



2014

Hallmarks of Successful Active Equity Managers

Kevin Ely



CAMBRIDGE ASSOCIATES LLC

Copyright © 2014 by Cambridge Associates LLC. All rights reserved. Confidential.

This report may not be displayed, reproduced, distributed, transmitted, or used to create derivative works in any form, in whole or in portion, by any means, without written permission from Cambridge Associates LLC (“CA”). Copying of this publication is a violation of U.S. and global copyright laws (e.g., 17 U.S.C. 101 et seq.). Violators of this copyright may be subject to liability for substantial monetary damages. The information and material published in this report are confidential and non-transferable. Therefore, recipients may not disclose any information or material derived from this report to third parties, or use information or material from this report, without prior written authorization. This report is provided for informational purposes only. It is not intended to constitute an offer of securities of any of the issuers that may be described in the report. No part of this report is intended as a recommendation of any firm or any security, unless expressly stated otherwise. Nothing contained in this report should be construed as the provision of tax or legal advice. Past performance is not indicative of future performance. Any information or opinions provided in this report are as of the date of the report and CA is under no obligation to update the information or communicate that any updates have been made. Information contained herein may have been provided by third parties, including investment firms providing information on returns and assets under management, and may not have been independently verified. CA can neither assure nor accept responsibility for accuracy, but substantial legal liability may apply to misrepresentations of results made by a manager that are delivered to CA electronically, by wire, or through the mail. Managers may report returns to CA gross (before the deduction of management fees), net (after the deduction of management fees), or both.

Cambridge Associates, LLC is a Massachusetts limited liability company with offices in Arlington, VA; Boston, MA; Dallas, TX; and Menlo Park, CA. Cambridge Associates Fiduciary Trust, LLC is a New Hampshire limited liability company chartered to serve as a non-depository trust company, and is a wholly-owned subsidiary of Cambridge Associates, LLC. Cambridge Associates Limited is registered as a limited company in England and Wales No. 06135829 and is authorised and regulated by the Financial Conduct Authority in the conduct of Investment Business. Cambridge Associates Limited, LLC is a Massachusetts limited liability company with a branch office in Sydney, Australia (ARBN 109 366 654). Cambridge Associates Asia Pte Ltd is a Singapore corporation (Registration No. 200101063G). Cambridge Associates Investment Consultancy (Beijing) Ltd is a wholly owned subsidiary of Cambridge Associates, LLC and is registered with the Beijing Administration for Industry and Commerce (Registration No. 110000450174972).



CAMBRIDGE ASSOCIATES LLC

Executive Summary	1
Active Share: Differentiated Portfolio Positioning	3
Portfolio Concentration: The Benefits of Fewer (Larger) Positions	6
Tracking Error: Gauging the Diversity of Factor Risks	8
Combining Active Share, Portfolio Concentration, and Tracking Error	10
Implementation Considerations	14
Summarizing Observations	16
Appendix: Research Methodology and Results	17
List of Tables	
1. Example of Active Share Calculation	3
2. Distribution of Active Share	4
3. Results of Active Share Analysis	5
4. Distribution of Number of Portfolio Holdings	7
5. Results of Portfolio Concentration Analysis	8
6. Correlation Between Active Share, Concentration, and Tracking Error	9
7. Example of Active Share and Industry Factor Risk	10
List of Figures	
1. Active Share, Portfolio Concentration, and Tracking Error Framework	11
2. Performance Summary: Intersection of Estimated Active Share and Tracking Error for US Large-Cap Equity Managers	13

- ◆ The debate about “active versus passive” investment management has received considerable attention. The average active equity manager regularly struggles to outpace the market; however, some managers perform better than average and studies generally conclude that some managers do exhibit skill. As a result, we attempt to answer a different question: how can investors selecting active equity managers maximize their odds for success?
- ◆ Increasing the average performance outcome is one part of the puzzle. Academic studies of US mutual funds show that funds with higher active share or more concentrated portfolios have outperformed their more benchmark-like peers. We investigated the applicability of these findings to institutional managers with an analysis across three primary segments of developed markets equity managers since the prior global equity market peak (October 2007). We find that higher active share or more concentrated managers in US large-cap, US small-cap, and non-US equity manager universes similarly delivered attractive returns that outpaced both their benchmarks and their peer group average manager even after applying an estimate for the impact of fees.
- ◆ We also consider the use of tracking error as a tool for positively skewing the distribution of manager outcomes. Preferring managers with highly active or high-conviction portfolios does not necessarily equate to choosing managers that are extremely volatile. We show that being mindful of managers that exhibit extreme tracking error can help prevent investors from being on the negative side of “differentiated” performance.
- ◆ Combining insight from active share and portfolio concentration with tracking error can help investors identify managers that may be better poised for success, with both a better distribution of outcomes and a better average outcome. However, we acknowledge that investing in differentiated portfolios comes with challenges, including the limited supply of managers that invest in this fashion and considerations about investor behavior. While some may see these challenges as roadblocks, they likely form the basis of the observed relative return premiums earned by investing with these managers. In investing, the willingness and discipline to overcome implementation challenges is often the path to more attractive results. ■

The average investor in an active US equity fund is likely to have been disappointed in recent years. For the three-year period ended June 2013, for example, over 60% of US large-cap growth and value managers in the Cambridge Associates Investment Manager Database underperformed their respective Russell style benchmarks. While questions persist about whether pursuing active management is a worthwhile exercise, the “active versus passive” debate has already received considerable attention. Since some managers do outperform over the long term, in this paper we attempt to answer a different question: how can investors that select active managers maximize their odds of success?

Although the average manager is challenged to outperform the market net of fees, disciplined institutional investors may not be doomed to experience the performance of the average manager. By mathematical necessity some managers will rank above average, and academic studies generally conclude that a small number of managers exhibit skill delivering outperformance after fees and over full market cycles.¹ An increasing body of research points to a link between long-term, benchmark-beating performance and two portfolio attributes: high active share, or a portfolio that looks different from its benchmark, and high concentration, or simply a limited number of holdings. The connecting theme is managers that are willing to look different and act with conviction. There is a sensible link between

these two attributes and relative performance; managers that deviate from the benchmark deliver differentiated results. However, since performance “differentiation” can occur in both positive and negative directions, investors face two key questions pertaining to managers that fit the theme above: first, do they outperform on average, and second, are there ways to reduce the risk of ending up in the bottom of performance distribution? On both counts, evidence suggests that the answer is “yes.” Concentrated, high active share managers have tended to outperform their benchmarks, and investors can limit their risk of failure by avoiding the managers with the highest tracking error.

In this paper, we begin by defining active share, examining the range of active share across the active manager landscape, and discussing the stronger relative performance of high active share managers. Next, we survey portfolio concentration in similar fashion. Third, we explain how tracking error differs from active share and portfolio concentration, and how it can be used to limit downside risk in manager selection. We then combine all three concepts to illustrate a framework for evaluation.

There are of course no free lunches in investing. Challenges such as a limited supply of suitable managers and behavioral risk may limit the ability of many investors to implement a program of highly differentiated managers. These challenges may indeed form the basis of the return premium historically earned by these managers. The last section of this paper describes these challenges to help investors assess whether they have the resources and discipline necessary to harvest the long-term rewards that may be available in active equity managers.

Other contributors to this report include Jake Blanton.

¹ Including Eugene Fama and Kenneth French, “Luck versus Skill in the Cross-Section of Mutual Fund Returns,” *The Journal of Finance* LXV, no. 5 (October 2010) and Laurent Barras, Olivier Scaillet, and Russ Wermers, “False Discoveries in Mutual Fund Performance: Measuring Luck in Estimated Alphas,” *The Journal of Finance* LXV, no. 1 (February 2010).

Active Share: Differentiated Portfolio Positioning

A portfolio must look different from its benchmark to deliver differentiated returns. *Active share* is a measure that quantifies the degree to which a portfolio's holdings are different from those of its benchmark. While C|A has considered this concept for years when evaluating managers, the term "active share" itself was coined by Martijn Cremers and Antti Petajisto in a 2009 research study² on US equity mutual funds.

Active share is calculated by summing the absolute value of the differences of the weight of each holding in a manager's portfolio and the weight of that same holding in the manager's benchmark index, and then dividing the result by two. More simply, it can be thought of as the percentage of a portfolio's positions that looks different from those of its benchmark. Active share percentages can range from 0%, in the case of a pure index strategy, to 100%, in the unlikely case that a portfolio and its benchmark have no stocks in common.

$$\text{Active Share} = \frac{1}{2} \sum_{i=1}^N |w_{fund,i} - w_{index,i}|$$

A simple example helps illustrate the mechanics of active share. Consider Table 1, which depicts a sample portfolio with five stocks, four of which are also included in the portfolio's benchmark.

Table 1. Example of Active Share Calculation

Stock	(A) Portfolio Weight (%)	(B) Benchmark Weight (%)	A - B
1	20	40	20
2	40	30	10
3	20	20	0
4	10	10	0
5	10	0	10
Step 1: Sum the differences			40
Step 2: Divide differences by 2			20

To calculate active share, sum the absolute values of the differences of the weight of each holding in the manager's portfolio and the weight of the same holding in the benchmark (Step 1 above) and divide the sum by two (Step 2 above). The second step adjusts for the fact that the absolute values summed in Step 1 count both over- and underweights relative to the benchmark, effectively doubling the actual percentage difference in holdings. In this example, 20% of the portfolio is different from its benchmark. Put differently, 80% of the portfolio overlaps with the benchmark.

Is 20% active share good or bad? In general, the term "closet indexer" is applied to managers with active share below 60%, which would include the outcome in the example above. As we will show later, closet index portfolios are likely too similar to their benchmarks to deliver significantly differentiated returns, especially after fees. Active share levels above 80%, on the other hand, are often considered to reflect a "truly active" manager.

As it happens, the 80% rule of thumb corresponds roughly to the median active share among large-cap developed markets equity managers. Table 2 shows the distribution of estimated active share as of June 30, 2013, for

² Martijn Cremers and Antti Petajisto, "How Active Is Your Fund Manager? A New Measure That Predicts Performance," *Review of Financial Studies* 22, no. 9 (August 2009). Follow on article: Antti Petajisto, "Active Share and Mutual Fund Performance," *Financial Analysts Journal* 69, no. 4 (July/August 2013).

three major categories of institutional equity managers from the eVestment Alliance database. One notable feature of this data is that US small-cap managers have markedly higher active shares than their large-cap US and EAFE counterparts. This is a function of the high number of constituents in small-cap benchmarks, and that small-cap managers do not tend to increase their number of portfolio holdings relative to large-cap managers in an amount proportionate to the increase in benchmark holdings. As a result, 95% may be a better cut-off to determine truly active US small-cap managers.

Table 2. Distribution of Active Share

As of June 30, 2013

Equity Asset Class	Bottom-Quartile Breakpoint (%)	Median (%)	Top-Quartile Breakpoint (%)
US Large-Cap	68.5	76.8	83.8
EAFE	73.3	81.8	85.1
US Small-Cap	88.4	93.1	96.2

Sources: eVestment Alliance, Frank Russell Company, and MSCI Inc. MSCI data provided “as is” without any express or implied warranties.

Note: The methodology for calculating estimated active share is detailed in the Appendix.

With this measure in mind we can assess the link between active share and subsequent performance. In their research, Cremers and Petajisto—the researchers who coined the term “active share”—found that US mutual funds with higher active share significantly outperformed those with lower active share over 1990–2009.³ Their assessment was that active share was predictive, and not just useful in hindsight; portfolios with higher active share at the beginning of a given time period generated better average returns in subsequent periods than their lower active share counter-

parts. Among US large-cap mutual funds, for example, every 10% increase in active share resulted in an additional 87 bps of subsequent annual relative performance. In other words, the predicted improvement in relative returns when moving from 60% active share (closet indexing) to 80% active share (truly active) was 174 bps annually over the 20-year period studied. This is an impressive improvement, particularly considering that the average closet indexer underperformed, net of fees, by 91 bps annually over the period.⁴

We found Cremers and Petajisto’s results for mutual funds compelling and decided to use a similar methodology to test the relationship between active share and performance in institutional portfolios, including US large-cap, US small-cap, and non-US (EAFE) managers. Since most institutional returns are reported gross of fees, we also estimated the impact of fees. Before reviewing the results, it is important to understand the parameters of our analysis design. First, we chose to analyze the period from the prior S&P 500 and MSCI EAFE peak in October 2007 through June 2013. In our view, this period best balanced the competing needs to use a robust set of manager portfolio data and to capture performance over a time period that includes both bear and bull markets. We limited our review to developed markets equity strategies because of insufficient portfolio holdings data for other categories of global equity managers, like emerging markets.

To perform the analysis, we grouped managers into quartiles using an estimate of their portfolio’s active share at September 30, 2007. For managers to be included in our analysis we had to have sufficient data to estimate their

³ Cremers and Petajisto’s 2009 article studied the period 1990–2003; subsequent research and articles by Petajisto extended the evaluation period through 2009.

⁴ This outcome held directionally even after adjusting for common risk factors like beta, style, size, and momentum.

Hallmarks of Successful Active Equity Managers

active share on that date. In the case of US large-cap equity managers, for example, our sample represented 90% of the managers with published returns in eVestment as of October 2007. Estimated active share⁵ and performance value added were calculated relative to the Russell 1000® Index, the Russell 1000® Growth Index, and the Russell 1000® Value Index for US large-cap core, growth, and value managers, respectively, as categorized in eVestment. A similar approach was used for US small-cap portfolios using the relevant Russell 2000® Index benchmarks. Given the smaller sample size in the non-US universe, we compared all these portfolios to the MSCI EAFE Index. We report performance gross of investment management fees.

Returns for inactive (discontinued) managers were included only if performance was available

⁵ Our active share estimate is based on eVestment Alliance's "Portfolio Coverage" (PC) statistic as calculated by Style Research. See the Appendix for further methodology details.

for the entire period measured. While survivorship bias may thus influence the final results, we believe the impact is limited because there was a very small (less than 2%) dropout rate within each of our samples over the period, and the collection of managers who dropped out was not disproportionately skewed to the higher active share quartile. This observation about survivorship also holds for our later analysis on portfolio concentration. The Appendix provides additional details on our data set and calculation methodologies. Our US large-cap sample includes 887 managers, the US small-cap sample includes 483 managers, and the EAFE sample includes 129 managers.

Our findings for institutional managers over the most recent market cycle, illustrated in Table 3, are directionally consistent with those of Cremers and Petajisto's study of mutual funds over multiple cycles. Among US large-cap equity managers, the average highest-quartile active share manager in our study outperformed the lowest-quartile manager by

Table 3. Results of Active Share Analysis

As of June 30, 2013

Sample	Active Share Quartile	Mean Estimated Active Share	Average Gross Annual Value Added (bps)	Average Annual Fee (bps)	Implied Net Average Annual Value Added (bps)
US Large-Cap Equity	All		36	68	-32
	Highest (H)	89.50%	106	77	29
	Lowest (L)	58.90%	33	61	-28
	H - L		73	16	57
US Small-Cap Equity	All		121	92	29
	Highest	98.00%	155	96	59
	Lowest	82.30%	82	85	-3
	H - L		73	11	62
EAFE Equity	All		95	74	21
	Highest	89.20%	163	75	88
	Lowest	61.60%	10	69	-59
	H - L		153	6	147

Sources: Cambridge Associates LLC, eVestment Alliance, Frank Russell Company, and MSCI Inc. MSCI data provided "as is" without any express or implied warranties.

Notes: Methodology for calculating estimated active share and average annual fees is detailed in the Appendix. Mean estimated active share represents the mean value within the quartile indicated.

73 bps, gross of fees.⁶ The highest-quartile active share average also compares favorably to each sample's average manager.

As Table 3 shows, managers with high active share also tend to charge higher fees than those with low active share, with fee premiums ranging from 6 bps among EAFE managers to 16 bps among US large-cap managers. As a result, we estimate the fee impact on the gross results by subtracting the average fee from the average gross value added. In all three manager samples, the return enhancement from higher active share far outweighed the incremental fee. For example, high active share US large-cap managers generated an average return premium of 73 bps, but investors only paid an average fee premium of 16 bps for this outperformance. Crucially, the average lowest-quartile active share managers did not, in aggregate, outpace their average fee in any of our samples.

The findings detailed here indicate that managers with portfolios that look significantly different from their benchmark have generated better results than their more benchmark-like counterparts. Our results also highlight the difficulty inherent in generating strong relative performance after fees from a portfolio that closely mimics its benchmark. Investors that choose low active share managers leave themselves very little margin for error in manager selection, while investors that select higher active share managers may experience better returns.

⁶ Though not discussed here, we also ran an analysis over the sub-periods October 2007 through March 2009 (downturn) and April 2009 through June 2013 (upturn), and the results in each sub-period were directionally consistent with the results over the full period.

Portfolio Concentration: The Benefits of Fewer (Larger) Positions

Another key variable managers can control in their portfolio construction is concentration, defined simply as the number of positions they hold. There are logical reasons why increases in portfolio concentration might be connected to increased return potential. Holding larger positions implies more conviction in each investment. In addition, holding fewer positions may focus a manager's attention and reduce the potential for complacency with smaller positions. This greater degree of focus may, in turn, help the manager achieve a deeper understanding of individual positions or make more efficient use of resources, potentially leading to improved valuation assessments or trading efficiency.

Most active portfolios are probably overdiversified. When a manager's 40th or 50th best idea is added to a portfolio, the marginal gain in either risk reduction or return enhancement is likely minimal. Studies indicate that an equity portfolio needs only 30–40 stocks to eliminate most of the diversifiable absolute risk (as defined by the standard deviation of the portfolio).⁷ Although similar studies suggest that at least 100 stocks may be needed to limit relative risk (as defined by tracking error), investors with a multi-manager portfolio can achieve exposure to 100 stocks by, for example, hiring five concentrated managers with 20 stocks each.

Several academic studies of mutual funds have found that higher portfolio concentration is associated with higher relative returns. For

⁷ For example, see Meir Statman, "How Many Stocks Make a Diversified Portfolio?," *Journal of Financial and Quantitative Analysis* 22, no. 3 (September 1987).

example, Busse, Green, and Baks analyzed 2,080 US equity funds from 1979 to 2003 and found that more concentrated mutual fund managers outperformed their more diversified counterparts by roughly 4% annually.⁸ Additionally, in a study considering the value of a manager's conviction, Cohen, Polk, and Silli compiled data from registered US mutual funds between 1984 and 2007 and observed that mutual fund managers' highest-conviction stocks (those with the largest weights) outperformed both the market and the rest of their stocks by 1% to 2.5% per quarter while the managers' other stocks and their overall portfolio did not generate meaningful outperformance.⁹ Taken with the observation that the average mutual fund does not outperform, these studies suggest that mutual funds are excessively diversified.

As with active share, we decided to investigate whether a similar link between portfolio concentration and subsequent performance has existed in our institutional sample over the most recent global equity market cycle.

As before, it is important to understand the parameters of our analysis. For US large-cap managers, we define "concentrated" portfolios as those with 30 or fewer holdings. This cutoff reflects our judgment about portfolio concentration and a typical number of holdings targeted by managers. For US small-cap and EAFE managers, we increase the cutoff to

⁸ Jeffrey A. Busse, T. Clifton Green, and Klaas Baks, "Fund Managers Who Take Big Bets: Skilled or Overconfident," AFA 2007 Chicago Meetings Paper. See also Joop Huij and Jeroen Derwall, "Global Equity Fund Performance, Portfolio Concentration, and the Fundamental Law of Active Management," *Journal of Banking & Finance* 35, no. 1 (January 2011).

⁹ Randolph B. Cohen, Christopher Polk, and Bernhard Silli, Best Ideas, May 2010. Working Paper, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1364827.

40 stocks to reflect the (logical) tendency of those managers to diversify portfolios further given the potential for reduced liquidity and heightened volatility in some segments of those markets. Across the manager samples, portfolios with holdings in excess of these limits are defined as "unconcentrated." While qualitatively chosen, we note that these two cutoff points are roughly equivalent to selecting the most concentrated decile of managers in each sample as shown in Table 4. As with our active share analysis, we grouped the managers based on their concentration as of September 30, 2007, and then calculated the average subsequent relative return for the concentrated and unconcentrated groupings over the next 69 months.

Table 4. Distribution of Number of Portfolio Holdings

As of June 30, 2013

	US Large Cap	EAFE	US Small Cap
Most	520	751	1,797
Least	7	24	7
Median/Average	55/72	72/109	82/120
Most Concentrated Decile	30	38	37

Source: eVestment Alliance.

As shown in Table 5, the average concentrated US large-cap equity manager outperformed the average unconcentrated manager by over 125 bps annually, gross of fees. In US small cap and EAFE the outperformance was 100 bps and 170 bps, respectively. The outcome with concentrated managers also compares favorably to the average manager in each sample.

As with high active share managers, concentrated managers also charge higher fees on average, but they out-earn their fee premium

Table 5. Results of Portfolio Concentration Analysis

As of June 30, 2013

Sample	Grouping	Average Gross Annual Value Added (bps)	Average Annual Fee (bps)	Implied Net Average Annual Value Added (bps)
US Large-Cap Equity	All	36	68	-32
	Concentrated (C)	147	78	69
	Unconcentrated (U)	20	66	-46
	<i>C - U</i>	127	12	115
US Small-Cap Equity	All	121	92	29
	Concentrated	207	96	111
	Unconcentrated	106	92	14
	<i>C - U</i>	100	4	96
EAFE Equity	All	95	74	21
	Concentrated	245	79	166
	Unconcentrated	75	72	3
	<i>C - U</i>	170	7	163

Sources: Cambridge Associates LLC, eVestment Alliance, Frank Russell Company, and MSCI Inc. MSCI data provided “as is” without any express or implied warranties.

Note: Methodology for calculating groupings and average annual fees is detailed in the Appendix.

by a wide margin.¹⁰ Concentrated US large-cap strategies, for example, earned a return premium of 127 bps annually but were only 12 bps more expensive, on average, implying a net return premium of over 1%. Among US large-cap managers, unconcentrated managers were not able to deliver results that outpaced the average fee, while among US small-cap and EAFE managers, unconcentrated strategies were still able to eke out average gains of 14 bps to 3 bps, respectively. Our findings suggest there is merit to the intuition connecting managers with more concentrated portfolios to increased chances for outperformance.

¹⁰ As with our active share analysis, though not discussed here, the results in the sub-periods October 2007 through March 2009 (downturn) and April 2009 through June 2013 (upturn) were directionally consistent with the results over the full period.

Tracking Error: Gauging the Diversity of Factor Risks

Our analysis so far has focused on the higher observed performance of equity strategies with high active share or more concentrated portfolios. Are these higher returns simply a function of higher risk compared to other active strategies?

In terms of absolute volatility, as defined by standard deviation, the potentially surprising answer is not necessarily. For example, in our US large-cap sample, the average volatility of returns for the top quartile active share managers (22.3%) is not significantly different from the average for the bottom quartile active share managers (21.9%).

In terms of relative volatility, as measured by tracking error—the standard deviation of the excess returns relative to a benchmark—high active share or more concentrated managers can be associated with higher tracking error, but this is not always the case. Correlations in Table

Table 6. Correlation Between Active Share, Concentration, and Tracking Error

As of June 30, 2013

	US Large Cap	EAFE	US Small Cap
Active Share to Concentration	0.65	0.74	0.82
Active Share to 5-Year Tracking Error	0.50	0.53	0.41
Concentration to 5-Year Tracking Error	0.26	0.31	0.31

Source: eVestment Alliance.

6 indicate the relationship is moderate at best, with correlations of active share and concentration to tracking error in the range of 0.26 to 0.53 across our three manager universes. There are high active share and concentrated portfolios with low tracking error and low active share and unconcentrated portfolios with high tracking error.

At first, the moderate relationship between tracking error and more concentrated or higher active share portfolios can seem unintuitive. Shouldn't portfolios with fewer and more differentiated holdings from their benchmarks automatically experience higher tracking error? First, investors should note that the data sources for the statistics are different: active share and portfolio concentration are based on a portfolio's holdings, while tracking error is based on portfolio and benchmark performance figures. Second, portfolios can differ from benchmarks in ways other than their relative weight and number of holdings. Another way is through pronounced factor biases, referring to exposures to any single factor that shows sensitivity to the performance of securities that share a similar characteristic. A portfolio with exposure to the "value factor," for example, will be sensitive to the performance of cheap stocks, as measured by some common valuation metric like price-to-book ratios. Managers may adopt factor biases explicitly to exploit a perceived investment opportunity, or they may do so implicitly, in

the way that their security selection philosophy results in exposures that are inherently different from those of their benchmark. Common examples of factor biases include being under- or overweight either growth or value stocks, persistent industry or sector tilts, or exhibiting a larger or smaller market capitalization size bias than the benchmark. More esoteric biases are also possible, like exposure to commodity prices or to the performance of stocks with high return on equity. A common way to adjust performance evaluation for explicit factor bias is to use benchmarks adjusted for size and style, but even this is imperfect. Few active managers have factor exposures that are identical to any particular benchmark.

A simple example helps illustrate how two portfolios with high active share may differ substantially in their exposures to a single factor—in this example extreme industry factor bias. In Table 7, Portfolio A and Portfolio B are both managed to the same benchmark, and hold only stocks that are represented in the benchmark. The portfolios have the same number of holdings, and the same active share. While Portfolio A is invested across ten industries, with one stock in each, Portfolio B's ten holdings are concentrated in a single industry.

If we assume that the two portfolios have no other hidden style differences, such as big differences in average market capitalization, Portfolio B will generate higher tracking error than Portfolio A, as Portfolio B's performance

Table 7. Example of Active Share and Industry Factor Risk

	Portfolio A	Benchmark	Portfolio B
Number of Stocks	10	100	10
Portfolio Weight Per Stock	10%	1%	10%
Active Share*	90%	0%	90%
Stocks Per Industry	1	10	NA
Number of Industries Represented	10	10	1

* Since both the portfolio's and the benchmark's positions are equally weighted, each position in the two portfolios will have a 9% active weight (10% - 1%) resulting in a 90% active share (9% x 10 positions).

is highly dependent on the performance of a single industry relative to the benchmark, while Portfolio A's performance has no clear source of a systematic industry factor difference.

A high level of tracking error may signal that a portfolio's relative performance is dependent on the success of a small number of factor bets. If so, the portfolio's performance over a given period may be more dependent on the market's appetite for those factors than the manager's security selection ability. Investors should consider whether they wish to have exposure to these factors. Some factor tilts may be desirable on a permanent basis, including those to the value, small size (i.e., exposure to small-cap stocks), or momentum, all of which have well-documented long-run performance benefits. Others, such as industry bets, may have less basis for permanent exposure in both theory and practice. As we examine in the next section, active portfolios with meaningful factor biases can be susceptible to larger relative return draw-downs than similarly active and/or concentrated portfolios, and they may not offer symmetrical upside to compensate for these losses.

Combining Active Share, Portfolio Concentration, and Tracking Error

We have documented the performance benefits associated with higher-conviction active management approaches. We have also noted that significant factor bets can be hidden in highly active portfolios, but that these bets are not a necessary byproduct of building portfolios that are distinct from their benchmarks. In this section, we combine these observations to illustrate a framework for active manager selection.

Figure 1, adapted from Cremers and Petajisto, provides a conceptual framework for characterizing active managers. As an indication that either can be helpful, active share or portfolio concentration is plotted on the vertical axis, and tracking error percentile ranking is shown on the horizontal axis. Why plot the percentile rank for tracking error and not the absolute value? Active share and portfolio concentration tend to be consistent across time for a given manager, with large deviations often a sign of strategy change. On the other hand, tracking error tends to be a more volatile statistic. Not only can an individual manager's tracking error vary significantly over time, but the spread of the entire peer group's tracking error can itself shift along with changes in market volatility and correlations. These latter causes for changes in tracking error are not under managers' control. Considering the percentile rank of tracking error rather than the absolute value helps isolate the manager-specific impacts—normalizing for changes in market dynamics and making our measurement statistic more consistent. Labeled within the figure are regions that categorize the equity manager universe. The regions range from

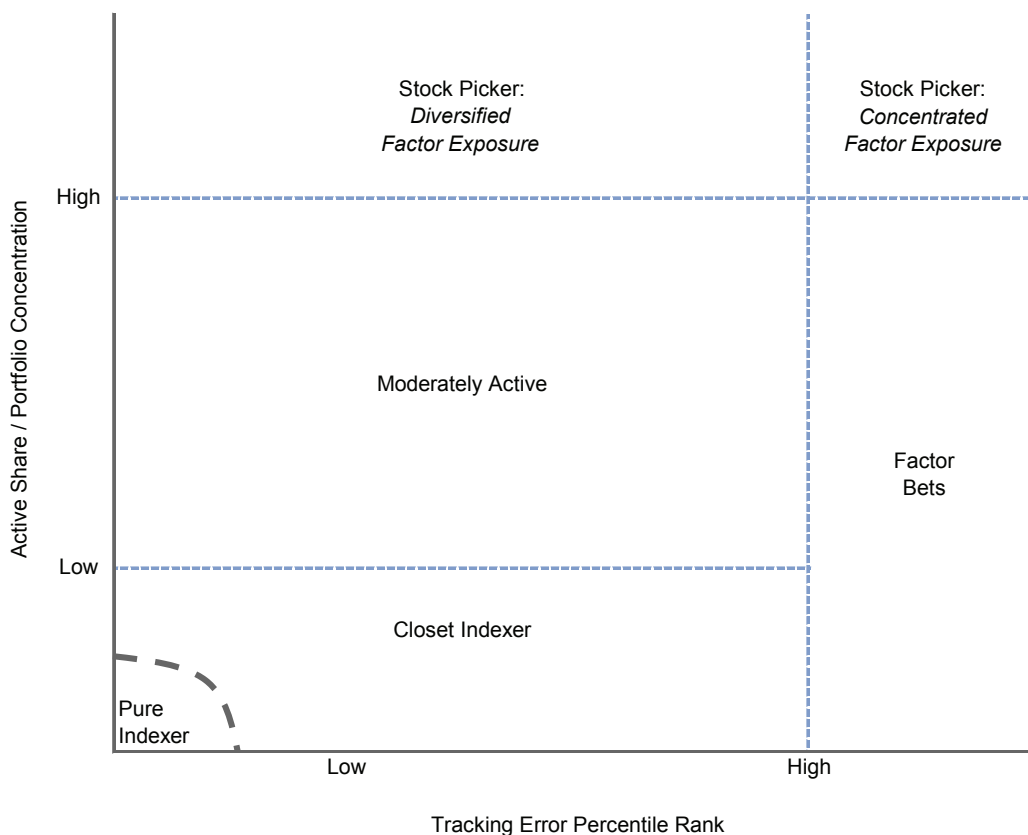
Hallmarks of Successful Active Equity Managers

“pure indexers,” which appear near the origin and have limited active share and tracking error by definition, to “stock pickers” with concentrated factor exposure, with higher active share or portfolio concentration and higher tracking error, on the top right.

Figure 1 can help frame performance expectations. Pure index strategies remain useful and important parts of investors’ toolkits, as can some semi-passive or factor bet strategies with carefully monitored and selected factor exposures. Among fundamental active managers, we have shown that managers with high active

share or highly concentrated portfolios perform better than their more benchmark-like (moderately active) peers, and that closet indexers can struggle to recoup their fees. This suggests that investors should focus on the upper part of the vertical axis where “stock pickers” build highly active portfolios. In the previous section we also established a basis for avoiding, or at least understanding the implications for, managers with extreme tracking error. This suggests a focus on managers in the upper left and upper middle of the chart.

Figure 1. Active Share, Portfolio Concentration, and Tracking Error Framework



Source: Adapted from Martijn Cremers and Antti Petajisto, “How Active Is Your Fund Manager? A New Measure That Predicts Performance,” *Review of Financial Studies* 22, no. 9 (2009).

To support that suggestion, we take a closer look at the manager performance implications of segmenting the universe of highly active managers by tracking error. To do so, we examine a sample consisting of US large-cap managers with active share estimates and five-year trailing tracking error figures as of September 30, 2007, and, again, annualized performance figures available over the most recent market cycle (October 1, 2007, through June 30, 2013).¹¹ We focus on active share rather than portfolio concentration for the sake of simplicity; as noted in Table 6, the correlation between these two measures is relatively high. We also limit our analysis to US large-cap managers due to the small number of US small-cap and EAFE managers with comparable data available.

Figure 2 confirms that investors choosing fundamental active equity managers should focus on selecting stock pickers with factor exposures that are not extreme. Each of the four bars in the figure reflects the performance distribution of a designated group of managers. As expected, selecting managers exclusively in the top quartile of active share increases the average relative return as compared to the entire universe (from 0.18% to 0.52%). However, it does not improve the overall shape of the full distribution of returns. The third bar from the left illustrates the average relative return and the distribution of returns for the intersection of the highest quartile tracking error managers within the highest active share quartile. Notably, the average result in the third bar is actually below the total sample average

¹¹ The addition of tracking error into the sample set construction reduces the size of the number of managers relative to our active share and portfolio concentration samples because it layers in a further requirement of five years of performance history prior to September 30, 2007.

and, as illustrated by the distribution of relative returns, the managers in this group drive the extreme ends of the former two groupings. On the other hand, considering the top quartile of active share managers and excluding the managers with the most extreme tracking error from the top quartile of active share—the group represented by the fourth bar—not only achieves a gain in average performance of nearly 1% versus the total sample, but sharply raises the lower end of the distribution of returns. More specifically, the 95th percentile return rises by 161 bps versus the total top-quartile active share group and by 99 bps versus the total sample.¹² This reduction on the under-performance side of the distribution is not accompanied by a proportional return penalty at the top—in fact, the 5th percentile return rises by 166 bps versus the comparable figure in the total sample. By selecting highly active strategies that have reasonably diversified factor risks, investors tilt both the expected average return and the expected distribution of returns in their favor.

While our analysis is limited to a single time period and a single manager category due to data constraints, our findings about the relationship between active share, concentration, tracking error, and subsequent performance are substantially similar to those of Cremers and Petajisto's analysis of mutual funds. Petajisto's study extends across two decades, limiting our concern that the results of our analysis are time period specific. It is also worth noting that the magnitude of the performance differences in our results is smaller than that published in the study. Petajisto finds, for example, that mutual funds in the top quintile of active share, excluding the top quintile of tracking error,

¹² Percentiles are calculated based on 0 being the best and 100 being the worst.

Hallmarks of Successful Active Equity Managers

Figure 2. Performance Summary: Intersection of Estimated Active Share and Tracking Error for US Large-Cap Equity Managers

October 2007 – June 2013 • Annualized Performance Quartile Ranges Per Designated Grouping



Sources: eVestment Alliance and Frank Russell Company.

Notes: Performance is generally reported gross of investment management fees. Returns for inactive (discontinued) managers are included if performance is available for the entire period measured. Manager tracking error calculated relative to its appropriate Russell style benchmark (Russell 1000®, Russell 1000® Growth, or Russell 1000® Value). Tracking error percentile rank calculated relative to the total sample. Sample includes 685 US large-cap managers with portfolio holdings and five-year tracking error figures as of September 30, 2007, and an annualized excess return figure as of June 30, 2013.

outperformed the total sample average by 165 bps, gross of fees, over the 20-year period ended December 31, 2009.¹³ In comparison, we observe that the institutional strategies in the top quartile of active share and not in the top quartile of tracking error outperformed the average manager by 89 bps. One possible

¹³ Antti Petajisto, "Active Share and Mutual Fund Performance," *Financial Analysts Journal* 69, no. 4 (July/August 2013).

explanation for this difference is the possibility that our sample period was less favorable for active strategies since the average manager in our total sample outperformed by 18 bps while the average mutual fund in their total sample outperformed by 96 bps. While we were unable to extend this analysis outside the United States with the data available to us, we believe that the conclusion is likely applicable to other geographic segments of the equity market.

Implementation Considerations

Choosing managers with high active share or more concentrated portfolios often has behavioral and logistical challenges, including the four broad types described below. Some of the return premium observed in differentiated active strategies may arise from the obstacles inherent in selecting, funding, and maintaining the investment with them through swings in relative performance. Investors must assess their ability to manage these challenges when determining their probability of long-term success in active equity manager selection.

Limited Supply

The supply of differentiated active managers with institutional-quality credentials is limited. While not a perfect proxy for the institutional world, only 20% of the assets managed in US equity mutual funds over the last decade were held in funds with an active share over 80%.¹⁴ Likewise, roughly 90% of active institutional equity managers are “unconcentrated” by the definition we used in our analysis.

The investment industry is simply not structured to favor approaches with high active share and concentration. The very nature of these strategies means that they do not scale well, as significant growth in assets under management (AUM) constrains a manager’s flexibility and ability to concentrate assets in specific holdings. All else equal, for example, a manager with a ten-stock portfolio is more constrained than the manager of a 100-stock portfolio, as each position in the ten-stock portfolio represents a larger portion of the investable market capitalization of each

company than it does in the 100-stock portfolio, potentially decreasing the manager’s flexibility. To be successful, a differentiated portfolio manager will likely have to limit growth and forego a corresponding increase in profits. This implicit capacity hurdle is distinctly different from the incentive structure of most investment managers, which become increasingly profitable with each new dollar of AUM.

As a result, institutional investors are limited to a smaller universe of optimal candidates, and they must find managers within that universe before they stop accepting new investments. This may involve choosing managers that lack a long, formal track record, and it poses the challenge to identify managers with the discipline to close strategies before they become too large to manage in a differentiated fashion.

Higher Fees and Investment Vehicle Constraints

Earlier, we noted that differentiated managers typically charge higher fees than managers whose portfolios look more like their benchmarks. In some cases, these managers may also charge performance-based incentive fees, and their investment vehicles may offer less liquidity. While these attributes may present a hurdle to some investors, we do not view them as necessarily problematic. The manager’s fees and liquidity should be judged relative to the strategy’s objectives and the manager’s ability to achieve those objectives. Is the investor receiving a performance or portfolio exposure benefit as a result of the higher fees? The reduced business scalability noted above, for example, may force the manager to charge higher fees to generate the economic balance to attract and retain the talent necessary to deliver superior performance. Are there strategic objectives like long holding periods or activist

¹⁴ Antti Petajisto, “Active Share and Mutual Fund Performance,” Working Paper (December 2010), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1685942.

positions that require the portfolio manager to count on having stable AUM? Such objectives might only be possible with a limited liquidity vehicle, as might the ability to hold large, off-benchmark positions that require sensitivity in trading. Our analysis above indicates that, on average, the incremental performance of higher active share and more concentrated portfolios more than justifies the incremental fees.

Manager Business Risk

Managers with differentiated portfolios face more significant career and business risk than benchmark-like managers. Performance for any active manager can deviate from benchmarks, sometimes significantly, over months and even years. While we suggest keeping a close eye on extreme tracking error, the general increase in relative performance volatility associated with increasing active share or portfolio concentration can increase the volatility of economics (business risk) for a manager's business. Any increase in business risk can, in turn, be compounded by the capacity limitations noted above, which can make a manager's AUM both smaller in size and more volatile. This potential business risk is a key reason many managers develop strategies with low active risk, which potentially deliver more muted relative performance but more business stability. Many investors, too, are more comfortable hiring less risky, more stable firms—potentially leaving a performance premium available to investors that are willing to tolerate higher manager business risk.

Investor Behavior Risk

Portfolios with high active share or concentration do not just create additional business risk for the managers that run them—they also create additional behavioral risk for the investors that hire them. Generally, relative

performance and investor behavioral risk go hand in hand. Investors tend to redeem after periods of underperformance or miss rebalancing opportunities after periods of outperformance. The historical evidence associated with these hiring and firing decisions does not shed favorable light on the timing of their choices. Studies on manager hiring and firing show that investors tend to swap managers exhibiting recent underperformance in favor of managers that have done better, only to subsequently see the performance of the fired manager improve while the previously impressive results of the hired manager stall.¹⁵ Investors maximize their odds of success by remaining invested over a full market cycle, which is typically five to seven years. Rotating managers can leave an investor running in circles—and paying transition costs for the joy of doing it. The volatility of portfolios of high active share or concentrated managers can make investors more prone to exit at the wrong time, even if investors take our advice and exclude the ones with the most extreme tracking error. To combat potential behavioral missteps, investors should maintain their focus on *aggregate* portfolio results over full market cycles. Not every manager needs to outperform at all times.

¹⁵ For example see Amit Goyal and Sunil Wahal, “The Selection and Termination of Investment Management Firms by Plan Sponsors,” *The Journal of Finance* LXIII, no. 4 (August 2008).

Summarizing Observations

While there are no silver bullets in active equity manager selection, some managers have generated attractive long-term performance that exceeds both their benchmarks and management fees. These managers tend to have one thing in common: they are different from their benchmarks as measured by either active share or portfolio concentration. This makes sense in theory: these managers do not waste precious portfolio dollars mimicking the benchmarks they are supposed to beat, and holding fewer positions may help focus their efforts. A growing body of evidence supports this theory. While avoiding managers with extreme tracking error can help limit some of the risks inherent in this type of manager, other hurdles make it difficult for many investors to implement such choices successfully. Investing often favors those willing to take a different path than the one of least resistance. For investors with a long time horizon and strong discipline, we believe investing with “truly” active managers may help them earn a premium. ■

Our analysis was performed based on data compiled from eVestment Alliance. It includes all managers categorized in the eVestment database as US large-cap core equity, US large-cap growth equity, US large-cap value equity, US small-cap core equity, US small-cap growth equity, US small-cap value equity, and all EAFE equity with available data over the selected time period.

Estimation of Active Share

Our active share estimate is based on eVestment Alliance's "Portfolio Coverage" (PC) statistic as calculated by Style Research. PC measures the percentage overlap between a portfolio and a benchmark. We estimate active share by taking 100% minus PC. Reporting inconsistencies result in PC figures for some managers being available in some time periods but not others. However, given the consistency of managers' PC over time—the correlations between PC in one period with PC in the next period is over 85%—when a PC figure was not available at a given end date we used the next available data point from our three end-point sample (October 2007, March 2009, and June 2013) as a proxy.

In the US large-cap sample, the distribution of managers by style (growth versus value) in the top and bottom quartiles of estimated active share was similar to the distribution across the total sample. Within the top quartile of active share among US small-cap managers, the distribution was skewed toward value managers. In other words, more US small-cap managers that categorized themselves as having a value style were in the top quartile of active share.

Estimation of Average Annual Fees

Average annual fees are calculated based on the published manager fee schedules in eVestment Alliance. Whenever asset-based fee breakpoints are available, a weighted average fee is calculated based on an assumed separate account size of \$10 million. ■