How Much Small Cap Should Be in Your Portfolio?

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Article Highlights

- Though small-cap stocks have higher long-term returns, they tend to be riskier than their large-cap brethren.
- Investors should also consider any "small-cap" risk outside of their portfolios, such as employment by a small company.
- While small value stocks have considerably outperformed, small growth stocks, particularly the most extreme growth, have underperformed even more dramatically.

It may come as a surprise to those who have placed their nest eggs in an S&P 500 index fund, or an actively managed version thereof, that they are actually making a decision to exclude a significant portion of the equity universe.

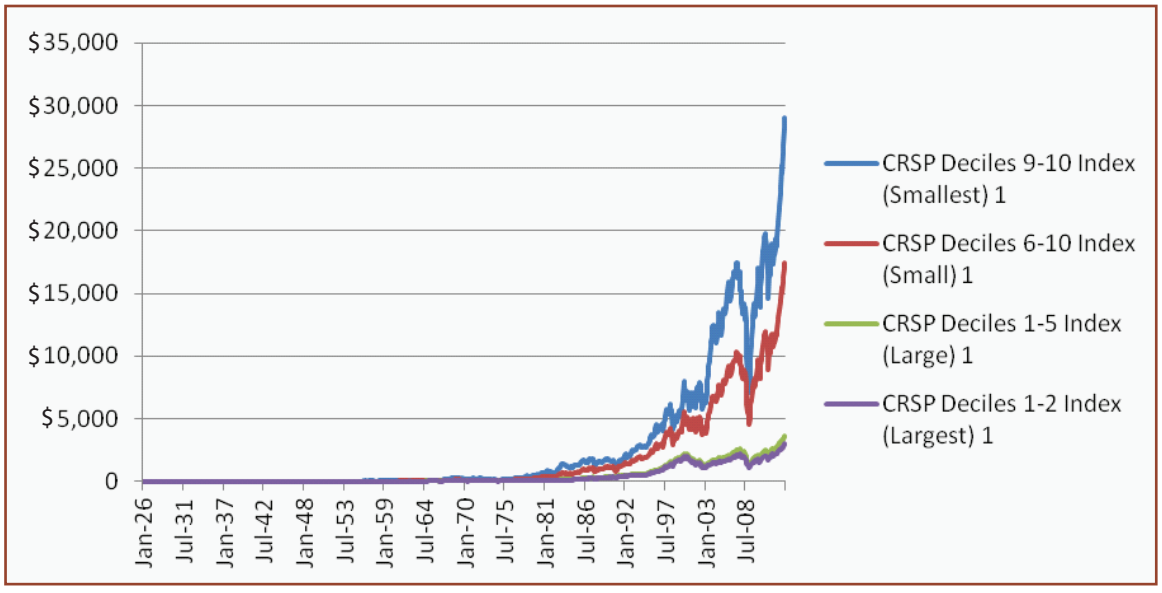
Academic theory, particularly William Sharpe's capital asset prices study, suggests market-capitalization (cap) weighting is an appropriate starting point for the weight of any asset class in the portfolio, including small caps. Market-cap weighting implies that the investor holds each asset and therefore each asset class in his or her portfolio in the same proportion as it is represented in the overall market. Determining market weight is an exercise in and of itself, because you must first settle on a definition of what constitutes a small or large stock. Standard & Poor's defines the ratio of large to small stocks in the U.S. equity market as about 80%/20%. This means that if your portfolio is an S&P 500 investment, you are missing out on a good 20% of the publicly traded universe in the U.S. equity market.

A variety of considerations might motivate an investor to deviate from a 20% weight to small caps in the U.S. Home equity bias, inertia and a simple desire to minimize complication in portfolio allocation decisions are likely chief among them. We submit that it is probably worth most investors' time to at least consider a position in small caps, if for no other reason than to diversify an existing portfolio of large caps. One of Harry Markowitz's seminal findings on investing is that one can increase the return of the portfolio for a given amount of risk (or volatility) by simply adding uncorrelated assets. Uncorrelated assets do not move in perfect concert with each other. Essentially, an investor is well served by allocating his or her financial capital among different types of equities (i.e., diversifying), so that a bad period for one asset class can be offset by a potentially good (or at least less bad) period in another.

Reasons to Deviate From Market Weight

If small caps are expected to outperform large caps, then some investors can increase their portfolio returns relative to the market by overweighting small caps. The expectation of outperformance of small caps relative to large caps is often dubbed the "small-cap premium." A premium can arise for both rational economic reasons as well as behavioral considerations. It is important to note that all investors cannot simultaneously overweight small caps since a balance in the market must be struck—the overweight of some investors must be compensated by the underweight of other investors. While we are unable to forecast future returns, we can look at historical stock returns for evidence of a small-cap premium. The well-known small-cap factor index called "SmB," (small minus big) was created by professors Eugene Fama and Kenneth French to measure the performance of U.S. small-cap stocks relative to U.S. large-cap stocks. The annualized return of SmB from July 1926 through December 2013 is 2.22%, providing evidence for a small-cap premium. However, SmB

Figure 1. Growth of $1 for Small- and Large-Cap U.S. Stocks, January 1926–December 2013



is positive in only a little more than 50% of calendar years, evidencing that small-cap outperformance in any given year is far from a sure thing and more like the flip of a coin.

The Center for Research in Security Prices (CRSP) at the University of Chicago offers U.S. equity indexes with long histories, enabling us to consider performance of various types of stocks back to January of 1926. The CRSP divides the U.S. equity market into deciles based on market capitalization and creates indexes. The CRSP 9-10 index captures the returns of the smallest fifth (i.e., deciles 9 and 10) of U.S. stocks, while the CRSP 1-2 index captures the returns of the largest fifth of U.S. stocks. Similarly, the CRSP 6-10 index represents the returns of the smaller half of the U.S. market while the CRSP 1-5 index represents the returns of the larger half of the market. Over this available history, Figure 1 makes clear that the cumulative return of small-cap stocks has been significantly greater than that of large caps, whether measured by comparing the extreme fifths or deciles 1 through 5 against deciles 6 through 10. It is crucial to bear in mind that these comparisons refer to the broad swath of small and large stocks and not to an investment in individual small or large stocks. Of course, the return of any individual stock is highly idiosyncratic and may not reflect the performance of the asset class as a whole. (We believe that markets are generally efficient and taking on stock-specific or other idiosyncratic risk is, on average, not compensated with additional expected return.)

Table 1 provides some detail into the vagaries of small-cap outperformance. As previously noted, the number of up and down months for the small-minus-big (SmB) index are practically even, meaning that small outperforms large just over 50% of the time based on that index. The other two indexes are absolute annualized returns on the long-only indexes. The "longest drawdown" is the longest period (in months) during which the index incurred a loss. For SmB, drawdown gives the longest period during which large caps outperformed small. Maximum drawdown reflects the worst loss experienced by the index, or for SmB, the worst small-cap performance relative to large-cap performance. The duration of the SmB drawdown is telling: Over the 220-month period (August 1983 through March 1999) small caps underperformed large caps by 52.75% on an annualized basis. The more severe drawdown in both duration (73 months) and magnitude (–89.40%) for small caps as compared to large caps suggests greater risk for small caps.

As noted, small caps have gone for long periods of time without evidencing a premium. For example, in the 32-year period (1982–2013) following the publication of Rolf W. Banz's research on the small-cap premium, SmB's annualized return is only 0.96% and is not statistically distinguishable from zero. Has the premium disappeared for good, perhaps as a result of investors exploiting an inefficiency, or does the premium just wane for long periods? Considering the high volatility of the small-cap premium relative to its magnitude, we may be confined to concluding no more than the latter. (We would need more than 100 years of performance similar to the 0.96% annualized return of the last 32 years in order to say with 95% confidence that the true premium is not equal to its historical long-term average value of 3%, and even longer to rule out

Table 1. Ups and Downs of U.S. Small-Cap vs. Large-Cap Performance

July 1926 to Dec 2013	Annualized Return (%)	# Up Months	# Down Months	Longest Drawdown (# Months)	Maximum Drawdown (%)
Small-minus-Big (SmB) Index	2.22	535	515	220	(52.75)
CRSP 6-10 Index (small caps)	11.88	635	415	73	(89.40)
CRSP 1-5 Index (large caps)	9.84	656	394	34	(82.23)

the existence of a smaller premium.) For the purposes of an investor considering a small-cap investment, the important point is that the outperformance of small caps relative to large caps cannot be assumed over any given investment horizon.

One consideration that may prompt investors to underweight small caps is that, on a stand-alone basis, small caps historically have been riskier than large caps. Standard deviation measures the dispersion of returns around their mean return. Assets with higher standard deviation are therefore more volatile than those with low standard deviation. Another measure of risk is beta, which measures the covariance of the asset with the overall market, or market risk. By definition, the beta of the market is 1.0. A beta lower than 1.0 means the asset takes on less market risk, while a beta higher than 1.0 means it takes on greater market risk. Table 2 indicates that small caps have both higher standard deviations and higher betas than large caps, although the annualized Sharpe ratio, which divides the amount of return earned over and above a risk-free proxy by the standard deviation, puts the two on par. The Sharpe ratio is a risk-adjusted measure of return and essentially measures how you are getting compensated in excess return for the risk you are taking relative to short-term Treasury bills (a larger number signifies better risk-adjusted performance).

While considering risk is essential, investors cannot stop here. As noted above, small caps do not move in perfect concert with large caps, and as a result their higher risk is not necessarily a bad thing for the investor's portfolio. The Uniform Prudent Investor Act of 1994 recognized this distinction in its update to the preexisting Prudent Man Rule (which required trustees to observe how men of "prudence, discretion and intelligence" managed their financial affairs from a long-term perspective), by establishing that an asset's risk is best measured in the context of the overall portfolio as opposed to on a stand-alone basis. While holding small caps on their own may be riskier than holding large caps on their own, holding large caps and small caps together may be the least risky, because their movements are not perfectly correlated. The third row of Table 2 suggests that this is the case. The entire market as measured by the CRSP 1-10 index, which includes small and large stocks, has a higher Sharpe ratio than either small or large caps held in isolation.

Table 2. Risk and Return of U.S. Large Stocks, Small Stocks and the Market

July 1926 to Dec 2013	Annualized Return (%)	Annualized St Dev (%)	Beta to Market (X)	Sharpe Ratio (X)
CRSP 6-10 Index (small caps)	11.88	27.06	1.31	0.413
CRSP 1-5 Index (large caps)	9.84	18.35	0.98	0.413
CRSP 1-10 index (market)	9.93	18.63	1.00	0.419

At this point, it should be clear that most investors would be well-served by having a market value weighting in small-cap stocks. On average, this is the market portfolio of both large and small stocks held at market value weights. Individual investors, however, may find it advantageous to overweight or underweight small-cap stocks depending on their individual circumstances. There are many ways to consider interactions between your personal situation and your investments; we will focus here on two. First, consider your own investment behavioral tendencies. Do you typically monitor the performance of your account on a short-term basis? Are you apt to be concerned if a particular investment underperforms in a given quarter or year? Studies, including one from Brad Barber and Terrance Odean, have shown that individual investors tend not to earn the returns that markets deliver over time because they trade poorly. They tend to buy high, when an investment is doing well, and sell low, when they perhaps lose faith in the investment. If you are likely to panic and sell when small caps take a dive, you could wind up worse off than if you never invested in them in the first place.

Another important investor-specific consideration is one's personal "human capital" and its risk. The term human capital refers to the economic value of one's own productive capacity, specifically the present value of your lifetime labor income. Conceptually, the risk of your human capital is how the value of your human capital co-varies with the market and other sources of risk. For example, teachers, policemen, or health care workers probably see little connection between their labor income and what is going on in the stock market. Employees in a business whose performance is dependent upon stock market performance—say, a luxury car manufacturer—may see more connection, and those who work in the financial industry—say, in an investment bank—still more. If you are likely to experience a loss of job or reduction in your pay due to poor stock performance (e.g., because of equity-based compensation such as warrants, or bonuses based on revenue that fluctuates with stock market performance), you may want to take less stock market risk with your financial capital. This same principle is applicable when considering a small-cap investment. If you work for, or own, a small firm, you inherently have "small-cap" risk in your human capital. When small firms in general undergo difficulty—this may be when times are tough in general, and smaller firms are less able to weather the storm—taking additional "small-cap" risk with your financial capital may be difficult to withstand. There are also industry effects in small-cap risk to consider: Information technology (IT) and consumer discretionary sector returns are significantly positively associated with SmB, while consumer staples and financials are significantly negatively associated with SmB. This suggests investors working in IT and consumer discretionary may consider underweighting small caps, while those

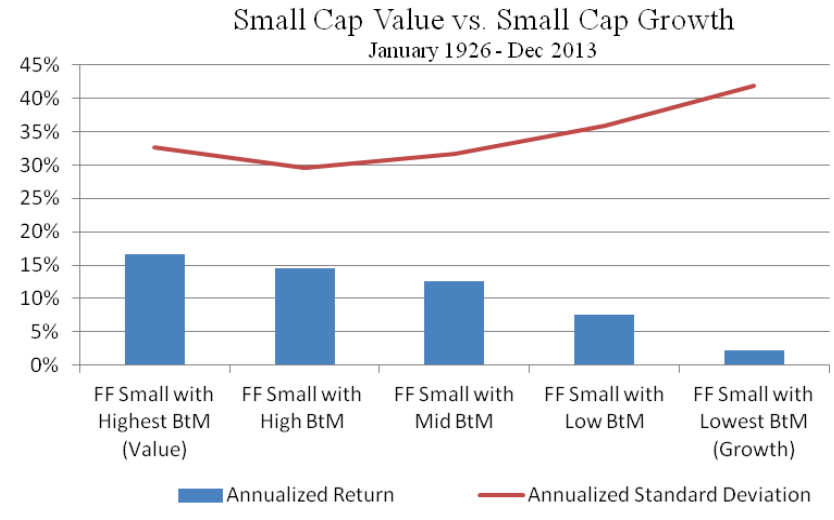
in consumer staples and financials may consider overweighting small caps in their portfolios.

Not All Small Stocks Are Created Equally

As if the multitude of variables at play in the small-cap space didn't make the decision complicated enough, investors need to be aware of another significant consideration. The group of small-cap stocks can be parsed in a variety of ways, and considering different complexions within small caps as a whole has resulted in widely different results. Perhaps the most typical dimension within which small caps can be grouped is their value or growth orientation. Value stocks tend to have a lower stock market price relative to other measurements of the firm's fundamentals, such as their book value of equity or earnings. Growth stocks are higher priced relative to a fundamental. Sorting small stocks by their "book-to-market" ratio, literally the ratio of book value of equity relative to the firm's market cap, reveals startling spreads in return. Figure 2 evidences this phenomenon using the five Fama-French small-cap portfolios sorted by "book to market," ranging from extreme value on the left to extreme growth on the right. The extreme small value portfolio has outperformed the extreme small growth portfolio by greater than 10% per year with a 10% per year lower annualized standard deviation.

Value to growth orientation is only one way to parse the greater small-cap space. Other relevant factors include stock price momentum and gross profitability. Momentum is the tendency for stocks that have performed well in the recent past to continue to do so, and vice versa. Momentum is generally measured by ranking stock performance over the course of the previous year, not including the most recent month. Stocks with performance in the top of this ranking have been found, on average, to continue to perform well for a time, while stocks at the bottom of the heap have tended to continue that underperformance. This proclivity is very evident within small-cap stocks, with higher-momentum small caps reliably (again over long periods, not in any given period), outperforming lower-momentum ones, as a study by Narasimhan Jegadeesh and Sheridan Titman has shown. More recently, Robert Novy-Marx has found that stocks with higher profitability relative to their book value (or their total assets, depending upon the measure) tend to outperform those with lower profitability. This finding also applies to small caps. There are now a myriad of mutual funds and exchange-traded funds (ETFs) in the U.S. small-cap space that use these insights in building small-cap portfolios engineered to capture momentum, profitability/quality and value premiums.

Figure 2. Small Caps by Book-to-Market Ratio



FF = Fama/French portfolio definition
BtM = book-to-market ratio (inverse of price-to-book-value ratio)

Conclusion

A market-weight allocation to small-cap stocks is generally a reasonable starting point for those considering a small-cap investment.

However, small-cap stocks have tended to be riskier than large caps, and the small-cap premium is highly volatile and therefore may not be positive even over long periods of time. For both of these reasons, investors prone to frequently examining their performance may not be suited to a portfolio with an overweight to small caps.

Additionally, the investor's human capital should be considered. At its simplest, investors who work for large companies may be better suited to a higher small-cap investment than those who work for or own small companies. Finally, small-cap growth stocks, particularly the most extreme growth stocks, have significantly underperformed small-cap value stocks. If you excise this group of small-cap stocks, the small-cap premium is very evident. A lack of profitability may be to blame for the underperformance of these stocks. Human capital considerations again come into play, if the investor works for or owns either a "startup" type of small firm or a small "distressed" firm.

In sum, most investors would probably be well-advised to have an allocation to small caps. Further, if the investor is not sensitive to small-cap risk in their human capital, an overweight to small, and especially small value, stocks presents an opportunity to improve portfolio performance. While we focus on investing in U.S. small-cap stocks, our conclusions apply as well to small-cap investing outside the U.S., as is supported by research from Fama and French. ▲

Notes

- The William Sharpe study referenced is "Capital Asset Prices: A Theory of Market Equilibrium under Conditions of Risk," Journal of Finance, September 1964.
- The Standard & Poor's assertion that the S&P 500 index represents about 80% of the market capitalization of the U.S. market can be found at http://us.spindices.com/indices/equity/sp-500.
- The Harry Markowitz study mentioned is "Portfolio Selection," Journal of Finance, March 1952.
- For a survey on the evidence surrounding the existence of a small-cap premium, see our paper, "What Do We (Really) Know About U.S. Small-Cap Investing?" (John McDermott and Dana D'Auria), in the Journal of Financial Planning, January 2014. We leave it to you to decide on its existence.
- Kenneth French has return data on SmB on his website at http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html.
- The Brad Barber and Terrance Odean study referenced is "Trading Is Hazardous to Your Wealth: The Common Stock Investment Performance of Individual Investors," Journal of Finance, April 2000.
- Industry effects in small-cap risk are based on results from regressing SmB on the nine S&P Global BMI (broad-market index) sector/industry U.S. portfolios from August 1989 through December 2013. Results are available from the authors upon request (ddauria@symmetrypartners.com or jmcdermott@fairfield.edu).
- The Narasimhan Jegadeesh and Sheridan Titman study referenced is "Returns to Buying Winners and Selling Losers: Implications for Stock Market Efficiency," Journal of Finance, March 1993.
- The Robert Novy-Marx study referenced is "The Other Side of Value: The Gross Profitability Premium," Journal of Financial Economics, April 2013.
- The Eugene Fama and Ken French study referenced is "Size, Value and Momentum in International Stock Returns," Journal of Financial Economics, September 2012.

See the online version of this article for direct links to the studies cited, where available.

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