Adding Value in Student-Managed Funds: *Benchmark and Sector Selection*

Overview

In **Adding Value in Student-Managed Funds***: Benchmark and Sector Selection*, from the Winter 2018 issue of ***The Journal of Trading,*** authors **J. Christopher Hughen, Jack Strauss**, and **J.P. Tremblay** (all of the **Daniels College of Business** at the **University of Denver**) propose a low-risk approach for portfolio management that offers significant opportunities for alpha generation. They focus on midcap stocks and propose a formal sector allocation strategy to identify mispriced sectors. The authors recommend using the ratio of enterprise value (EV) to EBITDA to determine which sectors to over- and underweight in portfolio allocation.

Practical Applications

- **Midcap stocks represented by the S&P MidCap 400 Index have multiple advantages over other size categories**. Stocks in this index tend to have better return characteristics, less Wall Street attention, and are targeted by fewer active funds that are attempting to exploit mispricings.
- **Using an EV/EBITDA strategy yields a portfolio payoff five times greater than when using a P/E strategy**. This ratio is particularly effective for comparing sectors characterized by different business models.
- **The return pattern for the strategy using EV/EBITDA is consistent over time.** The sectors with the lowest ratios are expected to be undervalued, and these sectors performed better than the benchmark in 56% of quarters over a 35-year period.

Discussion

The authors observe that portfolios constrained to large-capitalization stocks and benchmarked to the S&P 500 Index can lead to missed opportunities in portfolio management. They present a strategy that captures those opportunities with minimal risk while supplying significant potential for outperformance.

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Key Definitions

S&P MidCap 400 Index

The S&P MidCap 400 Index is a stock market index that functions as a barometer for the US midcap equities sector. Companies with market capitalization from $1.4 billion to $5.9 billion are eligible for inclusion in the index. Stocks in the index are also mutually exclusive from the stocks in the S&P 500 Index.

Benchmark

A benchmark is a passive, rules-based security or asset mix used as a measuring stick for the risk and performance of an actively managed portfolio.

EV/EBITDA

EV/EBITDA is the ratio of enterprise value to earnings before interest, taxes, depreciation, and amortization. The authors document its effectiveness in identifying which sectors to over- and underweight in portfolio composition.

> ❝[W]e encourage funds to pursue alpha at all levels of the portfolio management process.❞
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The authors recommend selecting a universe of stocks that is under-researched by sell-side equity analysts and targeted by few funds. Potential investments should have significant growth opportunities and be considered low risk, and their selection should be supported by in-depth, company-specific research. Rigorous equity valuation should be undertaken to select undervalued securities with the highest expected alphas.

BENCHMARK SELECTION

The S&P 500 Index, the world's most popular index of large-cap stocks, represents over 80% of the market capitalization of the US stock market. Because this index serves as a benchmark for almost $8 trillion in funds under management, large-cap stocks consist of established, recognized companies. This recognition could serve as a drawback for investors in terms of portfolio diversification.

The large size of the S&P 500 Index constituents diminishes their growth opportunities, and a large mean market cap and multiple segments complicates the valuation of these stocks. Finding undervalued stocks among them is more difficult because these firms are likely already efficiently priced.

Therefore, the authors recommend the selection of mid-cap stocks, represented by the S&P MidCap 400 Index, which provided an average annual return of 8.7% during the 18-year period studied—versus large- and small-cap stock returns of 5.1% and 7.5%, respectively. Midcap stocks also have a Sharpe ratio of 0.47 during this period, indicating that they provide more return for their raw risk than small-cap (0.41) or large-cap (0.26) stocks. Other advantages of midcap stocks include less attention and analyst coverage from Wall Street (which creates more opportunities for exploiting undervalued stocks) and the operation of fewer funds in the midcap space than the small-cap space.

The authors also note that investors tend to buy stocks that catch their attention. Buying stock based on personal interest is financially

unhealthy and can lead to actively trading in a limited set of stocks. These stocks underperform with lower portfolio returns. Investors can prevent the influence of behavioral biases by including stocks outside their personal experience.

SECTOR ALLOCATION

> **"** If the goal is outperforming the benchmark, a fund should only deviate significantly from the benchmark's sector allocation for objective reasons associated with the fund strategy. **"**
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The authors note that most investors pay little attention to sector allocations relative to a benchmark. However, they emphasize that over/underweighting sectors can add value, due to sector mispricings that can be exploited to beat the market.

The authors show their motivation for a fund strategy using sector allocation. They observe that sector performance of midcap stocks varies significantly through both bull and bear markets, a finding that supports the importance of sector classification systems. Moreover, some sectors tend to extremes of performance due to their sensitivity to systematic factors. For example, the energy sector's sensitivity to commodity prices leads to its position at the top or bottom of performance in over 40% of quarters from 1980 to 2014.

Furthermore, sectors are not easily valued from a relative perspective due to the fundamental differences across sectors in business operations (such as operating leverage, financial leverage, profitability, and noncash expenses) and asset structures (e.g., real estate, utility, and energy sectors have high levels of fixed assets, whereas consumer discretionary and information technology sectors use relatively more current assets).

SECTOR METRICS

The authors argue that a portfolio allocation strategy using EV/EBITDA produces greater outperformance than an approach using the price-to-earnings ratio (P/E). They found that a strategy using

EV/EBITDA results in a portfolio payoff five times greater than that of a strategy using P/E. EV/EBITDA is particularly effective for comparing companies in sectors with very different business models.

The numerator, EV, represents enterprise value: the value of common equity, preferred stock, and debt minus cash. The denominator, EBITDA, measures core profitability. EV/EBITDA is relatively insensitive to operating leverage, financial leverage, and capital structure, and is robust to many sector differences.

This ratio is also fairly unknown outside of the professional portfolio management community. P/E is popular and has an obvious rationale: It compares the price an investor pays for a share of stock to the per-share earnings accrued to the owner of a share. Investment textbooks don't teach much about EV/EBITDA, which also has a more challenging rationale. The ratio compares the market value of all securities issued by the firm to the pre-tax earnings that could be paid to all the providers of capital to a corporation.

ANALYSIS

The authors examine the ability of EV/EBITDA to identify undervalued and overvalued sectors. They use S&P CompStat data to calculate the ratio for each sector on a quarterly basis over the 35-year period of 1980 to 2014. The resulting sector ratios are an equally weighted average of the ratios for each company in the sector. The authors then identify the two sectors with the lowest ratios. These two sectors are likely to be undervalued due to offering more earnings relative to the value of capital provided to the company. Next, the authors identify the two sectors with the highest ratios. These two sectors are likely to be overvalued because they include companies with relatively low operating profits relative to the total value of their capital.

The authors then assess the value of portfolios that invested in the two sectors with the lowest EV/EBITDA ratios and the two sectors with the highest EV/EBITDA ratios. The authors use the sector returns two quarters following the end-of-period date for the financial statements to calculate the sector ratios. An investment of $100 following the portfolio strategy of the two sectors with the EV/EBITDA ratios results in an ending portfolio value of $15,863 after 35 years. This is double that of the ending portfolio value for a matching investment in the equally weighted index over the same period and 2.9 times the ending portfolio value for an investment in the value-weighted index. The ending portfolio value from following

the portfolio strategy of investing in the sectors with the two highest EV/EBITDA ratios is $1,767. This is much less than investments in sectors with the lowest EV/EBITDA ratios, the equally weighted index, and the value-weighted index.

The authors also investigate the consistency of these return patterns over time. The percentage of quarters in which the sector returns exceed the benchmark over various periods is displayed in Exhibit 1.

Exhibit 1: Percentage of Quarters Outperforming the Benchmark		
Period	**Low EV/EBITDA Sectors**	**High EV/EBITDA Sectors**
1980–2014	56%	43%
1980s	54%	48%
1990s	55%	38%
2000s	59%	43%
2007–2014	62%	41%

The lowest-ratio sectors beat the benchmark in 56% of the quarters in the 35-year period studied. In addition, they outperformed during the majority of quarters in subsamples of decades and during the period following the Great Recession. The highest-ratio sectors beat the benchmark in only 43% of the quarters and in less than 50% of the subsample periods.

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