

Where Size Matters

Small-Cap Multifactor Funds Pick Up Speed

There's a case to be made for these funds.

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Mar 16, 2021

While most multifactor funds focus on large- and mid-cap stocks, the payoff to factor investing has tended to be larger among smaller stocks. Small-cap stocks may not always be in favor, but those who believe in factors should consider small-cap multifactor strategies, which have greater potential to beat their relevant benchmark than large-cap multifactor funds.

Explaining the Edge

The value, momentum, low-volatility, size, and quality factors have historically been linked with superior risk-adjusted performance. The payoffs to value, momentum, and low volatility have tended to be greater among small-cap stocks, as shown in Exhibits 1, 2, and 3. Quality ..., however, appears to work similarly well across the entire market-cap spectrum.

Exhibit 1: Value Works Better Among Smaller Stocks

| Index | Value | Blend | Growth | Difference |
|-----------------|-------|-------|--------|------------|
| Russell 1000 | 10.48 | 11.14 | 11.37 | -0.89 |
| Russell Mid-Cap | 11.67 | 12.03 | 11.78 | -0.11 |
| Russell 2000 | 10.57 | 9.99 | 8.97 | 1.6 |

Source: Morningstar Direct. Data from January 1986 through February 2021.

Exhibit 2: Momentum Works Better Among Smaller Stocks

| | AQR Momentum | Russell Broad | Difference |
|-------|--------------|---------------|------------|
| Large | 13.06 | 11.82 | 1.24 |
| Small | 14.27 | 11.00 | 3.27 |

Source: Morningstar Direct. Data from February 1980 through February 2021.

Exhibit 3: Low Volatility Works Better Among Small-Caps

| | Low Volatility | High Volatility | Difference |
|-------|----------------|-----------------|------------|
| Large | 0.46 | 0.18 | 0.28 |
| Mid | 0.64 | 0.13 | 0.51 |
| Small | 0.69 | 0.09 | 0.60 |

Source: French Data Library; author's calculations. Sharpe ratios, July 1963 through January 2021.

Inefficiencies in the small-cap market offer the best explanation for these factors' greater payoffs among smaller stocks. Stock mispricing is more likely further down the market-cap scale. Smaller firms don't receive the same degree of attention as their large-cap brethren. Because mispricing likely contributes to the success of each factor, it makes sense that greater mispricing would contribute to greater factor efficacy among smaller stocks.

The small-cap market's proclivity to mispricing makes it fertile ground for the value effect to take hold. Value stocks' historical outperformance is believed to stem from one of two reasons: 1) investors are compensated for holding riskier stocks, or 2) stocks are not priced accurately. However, the risk compensation explanation doesn't hold up well for small-cap stocks. In the small-cap universe, the cheapest stocks have historically been less volatile than the priciest. This supports the explanation that value's increased efficacy among small-caps is partially due to greater mispricing in that market segment.

Conventional wisdom holds that, in an efficient market, low-volatility (low-risk) companies come with lower expected returns than their riskier counterparts. Yet, Exhibit 3 shows that the least-volatile quintile of stocks in each size segment posted better risk-adjusted performance than the most-volatile quintile. And similar to the value effect, this advantage was more pronounced among smaller stocks. This suggests that large-cap stock prices reflect risk more accurately than small caps.

The small-cap market is not quite as information-rich as the large-cap universe, which aligns with the economic intuition of why the momentum factor works. Momentum likely arises because markets are slow to react to new information. It's reasonable to conclude that the small-cap market--which is comparatively sparse in information--would react to news even more slowly than the larger markets. That said, channeling the momentum effect in small-cap strategies is difficult in practice. It requires frequently trading relatively illiquid stocks, which brings transaction costs that may offset momentum's added returns.

Not all factors work better among smaller stocks. For example, quality bucks the trend. This is likely because larger firms tend to be more profitable, so this factor tends to favor larger stocks to begin with. However, researchers from AQR have shown that after controlling for differences in quality, smaller firms tend to do better (1). ...

Turning Data into Dollars

Although quality and small size may not offer a bigger advantage when applied to small-cap stocks than they might among a universe of larger stocks, diversified factor investors have greater room to outperform in the small-cap arena. A few exchange-traded funds are well positioned to help investors channel the small-cap factor advantage.

IShares MSCI USA Small-Cap Multifactor ETF ([SMLF](#)) offers diversified factor exposure and levies a 0.30% fee, which is one of its category's lowest. It targets stocks with a strong combination of value, momentum, quality, and size characteristics. This holistic approach produces solid factor exposure and differentiates it from the Russell 2000 Index to the tune of a 76% active share, giving it ample room to recoup its fee. This fund kept risk in check despite its tilts; it has posted lower volatility than the index since its 2015 inception.

SMLF successfully leaps the practical hurdles of implementing a small-cap multifactor strategy. Combining momentum with the other factors has kept turnover in check, which a small-cap fund chasing momentum alone would struggle to do. Pursuing factor exposure can introduce pronounced sector biases, but this fund mechanically holds each sector allocation to within 5% of its parent index, the MSCI USA Small Cap Index.

This constraint prevents the fund from making any sector bets that may go unrewarded by the market. It effectively diversifies risk at the holding- and factor-level, too.

This strategy has trailed the Russell 2000 Index by 1.19% annually since its inception. Much of its underperformance has come in the past 12 months, as its defensive posture made it hard to keep up during the market's emergence from the depths of the COVID-19-induced drawdown. However, the fund's risk-adjusted performance measures paint a brighter picture, and it should fare well if value sustains its recent momentum. ...

IShares MSCI USA Small-Cap Min Vol Factor ETF ([SMMV](#)) makes for a solid partner, which comes with a 0.20% expense ratio and pronounced low-volatility tilt. This fund selects stocks from the same universe as SMLF but focuses on low-volatility rather than their return-enhancing factor traits. It uses an optimizer to consider both firm-level volatility and the way potential holdings interrelate. It leverages the low-volatility factor and builds on it through efficient portfolio construction to produce a well-diversified fund that mitigates exposure to concentrated sources of risk that past volatility alone may not detect.

Like SMLF, SMMV ensures each sector allocation remains within 5% of its parent index. Other constraints cap individual holding weights and mitigate turnover to improve diversification and limit transaction costs. Its defensive stance has overshadowed these efforts over the past year, when it captured only two thirds of the Russell 2000's upside. However, this fund's holistic approach to portfolio construction should enable it to deliver better risk-adjusted performance than the broad small-cap market over the long term.

Late Registration

Small-cap multifactor funds' relative advantage has taken a while to register with U.S. investors. At the end of February 2021, multifactor ETFs listed in the large growth, large blend, or large value Morningstar Categories tallied nearly \$28 billion in assets, while their small-cap counterparts counted just \$5 billion. This makes sense, as large-cap strategies tend to absorb more assets, but it shows that U.S. investors are not capitalizing on the greater factor payoffs among smaller stocks.

There are currently 17 small-cap multifactor ETFs on the market, nine of which were launched within the past five years. The recent wave of these products indicates that ETF providers expect more assets to start flowing into the small-cap multifactor space, but investors have been slow to comply.

That said, the imbalance between the developed product lineup and their relatively modest investment is beginning to level out. Over the trailing 12 months through February 2021, U.S. small-cap multifactor ETFs have raked in over \$1 billion in flows. Large-cap multifactor ETFs have seen *outflows* of about the same magnitude over the same span. Market-cap weighted index trackers have performed better in the large-cap space until recently, so it's difficult to say if the small-cap multifactor uptick is driven by frustration with traditional small-cap funds or wider recognition of the small-cap factor advantage. But for those with conviction in factor investing, there is a strong case for small-cap factor funds.

Reference

1) Asness, Cliff, Andrea Frazzini, Ronen Israel, Tobias Maskowitz and Lasse Pedersen. "[Size Matters, If You Control Your Junk](#)": AQR. Jan. 2015.

Is Size a Useful Investing Factor or Not?

By [Larry Swedroe](#) | December 18th, 2020|

In his famous 1981 paper, “[The Relationship Between Return and Market Value of Common Stocks](#),” Rolf Banz found that small firms have higher risk-adjusted returns than large firms. This was one of the first major challenges to the capital asset pricing model (CAPM) and market efficiency in general. However, its failure to generate statistically significant premiums post-publication has [called into question the premium’s existence](#).

In their 2018 study, “[Fact, Fiction, and the Size Effect](#),” ([Summary](#)) Ron Alquist, Ronen Israel, and Tobias Moskowitz, members of the research team at AQR Capital Management, concluded that there is no strong empirical evidence to support a size premium. However, they did add that size can be an important factor for explaining mutual fund returns and that other factors, such as value, tend to be more powerful among smaller stocks—which is not supportive of there being a small-cap versus large-cap effect but might be a reason to overweight small-cap stocks in long-only constrained factor portfolios. Extending the 2018 *Journal of Financial Economics* paper, “[Size Matters, if You Control Your Junk](#),” by Clifford Asness, Andrea Frazzini, Ronen Israel, Tobias Moskowitz, and Lasse Pedersen, they then “saved” the size effect by demonstrating that it is made much stronger (and implementation costs are reduced) when size is combined with the newer common factors of profitability, quality and defensive (low beta). Alquist, Israel, and Moskowitz noted:

“Controlling for quality resurrects the size effect after the 1980s and explains its time variation, restores a linear relationship between size and average returns that are no longer concentrated among the tiniest firms, revives the returns to size outside of January and simultaneously diminishes the returns to size in January—making it more uniform across months of the year, and uncovers a larger size effect in almost two dozen international equity markets, 30 where size has been notably weak. These results are robust to using nonmarket-based size measures, making the size premium a much stronger and more reliable effect after controlling for quality.”

The above findings are consistent with those of Mikheil Esakia, Felix Goltz, Ben Luyten and Marcel Sibbe, authors of the study “[Size Factor in Multifactor Portfolios: Does the Size Factor Still Have Its Place in Multifactor Portfolios?](#)” ([Summary](#)) published in the Winter 2019 issue of *The Journal of Index Investing*. They concluded: “Our results suggest that the size factor improves model fit, delivers a significant positive premium in the presence of other factors, and contributes positively to the performance of multifactor portfolios. Omitting the size factor has substantial cost to investors, which often exceeds that of omitting other popular factors.” They also observed that size is included as an explanatory factor in all major asset pricing models (three-, four-, five- and q-factor). Confirming their conclusion, in their 2015 study “[A Five-Factor Asset Pricing Model](#),” Eugene Fama and Ken French found that spanning regression tests on the size factor produces reliable intercepts with respect to the other factors, suggesting it has explanatory power over returns not captured by them.

New Research

David Blitz and Matthias Hanauer contribute to the literature on the size premium with their September 2020 paper “[Settling the Size Matter](#).” For the U.S. their data sample covered the period July 1963 to December 2019 (Fama-French/AQR data) or January 1967 to December 2019 (q-factor data), which are the longest periods for which all the required data series are available. They also considered international samples, with data from July 1990 to December 2019 (Fama-French data) or July 1993 to December 2019 (AQR data). All portfolios are capitalization weighted, and all returns are in U.S. dollars. Following is a summary of their findings, which are consistent with the papers discussed above:

- The U.S. size premium was 0.19% per month with a t-statistic of 1.68, weakly significant at the 10% confidence level. However, this size premium drops to an insignificant 0.08% after adjusting for market beta exposure.
- The U.S. size premium remained absent when additionally controlling for the classic value and momentum factors, but jumped to 0.22% per month (t-stat = 2.06) when adding the new Fama-French factors of profitability and investment. The main driver of this boost was a highly significant negative loading on the profitability factor, RMW (which is highly correlated with the quality factor, QMJ, from the 2018 paper “[Quality Minus Junk](#)” by Clifford Asness, Andrea Frazzini and Lasse Pedersen).
- Replacing profitability with the QMJ factor resulted in a highly significant 0.42% per month size premium (t-stat = 3.98), driven by a strong negative loading on the QMJ factor. This confirms the AQR conclusion of restoring the size premium when controlling for junk. Even stronger results were found when using the q-factor model.

Exhibit I: Regression results for US SMB_{FF} factor

| | alpha | Mkt | Mkt(-1) | HML | WML | RMW | CMA | QMJ | IA | ROE | EG |
|---------|--------|---------|---------|---------|--------|----------|---------|----------|---------|---------|---------|
| coeff. | 0.19 | | | | | | | | | | |
| t-stat. | (1.67) | | | | | | | | | | |
| coeff. | 0.08 | 0.20 | | | | | | | | | |
| t-stat. | (0.75) | (8.01) | | | | | | | | | |
| coeff. | 0.02 | 0.20 | 0.12 | | | | | | | | |
| t-stat. | (0.21) | (7.83) | (4.84) | | | | | | | | |
| coeff. | 0.06 | 0.18 | 0.13 | -0.13 | 0.01 | | | | | | |
| t-stat. | (0.56) | (6.73) | (5.02) | (-3.25) | (0.53) | | | | | | |
| coeff. | 0.22 | 0.12 | 0.12 | -0.07 | 0.04 | -0.50 | -0.11 | | | | |
| t-stat. | (2.05) | (4.38) | (5.24) | (-1.40) | (1.56) | (-10.10) | (-1.40) | | | | |
| coeff. | 0.42 | -0.01 | 0.09 | -0.21 | 0.08 | | | -0.68 | | | |
| t-stat. | (3.98) | (-0.24) | (4.19) | (-5.62) | (3.04) | | | (-12.65) | | | |
| coeff. | 0.60 | 0.07 | 0.09 | | | | | | -0.21 | -0.28 | -0.35 |
| t-stat. | (9.0) | (2.45) | (3.75) | | | | | | (-3.28) | (-5.55) | (-4.69) |

Sample period July 1963 to December 2019 for all except the last regression, which is from January 1967 to December 2019.

"When instead of the two new Fama-French factors we plug in the QMJ factor of Asness, Frazzini, and Pedersen (2019), the size premium jumps to 0.42% per month, with a highly significant tstatistic of 3.98, driven by a strong negative loading on the QMJ factor."

The results are hypothetical results and are NOT an indicator of future results and do NOT represent returns that any investor actually attained. Indexes are unmanaged, do not reflect management or trading fees, and one cannot invest directly in an index.

- For international stock markets, size also loads negatively on quality factors, and the size premium improves once controlling for quality, though it remains statistically indistinguishable from zero.
- In the U.S. the added value of SMB in time-series regressions is entirely driven by the short side of quality factors. There is no size premium when controlling for the long side of quality factors.

Despite these findings, like the authors of the previously mentioned studies, Blitz and Hanauer concluded:

"This result does not imply that investors should generally strive for size neutrality, in particular when it comes to long-only factor strategies. ... The fact that other factors, such as value, tend to be stronger in the small-cap space may justify a structural overweight in small-cap stocks even if the size premium itself is zero."

They added:

"Thus, a tilt towards small-cap stocks in long-only factor strategies can serve as a powerful catalyst for unlocking the full potential of these other factors."

They concluded:

"For long-only investors, this means that an overweight in small-cap stocks may be desirable even if there is no size premium because small-cap stocks can serve as a powerful catalyst for unlocking the full potential of other factors, such as value and momentum. The higher expected return from targeting other factors in the small-cap space has to be balanced against the systematic risk that comes along with small-cap exposure, in particular the risk of small-cap stocks, in general, lagging the capitalization-weighted index by a substantial amount or for a prolonged period of time."

Having reviewed the research findings, we can also review the evidence from live, systematic small-cap mutual funds—the true test of a realizable size premium.

Implementation: Does the Size Effect Survive Transaction Costs?

Based on their research, Dimensional uses screens in its fund construction rules to eliminate lottery and “junk” stocks (that is, penny stocks, recent IPOs, stocks in bankruptcy, and small stocks with high investment and low profitability). In addition, since 2013 Dimensional has incorporated screens for profitability. It added a screen for high investment in 2019. The table below shows the simulated returns to each market category. Note how exclusions improve returns.

| | Large Cap Index | Small Cap Market | Small Cap Market Ex-Growth Low Profitability Firms | Small Cap Market Ex-Growth Low Profitability and High Investment Firms | Percent of Market Capitalization Excluded |
|---|-----------------|------------------|--|--|---|
| U.S. Market 7/1974 – 12/2018 | 11.1% | 12.7% | 14.2% | 14.5% | 15.5% |
| Non-U.S. Developed Markets 1/1990 – 12/2018 | 4.5% | 5.2% | 5.9% | 6.1% | 10.8% |
| Emerging Markets 7/1994 – 12/2018 | 5.5% | 5.4% | 6.0% | 6.2% | 9.9% |

By reviewing the results of Dimensional’s small-cap funds, we can determine if there has still been a small-cap premium, controlling for junk (and profitability), that investors could have captured, not only in the U.S. but also in developing and emerging markets.

So that we can use all live funds, we will examine the more than 21-year period from January 1999 through August 2020 ¹.

| | January 1999- August 2020 Annualized Return (%) |
|--|--|
| U.S. | |
| DFA US Small Cap Portfolio (DFSTX) | 8.8 |
| S&P 500 Index | 7.0 |
| | |
| Developed Markets | |
| DFA International Small Company (DFISX) | 8.4 |
| MSCI EAFE Index | 4.0 |
| | |
| Emerging Markets | |
| DFA Emerging Markets Small Cap Portfolio (DEMSX) | 10.9 |
| MSCI Emerging Markets Index | 8.7 |

For the more than the 21-year period from January 1999 through August 2020, in each case there was an annualized size (small) premium, ranging from 1.8% to as much as 4.4%. These results are over the period where supposedly the size premium had disappeared (though in “Size Matters, if You Control Your Junk,” the authors do show slight improvement in the post-2000 period relative to the initial period after Banz published his paper), but importantly, these results were after screens that attempt to eliminate small, junky stocks. These results were net of not only expense ratios but all implementation costs, while index returns do not include any costs that are incurred by live funds. Long live the size premium (controlling for junk)!

Notes:

1. Full disclosure: My firm, Buckingham Strategic Wealth, recommends Dimensional funds in constructing client portfolios.

About the Author: [Larry Swedroe](#)

As Chief Research Officer for Buckingham Strategic Wealth and Buckingham Strategic Partners, Larry Swedroe spends his time, talent and energy educating investors on the benefits of evidence-based investing with enthusiasm few can match. Larry was among the first authors to publish a book that explained the science of investing in layman’s terms, “The Only Guide to a Winning Investment Strategy You’ll Ever Need.” He has since authored seven more books: “What Wall Street Doesn’t Want You to Know” (2001), “Rational Investing in Irrational Times” (2002), “The Successful Investor Today” (2003), “Wise Investing Made Simple” (2007), “Wise Investing Made Simpler” (2010), “The Quest for Alpha” (2011) and “Think, Act, and Invest Like Warren Buffett” (2012). He has also co-authored eight books about investing. His latest work, “Your Complete Guide to a Successful and Secure Retirement was co-authored with Kevin Grogan and published in January 2019. In his role as chief research officer and as a member of Buckingham’s Investment Policy Committee, Larry, who joined the firm in 1996, regularly reviews the findings published in dozens of peer-reviewed financial journals, evaluates the outcomes and uses the result to inform the organization’s formal investment strategy recommendations. He has had his own articles published in the Journal of Accountancy, Journal of Investing, AAI Journal, Personal Financial Planning Monthly, Journal of Indexing, and The Journal of

Portfolio Management. Larry's dedication to helping others has made him a sought-after national speaker. He has made appearances on national television shows airing on NBC, CNBC, CNN, and Bloomberg Personal Finance. Larry is a prolific writer and contributes regularly to multiple outlets, including Advisor Perspective, Evidence Based Investing, and Alpha Architect. Before joining Buckingham Wealth Partners, Larry was vice chairman of Prudential Home Mortgage. He has held positions at Citicorp as senior vice president and regional treasurer, responsible for treasury, foreign exchange and investment banking activities, including risk management strategies. Larry holds an MBA in finance and investment from New York University and a bachelor's degree in finance from Baruch College in New York.

Our thoughts

Once SMLF and SMMV had acceptable liquidity they became core holdings for HCM clients investing in Funds only. Numerous academic studies, some of which are featured on our website under Worth Sharing, have shown that Factors work best in combination. This is especially true with the Size Factor. The S&P 500, Large and Mega (>\$100 Billion) Caps, is a subset of the S&P 1500, which is also comprised of the S&P MidCap 400 and S&P SmallCap 600. The S&P 1500 covers approximately 90% of the U.S. market capitalization. While academics continue to debate whether there is a "pure size effect", it is clearly demonstrated by the relative performance of the S&P 600 and 400 (both of which, unlike the Russell 2000, use a Quality screen) to that of the S&P 500. As shown below, Small (IJR, blue line) beats Mid (IJH, orange line), and both clobber Large (SPY, green line).



SMLF - I added IWM (orange line), the largest Russell 2000 Index ETF, for comparison:

iShares MSCI USA Small-Cap Mltfctr ETF SMLF ★★★

| Expense Ratio | Total Assets | Category |
|---------------|--------------|---------------------|
| 0.300% | 881.9 Mil | US Fund Small Blend |



From "For Factor Investors, It Pays to Go Small" by Morningstar's Alex Bryan, CFA on 12-6-17: "For those who do want to profit from momentum in the small-cap arena, it would probably be best to get that exposure through a multifactor fund, like iShares Edge MSCI Multifactor USA Small-Cap ETF (SMLF) (0.30% expense ratio). This is because 1) it will have lower turnover than a stand-alone momentum fund, and 2) it should better diversify risk. This fund targets small-cap stocks with strong value, momentum, quality, and small size characteristics under constraints that mitigate sector bets and turnover. Its holistic approach and demanding selection criteria should give it potent exposure to the factors it targets."

SMMV - As noted above, once it had adequate liquidity, we began using iShares Edge MSCI Min Vol USA Sm-Cp ETF, instead of the older, and slightly more expensive XSLV (1.5 Bil in Total Assets, orange line), to capture the Low Volatility Factor in US stocks, for clients. Morningstar's chart compares these 2 ETFs with IWM (green line) since SMMV's inception:

iShares MSCI USA Sm-Cp Min Vol Fctr ETF SMMV ★★★★★

| Expense Ratio | Total Assets | Category |
|---------------|--------------|---------------------|
| 0.200% | 918.2 Mil | US Fund Small Blend |

