MICRO-CAP: THE ASSET CLASS OF OPPORTUNITY

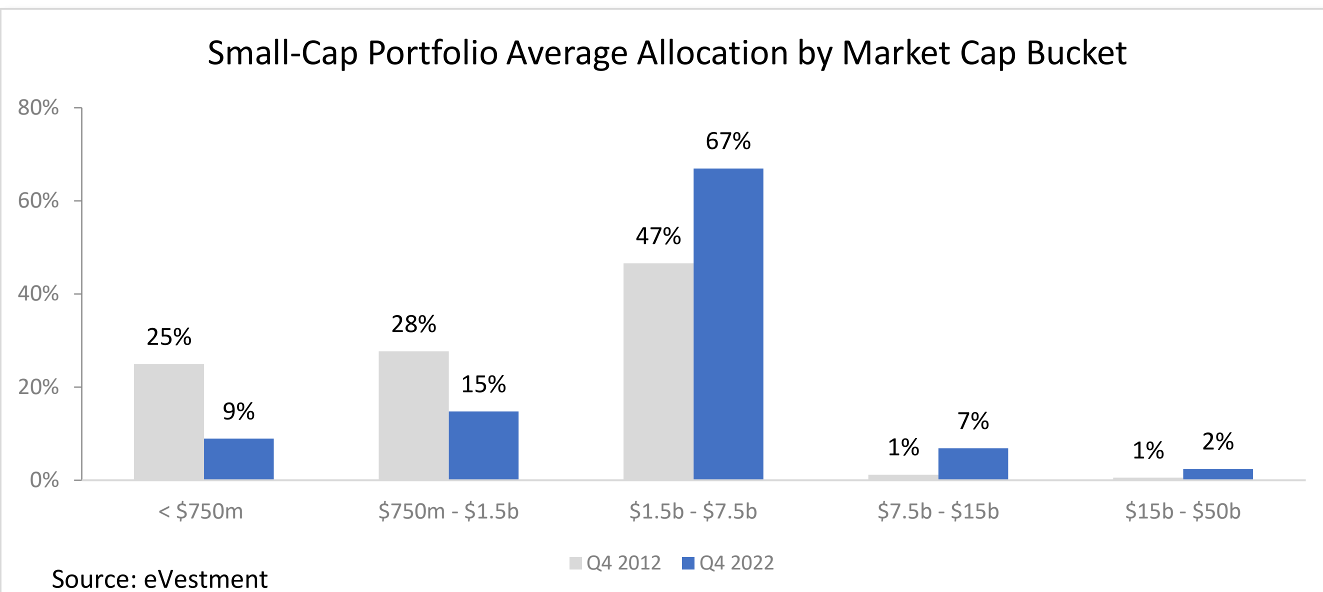
Adding U.S. micro-caps to an asset allocation framework may enhance the risk-adjusted performance of a total equity portfolio. This can be particularly appealing when the investment is made amid a period of compelling valuations for the asset class.

Micro-cap stocks are small companies that trade on public exchanges such as the New York Stock Exchange and the Nasdaq. While there is no industry-accepted definition for micro-cap stocks, the Russell Microcap Index includes 1,752 publicly traded U.S. companies with an average market capitalization of $755 million. The largest company in the index tops out at $5.1 billion *(as of December 31, 2022 – FTSE Russell)*.

WHY INVEST IN MICRO-CAP STOCKS?

Small-Cap Managers Have Gravitated Up-Cap

While micro-caps are often considered more of a niche asset class, they offer investors exposure to an important part of the market cap spectrum that was long-ago abandoned by many small-cap managers. Today, a gaping hole can usually be found in a client's overall portfolio as traditional small-cap managers are providing minimal exposure to sub-$1.5 billion market cap companies where alpha opportunities are most abundant. In 2012, the average small-cap manager allocated nearly 53% of their portfolio to companies with market caps under $1.5 billion; in 2022, that number had fallen below 24%.



The small-cap Russell 2000 Index keeps growing in cap too, with the largest capitalization company in that index increasing from $3.8 billion in 2012 to $9.0 billion in 2022[1]. Furthermore, the average small-cap manager has a weighted-average market cap *above* the benchmark (source: eVestment, FTSE Russell). We believe investors should think of micro-caps as a dedicated asset class or, at the very least, as an extension of their U.S. small-cap allocation.

[1]Top market cap company for Russell 2000 Index post-reconstitution on June 30th of each year. Source: FTSE Russell

Higher Returns Than Small-Caps

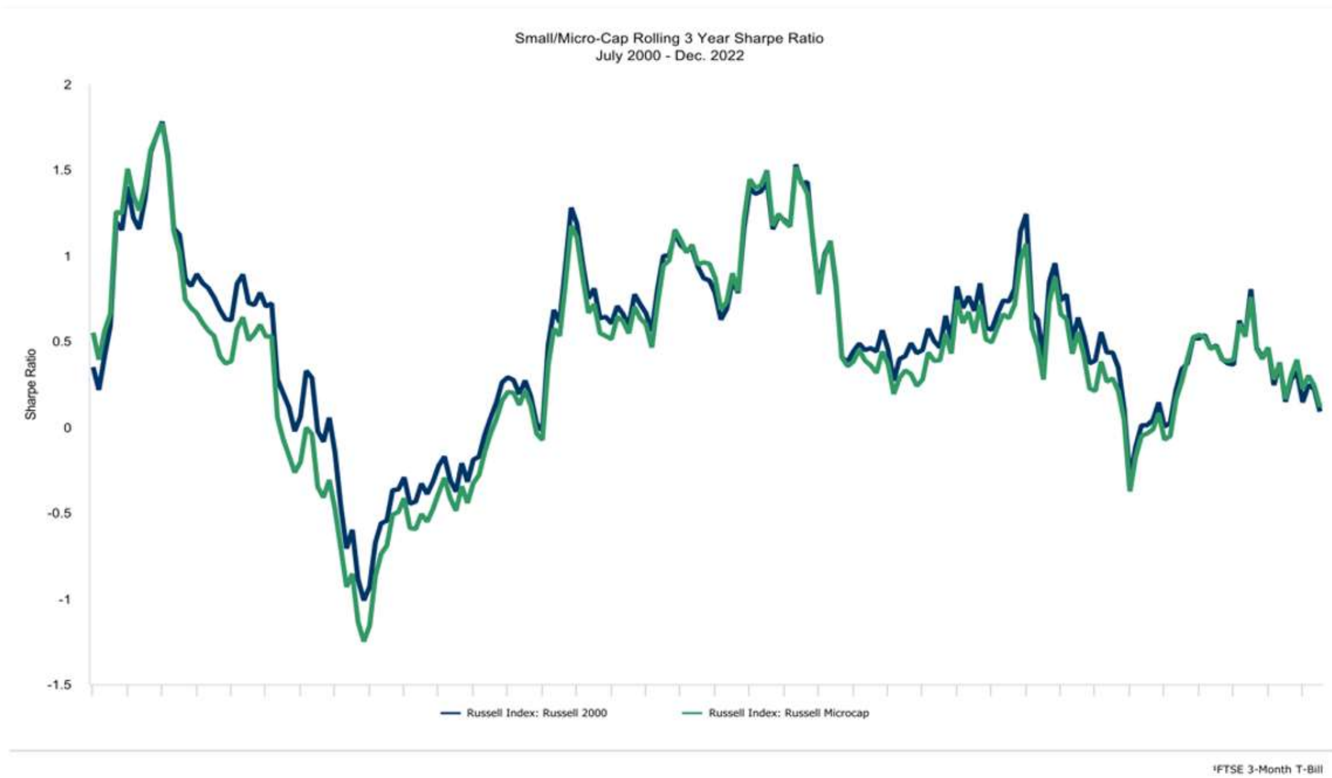
Over time, micro-cap managers generate higher returns than traditional small-cap managers, with top-quartile, median, and even bottom-quartile micro-cap managers outperforming their small-cap peers over multiple historical time frames.

MICRO-CAP MANAGERS OUTPERFORM SMALL-CAP PEERS

	Top Managers		Average Managers		Bottom Managers	
Total Return	**Micro 25th Percentile**	**Small 25th Percentile**	**Micro 50th Percentile**	**Small 50th Percentile**	**Micro 75th Percentile**	**Small 75th Percentile**
5 Year Return (%)	10.40%	8.33%	7.05%	6.54%	4.31%	5.06%
10 Year Return (%)	13.46%	12.01%	11.87%	10.81%	9.84%	9.56%
15 Year Return (%)	11.52%	9.98%	9.71%	8.84%	8.92%	8.02%
20 Year Return (%)	14.54%	12.01%	11.50%	11.18%	11.11%	10.27%

Source: eVestment Alliance Micro and Small-Cap Peer Groups for the trailing periods ending 12-31-22.

Interestingly, and contrary to popular belief, risk isn't materially higher for micro-caps compared to small-caps, as risk-adjusted rolling 3-year returns measured by Sharpe Ratio are nearly identical.



Allocating a small percentage of an investor's total equity portfolio to U.S. micro-cap equities can increase a total portfolio's risk-adjusted return. Why? Because micro-cap stocks aren't highly correlated with other asset classes, including other U.S. equities, bonds and foreign stocks (see Table 1). In other words, micro-cap stocks behave differently than other asset classes and allocating a small percentage of a portfolio to these dissimilar equities increases diversification and should increase risk-adjusted returns.

Table 1	Dow Jones US Micro-Cap Correlation versus
Russell 2000	0.94
S&P 500	0.72
MSCI EAFE	0.65
Bloomberg US Aggregate	0.00

Source: eVestment (1/1992 - 12/2022)

Inefficiency = Opportunity

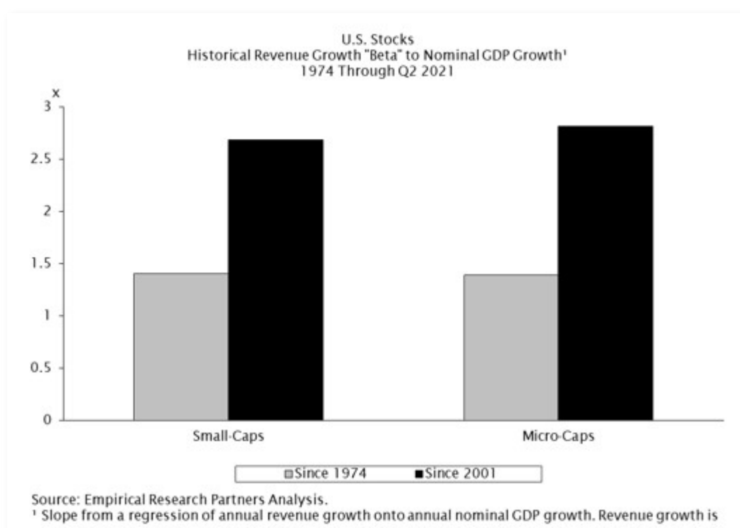
The alpha opportunity in micro-caps is proven and comes from significant inefficiencies in that market. Different market segments vary widely in market efficiency. Large companies with lots of investors and many analysts covering them tend to be more fairly priced most of the time relative to smaller, undiscovered companies with few investors or analysts covering them. Research adds value.

Most Wall Street analysts focus their research on larger companies that generate investment banking fees and trading commissions. On average, there are five times as many analysts covering large-cap companies compared to the average micro-cap. Nearly one-third of micro-caps are covered by only one sell-side analyst, and some aren't covered at all. This lack of Wall Street research in the micro-cap arena means active managers who conduct their own fundamental research should have an information advantage which can help them generate above-market returns.

WHY INVEST NOW?

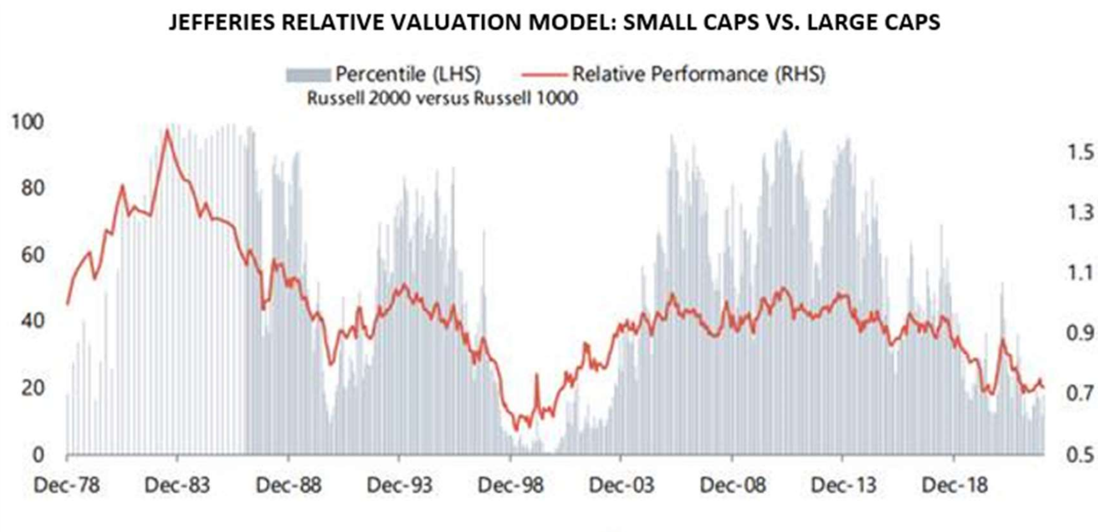
Micro-caps Are Levered to a Growing Economy

It's difficult to predict economic cycles, and there's an old Wall Street adage that "economists have predicted nine of the last five recessions." What we do know, however, is that micro-cap stocks perform even better than small-caps coming out of periods of economic stagnation. According to Empirical Research Partners (ERP), micro-cap stocks historically offer the most bang for your buck when the economy is growing, giving investors attractive "beta" exposure to a recovery. These periods generally offer exceptional opportunities for our investment style because expectations are artificially low exiting periods of high uncertainty. ERP also notes micro-caps (as a sub-set of small-caps) provide notably better returns than large-cap stocks during capital expenditure booms, inflationary periods, and even during times of stagflation.



They Look Cheap…Especially Versus Large-Caps

Micro-caps (as a sub-set of small-caps) look like a compelling *value* to us right now, and are notably cheap relative to large-cap stocks. According to the Jefferies relative valuation model shown here, small-caps are trading at the lowest valuation levels versus large-caps since the Internet bubble burst in 2000.



Note: Relative valuation model consists of relative Trailing and Forward P/E, Price to Book, Price To Sales and from 2002 Price to Cash Flow; from March 31, 2016 forward Jefferies' estimates.
Source: FactSet; FTSE Russell; Jefferies

In addition to the significant valuation premium for large-caps, there are added risks facing today's large-cap investors. Despite an unwind that began in 2022, the "market" remains dangerously narrow: the top 5 companies still account for a staggering 20% of the S&P 500, a concentration level that should – based on historical precedent – continue to decline. We suspect that few investors realize that they have so many eggs in such a small basket.

Source: Charles Schwab

WHY INVEST WITH OBERWEIS?

A Time-Tested Investment Philosophy Based on Academically-Verified Evidence

At Oberweis, we are guided philosophically by a focus on academically documented inefficiencies. We believe alpha is generated by investing in micro-cap companies that are:

- Growing sales and/or earnings in excess of expectations.
- Experiencing a fundamental change that is misunderstood.
- Capable of generating results beyond expectations in the future.
- Attractively valued based on our own proprietary estimates.

The foundation of our unique philosophy is based on an academically-documented anomaly called the Post-Earnings Announcement Drift (PEAD), which says that investors often misunderstand a company's fundamentals and earnings power because they under-react to positive information contained in surprising earnings reports. Every day, our proprietary screens identify companies with surprising earnings reports, and we work through a 17-step fundamental research process to select those companies we think are best positioned to continue to surprise going forward.

Why Post-Earnings Announcement Drift Works

Because PEAD is based on the behavioral biases and tendencies of other investors, it persists over time in generating alpha. It works particularly well as you move down in market capitalization into the micro-cap space because those companies aren't well-followed by Wall Street and institutional investors. Inefficiency increases the likelihood that the impact of a fundamental change at a micro-cap company will be misunderstood or under-estimated, and therefore enhances the alpha opportunity that exists for our PEAD-based investment philosophy.

Fundamentals and Valuation Matter

Just because a micro-cap company isn't a household name doesn't mean it isn't a high-quality company. Not only do we seek to identify companies exceeding expectations as a result of significant fundamental change, but we also pay careful attention to a company's growth prospects, competitive positioning, and financial statements. While a sizeable percentage of micro-cap companies are devoid of earnings, the vast majority of our investments are in companies generating earnings and free cash flow *today,* with a high probability that earnings and cash flow will surprise to the upside in the future. Importantly, valuation based on our proprietary earnings estimates has always been a significant focus. If we're correct and a company earns what we expect -- which is usually notably above the Wall Street estimate – we believe we are investing in that company at a compelling value. This time-tested process serves as a foundation for our micro-cap strategy to add alpha over long periods of time.

Disclosures

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The Standard & Poor's 500 Index, often abbreviated as the S&P 500, is an American stock capitalization-weighted market index based on 500 large companies having common stock listed on the NYSE or NASDAQ. The S&P 500 index components and their weightings are determined by S&P Dow Jones Indices.

The Bloomberg U.S. Aggregate Bond Index is a broad-based flagship benchmark that measures the investment grade, U.S. dollar-denominated, fixed-rate taxable bond market. The index includes Treasuries, government-related and corporate securities, MBS (agency fixed-rate and hybrid ARM pass-throughs), ABS and CMBS (agency and non-agency). The U.S. Aggregate Index was created in 1986 with history backfilled to January 1, 1976.

The Russell 2000 index is an index measuring the performance of approximately 2,000 small-cap companies in the Russell 3000 Index, which is made up of 3,000 of the biggest U.S. stocks. The Russell 2000 serves as a benchmark for small-cap stocks in the United States. The Russell Microcap Index measures the performance of the microcap segment of the US equity market. Microcap stocks make up less than 2% of the U.S. equity market (by market cap) and consist of the smallest 1,000 securities in the small-cap Russell 2000 Index, plus the next 1,000 smallest eligible securities by market cap

The MSCI EAFE Index is an equity index which captures large and mid-cap representation across Developed Markets countries around the world, excluding the U.S. and Canada. With 926 constituents, the index covers approximately 85% of the free float-adjusted market capitalization in each country.

Alpha is a measure of active return on an investment. It gauges the performance of an investment against a market index used as a benchmark. The excess returns of a fund relative to the return of a benchmark index is the fund's alpha. The most accurate measure of this type is "Jensen's Alpha" which adjusts the benchmark return for Beta.

Beta is a measure of the volatility, or systematic risk, of a security or a portfolio relative to the market as a whole. If a security or portfolio exhibits volatility equal to that of the market, the Beta is 1.00. If the security or portfolio exhibits more (or less) volatility than that of the market, Beta is greater (or less) than 1.00.

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