



## **Luck vs. Skill in Mutual Fund Alpha Estimates**

By Michael Edesess

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A long-standing research thread has shown that professionally-managed portfolio returns strongly resemble a random walk about the market average. This is interpreted to mean that professional money managers cannot predictably beat the market.

A new [study](#) by Eugene Fama and Kenneth French uses a novel statistical approach to add evidence to that record—but with an important caveat, to be mentioned at the end of this article.

### **Empirical studies of professionally-managed performance**

In most well-constructed academic studies that reach a random walk conclusion, two observations are central:

- 1) Professional investors on average do not outperform the market.
- 2) A professional investor who does beat the market in a series of periods cannot predictably continue to outperform—that is, market-beating performance is random and not persistent.

Both observations would also be made in coin-toss experiments: the average percentage of heads would be 50%, and a series of heads for a particular coin would not predict that the coin's chance of a head in the future will be greater than 50%.

An adjustment is needed, however, in studies of portfolio returns. One must correct for risk. Otherwise, it will be observed that returns for riskier funds have a tendency to be higher than those for less risky funds—though the variation around that trend will also be higher.

This risk-adjustment results in the notorious alpha ( $\alpha$ ), the elusive Holy Grail of investing. Alpha is the amount by which a fund beats the market after adjusting for risk.

In most studies, average alpha for professionally-managed funds is indiscernibly different from zero (or negative, if net-of-fee returns are used). Little or no statistical evidence is found that if a particular fund produces a series of positive alphas, its likelihood of continuing to do so is enhanced.



## **The bootstrap simulation methodology of the Fama-French study**

The Fama and French study uses a relatively new methodology to produce corroborating results.

Their data set is equity mutual fund performance from January 1984 through September 2006. They compute alphas by regressing monthly returns not only against market returns but against small stock and value stock returns as well (and in one version, “momentum return”). This uses the Fama-French three-factor model, which the authors published in 1992, and presumably adjusts not only for market risk but also any unique risks related to small or value stocks.

This yields an alpha for each fund. The alphas, not unexpectedly, average about zero when gross returns (before fees) are used, negative when net-of-fee returns are used. Thus, observation 1) above is confirmed.

To investigate whether observation 2) can be replicated the authors use a unique simulation methodology. They construct a parallel null-hypothetical data set of returns that are as much like the actual returns as possible, but in which—by construction—no fund has a positive alpha and no positive-alpha performance is ever persistent.

They do this by scrambling the months. There are 273 months in their time period January 1984 through September 2006. The authors construct 10,000 randomly-scrambled 273-month periods by sampling (with replacement) from those months. For example, the first scrambled series might be October 1993, February 2001, March 1988, ..., etc.

Their new data set now contains the same monthly data as the original, but with the months scrambled. Also, each fund’s monthly alpha is subtracted from its monthly return to force each new fund’s alpha to be zero.

This artificially-constructed data set adheres to 1) and 2) above. Even so, funds will randomly produce alphas. The alphas for the randomly constructed data set will have a distribution.

The authors compare that distribution with the actual alpha distribution for the un-doctored data. If the two distributions are nearly the same, it can be concluded that 1) and 2) hold for the real-life data also.

## **Results**

The authors find that the two distributions are almost the same, though not quite. The real-life data set has a slight tendency toward more negative alphas on the lower tail of the distribution, and an even slighter tendency for more positive ones on the upper tail.



That is, there is a statistically insignificant tendency for poor performance to persist and an even less significant tendency for good performance to persist.

The authors reference and compare their study with some prior studies. Unfortunately they do not reference or discuss the Wermers et. al. study [covered recently](#) in this space. In that study, the authors found “a significant proportion of skilled (positive alpha) funds prior to 1996, but almost none by 2006.” It would be interesting to know if Fama and French found a similar progression in their time period.

### **The caveat**

Relegated to an Appendix is an important detail. Fama and French performed the same bootstrap simulations again, but this time calculated alphas using only the CAPM model—that is, they regressed returns only against market returns. In this case, the tests “produce what seems like strong evidence that some fund managers have sufficient skill to cover their costs.”

The addition of the extra factors in the regression—for small stocks and value stocks—is what caused the resulting alphas to show little evidence of manager skill. Fama and French say, however, that adding the small stock (and momentum) factor has only a minor effect on the estimates of alpha. Therefore, the difference between showing that managers can beat the market and that they can't lies in adding the value stock factor.

To put it simply, you would have achieved alpha relative to the CAPM model if you tilted toward value stocks. But you get no alpha if value stocks are considered to be merely an added risk factor. This effect has, of course, been documented by Fama and French before. The debate continues as to whether the value stock effect occurs because value stocks are risky in some way that is not revealed by their market betas, or whether value stocks are a true alpha play—and if the latter, whether this effect, observed robustly in historical data, can continue.

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