

Examining the Shadow Stock Value and Size Factors

By John Bajkowski

Factor investing has become a popular way to seek out excess returns.

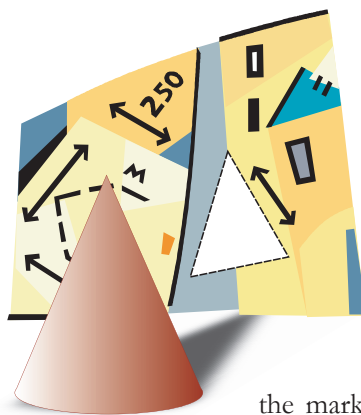
At its best, factor investing is a systematic investment strategy supported by long-term empirical evidence that can be explained with economic and behavioral insight. The empirical evidence should be pervasive and expected to continue into the future. Common factors used today include value, momentum, size, quality, volatility and carry (yield).

Some investors focus on single factors to create their portfolios, like looking for the A students who excel in a specific subject. However, many investors seek to combine factors that are unrelated (negative or low correlations) but when combined contribute to more consistent performance, higher returns or lower risk. Multi-factor approaches are akin to well-rounded students who achieve consistently high grades across a wide range of subjects, even if they don't always get A grades.

A Classic Two-Factor Portfolio

The Model Shadow Stock Portfolio is one of the oldest real-money examples of constructing and managing a two-factor portfolio focused on value and size. The Model Shadow Stock Portfolio was started in January 1993 to show members how a consistent investment approach could be followed and to help them learn how to apply it in their own portfolios. Table 1 shows the stocks that currently make up the portfolio.

The genesis for the creation of the Model Shadow Stock Portfolio was research from Eugene Fama and Kenneth French. Their oft-cited study, "The Cross-Section of Expected Stock Returns" (1992), found that company size, as measured by market capitalization, helped explain future



market returns. Market capitalization, or market cap, is simply calculated by multiplying the number of shares a company has issued by the share price. It is a common measure of company size and represents the market consensus of a company's worth. Apple Inc.'s (AAPL) market cap is just above \$1 trillion, while a number of smaller companies that trade on stock exchanges have a market cap of just a few million dollars.

The stocks with the lowest market cap outperformed the largest companies by a wide margin between July 1963 and December 1990. As shown in first column of Table 2, stocks in the lowest decile on average returned 19.1% a year versus 11.2% for the largest market-cap decile.

Researchers often rank domestic companies listed on the New York Stock Exchange (NYSE) by various factors to determine and record the different breakpoints that are then applied to stocks listed on other exchanges as well. This is done to maintain continuity over time when looking at market data before the growth of Nasdaq. Kenneth French maintains a useful data library on his Dartmouth College webpage (http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html).

Fama and French's research also found that companies with the lowest price-to-book-value ratios (P/B) performed better than those with high measures. The price-to-book-value ratio is calculated by dividing share price by shareholder's equity. The lowest price-to-book-value stocks, on average, returned 21.4% a year versus 8.0% for those with the highest price-to-book-value ratios as shown in the first row of Table 2.

A Multi-Factor Strategy

Taken individually, company size and valuation are factors investors can use to select stocks that, historically, have outperformed the broader market. However, they capture

Table 1. Model Shadow Stock Portfolio

Company (Ticker)	Current Price (\$)	52-Week		Market Cap (\$ Mil)	P/E Ratio (X)	P/B Ratio (X)	Div Yield (%)	Notes
		High (\$)	Low (\$)					
Aceto Corporation (ACET)	3.27	17.10	2.22	102.5	nmf*	0.57	1.20	
Amira Nature Foods (ANFI)	1.80	6.30	1.62	83.6	na	0.34	0.00	
AutoWeb Inc. (AUTO)	3.88	11.47	2.88	50.8	nmf*	0.84	0.00	
Beazer Homes USA (BZH)	12.81	23.24	12.19	455.7	10.7	0.71	0.00	
Big 5 Sporting Goods (BGFV)	6.45	11.10	5.05	137.1	nmf*	0.74	9.30	
Container Store Group (TCS)	6.63	8.93	3.53	326.5	85.5	1.28	0.00	
CPI Aerostructures (CVU)	9.40	11.75	7.80	88.9	15.0	1.10	0.00	
CSS Industries Inc. (CSS)	15.95	30.29	15.13	144.6	nmf*	0.57	5.00	
Delta Apparel, Inc. (DLA)	16.54	22.50	16.50	120.0	11.8	0.82	0.00	qualifies as of 7/31/2018
Ducommun Incorporated (DCO)	33.33	35.89	25.06	388.2	50.7	1.53	0.00	
Ennis, Inc. (EBF)	21.75	22.98	17.65	561.3	14.6	2.07	4.10	
Flexsteel Industries (FLXS)	35.83	56.98	34.74	281.6	12.3	1.17	2.50	
Hallador Energy Co. (HNRG)	7.01	7.98	4.79	195.3	19.8	0.83	2.30	qualifies as of 7/31/2018
Hooker Furniture Corp. (HOFT)	45.05	52.75	35.90	545.8	16.3	2.25	1.20	
Kimball Electronics Inc. (KE)	20.35	22.45	15.75	540.6	15.4	1.52	0.00	
New Home Co. (NWHM)	9.22	13.55	8.72	198.7	10.3	0.74	0.00	
Olympic Steel, Inc. (ZEUS)	22.11	25.84	16.58	247.9	10.0	0.90	0.40	qualifies as of 7/31/2018
PC Connection, Inc. (CNXN)	33.85	35.52	22.66	931.8	17.9	1.85	0.00	
PCM Inc. (PCMI)	22.10	22.25	6.90	236.6	45.6	2.00	0.00	
RCM Technologies (RCMT)	4.86	6.55	4.32	60.0	15.7	2.55	0.00	approaching value limit
RCI Hospitality Holdings (RICK)	32.43	34.84	21.91	334.0	28.9	2.09	0.40	
Renewable Energy Group (REGI)	17.05	18.45	9.50	613.8	2.5	0.85	0.00	
REX American Resources (REX)	77.00	99.99	70.48	491.2	16.8	1.32	0.00	
Roadrunner Transportation (RRTS)	2.19	9.75	1.63	86.3	nmf	0.95	0.00	
Rocky Brands Inc. (RCKY)	25.85	31.75	12.80	207.4	23.6	1.33	1.90	
Seneca Foods Corp. (SENEA)	26.95	36.60	26.45	269.9	nmf*	0.66	0.00	
SigmaTron International (SGMA)	6.99	11.61	5.26	30.1	nmf	0.50	0.00	earnings probation (Q4 2018)
Strattec Security Corp. (STRT)	33.00	49.20	29.70	121.2	13.2	0.74	1.70	qualifies as of 7/31/2018
Townsquare Media Inc. (TSQ)	6.48	11.28	6.03	109.1	nmf*	0.34	4.60	
Universal Stainless & Alloy (USAP)	29.91	31.20	17.30	260.6	43.1	1.12	0.00	
Vishay Precision Group (VPG)	39.90	41.60	16.55	538.8	34.9	2.64	0.00	approaching value limit

na = not available

nmf = no meaningful figure

*Trailing four-quarter GAAP earnings negative, but adjusted earnings positive.

Source: AAI's Stock Investor Pro/Thomson Reuters. Data as of 7/31/2018.

Approaching Size Limit: Stocks are sold if their market capitalization goes above three times the initial maximum criterion and there is a stock to replace it. The current market capitalization maximum for initial screening is \$400 million. Stocks are marked "approaching size limit" if their current market cap exceeds 2½ times the initial criterion, or \$1 billion.

Approaching Value Limit: Stocks are sold once their price-to-book-value ratio goes above three times the initial criterion and there is a stock to replace it. The current initial price-to-book ceiling is 1.00. Stocks are marked "approaching value limit" if their current price-to-book-value ratio exceeds 2½ times the initial criterion, or 2.50.

Earnings Probation: If last 12 months' earnings are negative, the stock is put on probation; if a subsequent quarter has negative earnings prior to 12-month earnings becoming positive, the stock is sold. When available, adjusted (non-GAAP) earnings are used to put stocks on probation or sell them. Otherwise, earnings from continuing operations are used. The date is the fiscal quarter during which the company first reported negative trailing 12-month earnings.

Qualifies as of: Stock still qualified as a buy when the screen was run with current data. Stocks that don't currently qualify as a buy are held until they meet one of the sell rules.

See the Model Shadow Stock Portfolio area of AAI.com for more information. Click on the monthly Update for discussion of stocks on probation or exceeding a limit and other news.

Table 2. Returns of Stocks Grouped by Market-Cap Size and Price-to-Book Ratio

	All Stocks	Average Annual Returns—July 1963 to December 1990 (%)									
		High	Price-to-Book-Value Ratio								Low
		1	2	3	4	5	6	7	8	9	10
All Stocks	15.8	8.0	12.4	13.5	15.0	15.9	16.2	18.0	18.2	19.6	21.4
Size Deciles											
1-Largest	11.2	11.7	11.1	10.6	8.9	9.9	10.4	10.2	12.1	12.3	15.1
2	12.0	5.4	11.2	11.6	12.7	13.4	11.7	10.3	14.2	13.2	15.7
3	13.8	8.2	14.4	11.5	12.0	12.5	12.8	14.7	13.4	16.6	20.3
4	13.6	12.0	12.7	12.5	10.4	12.5	14.4	12.5	14.8	14.0	19.1
5	14.7	8.7	12.4	14.6	15.8	11.9	16.4	15.3	15.3	15.9	19.6
6	15.9	11.1	8.1	13.8	19.1	14.4	18.6	18.7	16.2	19.8	19.4
7	15.3	4.8	9.0	13.5	17.6	14.4	15.5	17.3	20.8	19.7	19.1
8	15.7	6.9	11.1	15.8	12.0	17.6	16.8	16.8	18.2	20.1	21.0
9	15.7	5.3	13.4	12.1	15.3	17.2	15.3	20.7	16.5	18.6	23.7
10-Smallest	19.1	8.7	14.6	15.4	18.6	20.4	19.7	22.4	22.6	24.2	25.6

Source: "The Cross-Section of Expected Stock Returns," Eugene Fama & Kenneth French, *The Journal of Finance*, June 1992.

Table 3. Size and Value Maximums Used for the Model Shadow Stock Portfolio

Period Ending	Maximum Value of Lowest (10th) Decile NYSE Stocks		Maximum Values When Adding to Shadow Stock Portfolio		Annual Return (%)	
	Market Cap (\$ Mil)	Price-to-Book-Value (X)	Market Cap (\$ Mil)	Price-to-Book-Value (X)	Model Shadow Stock Portfolio	Vanguard 500 Index (VFINX)
1993	66	0.99	55	0.61	32.3	9.9
1994	60	0.87	60	0.65	2.0	1.2
1995	81	0.95	60	0.65	20.7	37.4
1996	93	1.01	100	0.70	22.3	22.9
1997	123	1.13	125	0.85	44.3	33.2
1998	100	0.82	125	0.85	(8.9)	28.6
1999	95	0.65	125	0.85	(0.0)	21.1
2000	90	0.50	125	0.85	(7.7)	(9.1)
2001	115	0.73	125	0.60	21.4	(12.0)
2002	130	0.68	125	0.60	10.8	(22.1)
2003	243	1.02	125	0.70	73.1	28.5
2004	300	1.20	200	0.80	43.7	10.8
2005	310	1.09	200	0.80	17.9	4.8
2006	380	1.19	200	0.80	29.4	15.6
2007	303	0.84	200	0.85	(1.8)	5.4
2008	127	0.52	200	0.80	(50.8)	(37.0)
2009	230	0.79	200	0.80	72.3	26.5
2010	287	0.93	200	0.80	45.4	14.9
2011	238	0.76	200	0.80	6.3	2.0
2012	266	0.85	240	0.80	33.3	15.8
2013	385	1.06	300	0.80	61.0	32.2
2014	326	0.94	300	0.80	(5.8)	13.5
2015	249	0.77	300	1.00	(15.2)	1.3
2016	370	1.04	400	1.00	29.8	11.8
2017	387	0.97	400	1.00	14.0	21.7
Jul 2018	398	0.99	400	1.00	(1.9)	6.4

Source: Kenneth R. French, AAIL's Stock Investor Pro/Thomson Reuters. Data as of 7/31/2018.

different elements or factors. What Fama and French discovered in their research is that, when combined, micro cap and low price to book value yield even better performance, as illustrated in Table 2.

An approach that combines the lowest decile by market cap and lowest decile by price to book value earned 25.6% per year on average versus 19.1% for the lowest market-cap decile, 21.4% for the lowest price to book value and 15.8% for the complete stock universe. The return of this combined portfolio is highlighted in the lower right-hand corner of Table 2.

The primary Model Shadow Stock Portfolio selection criteria target the value and size intersection,

but the breakpoints that determine the NYSE deciles change over time. Table 3 provides a history of the size and value maximums used to manage the Model Shadow Stock Portfolio. The initial \$55 million market-cap maximum for inclusion in the Model Shadow Stock Portfolio has grown to \$400 million. The price-to-book-value ratio has fluctuated as well. It was lowest during 2001 and 2002, at 0.60, and is currently at its highest level of 1.00.

The high price-to-book valuation levels reflect the long and aging bull market. However, as noted in the May 2018 *AAIL Journal*, successfully timing the market involves determining when to get out of the market as well as when to get back in. Missing the best market upturns often hurts long-term performance more than avoiding a portion of a bear market.

We will report on any quarterly portfolio actions for the Model Shadow Stock Portfolio in the October *AAIL Journal*. You can follow the portfolio on AAIL.com in the Model Portfolios area. To receive monthly email updates along with alerts to any changes made to the portfolio, please sign up at www.aail.com/email. ▲

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