

RS Rating: Segmentation

QUANTITATIVE RESEARCH

O'NEIL GLOBAL ADVISORS INC.

RS Rating: Pharma Flameouts and Small-Cap Values

November 19, 2020

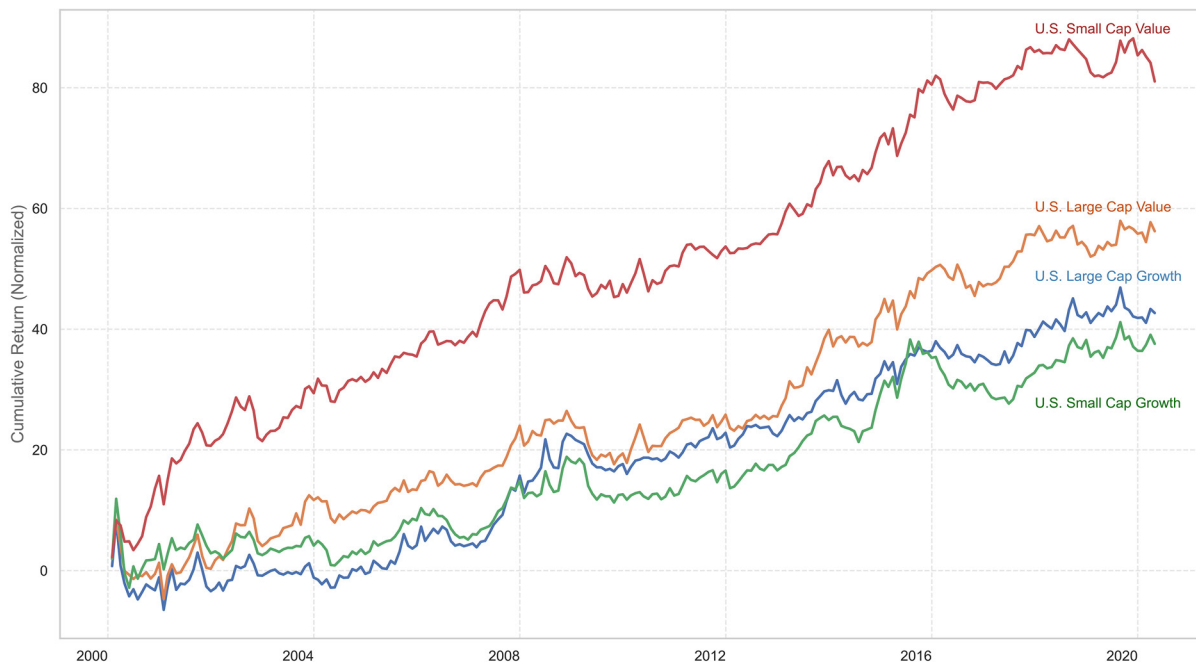


Figure 1: Cumulative monthly log returns for quantile-based long/short portfolios constructed based on Relative Strength (RS) Rating for U.S. Large-Cap Growth, U.S. Large-Cap Value, U.S. Small-Cap Growth, and U.S. Small-Cap Value. Results are liquidity-weighted and normalized with respect to intertemporal changes in market volatility.

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KEY FINDINGS

- Results from international markets, with the exception of China A shares, further validate the use of RS Rating to identify stocks likely to outperform or underperform.
- RS Rating-based quantile long/short portfolios of small caps beat those of large caps on a risk-adjusted basis.
- From 2000 onward, value stocks had better risk-adjusted performance than growth stocks. However, nearly all of this is explained by the superior performance of Small-Cap Value relative to Small-Cap Growth.
- Sector-level analytics show opportunities to enhance performance by tactically excluding poorly performing sectors such as Health Care.

EXECUTIVE SUMMARY

We perform a collection of segment-wise comparisons of the strength of William O'Neil + Co.'s proprietary Relative Strength (RS) Rating as a useful signal for identifying portfolios of stocks likely to outperform and underperform using quintile-based long/short portfolios constructed using the RS Rating. We compare on the basis of style (growth/value), size (large cap/small cap), market (U.S., China A shares, Hong Kong, and India), and industry sector. Evidence from India

and Hong Kong shows that **RS Rating displays robustness in international markets, with mainland China being the exception.** We found generally that **RS Rating quintile-based long/short portfolios of small-cap stocks outperform a similarly constructed portfolio of large-cap stocks on a risk-adjusted basis.** We also found RS Rating performs **better with value stocks than growth stocks,** particularly in the post-2000 period. However, analysis of the fully disaggregated Size-Style matrix shows that **most of these divergences are explained by the superior performance of Small-Cap Value over Small-Cap Growth.** Unpacking this divergence at the industry group and individual company levels shows that relative strength is useful for identifying situations with long-term secular decline and debt-laden death spirals as well as overlooked value opportunities. Conversely, we find the poor performance in Small-Cap Growth explained by patterns of highly idiosyncratic growth opportunities clustered among both Life Sciences R&D and a variety of speculative technology plays that fail to actualize with the frequency implied by their valuations. At the industry sector level, we found some divergences in effectiveness. While long/short portfolios consisting solely of Consumer Cyclical stocks performed well, we actually found **RS Rating had negative performance in portfolios of Health Care stocks** that appear to be driven by the flaming out of red-hot Life Sciences stocks on the long side and more defensive managed care and consumer health-care product companies on the short side, for which value oriented dip-buying appears to be an effective strategy.

INTRODUCTION

In this paper, we seek to further isolate the source of the secondary-momentum effects we uncovered in our prior RS Rating paper (Marble & Ognar, 2020). To the extent that there is a behavioral bias underpinning secondary momentum effects, we would expect this bias to manifest itself not exclusively in the U.S. but wherever similarly situated (and similarly behaving) investors are found. We would expect therefore in certain international markets that portfolios of high RS stocks would outperform those of low RS stocks, risk adjusted such that market-neutral portfolios could be formed with predictably non-zero returns. However within the U.S. market we postulate that some stocks, due to certain characteristics, are more prone to secondary momentum effects, and RS Rating could yield more information about future returns in such cases. Additionally, areas of the market that are known to trade less efficiently, such as U.S. small caps, could yield superior results. Armed with such knowledge, investors could tactically deploy RS Rating as a filter to certain targeted universe filters and in so doing

achieve superior results compared with investors naively applying to a broader universe of stocks.

METHODOLOGY

We perform cross-sectional comparisons of the time series of the monthly returns of portfolios constructed using RS Rating from January 1995–June 2020. We formed our investable equity universe each period in a manner free from survivorship bias, ranked according to RS Rating, and sorted into buckets on the basis of quintile rankings. We then segment this further by size, style, market, and sector as follows: Each day we sorted all stocks in our U.S. equity universe first by size and second by style to assign them a bucket for growth/value¹, large cap/small cap², and sector.

We then form hypothetical portfolios on a liquidity weighted-volatility corrected basis. Volatility-corrected portfolios are effectively normalized for changes in broader market volatility expectations over time such that daily portfolio returns are determined as a function of constant risk levels to avoid periods of higher volatility contributing disproportionately to average returns and measures of risk.

This is accomplished by dividing portfolio returns by point-in-time market volatility estimates. From the resulting time series of Q5–Q1 portfolios we run Ordinary Least Squares (OLS) regressions against the liquidity-weighted market portfolio (MKT) and two Fama-French factor portfolios, which mimic the relative return of small caps versus large caps (SMB) and the relative returns of value stocks compared with growth stocks (HML). Additionally, we form a Q5–Q1 portfolio by running an OLS regression of Q5 returns against those of Q1 and using the resulting coefficient as a hedge ratio, and then subtracting the Q1 return from the Q5 return under each weighting scheme. In so doing, we additionally compute the average portfolio turnover required to replicate each respective portfolio, enabling comparisons of the tradeoff between performance and robustness with respect to transaction costs.

1 We assign stocks to growth or value buckets by calculating a growth rank as follows: We rank stocks from 1 to 99 using average daily return (five-year trailing), volatility (five-year trailing), dividend yield, dividend payout ratio, sales yields, recent sales growth, and EPS Rank. Stocks ranked 50 or greater are considered growth stocks and stocks ranked 1 to 49 are considered value stocks.

2 We assign stocks to large-cap or small-cap buckets based on their expected market cap ranking among all U.S. equities. Those in percentile 75 or greater are considered large cap and those in percentiles 40–74 are considered small cap. Stocks in less than percentile 40 are considered not investable.

RESULTS

INTERNATIONAL MARKETS

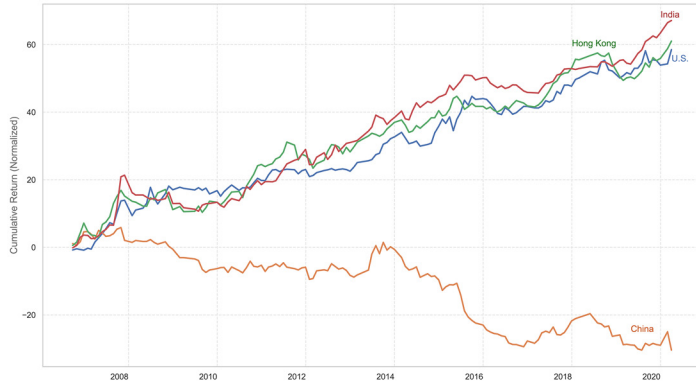


Figure 2: Cumulative monthly log returns for quantile-based long/short portfolios constructed using RS Rating for the U.S., China, Hong Kong, and India markets. Results are liquidity-weighted and normalized with respect to intertemporal changes in market volatility.

Evidence from India and Hong Kong shows that **RS Rating displays robustness in international markets, with mainland China being the exception.** Figure 2 shows the cumulative performance of quantile-based long/short portfolios comprised of locally traded shares on U.S., China A shares (mainland), Hong Kong, and Indian markets using RS Rating from January 1, 1995–June 30, 2020. The consistent upward slope of the U.S., Hong Kong, and India curves is reflective of portfolios with variable but stable positive mean returns. This is clear evidence of the international efficacy of RS Rating in extracting alpha. As we have seen in other studies, such effect appears curiously absent or to work in the opposite fashion in mainland China. This is also reflected in the summary performance statistics in Table 1, with such portfolios generating Sharpe ratios of 0.66, 0.78, and 0.72, respectively. To reassure ourselves that the effects captured by RS Rating are not the result of data-snooping or other artifacts of the data, we should be able to show generalizability of the effects in an orthogonal fashion in our original dataset. Results from both India and Hong Kong show that RS Rating is not merely a U.S. phenomenon. Evidence from international markets, with the notable exception of mainland China A shares, demonstrates and further validates the efficacy of using RS Rating to capture and extract alpha from second-order momentum effects.

	U.S.	China	Hong Kong	India
Annualized Return (normalized)	3.61 (3.30)	-0.09 (-0.05)	4.61 (2.86)	4.44 (2.61)
CAPM Alpha	0.32 (3.30)	-0.01 (-0.05)	0.39 (2.86)	0.38 (2.61)
Fama-French 3-Factor Alpha	0.20 (2.81)	0.08 (0.58)	0.34 (2.68)	0.19 (1.66)
Beta Market (MKT)	-0.14	0.02	-0.12	0.06
Beta Size (SMB)	-0.13	-0.24	-0.29	0.25
Beta Value (HML)	-1.32	-0.50	-0.61	-1.14
Annualized Volatility	5.50	6.52	5.89	6.20
Sharpe	0.66	-0.01	0.78	0.72

Table 1: Normalized returns, alphas, and factor loadings for long/short portfolios constructed based on RS Rating for the U.S., China, Hong Kong, and India markets. Portfolios are liquidity-weighted and normalized with respect to intertemporal volatility shifts and rebalanced monthly. Q5–Q1 reflect the scaling of Q1 portfolio exposure according to a simple hedge ratio derived from the coefficient to an OLS regression of Q5 returns against Q1. Monthly returns are expressed in standardized volatility units. CAPM and Fama-French three-factor alphas are the intercepts to one- and three-factor regressions of portfolio returns against the market-replicating portfolio as well as small minus big (SMB) and high minus low book/market cap (HML) factors.

SIZE

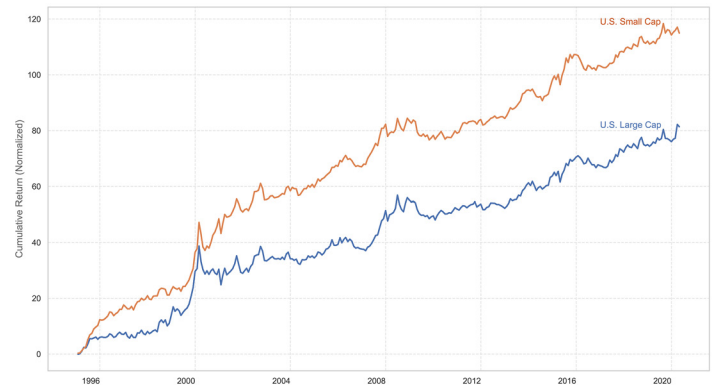


Figure 3: Cumulative monthly log returns for quantile-based long/short portfolios constructed based on RS Rating for U.S. Large Cap and U.S. Small Cap. Results are liquidity-weighted and normalized with respect to intertemporal changes in market volatility.

We found generally that RS Rating-based quantile long/short portfolios of small-cap stocks outperform those of large-cap stocks on a risk-adjusted basis. Figure 3 shows the cumulative performance of quantile-based long/short portfolios comprised of Large Caps and Small Caps using RS Rating for January 1, 1995–June 30, 2020. We see clear evidence of relative outperformance from the Small-

Cap portfolios on a risk-adjusted basis. This is reflected in the summary performance statistics in Table 2. Expressed in normalized volatility units, such portfolios have both a higher average return and lower volatility, resulting in a superior Sharpe ratio of 0.77, compared with 0.56 for the Large-Cap portfolios. We also see greater significance in terms of both CAPM and Fama-French three-factor alphas, with t-scores of 3.89 and 3.55, compared with 2.84 and 2.32, respectively.

	U.S. Large Cap	U.S. Small Cap
Annualized Return (normalized)	3.16 (2.84)	3.92 (3.89)
CAPM		
Alpha	0.28 (2.84)	0.33 (3.89)
Fama-French 3-Factor		
Alpha	0.16 (2.32)	0.26 (3.55)
Beta Market (MKT)	-0.17	-0.12
Beta Size (SMB)	-0.08	0.06
Beta Value (HML)	-1.43	-0.98
Annualized Volatility	5.60	5.08
Sharpe	0.56	0.77

Table 2: Normalized returns, alphas, and factor loadings for long/short portfolios constructed using RS Rating for U.S. Large Cap and U.S. Small Cap. Portfolios are liquidity-weighted and normalized with respect to intertemporal volatility shifts and rebalanced monthly. Q5–Q1 reflect the scaling of Q1 portfolio exposure according to a simple hedge ratio derived from the coefficient to an OLS regression of Q5 returns against Q1. Monthly returns are expressed in standardized volatility units. CAPM and Fama-French three-factor alphas are the intercepts to one- and three-factor regressions of portfolio returns against the market-replicating portfolio as well as small minus big (SMB) and high minus low book/market cap (HML) factors.

STYLE

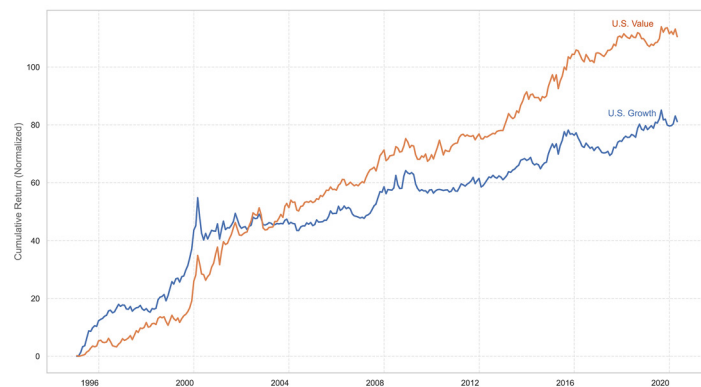


Figure 4: Cumulative monthly log returns for quantile-based long/short portfolios constructed based on RS Rating for U.S. Growth and U.S. Value. Results are liquidity-weighted and normalized with respect to intertemporal changes in market volatility.

If we consider the full 1995–2020 period, we find **marginally better risk-adjusted performance for portfolios of value stocks constructed using RS Rating than for similarly constructed growth-stock portfolios.** Figure 4 shows the cumulative volatility-normalized performance of long/short portfolios comprising Growth versus Value stocks constructed using RS Rating for January 1, 1995 through June 30, 2020. We can see that, though they appear to track one another closely, in the end a comparable-risk Value portfolio edges out the Growth portfolio. This is validated in the summary performance statistics in Table 3, which show a Sharpe ratio of 0.68 for the Value portfolio and 0.56 for the Growth portfolio. This marginal difference might be explained by greater incidence of hype-driven speculation unjustified by the fundamentals of the growth stocks, as the underpinning conceptual difference between growth and value stocks is a present value of assets and cash flows that is dependent upon conditional probabilities of future success.

	U.S. Growth	U.S. Value
Annualized Return (normalized)	3.36 (2.82)	2.63 (3.40)
CAPM		
Alpha	0.32 (2.82)	0.22 (3.40)
Fama-French 3-Factor		
Alpha	0.21 (2.58)	0.17 (2.71)
Beta Market (MKT)	-0.25	0.03
Beta Size (SMB)	-0.03	-0.20
Beta Value (HML)	-1.28	-0.40
Annualized Volatility	6.01	3.90
Sharpe	0.56	0.68

Table 3: Normalized returns, alphas, and factor loadings for long/short portfolios constructed based on RS Rating for U.S. Growth and U.S. Value. Portfolios are liquidity-weighted and normalized with respect to intertemporal volatility shifts and rebalanced monthly. Q5–Q1 reflect the scaling of Q1 portfolio exposure according to a simple hedge ratio derived from the coefficient to an OLS regression of Q5 returns against Q1. Monthly returns are expressed in standardized volatility units. CAPM and Fama-French three-factor alphas are the intercepts to one- and three-factor regressions of portfolio returns against the market-replicating portfolio as well as small minus big (SMB) and high minus low book/market cap (HML) factors.

If we take a close look at the line plots in Figure 4, however, we notice something interesting. The Growth portfolio is outperforming the Value portfolio in the early part of the chart, around 1995 to early 2000. In the later part of the chart, however, we see the Value portfolio recovering in relative terms and finishing definitively on top. Given what is known of the markets in these periods, we observe that

much of the RS Rating effects involving growth stocks are confined to the period of the first Internet Bubble (1995-1999). **Figure 5** shows the performance of Long/Short quantile-based portfolios comprised of Growth and Value stocks constructed using RS Rating from January 1, 1995 through December 31, 1999, we see that performance was unambiguously superior for Growth portfolios. However, if we look at the period from January 1, 2000 to June 30, 2020 in **Figure 6**, performance has consistently been dominated by the Value portfolio. This is evidence of a major regime change.

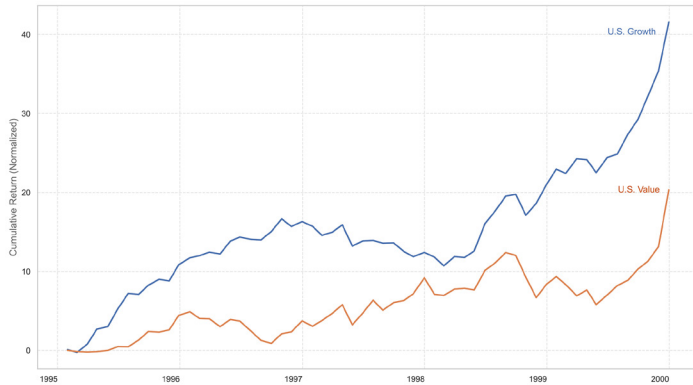


Figure 5: Performance comparison of long/short portfolios comprising Growth versus Value stocks from January 1, 1995 to December 31, 1999.

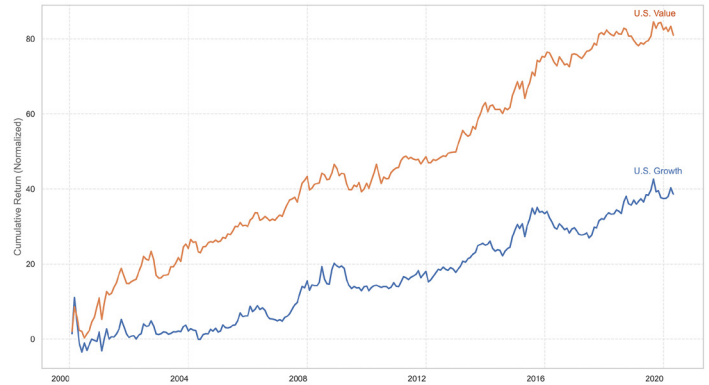


Figure 6: Performance comparison of long/short portfolios comprised of Growth versus Value stocks from January 1, 2000 to June 30, 2020.

The 1995–1999 period was characterized by the newly widespread availability of online trading and real-time price feeds to small retail traders, creating a temporary self-fulfilling prophecy of outsized momentum returns to smaller and highly speculative issues. The result of such a dynamic was a prolonged state of market disequilibrium as related to underlying fundamentals and expectations of future cash flows, which lacked a rational relationship to prices. It is inevitable, however, that in the long run prices must reflect actual earnings and cash flow because a company that fails to produce positive earnings will burn cash such that it must raise further cash, diluting the equity position of existing investors in the process. After the bursting of the Internet bubble, such companies found themselves in the midst of a ‘death spiral’ whereby their equity became less attractive to investors as they needed it all the more. After 2000, the RS Rating could be carrying information about value-seeking institutional investors who have identified names that are trading at a discount to their subjectively fair value in consideration of the present value of future cash flows.

SIZE-STYLE MATRIX

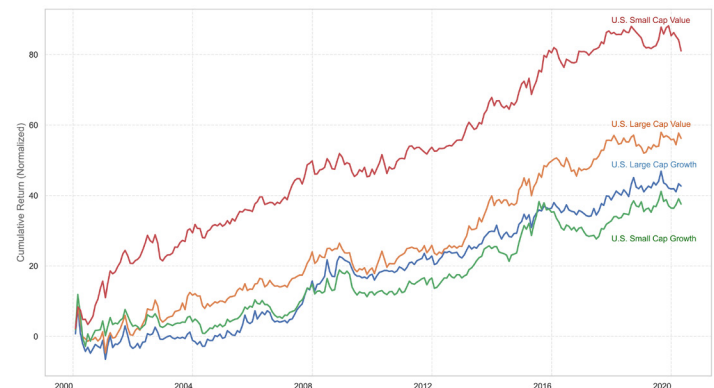


Figure 7: Cumulative monthly log returns for quantile-based long/short portfolios constructed based on RS Rating for U.S. Large-Cap Growth, U.S. Large-Cap Value, U.S. Small-Cap Growth, and U.S. Small-Cap Value. Results are liquidity-weighted and normalized with respect to intertemporal changes in market volatility.

When we look at the complete Size-Style matrix of quantile long/short portfolios, it becomes clear that **much of the relative outperformance of Value stocks over Growth** in the post-2000 period is driven by **strong divergence between Small-Cap Growth and Small-Cap Value portfolios**. In Figure 7, as we evaluate portfolios of comparable risk, we see little differentiation between the performance of the Large-Cap Value or Large-Cap Growth portfolios. However, the Small-Cap Growth portfolio is underperforming the other three portfolios, while **Small-Cap Value emerges as the unambiguous winner**. This is surprising, as we have previously demonstrated in **Figure 3** the consistent outperformance of Small-Cap portfolios relative to Large-

Cap portfolios. The fact that Small-Cap Growth underperforms the two Large-Cap portfolios demonstrates that the **preponderance of the outperformance of Value over Growth is explained by the superior performance of the Small-Cap Value segment.**

If we unpack this divergence we will see that much of the outperformance on behalf of Small-Cap Value comes from short positions in companies with low RS Ratings. Patterns in the relative contributions of companies and industries to short-side performance suggest that the RS Rating can be tactically deployed to identify “value traps,” death spirals, and conditions of persistent secular decline at the industry group level.

Symbol	Company name	First trade date	Last trade date	Contribution
TECK	Teck Resources Ltd	19980831	20200529	-126.07
THRY	Thryv Holdings Inc	20080131	20100930	-99.45
TEN	Tenneco Inc Cl A	20020131	20200228	-93.29
WLL	Whiting Petroleum Corp	20150831	20200917	-89.04
MNI	McClatchy Co Hldg Cl A	20050831	20081031	-82.83
PAGP	Plains GP Hldgs LP Cl A	20150930	20200917	-81.82
CC	The Chemours Company	20150731	20200331	-80.86
OVV	Ovintiv Inc	20150930	20200630	-78.53
CYH	Community Health System	20110531	20180228	-77.98
SVC	Service Properties Trust	20081128	20200917	-76.77
PAA	Plains All Amer Pipe	20151231	20200917	-75.43
LEND9	Accredited Home Lenders	20061130	20070531	-75.10
AXLL	Axiall Corp	19990430	20151231	-69.65
MAC	Macerich Co	20081128	20200917	-68.87
SPMD9	Supermedia Inc	20080229	20080530	-68.38

Table 4: The 15 largest relative positive contributors comprising short positions in stocks with low RS Ratings in the Small-Cap Value segment.

Table 4 shows the 15 largest relative positive contributors to our short portfolios of stocks with low RS Ratings in the Small-Cap Value segment. For example, McClatchy Co Holdings (MNI) is in the printed newspaper industry, which experienced a long-term secular decline during the study period. Other examples where the RS Rating identified successful shorts include natural resources sectors with long-term declines (coal) or periods of long-term oversupply (domestic oil drilling) that have experienced a persistently more difficult operating environment in light of public policy trends in favor of more environmentally friendly alternatives.

Symbol	Company Name	First trade date	Last trade date	Contribution
DDS	Dillards Inc Class A	20090430	20181130	60.25
TECK	Teck Resources Ltd	19990930	20170630	42.86
CCI	Crown Castle Intl	20021231	20041231	41.95
CC	The Chemours Company	20160531	20200917	41.64
AMT	American Tower Corp	20021231	20040930	39.42
MEOH	Methanex Corp	20020430	20180731	38.73
TRGP	Targa Resources Corp	20110228	20200731	35.08
ETP	Energy Transfer Partners	20061031	20141231	34.27
IBKR	Interactive Brokers Grp	20131031	20170929	34.14
CNO	C N O Financial Group	20090731	20200430	33.53
APO	Apollo Global Mgmt Inc	20121031	20190531	32.76
GHC	Graham Holdings Co Cl B	20130531	20190830	32.07
TTEK	Tetra Tech Inc	20030131	20190531	31.62
RYL	Ryland Group	19970930	20150529	31.38
SLCA	U S Silica Holdings Inc	20160429	20200831	30.95

Table 5: The 15 largest relative positive contributors comprising long positions in stocks with high RS Ratings in the Small-Cap Value segment.

On the long side, RS Rating systematically identifies diverse situations with a common theme of stable business models that can trend for long periods, exemplified by the top contributors to Small-Cap Value performance. Table 5 shows the 15 largest relative positive contributors to our long portfolios of stocks with high RS Ratings in the Small-Cap Value segment. Examples include wireless tower companies Crown Castle International (CCI) and American Tower Corp (AMT), which represent steady rent-producing business models with increasing need throughout the period. In these examples, such business models and associated stable earnings growth engender a virtuous cycle resulting in dual benefits to investors through expanding multiples and growing earnings.

Conversely, on the Small-Cap Growth side, we can identify a pattern of overly optimistic investor behavior in highly speculative situations that seemingly overestimate the probability of commercial success for companies with growth prospects expressed in orders of magnitude. Specifically by unpacking the contributing companies and industries to relative underperformance of long positions in Small-Cap Growth companies, we see disproportionate representation from life sciences names as well as a variety of orthogonal but comparatively speculative situations.

Symbol	Company Name	First trade date	Last trade date	Contribution
SGEN	Seagen Inc	20070831	20170531	-79.95
ITMN	Intermune Inc	20000929	20140731	-79.72
ICPT	Intercept Pharmaceutical	20140131	20200131	-59.04
PENN	Penn Natl Gaming Inc	19950731	20200831	-57.52
PLMD	Polymedica Corp	19980130	20031128	-56.11
STNE	Stoneco Ltd Cl A	20190430	20200331	-54.10
VPHM	Viropharma Inc	19990930	20120430	-49.60
PAAS	Pan American Silver Corp	19960229	20200630	-47.33
FND	Floor & Decor Hldgs Cl A	20170630	20200331	-45.59
PRXL	Parexel Intl Corp	19960229	20141031	-40.83
AMSC	American Superconductor	20000331	20100226	-40.29
TZOO	Travelzoo	20040730	20110831	-38.54
SWIR	Sierra Wireless Inc	19991231	20170831	-37.96
FEYE	FireEye Inc	20140228	20140430	-37.92
NTGR	Netgear Inc	20050131	20180228	-37.35

Table 6: The 15 largest relative negative contributors comprising long positions in stocks with high RS Ratings in the Small-Cap Growth segment.

Table 6 shows the 15 largest relative negative contributors to the underperformance of Small-Cap Growth portfolios of stocks with high RS Ratings. Intermune (ITMN) and Intercept Pharmaceutical (ICPT) are reflective of the disproportionate representation of life sciences names. Additionally, speculative tech plays such as Travelzoo (TZOO) and FireEye (FEYE) have shown a number of short-term rallies that proved to be false starts, demonstrating a persistent capacity to ‘flameout’ that is akin to that of the ubiquitous life sciences names. These patterns would suggest the small-cap growth, long-side returns suffer from persistent patterns of disappointment in both the life sciences and speculative tech spaces, where stocks with promise but little earnings can suffer strong trend reversals following disappointing clinical trials or products that fail to achieve widespread adoption despite novel promise.

INDUSTRY SECTOR

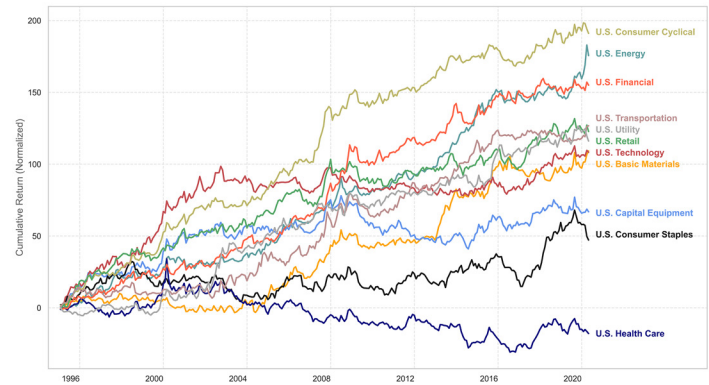


Figure 7: Cumulative volatility-normalized performance of long/short portfolios comprising industry sectors constructed using RS Rating for January 1, 1995 through June 30, 2020.

At the industry sector level, we found some divergences in effectiveness. While long/short portfolios consisting of Consumer Cyclical and Financial stocks, for example, performed well, the RS Rating had **negative performance among portfolios of Health Care stocks**. Figure 7 shows the cumulative volatility-normalized performance of long/short portfolios comprised of an assortment of industry sectors constructed using RS Rating for January 1, 1995 through June 30, 2020. We can see that while there are ups and downs, there are certain sectors that consistently outperformed others throughout the period. For example, if we look carefully at the ordering of the line plots at roughly 2010, Capital Equipment, Technology, Consumer Staple, and Health Care appear to linger in the ‘relegation zone,’ rounding out the bottom four positions among the eleven portfolios. As we look at the final position of each respective cumulative performance plot, we can see these have remained the four poorest-performing portfolios over the ensuing ten years. We can see in **Table 7** that this relative underperformance is reflected in Sharpe Ratios ranging from 0.75 on the high side for Utilities to -0.23 for Health Care and -0.32 for Consumer Staple. This suggests that we may be able to improve our results in practice by reasonably and tactically excluding certain sectors. It may additionally help us explain further some of the divergences we saw in performance across our Size-Style matrix, as each of the four segments are not without industry sector biases.

	Basic Material	Energy	Capital Equip.	Tech.	Cons. Staple	Health Care	Cons. Cyclical	Retail	Transp.	Financial	Utility
Annualized Return (normalized)	2.86 (1.89)	4.69 (3.36)	0.85 (0.88)	3.42 (2.55)	-1.94 (-1.60)	-1.99 (-1.17)	4.08 (3.72)	2.95 (2.71)	3.53 (2.10)	2.92 (3.17)	2.94 (3.75)
CAPM											
Alpha	0.27 (1.89)	0.42 (3.36)	0.08 (0.88)	0.31 (2.55)	-0.15 (-1.60)	-0.09 (-1.17)	0.34 (3.72)	0.26 (2.71)	0.31 (2.10)	0.24 (3.17)	0.27 (3.75)
Fama-French 3-Factor											
Alpha	0.15 (1.33)	0.31 (3.03)	-0.02 (-0.31)	0.20 (2.03)	-0.20 (-1.97)	-0.16 (-1.25)	0.24 (3.05)	0.17 (2.04)	0.21 (1.62)	0.17 (2.33)	0.24 (3.85)
Beta Market (MKT)	-0.14	-0.20	-0.04	-0.15	-0.05	-0.51	-0.04	-0.02	-0.14	0.04	-0.14
Beta Size (SMB)	-0.33	-0.04	-0.25	-0.17	-0.15	0.31	-0.13	-0.30	-0.03	-0.32	-0.05
Beta Value (HML)	-1.07	-1.26	-0.92	-1.10	-0.39	-1.22	-1.04	-0.69	-1.13	-0.59	-0.33
Annualized Volatility	7.64	7.02	4.84	6.77	6.09	8.58	5.51	5.48	8.46	4.65	3.95
Sharpe	0.37	0.67	0.18	0.51	-0.32	-0.23	0.74	0.54	0.42	0.63	0.75

Table 7: Normalized returns, alphas, and factor loadings for long/short portfolios constructed based on RS Rating for U.S. sectors. Portfolios are liquidity-weighted and normalized with respect to intertemporal volatility shifts and rebalanced monthly. Q5–Q1 reflect the scaling of Q1 portfolio exposure according to a simple hedge ratio derived from the coefficient to an OLS regression of Q5 returns against Q1. Monthly returns are expressed in standardized volatility units. CAPM and Fama-French three-factor alphas are the intercepts to one- and three-factor regressions of portfolio returns against the market replicating portfolio as well as small minus big (SMB) and high minus low book/market cap (HML) factors.

About the O'Neil Capital Management Quantitative Services Group

Over the years we have described the investment process used by William J. O'Neil as 'Qualitative Quant.' This type of investor looks at quantitative measures to accurately evaluate and efficiently compare companies but ultimately invests based on their own qualitative analysis of the data.

The O'Neil Capital Management Quantitative Services Group grew out of a desire to create quantitative research based on the work pioneered by Mr. O'Neil. The Quant Group develops quantitative research and systematic investment strategies for the O'Neil family

of companies. The program comprises a global team of data scientists, software engineers, and investment professionals. Our research is composed primarily of factor studies for discretionary and quantitative portfolio managers, and our current interests include factor investing, time series analysis, and machine learning techniques.

The Quant Group provides quantitative research and data science expertise for O'Neil Global Advisors. The two benefit from a common heritage and passion for finding what leads to outperformance in global equity markets.

CONCLUSION

As theorized, the presence of secondary momentum effects in relative, in addition to outright performance between stocks, could explain some of the conditional behavior we saw in stocks making new highs. If this is the case, a relative performance measure such as the RS Rating could identify stocks most likely to outperform or underperform in the future. This is precisely what we have found. In our cross-sectional studies we show that quantile-based long/short portfolios constructed based on RS Rating earned statistically significant positive returns despite remaining ostensibly market neutral and demonstrate that, after properly adjusting for changes in broader market volatility over time, such effects are relatively robust over time. Consistent with this proposition, our results provide clear evidence of the efficacy of using the RS Rating to identify future outperformers and underperformers, such that market-neutral portfolios of stocks can be formed that earn alpha while remaining hedged against broader market movements.

REFERENCES

Marble, T. J., & Ognar, R. P. (2020). *RS Rating: It's All Relative*. Los Angeles: O'Neil Global Advisors, Inc.

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The backtesting process assumes that the strategy would have been able to purchase the securities recommended by the model and the markets were sufficiently liquid to permit all trading. Changes in these assumptions may have a material impact on the backtested returns presented. Certain assumptions have been made for modeling purposes and are unlikely to be realized. No representations and warranties are made as to the reasonableness of the assumptions. This information is provided for illustrative purposes only.

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