

Small, Value, or Small/Value?

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KEY FINDINGS

- A portfolio's long-term return can be enhanced by adding factor tilts, with size and value being two of the most widely used factors.
- Size and value tilts can be incorporated by adding two satellites, one for small-cap companies and one for cheap companies, or just one satellite for small/value companies.
- This article shows that the one-satellite (small/value) strategy outperforms the two-satellite (small-cap and value) strategy.

ABSTRACT

This article focuses narrowly on a very concrete question that investors and advisors may consider frequently. Given a goal of enhancing a portfolio's long-term return by tilting it toward the size and value factors, and given an existing core exposure to the broad stock market, is it better to add one (small/value) satellite or two (one small-cap and one value) satellites? The results here suggest that, all things considered, adding one small/value satellite is the better option.

Investors have been increasingly using factor tilts to enhance the long-term return of their portfolios. Of all the factor exposures offered by asset management companies, funds that focus on small-cap stocks, value stocks, and small/value stocks have the longest history. Therefore, consider an investor who has decided to enhance a portfolio's long-term return by tilting it toward factors, and specifically toward the two traditional factors: size and value. What is the best way to achieve this goal? More precisely, should this investor add one (small/value) satellite or two (one small-cap and one value) satellites to the portfolio?

To be sure, both options have pros and cons. Adding one small/value satellite would make the portfolio, and managing the portfolio over time, a bit simpler than adding two satellites, and simplicity is a desirable portfolio trait. On the flip side, the single satellite would have exposures to each factor determined by the asset management company, thus preventing the investor from choosing the relative exposures to the size and value factors.

Ultimately, the expected performance of these two strategies should play an important role in the decision of which one to choose. In fact, considering an investor who has an existing core exposure to the broad stock market, the main issue addressed here is: Would this investor's portfolio perform better with the addition of one (small/value) fund or two (one small-cap and one value) fund? If the latter, what would be the ideal allocation to each of the two funds?

The evidence discussed here, from two different samples and sample periods, gives an edge to adding one small/value fund to the portfolio. Relative to the

two-fund strategy, the one-fund strategy delivers a higher return, generally results in a higher risk-adjusted return, and provides a higher aggregate exposure to the two factors targeted.

Importantly, the issue addressed here is *not* whether an investor should tilt a portfolio toward small-cap stocks, value stocks, or both; or when it would have been beneficial to do so. Rather, this article assumes that a decision to tilt a portfolio toward small-cap stocks and value stocks *has been made*, and asks what is the best way to *implement* that decision considering two options, namely, one (small/value) satellite, or two (one small-cap and one value) satellites.

The rest of the article is organized as follows. The first section briefly discusses the size and value factors, the relevant literature, and different strategies that can be implemented to enhance portfolio performance. The second section discusses the data, methodology, evidence, and main results. Finally, the third section provides an assessment. An appendix with an exhibit concludes the article.

THE ISSUE

The Basics

A factor is a characteristic that takes different values along a spectrum, such that companies at one end of the range are expected to perform differently from companies at the opposite end of the range. To illustrate, the size factor, on which this article focuses, ranks companies according to market capitalization and suggests that in the long term small-capitalization companies (small caps) are expected to outperform, and have historically outperformed, large-capitalization companies (large caps).

The other factor on which this article focuses, value, is somewhat more difficult to define. This factor suggests that in the long term cheap companies are expected to outperform expensive companies, and this is in fact what the historical evidence shows. That said, how “cheap” and “expensive” are defined is debatable; not only can they be assessed by more than one metric (such as the P/E ratio or the book-to-market ratio, to name but two), but they can also be assessed by combinations of two or more metrics.

In any case, these two and other factors have at least three things in common. First, the expected outperformance of one set of companies over the other is largely based on evidence, not on theory. Second, outperformance is cyclical and, therefore, expected in the long term, not necessarily in the short term, and the “short” periods of underperformance can be much longer than some investors may be willing or able to bear. And third, there typically are competing stories for factor outperformance, ranging from risk-based arguments consistent with market efficiency to behavioral arguments inconsistent with market efficiency.

A Glimpse of the Literature

The literature on the size and value factors is massive, far too extensive to summarize in this brief article. Basu (1977) is widely credited as the seminal article on the value factor, documenting the outperformance of value stocks over growth stocks. Similarly, Banz (1981) is widely credited as the seminal article on the size factor, documenting the outperformance of small caps over large caps.

Fama and French (1992, 1993) added the size and value factors to the CAPM, thus giving birth to the widely used three-factor model.¹ From that point on, the literature on

¹At around the same time Morningstar introduced the Style Box, splitting funds into two dimensions, market capitalization (large, medium, and small caps) and valuation (growth, core, and value).

factor investing exploded, leading some authors (Cochrane, 2011; Swade et al. 2024) to warn researchers about the creation of a factor zoo. Asness et al. (2015) provide a good overview of the literature on the value factor, and Alquist et al. (2018) do the same for the size factor.²

Finally, and recently, McQuarrie (2025) highlights an important distinction between the statistical significance of long–short factor portfolios and the practical outperformance of long-only factor portfolios. He argues that long–short portfolios that ignore transaction costs and focus on average returns over long periods are not inconsistent with, but do not necessarily imply, the outperformance of the long-only portfolios typically implemented in practice. Put differently, he argues that although long–short portfolios designed to capture the size (SMB) and value (HML) factors clearly are statistically significant in the long term, long-only portfolios of small caps and value stocks have gone, and may in the future go, through very long periods of underperformance.

Enhancing Long-Term Portfolio Returns

The virtues of building a simple, broadly diversified, low-cost portfolio are many, which may explain why both John Bogle and Warren Buffett have repeatedly recommended such an approach to all investors, small and large, individual and institutional. Importantly, what may have been a pipe dream many years ago has become feasible for all investors; that is, a two-fund portfolio with exposure to the two major asset classes, stocks and bonds, each broadly and globally diversified. Currently, such a portfolio is easy to build and costs just a few basis points, and for many and varied investors, such a strategy is very hard to beat.

That said, some aggressive long-term investors may want to target returns higher than may be expected from exposure to the broad stock market. Of the many alternatives such investors may consider, this article focuses on factors, and in particular on size and value. The reasons for focusing on these two factors are threefold. First, they are the two oldest “anomalies,” and for this reason they have been very widely tested and discussed. Second, they have the longest history, going as far back as 1926 in the US. And third, and critical for the issue discussed here, funds that combine both factors have been available to investors for many years.³

The fact that the bond allocation is not discussed in this article does not necessarily imply that the investor considered is fully invested in stocks. Starting from any given asset allocation, an investor who aims to enhance a portfolio’s long-term return can consider at least two options. One is increasing the allocation to stocks (and reducing the allocation to bonds) in the portfolio; the other is keeping the asset allocation constant and enhancing the expected return of the equity allocation.⁴ Seen from this perspective, this article focuses on the latter and particularly in enhancing stock returns by tilting the portfolio toward the size and value factors.

Two strategies are evaluated here for investors who, starting from an existing core equity exposure to the broad market, aim to enhance the long-term return of their equity allocation. One is to add one satellite to the core, consisting of a small/value fund; the other is to add two satellites to the core, one small-cap fund and one value fund, in which case the investor also has to decide the weight of each fund.

²Arnott et al. (2005), Hsu and Campollo (2006), and Estrada (2008) explore the size and value factors in the context of fundamental indexation, an early characterization of smart-beta strategies.

³Funds that combine more than two factors, typically referred to as multifactor funds, are a more recent development but also are widely available nowadays. The performance of these funds, however, has been largely disappointing; see Estrada (2023, 2024).

⁴Estrada (2020) considers this specific issue and finds that an investor would be better off by keeping the asset allocation constant and enhancing the expected return of the equity allocation.

In both cases the investor will be assumed to have a 60% core exposure to the broad stock market, and to carve a 40% exposure to either one (small/value) satellite or to two (one small-cap and one value) satellites.

EVIDENCE

Data

The decision on whether to add one (small/value) satellite or two (one small-cap and one value) satellites to an existing core exposure to the broad stock market is evaluated here using two samples. The first is based on the widely used Fama–French data available from Ken French’s web page; the monthly returns of the small cap, value, small/value, and market portfolios considered start in July 1926 and end in December 2024.⁵

In order to account for the transaction costs and fees of obtaining exposure to the strategies considered, a second sample consisting of BlackRock ETFs (iShares) of small-cap, value, small/value, and market portfolios is used; the monthly returns in this sample start in August 2000 and end in December 2024. Exhibit A1 in the appendix summarizes some characteristics of the series in both samples.

Methodology

Consider an investor who, starting from an existing core exposure to the broad stock market, aims to enhance a portfolio’s long-term return. The investor has decided to achieve this goal by adding one or two factor satellites to the core, and to focus on the size and value factors. The ultimate and very concrete question considered here is whether this goal would be best achieved by adding one satellite consisting of a small/value fund or two satellites consisting of one small-cap fund and one value fund.

In order to evaluate these two options, a 60% core exposure to the broad stock market is assumed in all the scenarios considered. The remaining 40% exposure to stocks can be fully allocated to one (small/value) fund or to two (one small-cap and one value) funds. In the latter case, five different breakdowns are considered, consisting of 20/80, 40/60, 50/50, 60/40, and 80/20 allocations to the small-cap and value funds, respectively. This set up implies the evaluation of six portfolios, one consisting of a 60/40 allocation to the broad market and to small/value stocks, respectively; and the other five consisting of 60/8/32, 60/16/24, 60/20/20, 60/24/16, and 60/32/8 allocations to the broad stock market, small-cap stocks, and value stocks, respectively.

All the strategies are implemented with annual rebalancing. Taxes are not accounted for, but they should be similar across the strategies evaluated, thus not affecting significantly the relative evaluation of these strategies. Transaction costs and fees are ignored in the Fama–French sample (although they should also be similar across the strategies evaluated) but are accounted for in the iShares sample.

Performance

Exhibit 1 summarizes the performance of the six portfolios already introduced (60/40, 60/8/32, 60/16/24, 60/20/20, 60/24/16, and 60/32/8) for the two samples

⁵The data are available at https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html. Whenever a risk-free rate is needed for either of the two samples considered here, the one-month Treasury bill rate provided with these data is used.

EXHIBIT 1

Performance

	60/40	60/8/32	60/16/24	60/20/20	60/24/16	60/32/8
Panel A: Fama–French						
MR	12.1	11.6	11.5	11.4	11.4	11.3
SD	21.7	20.9	20.8	20.8	20.8	20.8
SR	0.140	0.136	0.135	0.135	0.134	0.133
TV	7,902,691	4,756,726	4,374,583	4,187,881	4,004,481	3,648,605
Panel B: iShares						
MR	8.8	8.2	8.3	8.4	8.4	8.5
SD	16.6	15.3	15.6	15.7	15.8	16.1
SR	0.141	0.140	0.140	0.140	0.140	0.140
TV	778	688	705	713	722	738

NOTES: This exhibit summarizes the performance of six portfolios for the two different samples (Fama–French in Panel A and iShares in Panel B) considered here. The second column corresponds to a portfolio invested 60% in the broad stock market and 40% in small/value stocks; the next five columns correspond to portfolios with 60/8/32, 60/16/24, 60/20/20, 60/24/16, and 60/32/8 allocations to the broad stock market, small-cap stocks, and value stocks, respectively. Performance is summarized by each portfolio's geometric mean return (MR) and volatility (SD), both in annual terms; Sharpe ratio (SR); and terminal value of \$100 invested at the beginning of each sample period (TV). MR and SD in percent and TV in dollars. The data are described in Exhibit A1 in the appendix.

considered (Fama–French in Panel A and iShares in Panel B) over their entire sample period (1,182 and 293 monthly observations for the Fama–French data and iShares data, respectively). The summary statistics reported are the geometric mean return (MR) and volatility (SD), both in annual terms; Sharpe ratio (SR); and terminal value of \$100 invested at the beginning of each sample period (TV).

Panel A shows that adding one small/value satellite to an existing core exposure to the broad stock market outperforms adding two satellites, regardless of the allocation to small-cap and value funds in the latter. In terms of return, the outperformance of the small/value strategy ranges between 58 and 88 basis points per year. This outperformance comes with slightly higher volatility, but it still results in a higher Sharpe ratio than that of the five two-satellite strategies. Although the difference in Sharpe ratios between the 60/40 and the 60/8/32 strategies is not statistically significant, the Sharpe ratio of the 60/40 strategy is significantly larger than that of the other four two-satellite strategies considered.⁶

Given the very long sample period, the difference in mean return between the 60/40 strategy and the two-satellite strategies compounds to a very large difference in terminal wealth. The one-satellite strategy outperforms the best-performing two-satellite strategy (60/8/32) by more than 66% (\$7.90 million versus \$4.76 million), clearly a significant difference from an economic standpoint.

The results for the sample of iShares in Panel B confirm and strengthen the previous results. The one-satellite (small/value) strategy delivers a higher return than all the two-satellite strategies, with the outperformance ranging between 23 and 54 basis points per year. This outperformance comes with slightly higher volatility but still results in a slightly higher Sharpe ratio. That said, in this case, the difference in Sharpe ratios between the one-satellite strategy and the two-satellite strategies is not statistically significant. Finally, the one-satellite strategy results in higher terminal wealth between 5% and 13% with respect to the two-satellite strategies.

⁶The difference in Sharpe ratios is evaluated with the Jobson/Korkie–Mermel test (Mermel, 2003) at the 5% level of significance.

Factor Exposures

Exhibit 1 shows that the one-satellite (small/value) strategy outperforms all the two-satellite strategies considered here but does not explain why. Exhibit 2, which shows the results of three-factor regressions on the six portfolios considered here, suggests a possible answer. Panel A, for the Fama–French sample, shows the estimated intercept (alpha) and beta coefficients with respect to the market (MRP), the size factor (SMB), and the value factor (HML), as well as their P-values (in parentheses); Panel B shows the same coefficients for the iShares sample.⁷

As expected, Panel A shows that the size beta and the value beta are both positive and clearly statistically significant in all the strategies considered. The last line of the panel, which shows the sum of these two betas (SMB+HML) and, therefore, the combined exposure to the two targeted factors, reveals that the small/value satellite yields a larger exposure to the size and value factors (0.72) than does any of the five two-satellite strategies considered. This result suggests a likely explanation for the outperformance of the one-satellite strategy.

EXHIBIT 2

Factor Exposures

	60/40	60/8/32	60/16/24	60/20/20	60/24/16	60/32/8
Panel A: Fama–French						
Alpha	0.00 (0.64)	−0.00 (0.04)	−0.00 (0.04)	−0.00 (0.04)	−0.00 (0.04)	−0.00 (0.05)
MRP	1.01 (0.00)	1.02 (0.00)	1.02 (0.00)	1.02 (0.00)	1.02 (0.00)	1.01 (0.00)
SMB	0.38 (0.00)	0.23 (0.00)	0.27 (0.00)	0.29 (0.00)	0.31 (0.00)	0.34 (0.00)
HML	0.33 (0.00)	0.29 (0.00)	0.25 (0.00)	0.23 (0.00)	0.21 (0.00)	0.16 (0.00)
Adj. R ²	1.00	1.00	1.00	1.00	1.00	1.00
SMB + HML	0.72	0.52	0.52	0.52	0.51	0.51
Panel B: iShares						
Alpha	0.00 (0.83)	−0.00 (0.97)	0.00 (0.98)	0.00 (0.95)	0.00 (0.92)	0.00 (0.86)
MRP	0.97 (0.00)	0.97 (0.00)	0.97 (0.00)	0.97 (0.00)	0.97 (0.00)	0.97 (0.00)
SMB	0.25 (0.00)	−0.03 (0.00)	0.03 (0.00)	0.07 (0.00)	0.10 (0.00)	0.17 (0.00)
HML	0.23 (0.00)	0.16 (0.00)	0.16 (0.00)	0.15 (0.00)	0.15 (0.00)	0.15 (0.00)
Adj. R ²	0.99	0.99	0.99	0.99	0.99	0.99
SMB + HML	0.48	0.12	0.19	0.22	0.25	0.32

NOTES: This exhibit summarizes the results of three-factor regressions for the two different samples (Fama–French in Panel A and iShares in Panel B) considered here. The second column corresponds to a portfolio invested 60% in the broad stock market and 40% in small/value stocks; the next five columns correspond to portfolios with 60/8/32, 60/16/24, 60/20/20, 60/24/16, and 60/32/8 allocations to the broad stock market, small-cap stocks, and value stocks, respectively. Both panels show the intercept (alpha) and the betas with respect to the market (MRP), the size factor (SMB), and the value factor (HML), as well as their p-values (in parentheses); they also show the adjusted R² (Adj. R²) and the sum of the size and value betas (SMB+HML). The data are described in Exhibit A1 in the appendix.

⁷ Tests for significance are based on Newey–West’s heteroskedasticity-consistent and autocorrelation-consistent covariance matrix.

Panel B, for the iShares sample, again confirms and strengthens the results obtained for the Fama–French sample. With one exception (the size beta for the 60/8/32 portfolio), all the size betas and value betas are positive and statistically significant. In addition, as the last line of the panel shows, the small/value satellite again yields a larger combined exposure to the size and value factors (0.48) than does any of the five two-satellite strategies considered, thus reinforcing the likely explanation for the outperformance of the one-satellite strategy.

Further Discussion

The results discussed so far reveal that adding one (small/value) satellite to an existing core exposure to the broad stock market is better than adding two (one small-cap and one value) satellites. The former strategy outperforms the latter more clearly over the longer (Fama–French) sample period, but the results for the shorter (iShares) sample period point in the same direction.

An interesting issue to explore is whether the clearer outperformance observed in the Fama–French data is due to portfolio construction or to the sample period considered. Exhibit 3, which shows results for the Fama–French data over the iShares sample period (August 2000–December 2024) addresses this issue.

Relative to the iShares portfolios in Panel B of Exhibit 1, the Fama–French portfolios in Exhibit 3 tend to have a somewhat higher return, a slightly higher volatility, and a fairly similar risk-adjusted return. To illustrate, the 60/40 portfolio in Panel B of Exhibit 1 has a mean return, volatility, and Sharpe ratio of 8.8%, 16.6%, and 0.141, compared to 9.4%, 17.4%, and 0.147, respectively, in Exhibit 3. The higher return of the Fama–French data over the August 2000–December 2024 sample period results in a higher terminal value (\$896 in Exhibit 3 versus \$778 in Panel B of Exhibit 1). A comparison along the same lines for the rest of the strategies yields (numerically different but) similar conclusions.

Importantly, in Exhibit 3, it remains the case that the small/value strategy outperforms all the two-satellite strategies considered in terms of return (by a margin between 52 and 60 basis points per year), with very similar volatility and slightly higher Sharpe ratio, although the differences in risk-adjusted return are not statistically significant. The differences in terminal wealth range between 12% and 14% in favor of the one-satellite strategy.

These results show that portfolio construction has a mild impact on performance; the Fama–French portfolios outperform the iShares portfolios over their overlapping sample period in terms of return, but due to their slightly higher volatility, they end up

EXHIBIT 3

Performance—Fama–French Data Over iShares Sample Period

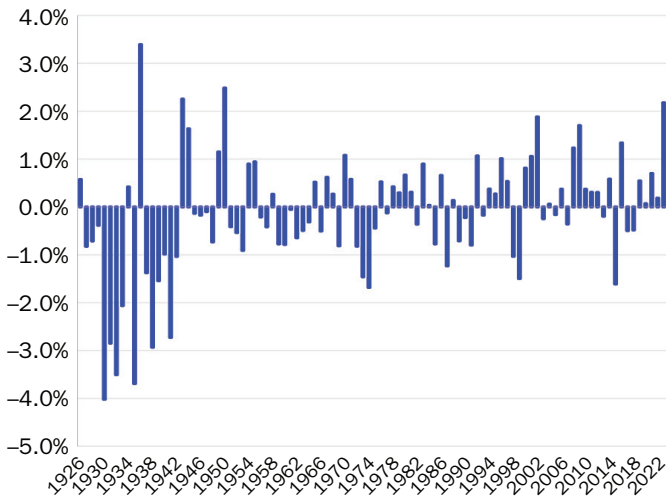
	60/40	60/8/32	60/16/24	60/20/20	60/24/16	60/32/8
MR	9.4	8.9	8.9	8.8	8.8	8.8
SD	17.4	17.1	17.1	17.2	17.2	17.3
SR	0.147	0.141	0.140	0.140	0.139	0.138
TV	896	799	795	792	790	784

NOTES: This exhibit summarizes the performance of six portfolios for the Fama–French data over the iShares sample period (August 2000–December 2024). The second column corresponds to a portfolio invested 60% in the broad stock market and 40% in small/value stocks; the next five columns correspond to portfolios with 60/8/32, 60/16/24, 60/20/20, 60/24/16, and 60/32/8 allocations to the broad stock market, small-cap stocks, and value stocks, respectively. Performance is summarized by each portfolio's geometric mean return (MR) and volatility (SD), both in annual terms; Sharpe ratio (SR); and terminal value of \$100 invested at the beginning of each sample period (TV). MR and SD in percent and TV in dollars. The data are described in Exhibit A1 in the appendix.

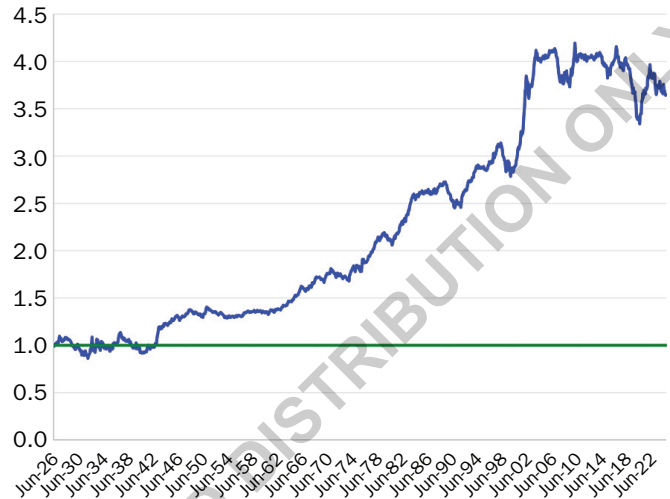
EXHIBIT 4

Relative Performance over Time

Panel A: Annual Relative Performance



Panel B: Cumulative Relative Performance



NOTES: This exhibit shows in Panel A the annual return of the one-satellite (small/value) strategy net of the annual return of an equally weighted portfolio of the small-cap satellite and the value satellite; and in Panel B the cumulative performance of \$100 invested in the one-satellite strategy relative to \$100 invested in the equally weighted portfolio of the small-cap and value satellites. Results based on the Fama–French data described in Exhibit A1 in the appendix.

delivering a very similar risk-adjusted return.⁸ In addition, these results show that, *regardless of portfolio construction*, the small/value strategy tends to outperform all the two-satellite strategies considered.⁹

A final issue to explore is the consistency of the outperformance of the one-satellite strategy over the two-satellite strategy. Exhibit 4 addresses this issue with the Fama–French data. Each of the bars in Panel A is the annual return of the one-satellite (small/value) strategy net of the annual return of an equally weighted portfolio of the small-cap satellite and the value satellite. As the picture clearly shows, the relative performance of these two strategies fluctuates over time; in fact, in 47% of the years the one-satellite strategy outperformed the two-satellite strategy, with the opposite happening the in the rest of the years.

Panel B shows the cumulative performance of \$100 invested in the one-satellite (small/value) strategy relative to (that is, divided by) the cumulative performance of \$100 invested in the equally weighted portfolio of the small-cap satellite and the value satellite, annually rebalanced. As the picture shows, after an initial period in which the relative performance of these two strategies fluctuated around 1 (that is, they performed similarly), the one-satellite strategy overtakes the two-satellite strategy in October 1942 and never falls behind again. By the end of December 2024, the former had accumulated \$50.1 million, clearly outperforming by over three and a half times the \$13.7 million accumulated by the latter.

⁸Unreported results for four Vanguard ETFs (with tickers VB, VTV, VBR, and VTI) show that their performance is very similar to those of the four iShares considered here over their overlapping sample period (February 2004–December 2024).

⁹Unreported results show that, for the Fama–French data over the iShares sample period, it remains the case that the one-satellite strategy provides a larger combined exposure to the size and value factors than that provided by any of the two-satellite strategies considered.

ASSESSMENT

An investor who has decided to enhance a portfolio's long-term return by tilting it toward the size and value factors needs to answer two important questions: Given an existing exposure to the broad stock market, is it better to add one satellite consisting of a small/value fund or two satellites consisting of one small-cap fund and one value fund? If the latter, what should be the allocation to each fund?

The results discussed here, based on two different samples and sample periods, suggest that adding one (small/value) satellite is better than adding two (one small-cap and one value) satellites. In fact, this is the case regardless of the relative allocation to small-cap stocks and value stocks in the two-satellite strategy.

In both the Fama–French and the iShares samples, the one-satellite strategy has a higher return, a slightly higher volatility, and a somewhat higher risk-adjusted return than all the two-satellite strategies considered, with the edge being clearer in the longer (Fama–French) sample. In addition, the one-satellite strategy provides a larger combined exposure to the two targeted factors than that provided by all the two-satellite strategies considered.

In short, investors having a core exposure to the stock market and aiming to enhance the long-term return of their portfolio would be better served by adding one small/value fund rather than two separate funds for the size and value factors. The one-satellite strategy would make the portfolio a bit simpler; it would be slightly easier and cheaper to rebalance it periodically; and, as the results in this article show, it would deliver better long-term performance.

APPENDIX

EXHIBIT A1

Data

	FM	MO	MR	SD
Panel A: Fama–French				
Fama–French Small Factor Portfolio	Jul/1926	1,182	12.1	25.4
Fama–French Value Factor Portfolio	Jul/1926	1,182	13.3	25.8
Fama–French Small Value Portfolio	Jul/1926	1,182	14.3	28.0
Fama–French Market Portfolio	Jul/1926	1,182	10.2	18.4
Panel B: iShares				
iShares Core S&P Small-Cap ETF (IJR)	Aug/2000	293	9.5	19.7
iShares Core S&P US Value ETF (IUSV)	Aug/2000	293	8.2	15.5
iShares S&P Small-Cap 600 Value ETF (IJS)	Aug/2000	293	9.6	20.7
iShares Core S&P 500 ETF (IVV)	Aug/2000	293	7.9	15.3

NOTES: This exhibit shows the first month (FM) and the number of monthly observations (MO) in the sample, as well as the geometric mean return (MR) and volatility (SD), both in annual terms, over each sample period, for all the series considered. The letters in parentheses for the iShares ETFs indicate fund tickers. MR and SD in percent.

ACKNOWLEDGMENTS

I would like to thank Tom Berglund, Edward McQuarrie, Jack Rader, and John Rekenhaller for their comments. Pol Delgado provided valuable research assistance. The views expressed and any errors that may remain are entirely my own.

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