cash-flow-to-debt ratio, or coverage ratio, measures a company's ability to meet its interest payments. The ratio used by O'Shaughnessy related cash flow to debt levels, while the measure in *Stock Investor Pro* (times interest earned) relates the cash flow to interest expense. It indicates how well a company is able to generate earnings to pay interest on its debt. The larger and more stable the ratio, the lower the risk of the company

defaulting. In addition, the higher the ratio, the more flexibility a company has in being able to meet its financial obligations and have money left over for dividends, expansion, etc. A ratio of less than one indicates that company's current cash flow is not high enough to meet their current debt obligations, meaning they will need to liquidate assets to make up the shortfall or find additional funding. This field is only relevant and calculated for non-financial companies in *Stock Investor Pro*.

The external financing measure was a custom field that divided cash from financing by total assets. Cash from financing comes from the cash flow statement and measures the inflows from additional borrowing, repayment of debt, dividend payments and equity financing. It is better to avoid companies that finance from external sources rather than through internally generated cash flow. Lower ratios and negative ratios are desirable.

The final component of the financial strength composite is the one-year change in debt. This was also a custom field that looked at the percentage change in debt from a year ago (Q5) to the last quarter (Q1). As the name implies, it is a straightforward look at the change in long-term debt over the last four quarters. O'Shaughnessy found that companies with the highest increase in debt perform significantly worse than the market.

We determined the percentile rank for each of the four variables, averaged the rank for companies with two or more financial strength ratios and then required that companies have financial

strength among the best 25% of stocks with at least two financial strength ratios. We were a bit less conservative than O'Shaughnessy, who normally used the lowest decile in his testing, because we wanted to highlight a slightly large group of stocks in this article. O'Shaughnessy also indicates that optimally you should calculate the financial strength ranking within each company's sector. Table 1 lists percentile rank of the financial strength composite for each company. This filter reduced our group of best value stocks (lowest decile) from 260 stocks to 81 stocks.

Earnings Quality Composite

O'Shaughnessy also looked at earnings quality. He created a composite that consisted of the ratio of current accruals to total assets, change in operating assets, ratio of total accruals to total assets and ratio of depreciation to capital expenditures. Current accruals to assets is defined as the difference in accruals to earnings over the last 12 months minus the cash earnings over the last 12 months. Total accruals to total assets is calculated as the change in working capital accounts on the balance sheet (change in current assets minus change in current liabilities minus change in cash).

In examining the data variable in *Stock Investor Pro*, O'Shaughnessy and his son Patrick determined that the easiest solution was to create a single custom field that examines the difference between the operating cash flow and the net income and scales the figure to the market cap. [(Cash from operations minus net income) divided by market

cap.] We calculated this variable and then determined the percentile rank for each company. O'Shaughnessy calculated the earnings quality percentile rank within each company's sector, but for the sake of simplicity we did not.

Companies with a higher level of operating earnings compared to net income are considered to have better quality earnings. The results are divided by market cap to allow comparison across different-sized companies. Here again, we were a bit less conservative than O'Shaughnessy and only required that stocks be in the lowest (best) 25% earnings quality rank. Table 1 lists the percentile rank of the earnings quality composite. This reduced our group of passing companies to 22 stocks.

Conclusion

"What Works on Wall Street" is a rich resource for the investor wishing to study the markets and develop a long-term investment strategy.

All strategies have good and poor performance cycles. O'Shaughnessy helps to find strategies that have the highest "base rate" and shows that a composite strategy can help identify both higher and more consistent performance than single-variable strategies. One can also use accounting variables to measure financial strength and earnings quality to improve investment performance.

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. ▲

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