THOUGHT LEADERSHIP

Weighing Risk & Reward:

The Intersection Where Art Meets Science

Helping Build Solid
Investment Foundations

September 2023

FOUNDRY PARTNERS

"In the abstract, life is a mixture of chance and choice. Chance can be thought of as the cards you are dealt in life. Choice is how you play them"

- Edward O. Thorp - A Man for all Markets

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In poker there is a saying "play the player, not the cards". The game, first introduced in the United States in the early 1800s, is a mixture of art, science and luck. It gained mass popularity in the early 2000s with Texas Hold'em and is at the heart of the 1998 movie, *Rounders,* where the opening dialogue begins with:

"If you can't spot the sucker in your first half hour at the table, then you are the sucker."

Underlying this psychology of poker is a statistical concept called "pot odds"[1]. Mastering the science along with the psychological art of the game fundamentally improves the chances of success and minimizes the role "luck" plays in turning you into the "sucker" at the table.

We discussed the psychological art of the markets in our recent thought piece entitled "The Power of Narratives: How stories shape investor behaviors" and described it as "akin to playing poker". In that piece we wrote:

"Poker is part science, odds your cards are the best, and part art, reading your opponents and their actions to gain insights on the cards they may hold".

In this thought piece we examine the science implemented in our process. We analyze the distribution of relative returns over the past 20+ years within the Small Cap space to determine which sectors and/or industries provide a more fertile ground to picking outperformers (we call "hit rates"[2]), the risk required to capture positive severity ("severity odds") and the impact that value, momentum, and quality have on picking winners.

[1] Pot odds are a fundamental concept in poker that involve comparing the current size of the pot to the cost of a contemplated call. It's used to help determine whether it's mathematically profitable to call a bet or raise based on the likelihood of completing a drawing hand or hitting a winning hand. - ChatGPT

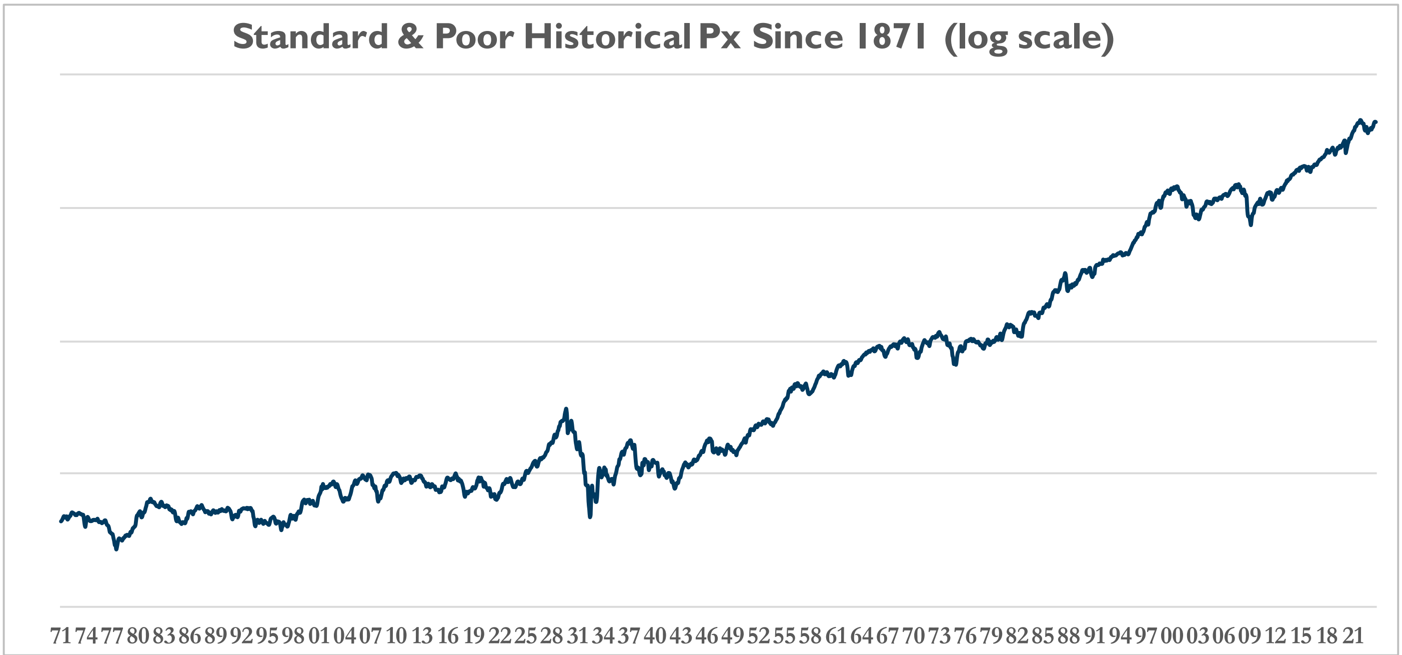
[2] Given a basket of names, what are the percent of companies that outperform a specified index over a specified period.

The Power of Narratives: How stories shape investor behaviors:

https://foundrypartnersllc.com/february-14-2023-the-power-of-narratives/

The market is biased to go higher (or at least we believe it is), and despite periods of volatility to the downside it has done just that over the past 150+ years (see Exhibit 1).

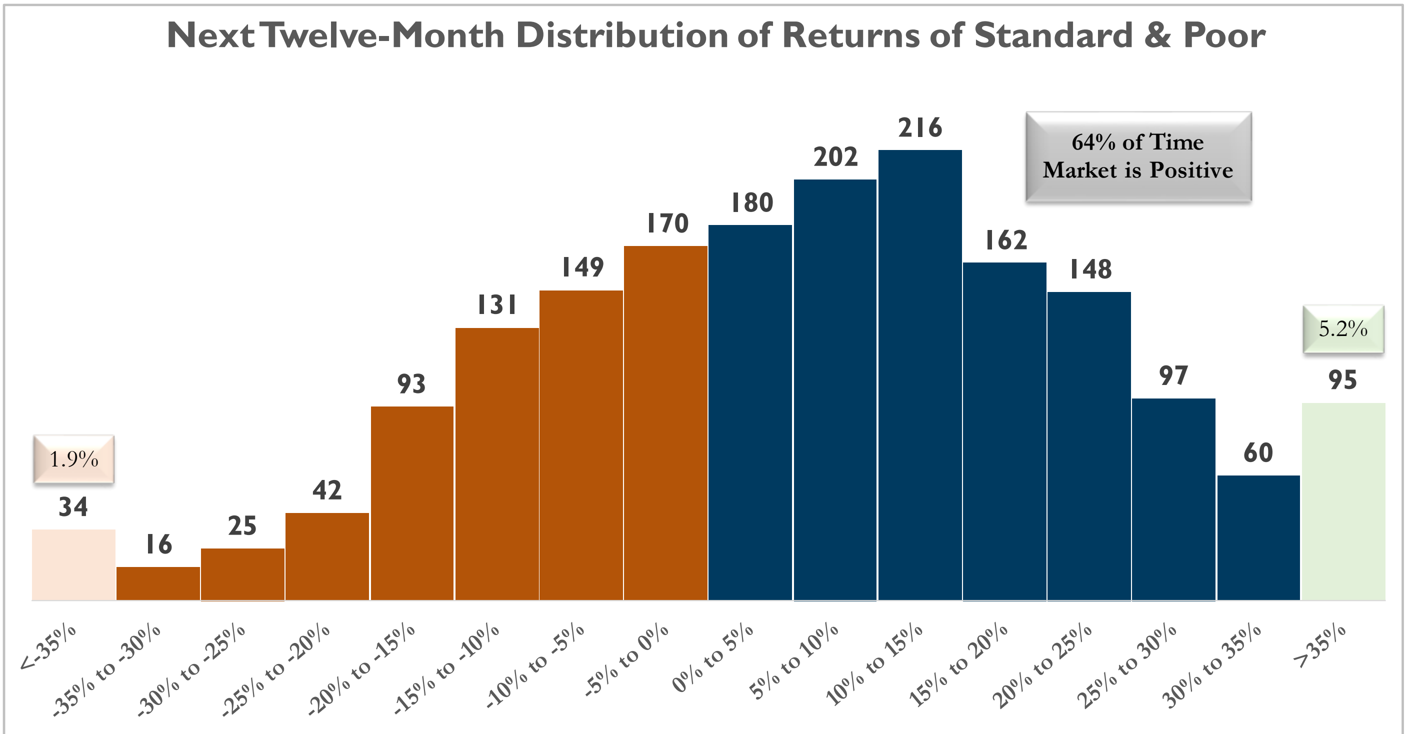
Exhibit 1: The Market is Biased to go Higher (Data as of 7/31/2023)



Source: Shiller, Robert J. "U.S. Stock Markets 1871-Present and CAPE Ratio" Shiller Data.[http://www.econ.yale.edu/~shiller/data.htm], Foundry Partners LLC

This bias is better seen when we view the line chart above as a histogram of monthly observations of the next twelve-month returns. In Exhibit 2 we see that since 1871 the market has been positive 63.7% of the time over the next twelve months when examining 1,820 monthly periods.

Exhibit 2: The Market Has Been Positive 63.7% of the Time Since 1871



Source: Shiller, Robert J. "U.S. Stock Markets 1871-Present and CAPE Ratio" Shiller Data. [http://www.econ.yale.edu/~shiller/data.htm], Foundry Partners LLC

Data as of 7/31/2023

When looking at the tails of this histogram, we find that positive outliers outweigh negative outliers. There are 95 observations (or 5.2% of the time) where the market rose +35% or more in the proceeding twelve months and 34 observations (1.9%) where the market fell -35% or more. These positive and negative outliers provide insights into "severity"[3] and frames the potential risk involved of the returns. Combining these two figures into a ratio helps us better understand the unit of risk required (negative severity) to capture a unit of reward desired (positive severity).

Exhibit 3: The Last 50 Years Has Exhibited a More Pronounced Bias (as of 7/31/2023)

	1871 to 1922	1923 to 1972	1973 to 2023	Total
% Positive	52.1%	65.0%	74.2%	63.7%
Positive Severity >+35%	3.4%	8.5%	3.8%	5.2%
Negative Severity <-35%	0.2%	3.8%	1.6%	1.9%
Severity Odds	21.0	2.2	2.3	2.8

Source: Shiller, Robert J. "U.S. Stock Markets 1871-Present and CAPE Ratio" Shiller Data. [http://www.econ.yale.edu/~shiller/data.htm], Foundry Partners LLC

We term this ratio as "severity odds" or the ratio of positive severity over negative severity (2.8 or nearly 3 to 1 odds as seen in Exhibit 2 - preceding histogram).

Higher severity odds combined with robust hit rates increases the likelihood of capturing significant alpha for a portfolio - equivalent to catching a straight flush in poker (with better odds)[4].

Even if we break these periods into thirds spanning 50 years each, we find a similar dynamic, albeit one that has increased over time. Exhibit 3 illustrates this relationship along with the severity odds for each period.

This upward bias that leads to the positive severity found in the market is more acute when examining specific stock groups. When we apply the framework outlined above to the small cap space and analyze relative returns to the Russell 2000 Value Index over the past 20+ years we walk away with the following:

1. An Industry/Sector breakdown shows that Pharma/Biotech, Regional Banks/Thrifts and Communication Services provide the lowest hit rate and poorest severity odds;[5]

2. A lean towards stocks that exhibit a value, momentum, and quality bias leads to improved hit rates and better severity odds; and

3. Both metrics vary over time and exhibit the highest probability of success when fear gauges are at extremes.

In Exhibit 4 (next page) we take monthly observations of the next twelve-month relative returns of all stocks within the small cap space[6] versus the Russell 2000 Value Index and plot them into a histogram like we did in Exhibit 2 with the market returns. We find that roughly 47% of stocks outpace the index over a next twelve-month period and that the severity odds (>+50% relative return vs <-50%) are 1.1 (9.7% divided by 8.8%).

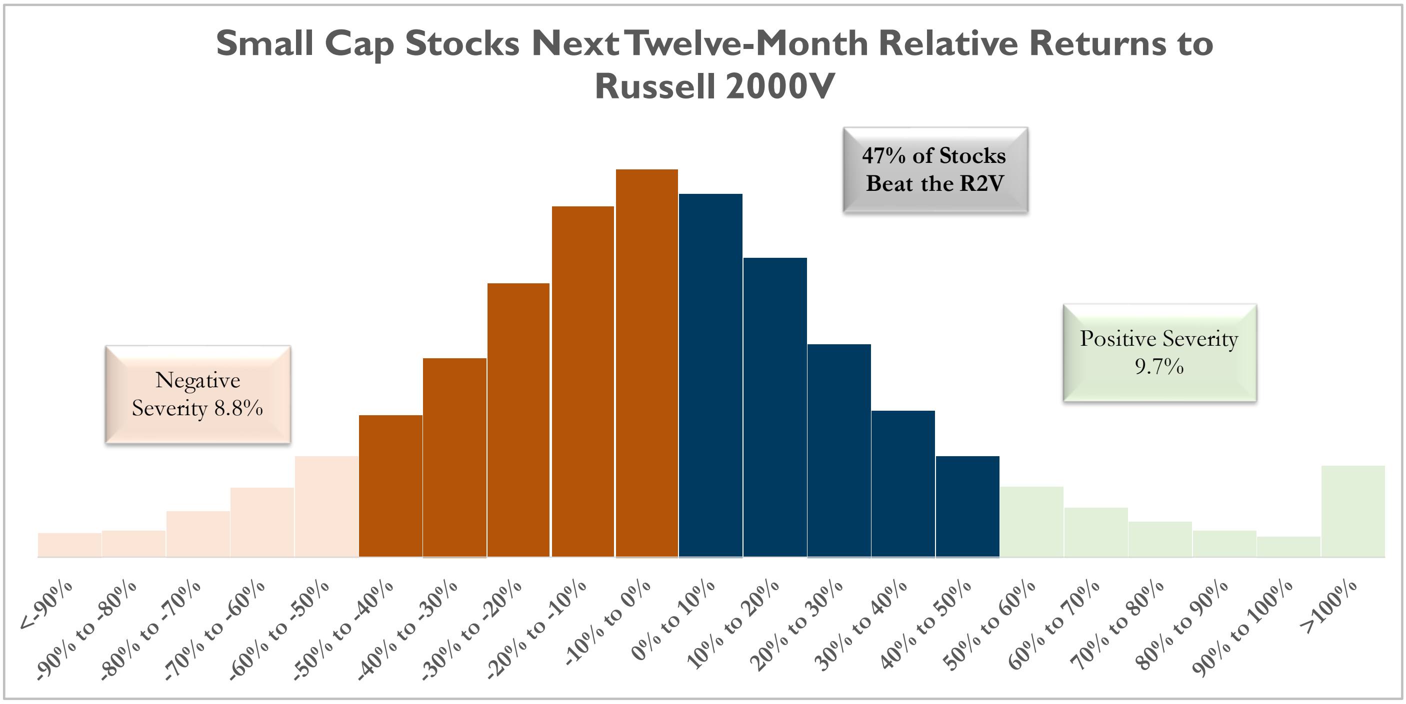
[3] In statistics, "severity" generally refers to the extent or intensity of a specific attribute, characteristic, or outcome within a dataset. It is often used to describe the degree of impact or seriousness of a particular variable or event. The concept of severity is particularly important in fields such as risk assessment, insurance, epidemiology, and quality control. – ChatGPT

[4] A straight flush is the combination of 5 consecutive cards of the same suit. It is the second-best hand in poker only beaten by a royal flush which is a straight flush to the Ace. The odds are 0.0279% in Texas Hold'em.

[5] In this case we define positive severity as a relative return greater than +50% and negative severity as a relative return less than -50%.

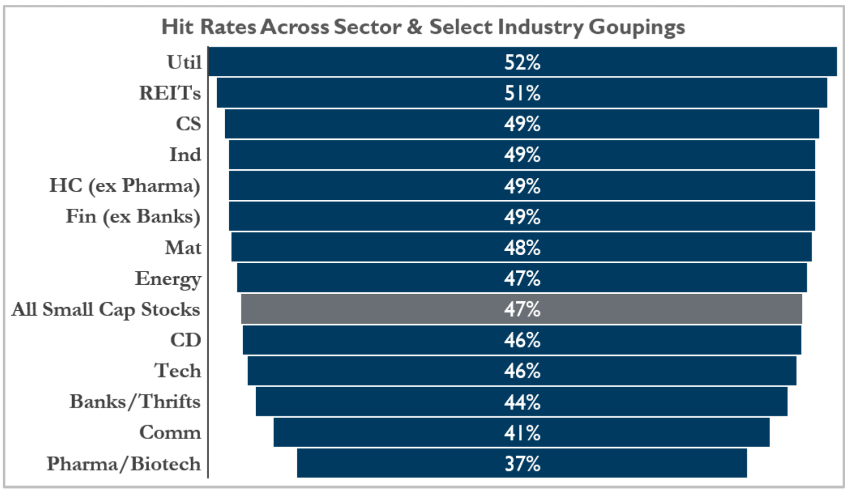
[6] $80 million to $6 billion at time of observation with a days to fill ratio of 75 or less. Days to fill is calculated by taking a stocks average volume over the past 6 months to determine the number of days it would take a $2.5 billion portfolio to acquire a 1% weighing assuming 20% of the daily trading volume is acquired.

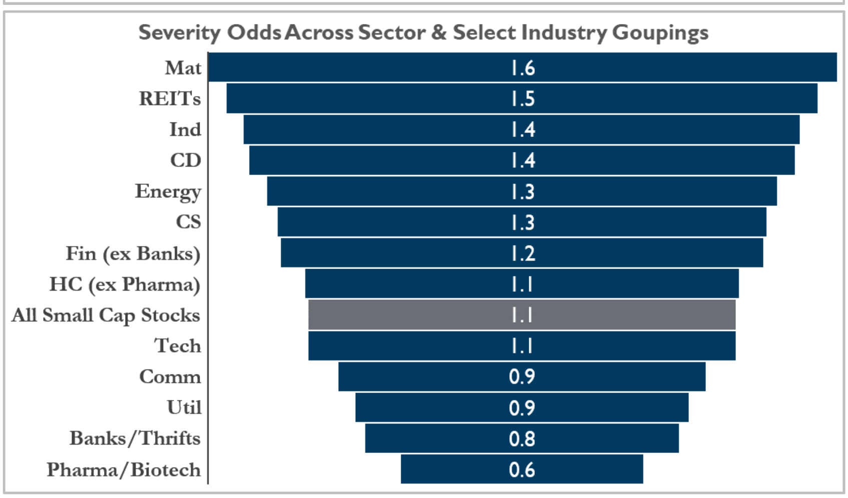
Exhibit 4: The Market is Biased to go Higher



Source: FactSet, Foundry Partners LLC)

Data as of 7/31/2023





Source: FactSet, Foundry Partners LLC (Data as of 7/31/2023)

Exhibit 5: The Utilities and REITs Groups are the Only Places with a >50% Hit Rate

If we segment these stocks into respective sectors (grouping Regional Banks/Thrifts and Pharma/Biotech into groups given the number of names) we discover that the Utilities and REITs space are the only two areas where you have a slight edge (>50% hit rate) in beating the index. While Pharma/Biotech, Communication Services and Regional Banks/Thrifts are some of the worst areas to unearth outperformers.

Exhibit 6: Pharma/Biotech & Regional Banks/Thrifts Exhibit Poor Severity Odds

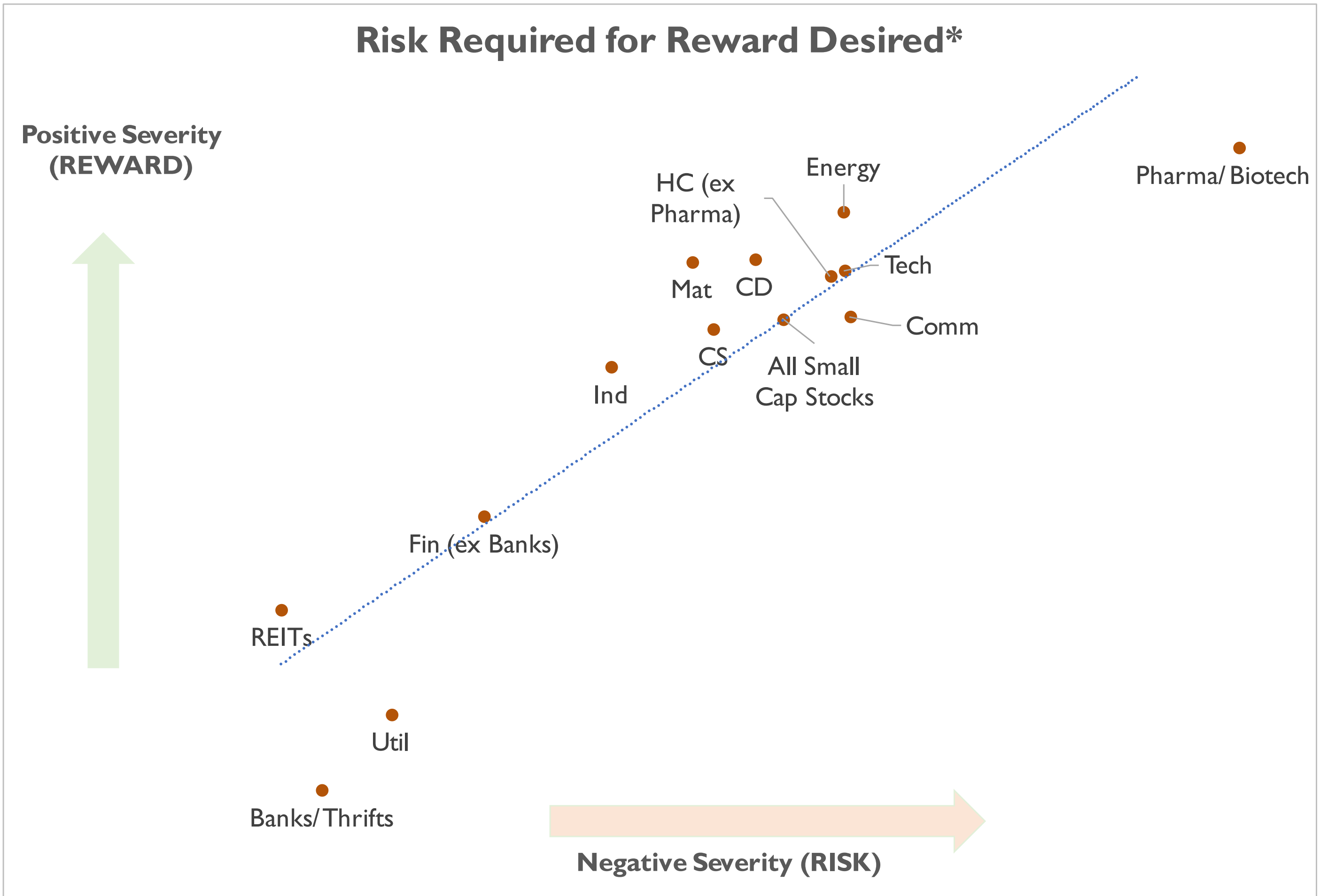
When it comes to severity odds, Materials, REITs and Industrials provide the best risk/reward ratio while Pharma/Biotech, Regional Banks/Thrifts and Utilities are at the bottom.

By graphing the positive and negative severity of each grouping on a scatter plot (reference Exhibit 7) we capture a more detailed picture of the dynamic. Pharma/Biotech is an area of potential tremendous upside given the positive outliers, but it comes with enormous risk. We discussed this dynamic last year in a thought piece entitled "The Pharma/Biotech Dilemma."

REITs, Regional Banks/Thrifts and Utilities exhibit the least risk. This is likely due to a mixture of asset floor value, recurring revenue stream, and yield.

While Regional Banks/Thrifts and Utilities provide the worst chance of catching positive severity. It is uncommon for a bank or utility to be bought at a significant premium and the fundamentals of both rarely lead to earnings surprises that result in massive outperformance. Nonetheless, the potential reward to level of risk required for both Regional Banks/Thrifts and Utilities is not attractive when compared to other groupings and are in the same category as the Pharma/Biotech space.

Exhibit 7: Regional Banks/Thrifts and Utilities Provide Limited Downside but Mute Upside Performance



Source: FactSet, Foundry Partners LLC Data as of 7/31/2023
*Y&X Axis in Log Scale

The Pharma/Biotech Dilemma:

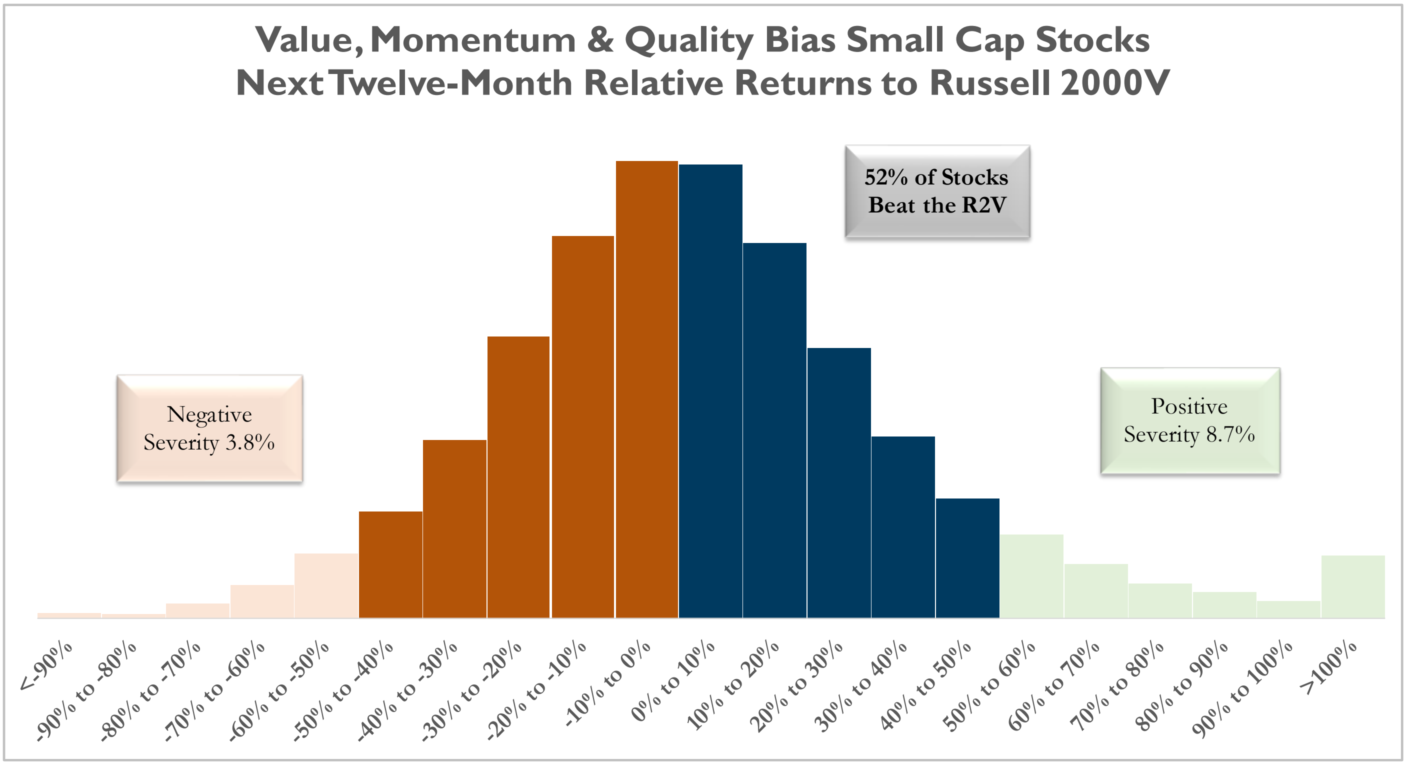
https://foundrypartnersllc.com/september-1-2022-the-pharma-biotech-dilemma/

We have discussed at length in prior thought pieces the importance of a value, momentum, and quality bias (or VMQ) to our process. See "Fear and Greed: Navigating Behavioral Biases and White Paper Expectation Fallacies" in addition to "Is Quality Investing Back 'EnVogue'."

Overlaying this process onto the above groupings derives a much different outcome when it comes to hit rates and severity odds.

Exhibit 8 depicts the histogram of the next twelve-month relative returns of stocks within the small cap space that have been filtered through the Foundry Small Cap quantitative process and adheres to a value, momentum and quality bias. Compared to the histogram of all stocks referenced in Exhibit 4, our process improves the hit rate by roughly 500bps making it better than a 52% chance of outperforming the index. It also provides a better risk/reward relationship with severity odds at 2.3 (8.7% divided by 3.8%) versus 1.1 for the entire universe.

Exhibit 8: Screening for Value, Momentum and Quality Provides a Better Chance of Outperformance



Source: FactSet, Foundry Partners LLC Data as of 7/31/2023

Fear and Greed: Navigating Behavioral Biases and White Paper Expectation Fallacies :

https://foundrypartnersllc.com/july-26-2019-fear-greed-navigating-behavioral-biases-and-white-paper-expectation-fallacies/

Is Quality Investing Back 'EnVogue' :

https://foundrypartnersllc.com/december-15-2022-is-quality-investing-back-en-vogue/

The aforementioned improvement within hit rates and severity odds holds up across the sector/industry groupings we outlined above. All groups except three have a 50% or better chance of outperforming the index and the severity odds ratio is above 1 for each group. See Exhibits 9 and 10 below for the comparison.

Exhibit 9: Hit Rates Improve Considerably When Using Value, Momentum and Quality…

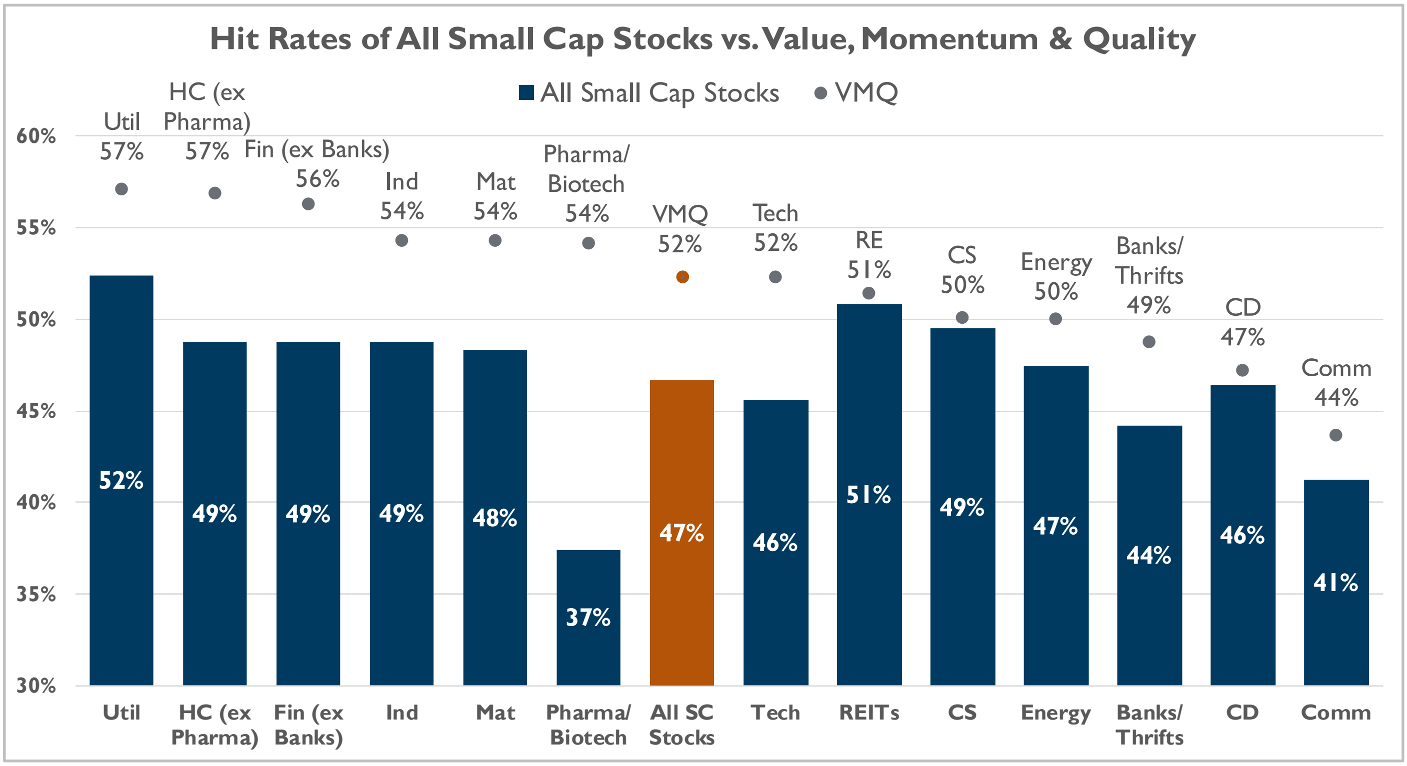
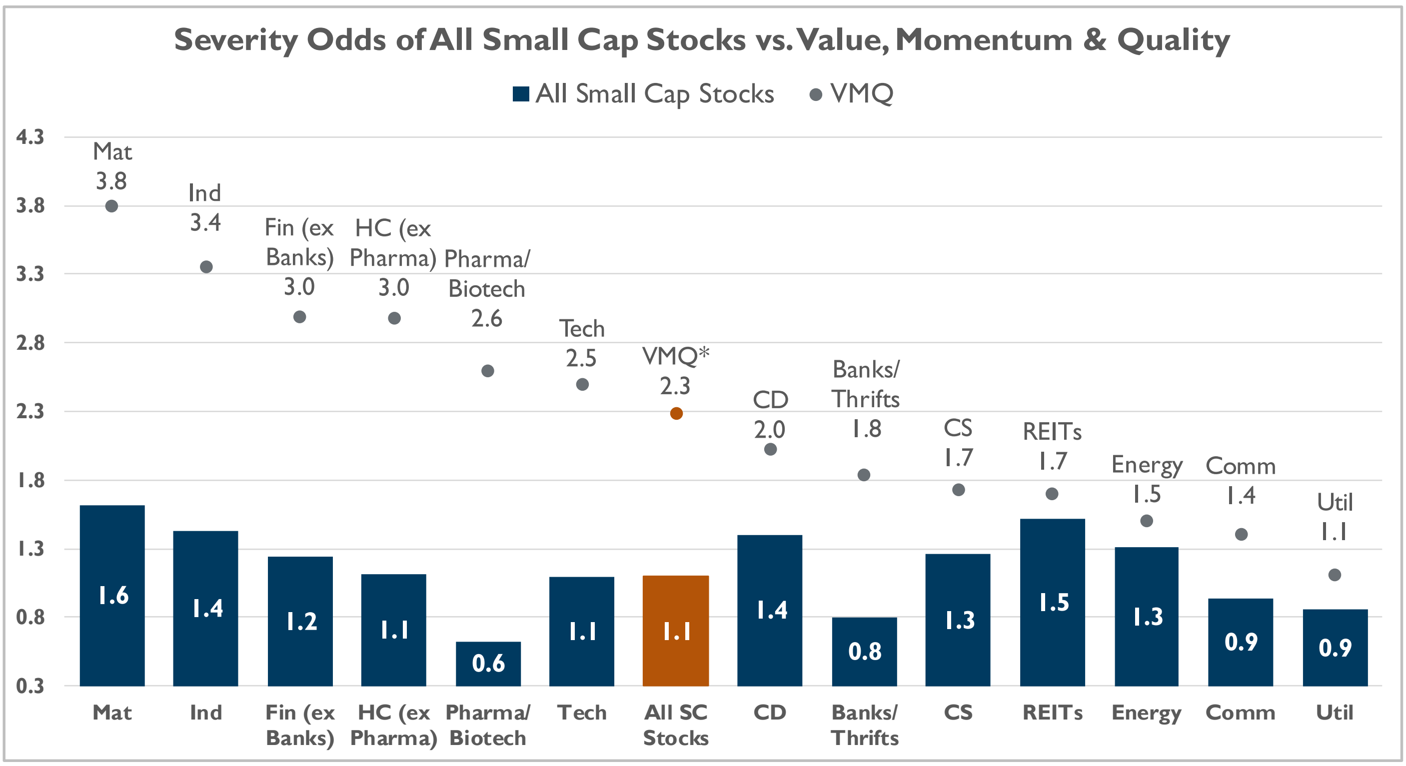


Exhibit 10: As Do Severity Odds



Source: FactSet, Foundry Partners LLC Data as of 7/31/2023

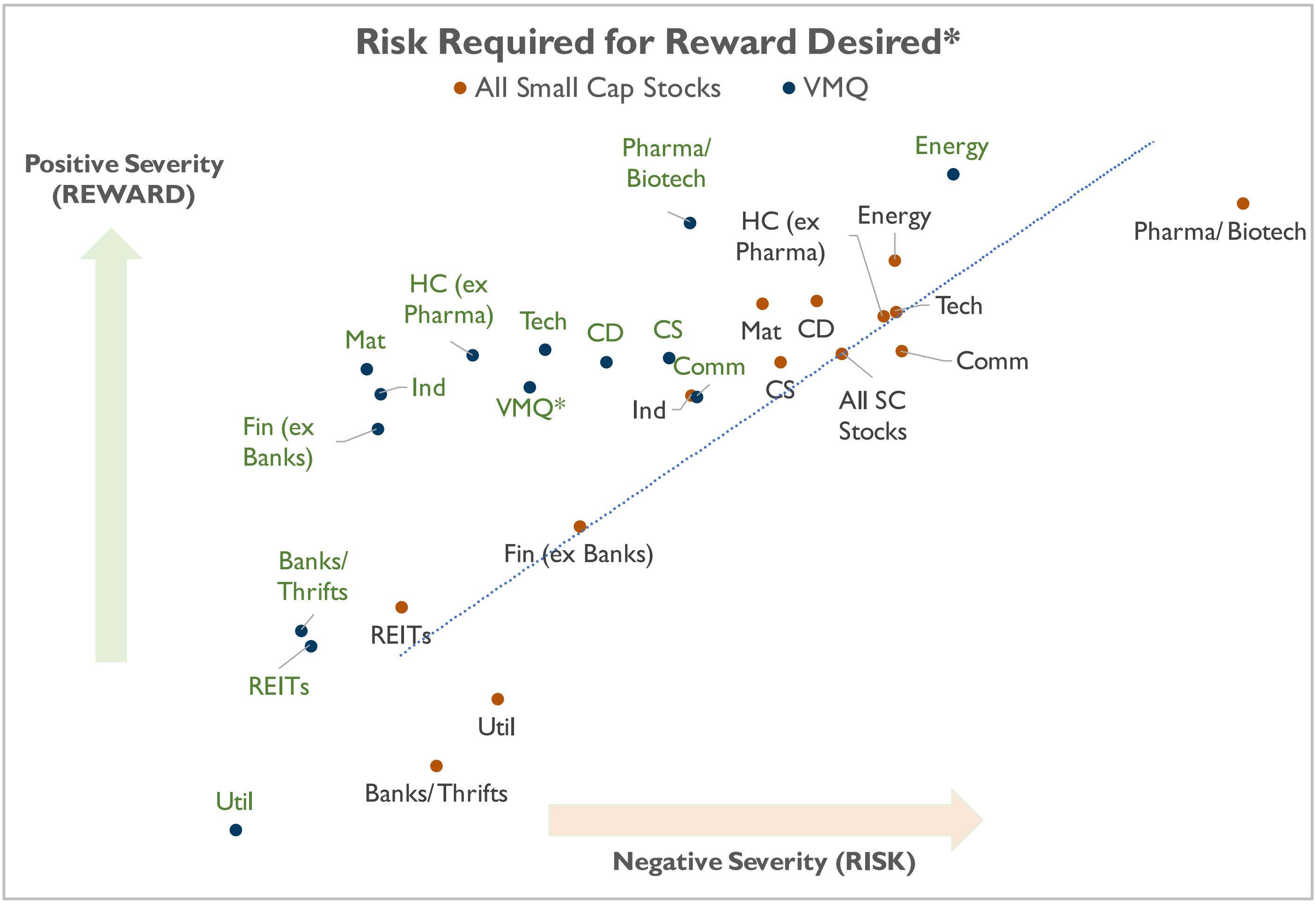
In Exhibit 11 we add the positive and negative severity of each grouping filtered through our VMQ screen to the scatter plot in Exhibit 7. Through this visual we see the following:

1) The risk profile improves for all groups except Energy, which provides more reward per unit of risk

2) Regional Banks/Thrifts and Financials exhibit a better reward profile with less required risk involved; and

3) Pharma/Biotech exhibits the largest improvement in risk with minimal loss in reward (the total number of opportunities drop significantly however given the prevalent number of speculative names in this space).

Exhibit 11: Risk Dramatically Shifts to the Left When Using Value, Momentum & Quality



Source: FactSet, Foundry Partners LLC Data as of 7/31/2023
*Y&X Axis in Log Scale

Upon scrutinizing the evolution of these ratios within a value/quality-oriented framework across time, a discernible pattern emerges. The hit rate, for instance, has exhibited a fluctuation around the 50% mark, even ascending to a pinnacle surpassing 70% at one juncture (refer to Exhibit 12). Notably, periods of heightened fear (VIX exceeding 40% and high-yield spreads beyond 7% like the 2008/2009 credit crisis and the 2020 COVID pandemic) have yielded the most pronounced positive severity outcomes.

Navigating this intricate ebb and flow necessitates astute judgment regarding the strategic application of value and quality (when to pull the levers). More than that, it demands a steadfast commitment to discipline and patience throughout the execution of the strategy. In our discourse entitled "Is Quality Back 'En Vogue'," we dissected the multifaceted scenarios in which these factors encounter headwinds, along with guiding investors on the optimal course to navigate these turbulent waters.

Exhibit 12: Hit Rates for a Value, Momentum and Quality Portfolio Oscillate Over Time

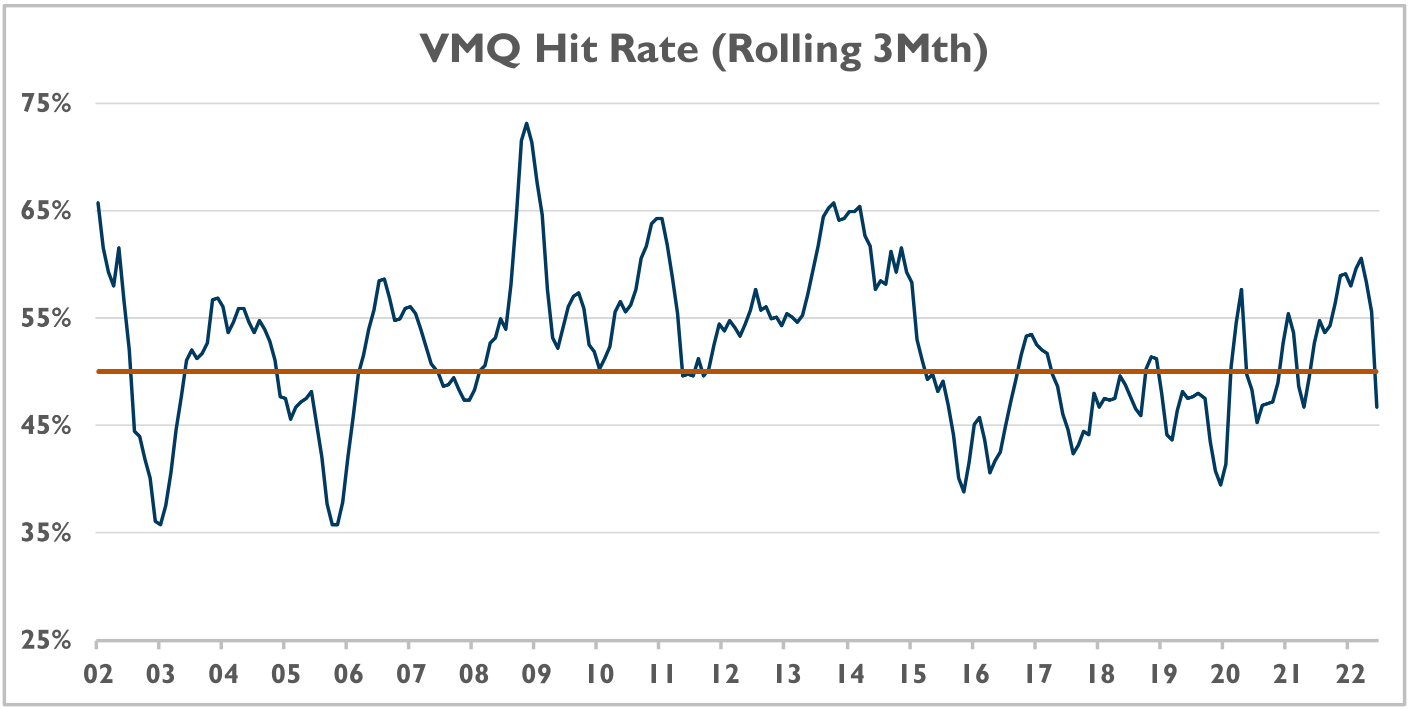
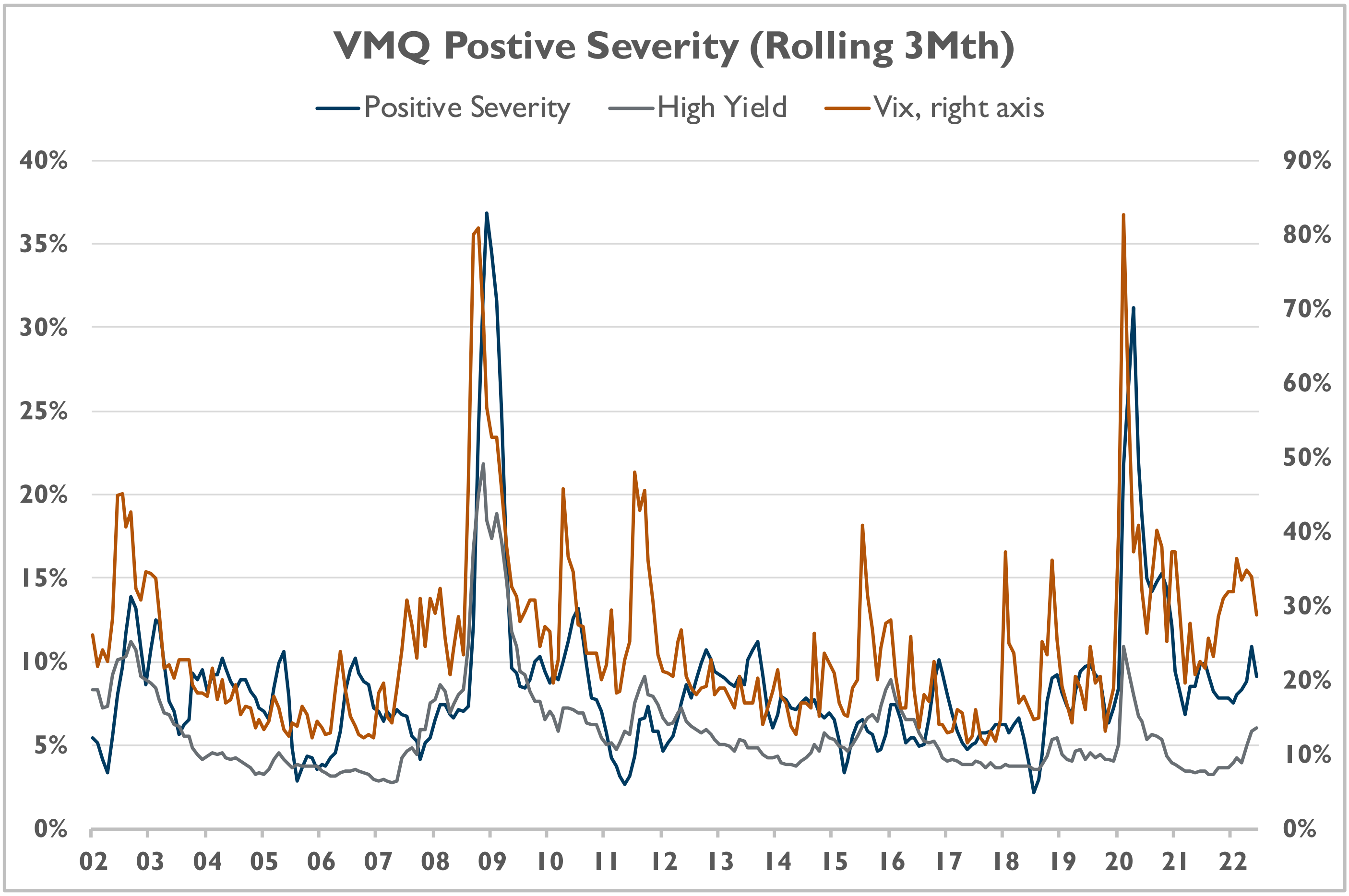


Exhibit 13: Positive Severity is at Its Peak When Fear Gauges Are at Extremes



Source: FactSet, Foundry Partners LLC

Data as of 7/31/2023

Bringing this back to poker, the 1998 movie, *Rounders,* tells the story of reformed poker prodigy Mike McDermott. McDermott, played by Matt Damon, is summoned by his childhood friend Worm, an ex-con played by Edward Norton, to win at underground high stake poker games to pay off a large sum of debt. The movie coincided with the poker boom of the 2000s and was released right as the Dotcom bubble was gaining traction. In the years following the movie's release, the market embarked on an amazing run with several booms and busts along the way marked by periods where value and quality went in and out of favor.

Regardless of the carefully calculated odds and the wisdom amassed through dedicated study of the craft (poker and investing alike) luck occasionally prevails in the short term, bringing even seasoned poker players and market experts to humility. Sometimes the opponent pulls off a full house on the river beating your flush, leaving you feeling like the "sucker" at the table. Yet, as Mike attempts to explain to his soon-to-be ex-girlfriend why he's returned to poker:

"Why do you think the same five guys make it to the final table of the World Series of Poker every year? What, are they the luckiest guys in Las Vegas?"

Luck in the markets as in poker eventually runs out, but a strategy rooted in a proven process combined with discipline and experience from years of practicing the art increases the odds of success over market cycles – the proverbial ace up our sleeve (or in our paw).

In Summation:

1. Investing in the markets, much like poker, is part art and part science. Both skills are needed to improve the odds of success.

2. Regional Banks/Thrifts and Pharma/Biotech provide the toughest odds of outperforming in the Small Cap space given poor hit rates and severity odds.

3. A disciplined process rooted in value, momentum and quality increases the chances of outperformance by reducing negative severity and increasing hit rates.

Exhibit 14: A Friend in Need with an Ace in Paw

Source: "A Friend in Need," 1903 by Cassius Marcellus Coolidge. (Photo Wikimedia Commons)

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Mario Tufano is a Portfolio Manager on the Small and Micro Cap Value Strategies team for Foundry Partners. Mario started in the industry in 2002 and has been with Foundry Partners since the company's transaction with Dreman Value Management (DVM) in June of 2016. He joined DVM in 2007 as a Senior Securities Analyst and was promoted to Associate Portfolio Manager in 2010. He is responsible for research of new investment ideas as well as current portfolio holdings for the firm's Small Cap Value products. Prior to joining the firm, he was an Associate Director and Equity Analyst at UBS Investment Bank covering the Consumer Staples and Discretionary sectors.

Mr. Tufano graduated from Pennsylvania State University with a B.S. in Finance. He is a CFA charterholder and is a member of the New York Society of Security Analysts (NYSSA).

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Mr. Roach graduated from Baldwin Wallace College with a B.A. in Business, and earned a MBA from the University of Chicago's Booth School of Business. In addition, Mr. Roach is a former board member on the Rice University Wright Fund.

About Foundry Partners:

Foundry Partners, LLC, is a boutique asset management company that specializes in active management. Established in September of 2012, the company officially began managing assets in February 2013. The firm originated after its founders, former Fifth Third Asset Management Employees, acquired the growth and value products/assets from Fifth Third Asset Management, Inc. As part of Foundry's long term plan to grow both organically and strategic acquisition, Foundry Partners added to its Cleveland office with the acquisition of the Small Cap Value team (and assets) from Dreman Value Management.

The firm was formed out of a desire to create a unique and independent atmosphere. With an average of over 25 years of investment experience per manager, our autonomous investment teams are able to offer a diverse product set while bringing the stability and confidence needed to navigate a variety of market environments.

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