

Comparing Apples to Apples: Using Information Ratio in Small Cap to Identify Manager Skill

August 2023

Executive Summary

- It's easy to identify managers who happen to be doing well on any given day, but those results may be fleeting. The challenge is identifying managers who have the most skill, because skill should be repeatable.
- We believe the Information Ratio, which measures a risk-adjusted return versus a benchmark, is an incredibly powerful tool to compare actively managed strategies on an apples-to-apples basis.
- The Information Ratio is particularly critical to use in small cap, which naturally has greater levels of volatility and risk versus other asset classes.
- Small cap remains an area where active managers provide a significant opportunity to outperform the passive Russell 2000 benchmark, but success relies upon the selection of skillful active managers.
- **Cornerstone's Diversified Small Cap Core strategy, over its 11-year track record, has delivered the single best Information Ratio versus all 127 US Small Cap Core managers in eVestment's database.***

**As of 2Q 2023. See disclosure.*

It's Easy to Outperform...Once

Investment managers and asset allocators are partners serving one client, whose assets are entrusted to both of us. The problem is that many investment managers ramp up excess risk and market beta to try to deliver outperformance in the short term at the expense of long-term sustainable performance. That's a business decision masquerading as an investment decision. That excess risk in their portfolio works...until it doesn't.

The managers who have done the best recently are not necessarily the best managers. Recently, we've seen many examples of today's investing heroes suddenly becoming tomorrow's punch lines. We all recognize that investing is a remarkably difficult and humbling profession, with both cyclical and idiosyncratic pressures on portfolios. The manager who has a good 2022 may not have a good 2023 (and very often will not), which makes asset allocators' jobs selecting among those managers just as difficult (and very often more so). This is particularly important for those clients with liquidity needs.

Benchmarks also matter. Strategies do not exist in a vacuum – they fit in a broader asset allocation designed for a client's overall portfolio, with each asset class providing an expected level of risk and return.

How do you Distinguish between the Skillful Manager and the Lucky or Risky One?

Cornerstone believes that long-term risk-adjusted performance relative to a strategy's benchmark, not short-term headline returns, is what matters for clients. In fact, some managers intentionally take more risk in their portfolio, believing more risk will increase returns. Sometimes that works in the near term. Skill, however, wins out in the long run.

The Information Ratio, which compares excess returns to the volatility of those excess returns, is a powerful metric of manager skill measuring risk-adjusted returns over time.

Information Ratio Should be the Preferred Tool to Identify Good Active Managers

The Information Ratio is one of most well-known metrics used to analyze manager skill and is the base of the Fundamental Law of Active Management, but we believe it should be used more often. Broadly, it's the same design as the earlier (and more discussed) Sharpe Ratio but based on a relevant benchmark instead of a risk-free asset. While the formula looks complicated, it is simple:

$$\text{Information Ratio} = \frac{R_p - R_B}{\text{stdev}(R_p - R_B)}$$

Where: R_p = Return of Portfolio
 R_B = Return of Benchmark

The numerator is the strategy's excess return (portfolio minus the benchmark), and the denominator is the standard deviation of those excess returns (the strategy's tracking error).

Unlike the Sharpe Ratio, which focuses on total risk, the Information Ratio considers active risk. The Information Ratio adjusts out the market impact on returns and allows investors to consider, in one number, the active return per unit of active risk taken. It is particularly helpful when comparing different managers both within an asset class and across asset classes as part of an overall asset allocation.

Below is an illustrative comparison between the Information Ratio and Sharpe Ratio, as published in our 2009 thought paper, "Interpreting the Information Ratio:"

Information Ratio Sharpe Ratio	Manager A (large cap)			Manager B (small cap)		
	0.86			0.44		
	0.02			1.91		
	Returns	S&P 500	Excess Return	Returns	Russell 2000	Excess Return
Year 1	5.0%	3.0%	2.0%	6.0%	-4.0%	10.0%
2	-2.0%	-4.0%	2.0%	8.0%	8.0%	0.0%
3	5.0%	2.0%	3.0%	10.0%	15.0%	-5.0%
4	-3.0%	-5.0%	2.0%	8.0%	7.0%	1.0%
5	25.0%	23.0%	2.0%	6.0%	5.0%	1.0%
6	8.0%	8.0%	0.0%	-2.0%	-5.0%	3.0%
7	4.0%	6.0%	-2.0%	-1.0%	-3.0%	2.0%
8	2.0%	-3.0%	5.0%	2.0%	3.0%	-1.0%
9	5.0%	3.0%	2.0%	8.0%	7.5%	0.5%
10	5.0%	5.0%	0.0%	8.0%	3.0%	5.0%
Annualized Return	5.2%	3.5%		5.2%	3.5%	
Standard Deviation of Excess Returns			1.9%			3.9%

Source: Clement, Cameron, "Interpreting the Information Ratio," 2009. Published by Cornerstone Investment Partners. Illustrative example and not representative of any actual or hypothetical strategy.

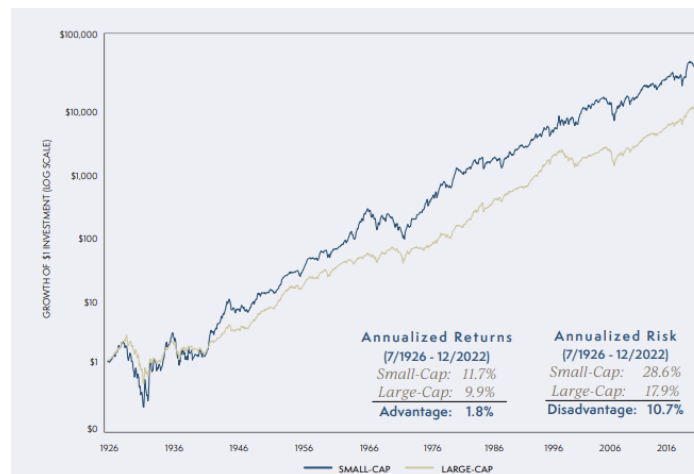
While Managers A and B both had the same annualized returns and outperformance versus their individual benchmarks, they did so with different levels of volatility, and if we assume volatility is a good proxy for risk (and clients often do), volatility matters. Manager B had a higher Sharpe ratio due to less absolute volatility, given it didn't have the 25% return in year five that Manager A did, but in this illustration, the S&P 500 was itself more volatile, up 23% in year five, and so Manager A's tracking error was lower than that of Manager B. With the same returns but lower tracking error, that suggests Manager A has more skill versus its benchmark.

That being said, the Information Ratio is not a perfect metric:

- It is subject to endpoint bias, like most performance attribution metrics, and choosing different dates for analysis can lead to significantly different results.
- It is ex-post (backward-looking), and past results may not be indicative of future performance.
- It does not consider the overall risk that the fund may add to a broader portfolio.
- It is dependent on picking an appropriate benchmark.

As shown by the chart below, while small caps have outperformed large caps significantly over time, they do so with higher levels of volatility.

Total Return and Risk of the Small Cap Asset Class vs. Large Caps



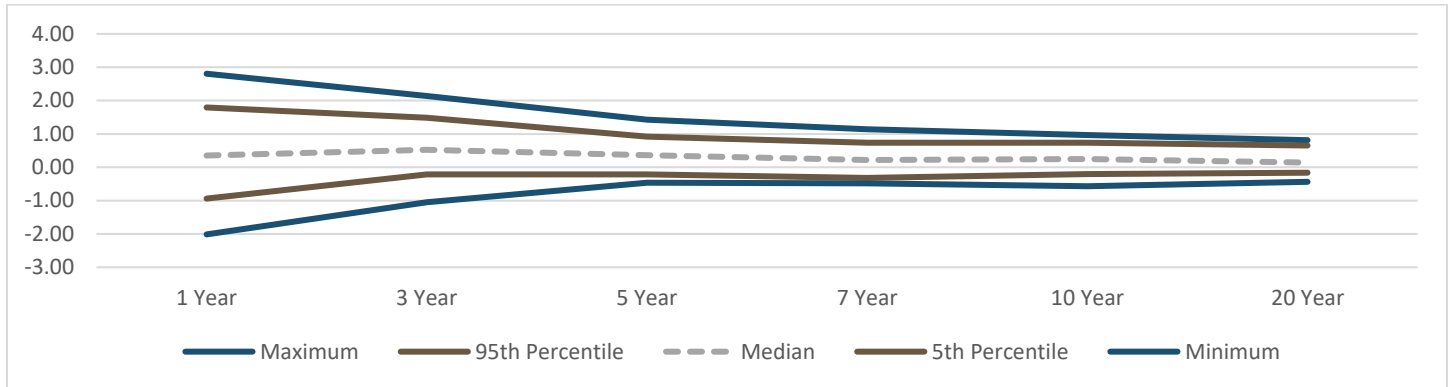
Source: Cornerstone Investment Partners, Fama-French as of December 31, 2022. Fama-French Large-Cap and Small-Cap portfolios are constructed at the end of each June using the June Market equity and market equity (ME) breakpoints from the NYSE. ME < 0 (not used); bottom 30%, middle 40%, top 30%; quintiles; deciles. Annualized risk refers to the standard deviation of annualized monthly returns

Given the excess risk of the small cap asset class versus other equities, we believe using a risk-adjusted performance measure like the Information Ratio is even more critical.

How Long of a Track Record Should You Consider?

You could consider a range of periods when reviewing a strategy’s Information Ratio. As the below charts (and common sense) suggest, one and three years are clearly too short – the spread is too wide and likely to be driven by outliers or luck.

Information Ratio Ranges by Term as of 6/30/2023 for the Small Cap Core Universe of Active Managers



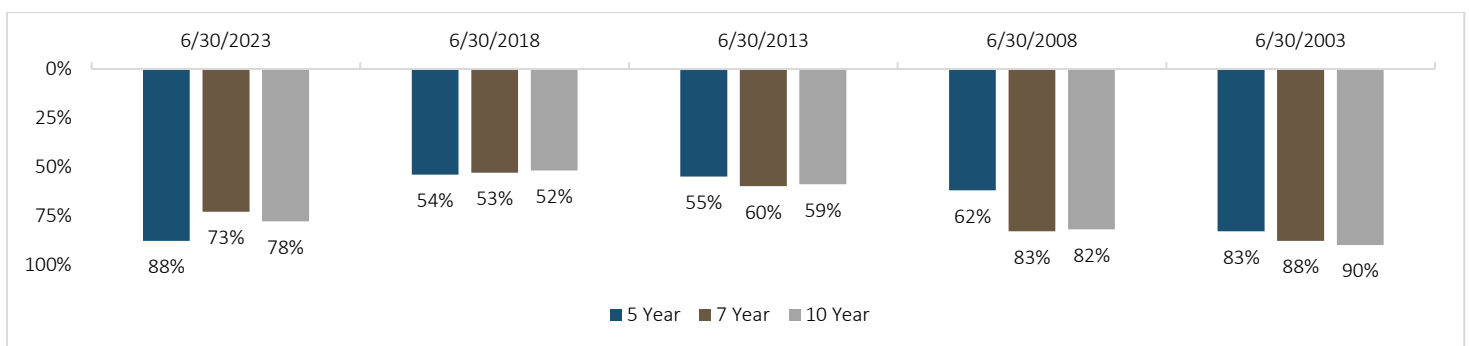
Source: eVestment, Cornerstone Investment Partners. Quarterly average of monthly data through 6/30/2023. Net of fees, includes inactive funds.

The breadth of results stabilizes around five years, suggesting that five, seven, or ten-year statistics are reasonably appropriate. Using these more extended time frames also allows for more investment environments and variability to be included in the data, and thus more likely to reflect manager skill.

Active Management Has Beaten Passive in Small Cap For Decades

Small cap passive investment options have been long-term underperformers. The Russell 2000 Index, which is the most common benchmark at an 81% market share and \$1.7 trillion of institutional assets per FTSE Russell, has barely even shown up versus active competition. As shown below, the Russell 2000 is currently a bottom third performer for the last five-, seven-, and ten-year periods versus eVestment’s US Small Cap Core manager universe, and looking back every five years to 2003, it has never been above the median active strategy across those time frames. Note that this data is net of fees for active managers (but not for the Index), and the largest Russell 2000 ETF, the iShares Russell 2000 ETF (IWM), has a 0.19% expense ratio.

Russell 2000 Index Percentile Performance Compared To eVestment Small Cap Core Universe



Source: eVestment, Net of fees.

Why is this the case? Passive options must own everything in the index, and there are a lot of small cap stocks you shouldn't own. Small caps as a whole are more concentrated, more levered, and less profitable, which means active management in this space has the opportunity to focus portfolios on investing in the potential winners and avoiding the potential losers.

Active management is the clear winner versus passive in small cap. But since we all know that "Past performance does not indicate future results," how do you increase your likelihood that a manager will provide attractive risk-adjusted results over time?

What is an Attractive Information Ratio in Small Cap?

The above question is more complicated than it seems. A rule of thumb has historically been used, coming from a seminal book on the topic from 1995 by Richard Grinold and Ronald Kahn, *Active Portfolio Management*, which suggested that an Information Ratio of 0.5 was "Good," 0.75 was "Very Good," and 1.0 was "Exceptional."¹ Bruce Jacobs and Ken Levy's paper, "Residual Risk: How Much Is Too Much?"² the following year repeated this assessment.

While Grinold and Kahn's rules of thumb were not determined empirically, they did state a belief that 10% of managers achieved greater than 1.0 Information Ratios; however, empirical evidence suggests it has been much more difficult for active managers to achieve this level.

As of 2Q of 2023, the median manager had an information ratio, net of fees, of 0.4 on a 5-year basis, and 0.2 on both a 7-year and 10-year basis.

Information Ratio over Different Terms for the US Small Cap Core Universe of Active Managers as of 6/30/23

		Information Ratio as of 6/30/23		
		5 Year	7 Year	10 Year
Percentile	<i>Cornerstone DSCC</i>	<i>0.98</i>	<i>1.01</i>	<i>0.97</i>
	5th	0.92	0.74	0.73
	10th	0.74	0.59	0.55
	25th	0.56	0.41	0.41
	50th	0.36	0.22	0.25
	75th	0.14	(0.01)	0.02
	90th	(0.03)	(0.20)	(0.14)
	95th	(0.22)	(0.32)	(0.20)
	# Observations	163	151	135

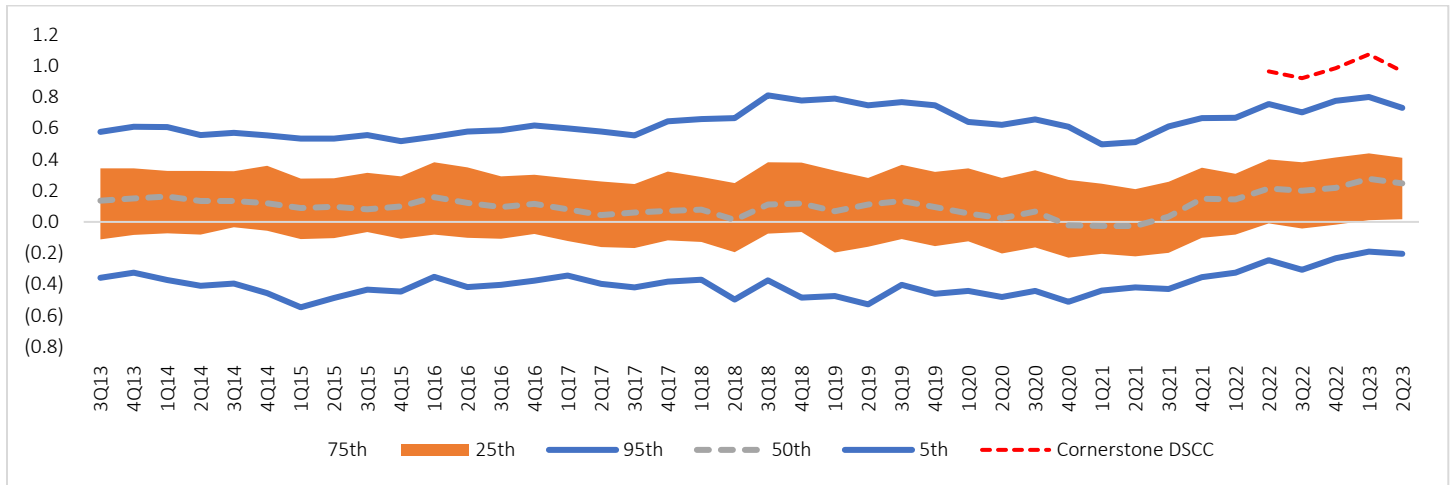
Source: eVestment, Cornerstone Investment Partners. Quarterly average of monthly data through 6/30/2023. Net of fees, includes inactive funds.

Results have been fairly consistent over the last decade.

¹ Grinold, Richard, and Ronald Khan, 1995, "Active Portfolio Management" Richard D. Irwin

² Jacobs, Bruce I. and Levy, Kenneth N., Residual Risk: How Much is Too Much?. The Journal of Portfolio Management, Vol. 22, No. 3, 1996, pp. 10-16.

10-Year Rolling Information Ratio by Percentile for the US Small Cap Core Universe of Active Managers

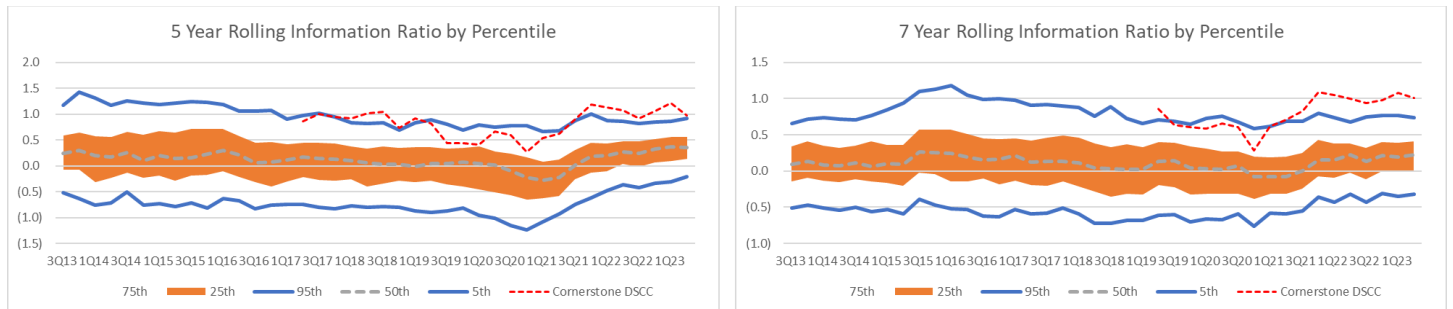


Source: eVestment, Cornerstone Investment Partners. Quarterly average of monthly data through 6/30/2023. Net of fees, includes inactive funds.
Note: Diversified Small Cap Core’s inception date is 6/30/2012, so the strategy started to have a 10-year information ratio as of 2Q22.

As shown, on a ten-year basis, only 0.3% of managers on average qualify to be considered “Exceptional” under Grinold and Kahn’s definition, and only 2% qualify as “Good.” While there are outlier periods, such as the GFC and COVID-19 pandemic, achieving an “Exceptional” Information Ratio in small cap stocks has been much more challenging than those who defined the term expected.

These results are similar on a five- and seven-year basis.

5- and 7-Year Rolling Information Ratio by Percentile for the Small Cap Core Universe of Active Managers



Source: eVestment, Cornerstone Investment Partners. Quarterly average of monthly data through 6/30/2023. Net of fees, includes inactive funds.
Note: Diversified Small Cap Core’s inception date is 6/30/2012, so the strategy started to have a 5- and 7-year information ratio as of 2Q17 and 2Q19, respectively.

Even though the Russell 2000 benchmark has been a consistent underperformer versus active managers in recent years, it has required additional risk to beat it. On a 10-year basis, less than 0.5% of active managers have, on average in a given year, delivered Information Ratios (IR) over 1.0.

Average Percent of Small Cap Core Active Managers Achieving Certain Information Ratio Levels

G&K Description	IR	5 Year Term		7 Year Term		10 Year Term	
		2018-2023	2013-2023	2018-2023	2013-2023	2018-2023	2013-2023
"Exceptional"	1.00	2%	5%	1%	3%	1%	0%
"Very Good"	0.75	7%	11%	4%	6%	4%	2%
"Good"	0.50	18%	23%	14%	17%	12%	11%
<i>Manager Universe</i>		<i>163</i>		<i>151</i>		<i>135</i>	

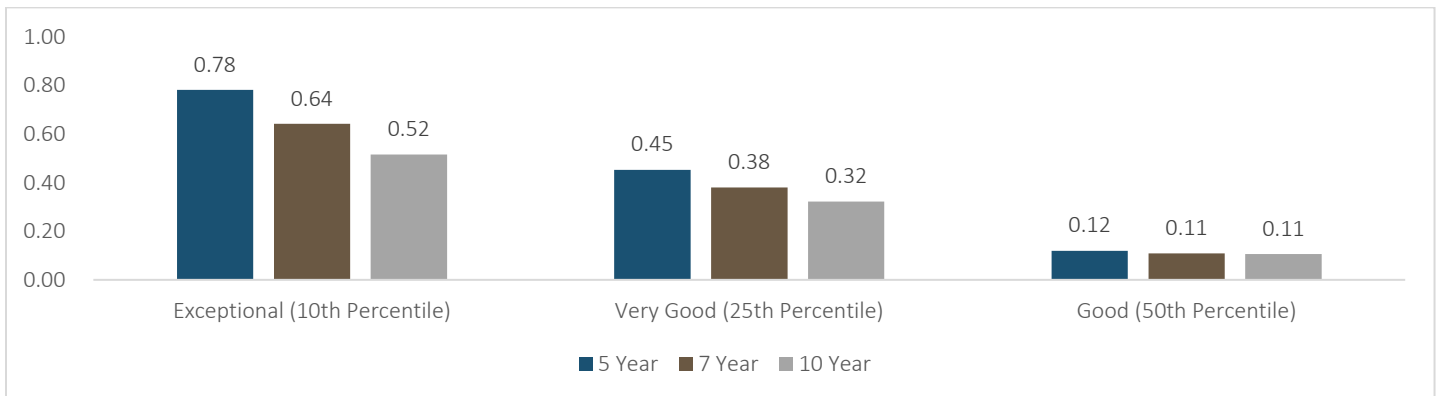
Source: eVestment, Cornerstone Investment Partners. Quarterly average of monthly data through 6/30/2023. Net of fees, includes inactive funds

Data from the 1990s agrees with these results. Thomas Goodwin’s 1998 paper, “The Information Ratio,” looks at the 1996-1985 ten-year period for various asset classes, including small cap.³ While there are only 35 managers in the small cap study, his results suggest similar outcomes to today, with a median Information Ratio of 0.43 and an upper/lower quartile band of 0.17-0.58. Goodwin’s (and Grinold and Kahn’s is) data is likely on a gross-of-fees basis due to data availability at the time, so results would be comparably somewhat higher than our data, which is presented on a net-of-fees basis.

Small cap is also a capacity-constrained asset class – only so much capital can go into those exceptional managers, particularly if they are concentrated. According to FTSE Russell, \$1.7 trillion of institutional assets are benchmarked to the Russell 2000 Index. Even with \$5 billion in each of the top five active strategies, there’s...still \$1.7 trillion of invested capital remaining to be allocated.

The below chart details the Information Ratios implied by various percentile ranges. If we were to re-calculate these descriptions for small cap based on Grinold and Kahn’s intent, with “Good” being above average, “Very Good” at the top quartile, and “Exceptional” at the top decile, “Good” moves down to ~0.25, “Very Good” to ~0.50, and “Exceptional” to ~0.80.

Average Information Ratio by Percentile (2013-2023) for the Small Cap Core Universe



Source: eVestment, Cornerstone Investment Partners. Quarterly average of monthly data through 6/30/2023. Net of fees, includes inactive funds.

Cornerstone’s Diversified Small Cap Core’s Information Ratio Distinguishes the Strategy as an Exceptional One vs. Active Peers Given its Historic Information Ratio

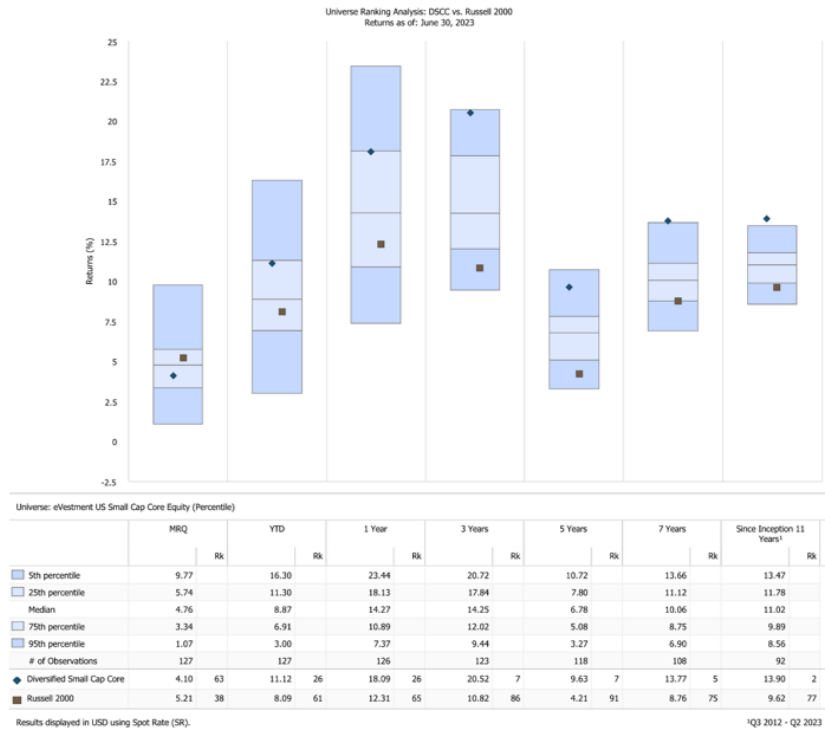
Cornerstone’s Diversified Small Cap Core is a 240-stock, rules-based small cap portfolio focused on identifying companies delivering fundamental improvement, quality balance sheets, and robust cash flows. It’s approach is designed with both

³ Goodwin, Thomas H. “The Information Ratio.” Financial Analysts Journal, vol. 54, no. 4, 1998, pp. 34–43.

offensive characteristics to exploit the long-term small cap premium, and defensive characteristics to help mitigate the higher risk of the asset class. Our rules-based approach helps control the behavioral biases that are often amplified in small cap and get reflected in poor portfolio management decisions like holding story stocks and turning over the portfolio excessively in response to market noise.

Since its inception in June of 2012, Diversified Small Cap Core’s results have been very strong on both an absolute and risk-adjusted basis.

Diversified Small Cap Core Annualized Returns over Time

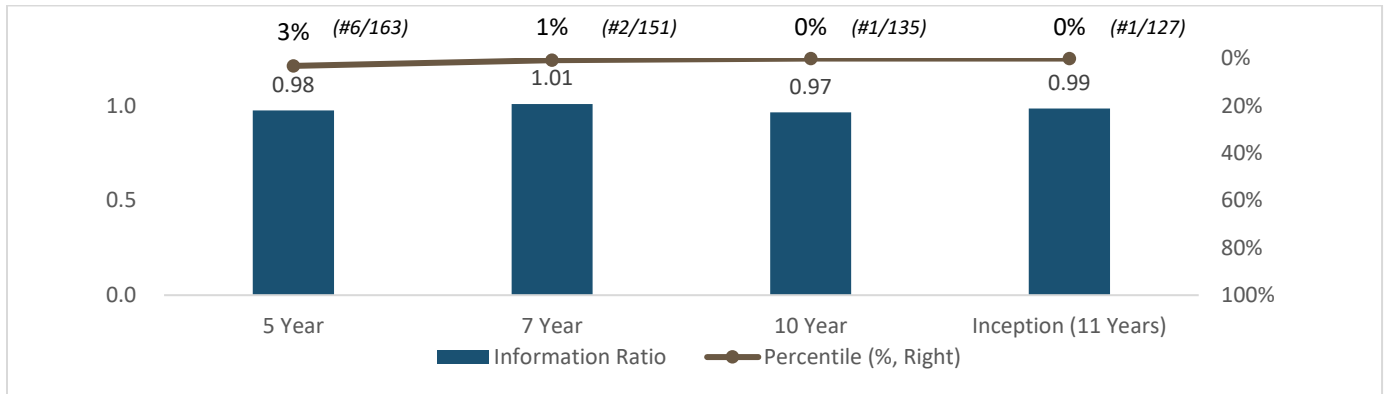


Returns are presented net of fees. This graph is included as supplemental and complements the full performance disclosure presentation, which can be located on the Cornerstone Investment Results: Diversified Small Cap Core Composite page.

Source: eVestment

That top 7th-percentile performance has been consistent over a range of time periods, including five, seven, and ten-year terms. **The strategy has delivered an information ratio of approximately one for each of those longer time frames, and has the single best information ratio among all 135 US Small Cap Core strategies in the eVestment database over the last 10 years and since its inception 11 years ago.**

Information Ratio and Percentile of Diversified Small Cap Core versus the US Small Cap Core Universe



Source: eVestment, Cornerstone Investment Partners. Quarterly average of monthly data through 6/30/2023. Net of fees, includes inactive funds.

Conclusion

The small cap space is uniquely challenging, with volatile results, high levels of idiosyncratic risk, and a shifting investible universe. The Information Ratio is a statistic that helps break through that volatility to demonstrate how a manager performs on a risk-adjusted basis.

Cornerstone’s Diversified Small Cap Core strategy is designed to buy stocks that are building value, hold them while they execute, and sell them when a better idea presents itself; while avoiding stocks that are overly risky or not building value. This rules-based strategy brings discipline to an asset class that often lacks it. The disciplined execution of this investment process has delivered exceptional results over time.

Disclosures

1. Past performance does not indicate future results. As with all investments, the possibility for profit is accompanied by the risk of loss.
2. eVestment provides institutional investment data, analytics and market intelligence covering public and private markets. Cornerstone has an agreement with eVestment to provide data on eVestment's Global Database. Cornerstone does not pay a fee to be included in eVestment's rankings.

GIPS Disclosure

Cornerstone Investment Results: Diversified Small Cap Core Composite

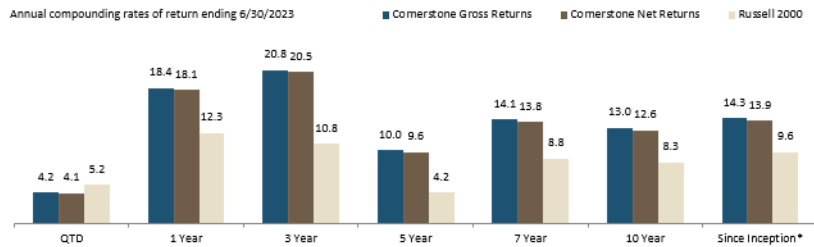
	Cornerstone Gross Returns	Cornerstone Net Returns	Russell 2000	Gross Composite 3yr St Dev	R2000 3yr St Dev	Composite assets \$millions	Accounts at period end	Percent of firm assets	Firm assets \$millions	Gross composite dispersion
2022	-18.41%	-18.62%	-20.44%	26%	26%	44.32	5 or fewer	2.601%	1,703.9	N.A.*
2021	44.80%	44.44%	14.82%	23%	23%	56.66	5 or fewer	2.933%	1,932.1	N.A.*
2020	22.37%	22.05%	19.96%	25%	25%	48.53	5 or fewer	2.650%	1,831.3	N.A.*
2019	18.75%	18.33%	25.52%	16%	16%	5.15	5 or fewer	0.224%	2,300.8	N.A.*
2018	-5.78%	-6.12%	-11.01%	16%	16%	4.40	5 or fewer	0.203%	2,169.9	N.A.*
2017	17.63%	17.21%	14.65%	13%	14%	4.67	5 or fewer	0.190%	2,458.6	N.A.*
2016	23.38%	22.94%	21.31%	15%	16%	2.56	5 or fewer	0.098%	2,609.7	N.A.*
2015	-1.17%	-1.52%	-4.41%	13%	14%	0.28	5 or fewer	0.008%	3,480.2	N.A.*
2014	4.25%	3.87%	4.89%	N.R.	N.R.	0.28	5 or fewer	0.003%	9,154.3	N.A.*
2013	48.81%	48.31%	38.82%	N.R.	N.R.	0.46	5 or fewer	0.006%	8,210.6	N.A.*
2012*	8.39%	8.21%	7.20%	N.R.	N.R.	0.31	5 or fewer	0.005%	5,725.4	N.A.*

*Composite inception date is 6/30/2012
N.R. - Not Required

	Cornerstone Gross Returns	Cornerstone Net Returns	Russell 2000
QTD	4.15%	4.09%	5.21%
1 Year	18.40%	18.09%	12.31%
3 Year	20.83%	20.52%	10.82%
5 Year	9.95%	9.63%	4.21%
7 Year	14.12%	13.77%	8.76%
10 Year	12.96%	12.60%	8.26%
Since Inception*	14.28%	13.91%	9.62%

Annual compounding rates of return ending 6/30/2023
*Composite inception date is 6/30/2012

Annual compounding rates of return ending 6/30/2023



Diversified Small Cap contains fully discretionary accounts that are comprised of around 230-250 securities that typically have capitalizations between \$250M and \$3B. For comparison purposes, the composite is measured against the Russell 2000 Index. Cornerstone Investment Partners is an independent, employee-owned investment advisory firm. Results are based on fully discretionary accounts under management, including those accounts no longer with the firm. Past performance is not indicative of future results. The U.S. Dollar is the currency used to express performance. Returns are presented gross and net of management fees and include the reinvestment of all income. Net of fee performance was calculated using actual management fees. For non-fee-paying accounts, a model fee based on the standard investment advisory schedule was applied. The Diversified Small Cap Core composite was inceptioned and created on June 30, 2012. N.A.* The annual composite dispersion is an asset-weighted standard deviation calculated for the accounts in the composite for the entire year. This is not shown when there are 5 or fewer accounts in the composite for the entire year as it is not statistically meaningful. Cornerstone Investment Partners claims compliance with the Global Investment Performance Standards (GIPS®) and has prepared and presented this report in compliance with the GIPS standards. Cornerstone Investment Partners has been independently verified for the periods September 30, 2001 thru December 31, 2022. A firm that claims compliance with the GIPS standards must establish policies and procedures for complying with all the applicable requirements of the GIPS standards. Verification provides assurance on whether the firm's policies and procedures related to composite and pooled fund maintenance, as well as the calculation, presentation, and distribution of performance, have been designed in compliance with the GIPS standards and have been implemented on a firm-wide basis. The Diversified Small Cap Core composite has had a performance examination for the periods June 30, 2012 thru December 31, 2022. The verification and performance examination reports are available upon request. Benchmark returns are not covered by the report of independent verifiers. Policies for valuing investments, calculating performance, and preparing GIPS Reports are available upon request. To receive a list of composite descriptions and/or additional information, contact Cornerstone Investment Partners at 3438 Peachtree Rd, NE, Suite 900, Atlanta, GA 30326, 404-751-3850 or marketing@cornerstone-ip.com. The general fee schedule for accounts is as follows: 1.00% on the first \$10,000,000; 0.75% on the next \$40,000,000 and 0.50% on the balance. Actual investment advisory fees incurred by clients may vary. GIPS® is a registered trademark of CFA Institute. CFA Institute does not endorse or promote this organization, nor does it warrant the accuracy or quality of the content contained herein. Due to the marketing rule that went into effect on 11/4/22, the net returns were updated to comply with this regulation. Additional information is available upon request.