

A Test of a Composite Measure for Common Stock Momentum Investing

By

A.J. Senchack

**Lucy King Brown Chair in International Business
And
Professor of Business**

Presentation

**The Academy of Financial Services
San Antonio, Texas**

October 1, 2012

**Contact: Dr. A. J. Senchack
Southwestern University
1001 E. University
Georgetown, Texas 78627
512-630-6288**

JEL Classification: G11, C10, C52, E00.

Keywords: Momentum Investing; Relative Strength; Efficient Markets Hypothesis, Technical Analysis; Investment Strategies

A Test of a Composite Measure in Common Stock Momentum Investing¹

A.J. Senchack
Lucy King Brown Chair in International Business
And
Professor of Business
Southwestern University
Georgetown, Texas 78628

Momentum investing has received considerable attention in both academic and (especially) practitioner research (see, e.g., Jegadeesh and Titman, 1992, 2001; Brush, 1986; Levy, 1967; Moskowitz and Grinblatt, 1999). In general, *momentum investing* refers to the tendency of common stock's rate of return or price change to exhibit *persistence* in its past and future relative *performance*. A related, but more specific, term is a stock's *relative strength*, which refers to a stock's market price or value variable compared to the same variable for a group of stocks or the overall market over a stated time period. (NOTE: We will use these two concepts interchangeably in this paper.)

Application and examples of relative strength to momentum investing are the estimation and ranking of the 52-week relative strength found in the share price or year-over-year quarter earnings performances as selection criteria for common stocks. The key assumption when they are used to select common stocks is that, *if a common stock has performed relatively well recently, it will continue to perform relatively well in the future*. Many may recognize this assumption as also one of the key assumptions underlying technical analysis.

While some think of momentum investing as buying (chasing after?) a handful of the hottest stocks, a momentum strategy is actually a very disciplined, systematic *investing style* that uses

¹ The research assistance of Mr. Jack Parker is acknowledged and greatly appreciated.

relative strength measures as inputs to its investment decisions. Moreover, momentum appears to apply to not only common stocks but also to different assets classes, such as commodities and currencies, as well as mutual fund performance (see, e.g., Asness and Peterson, 2009; Griffin, Ji, and Martin 2005; and Rouwenhorst, 1999).²

This research contains the results from an initial study that examines a unique *source* of valuation variables to test momentum investing. Specifically, while prior research has relied on easily-accessed asset return statistics to test momentum investing, we assess whether a *composite* measure of *different types* of relative strength ratings provides a selection criteria or strategy for creating superior investment performance portfolios of large cap, growth stocks. To test this proposal, the usual average returns, risk, and Sharpe and Treynor reward-to-risk ratios are estimated over the July 2009–March 2012 time period, using a weekly, replicating portfolio formation strategy that involves holding periods of 13-, 26-, 39-, and 52-weeks.³ Preliminary evidence indicates that this new portfolio strategy offers only a small incremental raw and a zero risk-adjusted return improvement over the traditional straw man of financial research, the simple buy-and-hold strategy.

I. Motivation.

Our research became motivated by the significant academic and practitioner interest in the merits of the momentum or relative strength investing style in capturing excess market returns (and with minimal investor effort, I might add!). In distinction to earlier research, the current research does not rely upon a single formation criterion to form portfolios, such as simply selecting the best stocks or “winners” based on their latest 52-week relative stock performance (e.g.,

² In this research and as with other researchers, we will use the terms momentum investing and relative strength interchangeably, despite their subtle differences.

³ Studies of the *Value Line Investment Survey* (VL), such as Copeland and Mayers (1982), come closest to what we are doing. Copeland and Mayers use the VL ratings to select stocks to form portfolios. The VL ratings are also a composite measure that is based upon a computer-generated analysis (adjusted for other unique information by the VL analyst). For instance, a VL composite rating of 1 means the stock should outperform other lower-rated stocks over the next 6-12 months and is based on a proprietary weighting of a stocks price and earnings relative strength plus other fundamental variables.

Jegadeesh and Titman, 1993 and 2001). Instead, and importantly, our replicating portfolios are based upon much more fundamental and technical information. The logic is that the use of much more valuation information should lead to even better performance than found in the extant literature. Moreover, such information is readily accessible such that individual investors can obtain the information in a timely manner at a relatively low cost. Thus, the research question arises as to whether the additional input to the selection process provides an enhancement to the relative performance found in other momentum studies, yet remains easily available and implemented by the average investor in his/her personal or retirement portfolio?

Another distinguishing feature of this research is that nearly all of the prior academic research on momentum investing would be classified as a test of the weak form market efficiency. In contrast, our research is more appropriately a test of the semi-strong form of market efficiency because (public) fundamental data such as sales, earnings, and returns on equity feed into the selection criterion for our common stock sample.

II. Research Methodology:

A. Description of Data Sample. A unique, hand-collected database was created from company and common stock information provided in William O'Neil's *Investor's Business Daily* (IBD) newspaper and database. (IBD told me that it does not keep historical information on these relative strength measures; therefore, I was forced to hand collect the requisite information from my personal library, supplemented by microfiche copies of IBD for missing data, for July 9, 2009 through March 29, 2012.)⁴ Specifically, each Tuesday, IBD tabulates, ranks, and reports a list of large cap, growth stocks referred to as "*The IBD Big Cap 20.*" Each stock in this list is distinguished as those stocks with the highest "*SmartSelect Composite Rating,*" based on a proprietary rating system as follows:

⁴ IBD began gathering and publishing the Big Cap 20 on July 19, 2005.

“The “Big Cap 20” is a computer-generated watch list of leading large growth stocks. IBD combines earnings, sales and other fundamental factors with strong stock price performance to create this weekly snapshot.”⁵

The technical and fundamental selection variables that, in part, appear to comprise the proprietary system are price relative strength; eps relative strength; annual (estimated), last quarter, and next quarter (estimated) eps *percentage* growth, last quarter sales *percentage* change; return of equity; pre-tax profit margin; percent of outstanding equity owned by top management; and a mutual fund “sponsorship rating.”

These specific variables largely stem from William O’Neil’s research on what characteristics tend to identify big winners (e.g., more than a double in price within 12 months) *before* and during their explosive performance. See O’Neil (1988) and his C-A-N S-L-I-M stock selection system. Finally, Marc Reinganum’s 1987 *Financial Analysis Journal* article and his Chartered Financial Analysis research publication (1979) used O’Neil’s research and database to test these systems. However, its application to large cap stocks has not apparently been published anywhere.

IBD is most known for helping investors find and assess newer, small-to-mid-cap companies that are exhibiting fast-, even explosively-, growing sales and earnings. But, those stocks are also well known to exhibit extreme volatility (with market betas typically much greater than 1.00), and have the potential to drop quickly and hard in price, even on an intraday basis. To offer an alternative choice, *IBD* began publishing its Big Cap 20 Screen in July 2005 to provide a list of stock candidates that might provide above-average, future returns, but with considerably less risk exposure. To be eligible on the list, a stock’s market value of equity must be greater than \$15 billion and, further, all Big Cap 20 stocks must be experiencing high or increasing profit and sales growth. *IBD* further states,

⁵ *IBD* further adds a familiar disclaimer:

“You should never buy any stock based solely on its inclusion the list. Scan the charts for stocks near buy points. Go to investors.com to research companies further. Be sure to read archived stories and analyze the company with *IBD*’s Stock Checkup.”

"...these stocks have less in common with old, slow moving industrial giants than they do with their smaller, high growth cousins...Big Cap 20 stocks are industry leaders that, though large, usually boast steady and substantial profit and sales growth. They often trade millions of shares a day, which is attractive to institutional investors looking to buy or sell blocks of shares without causing the stock to swing wildly.

*By contrast, small-cap stocks often trade a much smaller number of shares, so relatively small trades can drive the stock price up—or down—quickly."*⁶

B. Portfolio Formation and Their Statistical Analysis. Each Tuesday during the test period, an equally weighted portfolio was formed with the 20 Big Cap stocks. Each weekly portfolio's return is based on the closing Tuesday price and calculated at 13-, 26-, 39-, and 52-week intervals. Therefore, there are 52 weekly portfolios per calendar year, with four return series (and overlapping since a stock may still be highly ranked in subsequent weeks) or a total sample of 208 returns each year. The familiar average return, risk (standard deviation and beta risks), and Sharpe risk-adjusted portfolio performance ratios ("reward-to-variability" measures) are also calculated for the different time intervals, where a portfolio's overall, market beta risk is found from the market model, i.e., a regression of the series of a time-intervalled portfolio's returns on the comparable S&P 500 Composite Index rates of returns.

III. Results:

Over the time period studied, our evidence indicates little-to-no advantage of the buy-the-Big-Cap-20 strategy versus the usual buy-a-market-index-fund approach, despite the additional fundamental and technical information used to form and implement a Big Cap 20 momentum strategy. Namely, our results show

1. From Table 2, on a raw, weekly return basis over the four interval portfolios, the Big Cap 20 portfolios raw returns, on average, tended to outperform the market by 29 to 138 basis points (bps), with the 26-week portfolios experiencing the smallest, 29 bps advantage of

⁶ Stoddard, Scott (2012). Big Cap 20 stocks offer growth with less volatility, *Investor's Business Daily*, September 12, B6.

6.61% versus 6.32% for the market (S&P 500). Not surprisingly, the larger bps gap occurred with the longest, 52-week time interval.

2. Not reported in Table 2 and also on a raw, weekly return basis, a Big Cap 20 portfolio outperformed the market in 68% of the more than 200 time periods,
3. Over time, there appears to be an attenuation effect in the portfolio returns as the holding period increases. That is, as the portfolio intervals increase in length the average return continues to increase, but at a decreasing rate.
4. The Big Cap portfolios also tended to exhibit more total risk, especially for the 52-week time period where the Big Cap stocks exhibited almost twice as much total risk (86% more). In fact, the 52-week results behave aberrantly compared to the other time period, with the portfolios experiencing more average return, but less risk!
5. On a risk-adjusted return basis, an analysis of the portfolios' and market's Sharpe portfolio performance ratios indicate that the Big Cap 20 portfolios did not offer a superior investing procedure, especially in the longer time interval.
6. Based on market risk, the four interval portfolios displayed slightly less risk than the market, with the betas ranging from 0.91 to 0.97. Of course, given the size of the portfolios, one might question the relevance of market risk, given that there is significant diversifiable risk in the portfolios.
7. Although there are statistical difficulties in applying a test of sample means because of the overlapping portfolios, not surprising, a hypothesis of no difference is rejected.
8. From week to week, the portfolio turnover averaged 38%, or about 7 stocks per week, with most of these stock changes occurring at the lower ranks. In fact, was not unusual for a stock to move in and out of the Big Cap 20 over a number of weeks. In contrast, a stock in the top 10 of the Big Cap list tended to stay in the weekly portfolios for an extended period. But, at lower levels, because obvious changes in the five (observable) technical components

used in the *SmartSelect* Composite ratio were not evident, other (unknown) measure(s), such as the 10-week moving average, must have been used in IBD’s proprietary ranking method.

Finally, we continue to explore whether a refinement in the selection procedure to include only the Top 10 (highest ranking) stocks will enhance performance (despite opening myself up to potential criticism about “data mining”). From Table 3, interestingly, our evidence appears to say that the Top 10 stocks in the Big Cap 20 generate about a 20-75% improvement in raw return, AND with less total risk.

Table 3. Return-Risk Statistics for Top 10 (Big Cap 20) Portfolios vs. S&P 500 Composite Index

Holding Period Interval:	13-week Avg. Return (Total Risk)	26-week Avg. Return (Total Risk)	39-week Avg. Return (Total Risk)	52-week Avg. Return (total Risk)
--------------------------	----------------------------------	----------------------------------	----------------------------------	----------------------------------

**Table 2. Return-Risk Portfolio Statistics for Big Cap 20 Portfolios
vs. S&P 500 Composite Index, 2009-12.**

Holding Period Interval:	13-week Return Interval	26-week Return Interval	39-week Return Interval	52-week Return Interval
<u>Big Cap 20</u>				
Avg. Return (HPR*) (Std. Dev. Of Returns)	4.97% (6.82%)	6.61% (10.44%)	7.54% (13.15%)	10.32% (11.58%)
Beta Risk	0.99	0.98	1.11	1.30
Diversification (R²)	0.80	0.84	0.86	0.73
Sharpe Ratio	0.66	0.58	0.54	0.83
<u>S&P 500 Composite Index</u>				
Avg. Return (HPR*) (Std. Dev. Of Returns)	4.61% (6.47%)	6.32% (10.06%)	7.16% (10.79%)	8.94% (6.20%)
Sharpe Ratio	0.63	0.57	0.62	1.33

* HPR = "Holding Period Return" over the entire time interval, $(P_{t+1} - P_t)/P_t$, where P_t is the portfolio value at time t.

References

- Asness, C.S., Liew, J. and Peterson, L.H. (2009). Value and momentum everywhere, unpublished National bureau of Economic Research Working Papers,
- Berger, ADAM L., Israel, Ronen, and Moskowitz, Tobias J. (2009). The Case for momentum investing, Greenwich, CT: AQR Capital Management, LLC working paper.
- Brush, John S. (1986). Eight relative strength models compared, *The Journal of Portfolio Management*, 13, 1, 21–28.
- Copeland, Thomas and David Mayers (1982). The Value Line enigma (1965–1978): A case study of performance evaluation issues, *Journal of Financial Economics* 10, 289–321.
- Griffin, John M., Ji, Susan, and Martin, J. Spencer (2005). Global momentum strategies: A portfolio perspective, *Journal of Portfolio Management*, Winter, 23-39.
- Jegadeesh, Narashimhan and Titman, Sheridan (1993). Returns to buying winners and selling losers: Implications for stock market efficiency, *Journal of Finance*, 68, 65-91.
- _____ (2001). Profitability of momentum strategies: An evaluation of alternative explanations. *Journal of Finance*, 56.
- Levy, Robert (1967). Relative strength as a criterion for investment selection, *Journal of Finance*, 22, 595–610.
- Moskowitz, T.J. and Grinblatt, M. (1999). Do industries explain momentum?" *Journal of Finance*, 54.
- O'Neil, William J. (1988). *How to make money in stocks: A winning system in good times and or bad*. McGraw-Hill.
- Reinganum, Marc (1988). Selecting superior securities. *Financial Analysis Journal*. This published research was based on his Chartered Financial Analyst research that was published as a 1987 C.F.A. monograph.
- Rouwenhorst, K.G. (1999). International momentum strategies, *Journal of Finance*, 53.