



Shopping for alpha: You get what you don't pay for

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- In an effort to select superior funds and earn outsized returns, investors use a variety of quantitative measures to assist in narrowing the large universe of equity mutual funds.
- We investigate numerous readily available metrics—cost, fund concentration, turnover, fund size, and past performance—to determine which, if any, help indicate higher subsequent performance.
- We find cost to be clearly the most significant indicator of future alpha, with lower costs leading to higher returns, on average.

For investors using active management, a primary goal is to select specific active funds that provide the greatest likelihood of earning positive alpha. This is not a simple task. Although it's easy to identify managers who have delivered benchmark-beating returns in the past, these historical feats shed little light on a fund's future performance—hence, the familiar regulatory caution that “past performance is not necessarily indicative of future results.”

For active investors, are there metrics that improve the odds of identifying outperforming funds ahead of time? The answer is yes. More than any other quantifiable attribute we have examined, lower costs are associated with higher risk-adjusted future returns—or alpha. But, this conclusion may seem paradoxical since it's inconsistent with the typical relationship between price and quality. Consumers generally assume that if they pay more for something, they will get better quality in return.

This research note examines five common fund characteristics—cost, fund concentration (measured by number of holdings), turnover, fund size, and past performance—to gauge their ability to identify funds that are more likely to outperform their benchmarks. The price–quality relationship in the investment industry may be counterintuitive, but the results are clear: When shopping for alpha, you get what you *don't* pay for.

Understanding alpha and excess return

Before evaluating the ability of various fund metrics to identify funds that offer greater potential to achieve future success, we first needed to define *success*. Many investment practitioners define *success* as the ability to outperform a stated benchmark. The margin of outperformance is referred to as “excess return.” A limitation of excess return is that it may not account for differences between a manager's static beta bets—for example, a large-capitalization manager's persistent tilt toward small caps—and the benchmark's beta profile.¹ What appears to be superior portfolio management may simply reflect a mismatch between the fund's and the benchmark's betas.

Alpha, by contrast, is risk-adjusted return calculated relative to a customized benchmark that seeks to account for a manager's static beta bets. Alpha is a more demanding measure of a manager's ability to produce returns that can't be captured through a combination of low-cost index funds or ETFs weighted according to the manager's beta exposures.² Throughout most of this research note, we use alpha (specifically, the Fama-French three-factor alpha)³ to measure performance and how it relates to various fund characteristics.

¹ *Beta* refers to a measure of the volatility of a security or portfolio relative to a benchmark.

² See Rowley, Bennyhoff, and Choa (2014) for a more detailed discussion of the use of beta products to implement static active “tilts” in a portfolio.

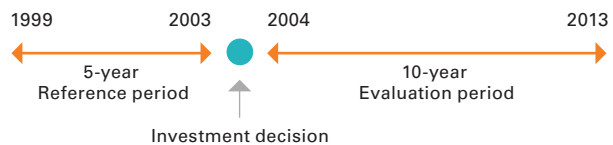
³ Alphas in this analysis are calculated using net (after-cost) returns relative to the stock market's three common risk factors as outlined by Fama and French (1993). We also performed the analysis using the Carhart (1997) four-factor model and found similar results, not displayed in this research note.

The search for alpha begins

A range of quantitative mutual fund metrics exist that are easily accessible for use in active manager selection. Although the use of quantitative metrics is only one aspect in a typical selection process, most investors would acknowledge that such metrics play an important role in narrowing the universe. Yet, few investors have empirically assessed the alpha-identification ability (or inability) of most frequently used metrics.

To structure an analysis for identifying which of our five selected metrics—cost, fund concentration, turnover, fund size, and past performance—have best predicted alpha in active equity mutual funds,⁴ we needed to determine a *reference period* over which the fund metrics would be measured ex-ante (here meaning “ahead of an investment decision”), as well as an *evaluation period* over which we could calculate the metrics’ ability to predict subsequent alpha. We thus chose a five-year reference period (1999–2003) followed by a ten-year evaluation period (2004–2013) as the primary focus for our analysis.⁵

In essence, we put ourselves in the shoes of an investor who was selecting active equity mutual funds on January 1, 2004. We assumed the investor used the five years of fund metrics leading up to 2004 to select funds, and then measured their long-term success (alpha) over the subsequent ten-year holding period (see the following visualization of our analysis periods). Over that time frame, we analyzed a total of 1,592 funds.



Which metrics are most helpful?

To determine the relative strength of each metric to predict alpha, we performed the following analysis:

1. We separated the funds into lowest and highest quartiles based on data for each reference-period metric (for example, funds with lowest-quartile turnover were separated from funds with highest-quartile turnover, as measured during the 1999–2003 period). This was done separately for each metric.⁶
2. We calculated the evaluation-period alpha for all funds in the lowest quartile and highest quartile for each metric.
3. We charted and compared the median alpha of the lowest-quartile metric funds versus the median alpha of the highest-quartile metric funds for each metric.

The results are displayed in **Figure 1**. Our primary focus when reviewing the results was to determine the *difference* between the alpha of the lowest-quartile metric funds and the alpha of the highest-quartile metric funds. A greater difference meant that the metric did a better job of stratifying funds with differing levels of alpha.

Expense ratio is the best (but not a perfect) predictor of future performance

Of the metrics shown in Figure 1, the ex-ante expense ratio separated poorly performing funds from better-performing funds more successfully than all other metrics we analyzed. In fact, the 1.27 percentage-point annual alpha difference between the lowest-quartile cost funds and the highest-quartile cost funds was more than *four times* the difference produced by any other metric.

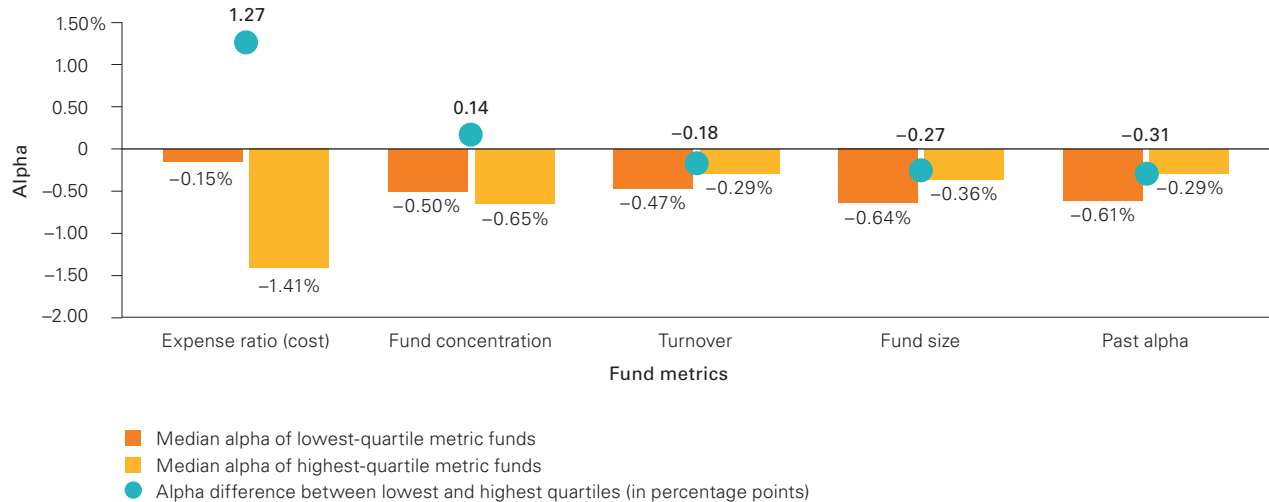
It should be noted that although cost is an important determinant of future performance, it is certainly not a perfect predictor. On average, lower-cost funds tend to produce better future results than higher-cost funds (Wallick, Wimmer, and Martielli, 2013; Philips et al., 2014), but there can be exceptions. And, as the

⁴ We reviewed a number of additional metrics including fund age, tracking error, Sharpe ratios, excess return, active share, and asset percentage in top-ten holdings, but we excluded them from our final results owing to poor data quality, lack of availability, and/or similarity with other metrics that we did include.

⁵ We decided on these periods because they balanced concerns regarding the availability of historical data, the desire to accurately reflect investor behavior, and the need for a sufficiently long analysis period. We performed the analysis using various other reference-period and evaluation-period combinations and found similar results.

⁶ Given that funds of different styles tend to have noticeable and consistent differences in some of these metrics (for example, small-cap funds frequently have higher expense ratios than large-cap funds), we controlled for those differences in our underlying data before running the analysis by calculating the metrics relative to their style-box averages.

Figure 1. Median annual alpha from 2004 through 2013 of mutual funds by highest/lowest quartiles based on metric measurements from 1999 through 2003



Note: The percentages may not compute precisely because of rounding.
Sources: Vanguard calculations, using data from Morningstar, Inc.

negative alphas displayed in Figure 1 demonstrate, the majority of actively managed funds do not produce outperformance, even using a range of metrics to inform our selections. Therefore, sorting funds by cost is an effective way to *begin* an active manager search, but, ultimately, manager selection requires a robust, qualitative talent-evaluation process for the best chance of achieving positive alpha.⁷

Further support for importance of low costs

In addition to comparing the alpha produced by funds in the lowest and highest quartiles of cost, fund concentration, turnover, fund size, and past alpha, we also looked at these characteristics in a multiple-regression analysis to see if their combined impact provided any additional insights. In other words, some investors might believe that using multiple metrics at the same time will further improve their selection process. However, we found no meaningful predictive ability to be gained by combining metrics with the expense ratio. The expense ratio remained the most powerful (and, indeed, the only statistically significant)⁸ predictor of relative performance. The coefficient for expense ratio was -1.04, indicating an approximate 1-to-1 relationship between cost and alpha: For a 1-basis-point increase in the expense ratio, there was a corresponding 1.04-basis-point *decrease* in subsequent alpha, on average.

Our analysis has so far focused on how well various metrics (particularly cost) have predicted superior performance during the 2004–2013 time period. But, are our findings on the importance of cost time-period dependent? To help answer this question, we looked at the percentage of funds that outperformed their relevant style benchmarks over the 5, 10, 15, and 20 years ended December 31, 2013. The funds were grouped by cost quartile. Again, lower-cost funds boasted better odds of beating the benchmark in each time period (see Figure 2). This finding was not surprising, given that past research has documented similar conclusions (Wallick et al., 2013; Philips et al., 2014). Our results further refute the assumption that a higher expense ratio is an indication of a more successful active manager.

Figure 2. Percentage of active equity funds outperforming, periods ended December 31, 2013

	5 years	10 years	15 years	20 years
Least-expensive quartile	40%	36%	46%	35%
Most-expensive quartile	26%	17%	22%	17%

Note: Fund performance was calculated relative to each fund’s costless stated benchmark.
Sources: Vanguard calculations, using data from Morningstar, Inc.

7 See Wallick et al. (2013) for a discussion of Vanguard’s views on the importance of a qualitative talent-evaluation process.

8 The expense ratio was the only variable significant at the 99% confidence level.

Conclusion

Alpha is a measure of risk-adjusted outperformance. Unfortunately, as our analysis has reaffirmed, previous alpha and other measures of historical performance are of little use in identifying tomorrow's superior performers. The elements that distinguish talented investment managers are difficult, if not impossible, to quantify in a simple metric. Active management is both art and science. Therefore, a robust selection process, including resource-intensive qualitative research, is critical. But for investors beginning this process, it is helpful to know that the expense ratio is a useful quantitative predictor of a fund's relative performance and can be an effective metric when narrowing the fund universe. Vanguard's research confirms that when it comes to the search for alpha, you get what you don't pay for.

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