Active Management in Mostly Efficient Markets

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This survey of the literature on the value of active management shows that the average active manager does not outperform but that a significant minority of active managers do add value. Further, studies suggest that investors may be able to identify superior active managers (SAMs) in advance by using public information. Investors who can identify SAMs should be able to improve their overall Sharpe ratio by including a meaningful exposure to active strategies.

Most debates have a clear winner: Lincoln beat Douglas, Kennedy beat Nixon, and Reagan beat Mondale. But the debate surrounding active versus passive management continues to rage after more than 40 years of contention. Should investors be satisfied with index returns, or should they seek to outperform the indices by gathering and analyzing information that *may* already be reflected in security prices? Advocates on both sides of the issue are dogmatic in their beliefs and provide compelling arguments to support their cases. We surveyed the academic research on the issue—covering both theory and empirical analysis—in order to offer investors some practical advice. Our goal was to answer the following three important questions for investors:

1. Does active management add value?
2. Can we identify superior active managers *ex ante*?
3. How much active risk should investors include in their portfolios?

Some Caveats

The academic studies in this area are extensive, and in some cases, the results are not entirely consistent. The conclusions often depend on the period covered, the methodology used, the universe and type of funds considered, and the authors' biases. Although we have attempted to distill these varied results into practical advice by giving more weight to studies with more extensive data and more robust analysis, there is always a chance that our own biases may have colored our interpretation of the results or that the future will differ significantly from the periods covered in these studies.

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Further, owing to data availability, most of the surveyed studies analyzed only U.S. domestic equity mutual funds. Results for other asset classes (e.g., fixed income, non-U.S. equities, real estate, commodities) and other active vehicles (e.g., separate accounts, hedge funds, exchange-traded funds [ETFs]) are much more sparse or even nonexistent. The available data may contain survivor bias (exclude dead funds or products that were closed for poor performance) or self-selection bias (include only those managers who chose to submit data) or have a limited return frequency (annually or quarterly instead of monthly or daily). In addition, we note that the sample of actively managed ETFs is too small and too recently introduced for a statistically reliable analysis. Nevertheless, this concept is receiving a lot of attention in the industry and should be a focus of future academic research. Moreover, we suspect that many of the results for active mutual funds would also apply to active ETFs because the latter are often managed by the same managers using the same strategies.

We have tried to point out where our conclusions likely apply—or do not apply—to these other asset classes and vehicles. In general, however, we should expect institutional funds (e.g., separate accounts, pooled trust funds) to outperform retail funds (e.g., retail mutual funds) because the former (1) usually have lower management fees owing to scale economies, (2) can use more performance-sensitive fees to better align the manager's interests with those of the investor, and (3) have lower costs for client accounting, client servicing, and managing daily cash flows.

Finally, even where a study's results are intuitive and statistically significant, they apply only *on average*, not necessarily to a specific manager or fund. For example, Chevalier and Ellison (1999) found that managers who graduated from colleges whose students had higher average SAT scores

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outperformed other managers. This finding does not mean, however, that all such managers will outperform or that managers from other schools will not outperform. Thus, all our recommendations are generic rather than specific to individual funds or managers.

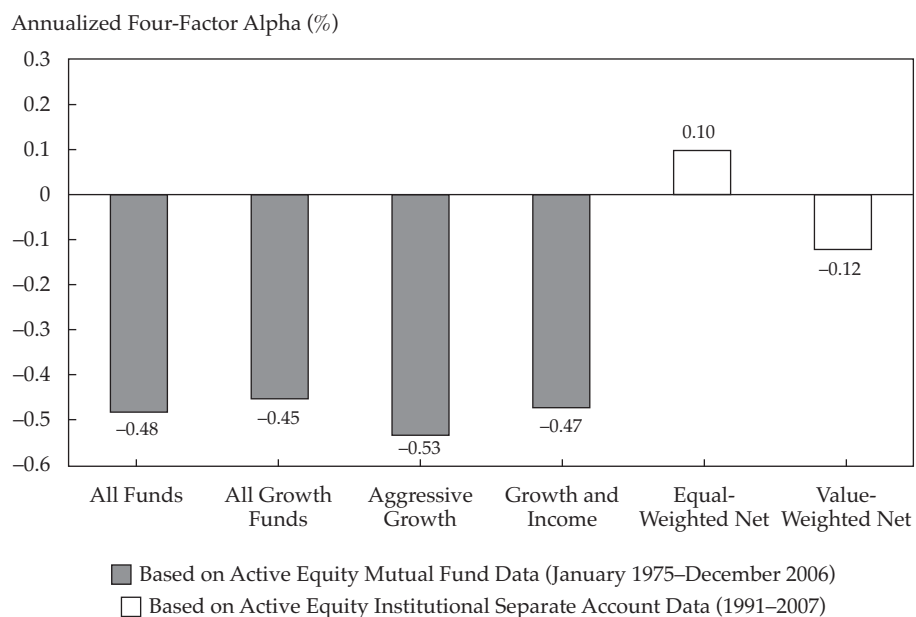## Does Active Management Add Value?

If we assume that the aggregate of all actively managed funds is equal to the market—that is, active management is a zero-sum game—then the aggregate of active fund returns equals the market return but incurs trading costs and charges fees, and so the aggregate will underperform the market by an amount equal to fees and expenses. Empirical studies seem to broadly support this conclusion.[1]

Following Jensen's seminal study (1968), numerous studies have reached virtually the same conclusion: *The average actively managed mutual fund does not capture alpha, net of fees and expenses.* **Figure 1** summarizes the results from two recent studies (Barras, Scaillet, and Wermers 2010; Busse, Goyal, and Wahal 2010). It shows that neither the average mutual fund nor the average institutional separate account (ISA) earned a positive alpha, net of fees and expenses, after adjusting for market and style risks by using Carhart's four-factor model

(1997). Although we did not address after-tax results in our survey, some studies (e.g., Dickson and Shoven 1993) have found that it is even harder for actively managed funds to outperform passive alternatives on an after-tax basis. In fact, the average underperformance reported in these studies is only slightly lower in magnitude than the average fee charged by active managers, which suggests that the average active manager earns a positive alpha before fees but that this alpha does not quite cover the costs of active management. Further, this conclusion seems to apply equally to domestic equity funds, fixed-income funds, international equity funds, balanced funds, and possibly even hedge funds and private equity vehicles (in the last two cases, the data are not as readily available and the results are less compelling).[2]

Proponents of active management often argue that its benefits are most pronounced in periods of heightened volatility and economic stress. Although no relevant academic studies yet exist for the period of the global financial crisis (2007–2009), Standard & Poor's has made some comparisons.[3] The results for the five years ended December 2010 show a fairly balanced "scorecard" for active versus passive management. Specifically, although the market indices outperformed a majority of active managers across all major international and domestic equity categories, asset-weighted averages of

Figure 1. Four-Factor Alphas for Active Equity Mutual Funds and Active Equity ISAs, Net of Fees and Expenses

Annualized Four-Factor Alpha (%)

Values shown: All Funds −0.48; All Growth Funds −0.45; Aggressive Growth −0.53; Growth and Income −0.47; Equal-Weighted Net 0.10; Value-Weighted Net −0.12

☐ Based on Active Equity Mutual Fund Data (January 1975–December 2006)
☐ Based on Active Equity Institutional Separate Account Data (1991–2007)

Sources: Barras, Scaillet, and Wermers (2010) for mutual fund data; Busse, Goyal, and Wahal (2010) for ISA data.

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active managers matched or slightly beat the benchmarks in most categories, with the exception of mid-caps, international equities, and emerging markets.

These five-year results are somewhat worse for actively managed bond funds. With the exception of emerging-market debt, more than 50 percent of active managers failed to beat their benchmarks. Although five-year asset-weighted average returns were lower for active funds in all but three categories, equal-weighted returns over the same investment horizon lagged in *every* category.

So, the most recent five years, which include the global financial crisis, have apparently been a bit more favorable to active *equity* management than the much longer periods covered by prior studies—but not significantly so. As we will see later, some researchers have documented that active funds are more likely to outperform during financial downturns and recessions. Longer-term results that include both "stressed" and "normal" markets, however, offer little support for the "average" active manager.

Active Management and "Mostly Efficient Markets"

Although the semi-strong form of the efficient market hypothesis—whereby market prices completely and accurately reflect all publicly available information—predicts that rational investors (without inside information) will always choose passive management over active management, this is clearly not the case. Why not? Are investors that irrational? If so, how can the market be efficient? In their seminal paper, Grossman and Stiglitz (1980) argued that in a world of costly information, informed traders must earn an excess return or else they would have no incentive to gather and analyze information to make prices more efficient (i.e., reflective of information).[4] In other words, markets need to be "mostly but not completely efficient" or else investors would not make the effort to assess whether prices are "fair." If that were to happen, prices would no longer properly reflect all available and relevant information and markets would lose their ability to allocate capital efficiently. Therefore, although the contest between active managers may be a zero-sum game, active management as a whole is definitely not: *By making markets more efficient, active management improves capital allocation—and thus economic efficiency and growth—resulting in greater aggregate wealth for society as a whole.* Thus, we can view the excess returns earned by informed traders as a kind of economic rent for gathering and processing information and thereby making markets more efficient.

In the Grossman–Stiglitz equilibrium (1980), the marginal (least skilled) active manager earns an excess return that equals the costs of actively managing the assets (i.e., the costs of gathering and analyzing information, including the cost of human capital). Thus, in equilibrium, we should expect to see a (possibly large) group of marginal, yet active, managers who just barely earn back their fees in the form of excess returns. In the real world, however, the average active fund *underperforms* the index, net of fees. Why is this so?

Funds must provide other benefits—liquidity, custody, bookkeeping, scale, optionality, or diversification—that justify their fees. *In fact, virtually 100 percent of passive funds underperform their relevant indices, net of fees*, which can average anywhere from less than 15 bps a year for passive mutual funds that invest in large-cap U.S. equities to more than 75 bps a year for passive emerging-market funds.[5] Thus, the relevant comparison is to the passive alternative and not to the index itself. On that basis, the average active fund earns roughly the same return as the average passive fund, net of fees.[6]

The world we see around us—one filled with active managers who, on average, provide no excess return (versus the passive alternative), net of fees—seems perfectly consistent with the Grossman–Stiglitz model (1980) of "mostly efficient" markets, wherein prices may not fully reflect costly information. In the real world, with differential skills among active managers, we expect to (and do) find informed traders (or superior active managers) who earn meaningful excess returns commensurate with their superior ability to gather and analyze information. Of course, to the extent that they manage money for others, they are also likely to charge higher fees for their services. Because of randomness in markets, however, discriminating perfectly between superior and inferior active managers is nearly impossible for investors to do *ex ante*; therefore, superior active managers are unable to capture all their added value in the form of higher fees.[7] So, the question becomes, Can we identify, *ex ante*, superior active managers whose added value exceeds their fees? Several academic studies have offered encouraging results.

Identifying Superior Active Managers

In a zero-sum game, if some investors (superior active managers, or SAMs) earn positive alphas, other investors (inferior active managers, or IAMs) must "earn" negative alphas. SAMs can exploit IAMs in one of two ways: (1) by having superior

information and analytical capabilities, allowing them to better predict results, or (2) by providing liquidity/immediacy when IAMs need to trade quickly for reasons unrelated to expectations (e.g., to meet redemptions). Of course, the quality of an investor's forecasts can vary across stocks and over time. In addition, today's liquidity suppliers can be tomorrow's liquidity demanders; luck and randomness can also play an important role. Thus, active management amounts to a SAM–IAM contest, in which telling exactly who is who can be difficult (despite what Horton might hear)![8]

Barras, Scaillet, and Wermers (2010) argued that some managers do have skills that allow them to outperform the market, net of fees, but that distinguishing these skilled managers from managers whose strong performance is simply due to luck is virtually impossible. This argument may be valid if investors have only simple past returns to work with, but academics have discovered a number of ways for investors to identify SAMs by using other data and methods. We recommend that investors consider all four of the following factors in identifying and evaluating SAMs: (1) past performance (properly adjusted), (2) macroeconomic forecasting, (3) fund/manager characteristics, and (4) analysis of fund holdings.

Past Performance. If SAMs do have superior information or analytical capabilities, this advantage should presumably persist over time. If so, SAMs who outperform in one period will likely outperform in the next period as well. Offsetting this likelihood are various agency effects and competitive pressures: Managers at poorly performing funds are more likely to change their strategies or be replaced, resulting in better future performance.[9] Managers at top-performing funds may lose their competitive edge—perhaps owing to changing technologies for security analysis, diminished motivation, or overconfidence—or they may reduce fund risk to protect their reputations and fees. Equally problematic are top-performing managers who may either raise fees or attract too many assets for them to continue delivering the same *net* excess returns that they had in the past (i.e., at some point, there are *diseconomies* of scale in active management). Thus, lack of persistence does not necessarily imply a lack of skill among managers.

Although the evidence is mixed, it seems to indicate that mutual fund returns exhibit modest persistence but only if excess returns are adjusted to account for style biases by using either the Carhart four-factor model (1997) or the Fama–French three-factor model (1993). Typical of the many relevant studies, Harlow and Brown (2006) found that using style-adjusted returns can improve the odds of finding an outperforming fund from 45

percent to 60 percent. **Figure 2**, which is from their paper, shows that the top-decile prior-alpha funds produce annual future alphas of about 150 bps, net of fees. Pástor and Stambaugh (2002) found that adjusting for sector biases can further improve these results.
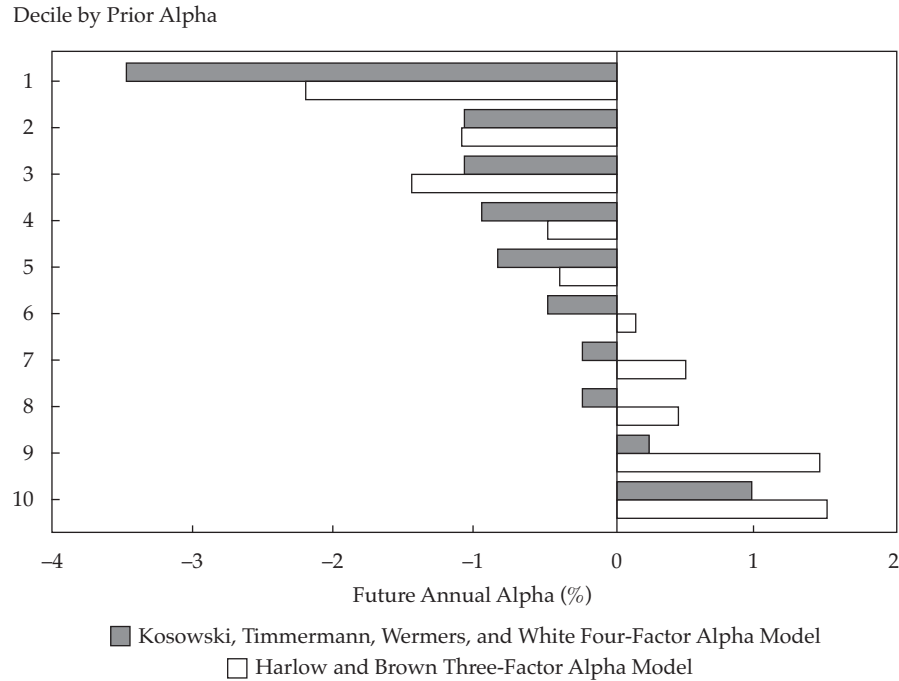
Also shown in Figure 2 are results from Kosowski, Timmermann, Wermers, and White (2006), who found that adjusting for non-normality in fund alphas (e.g., skewness and fat tails) improves the odds of identifying funds with greater return persistence. The intuition is that some SAMs may have positively skewed returns, which are valuable to investors. Therefore, adjusting for "random skewness" (defined as observed fund return skewness that is statistically insignificant) should help discriminate between managers who were lucky and those whose active returns exhibit a positive bias (or skew).

Although research has shown that persistence appears to be strongest at short intervals (monthly or quarterly), some studies have documented persistence at intervals as long as three to four years.[10] None of these studies, however, accounted for potential fund rebalancing costs, which would reduce the potential value added from picking active managers solely on the basis of prior returns or risk-adjusted performance.

Some researchers have also found evidence of persistent skills among hedge fund managers. Kosowski, Naik, and Teo (2007) extended the bootstrap methodology of Kosowski, Timmermann, Wermers, and White (2006) into the hedge fund universe. Accounting for the non-normal returns of hedge funds is particularly important because they often pursue dynamic strategies and make security choices (e.g., various derivatives) that render their portfolio returns distinctly non-normal. Kosowski, Naik, and Teo (2007) found that top-decile hedge funds (ranked by adjusted two-year lagged Bayesian posterior alpha) outperformed bottom-decile funds by 5.8 percent in the following year. Using a simple ordinary least-squares ranking, they found no significant difference between the top and bottom deciles, which illustrates the importance of adjusting hedge fund returns for non-normality.

Using the Fung–Hsieh seven-factor model (2004), Fung, Hsieh, Naik, and Ramadorai (2008) investigated the performance, risk, and capital formation of funds of hedge funds over 1995–2004. Although the *average* fund of funds delivered alpha only over October 1998–March 2000, a subset of funds of funds delivered persistent alpha over longer periods. Such alpha-producing funds experience steadier capital inflows and are less likely to liquidate. Those capital inflows reduce, but do not eliminate, alpha producers' ability to deliver alpha in future periods.

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Figure 2. Persistence in Past Performance

Decile by Prior Alpha

Future Annual Alpha (%)

■ Kosowski, Timmermann, Wermers, and White Four-Factor Alpha Model
□ Harlow and Brown Three-Factor Alpha Model

Notes: Harlow and Brown (2006) used a three-factor alpha methodology and rebalanced quarterly over 1979–2003. Using a four-factor alpha methodology with a three-year ranking period and a bootstrapping technique to model non-normality, Kosowski, Timmermann, Wermers, and White (2006) rebalanced annually over 1978–2002.

Sources: Harlow and Brown (2006); Kosowski, Timmermann, Wermers, and White (2006).

Although far fewer in number, studies of other asset classes and vehicles have provided findings that are generally consistent with those for hedge funds and domestic equity mutual funds. Kaplan and Schoar (2005) found persistence in the performance of funds run by a private equity fund, although (unlike our other investment categories) general partners can sometimes polish performance by using smoothed estimates for the "market" values of their investments.[11] Also unclear is whether these general partners choose better investments or apply superior skills in overseeing the funded companies (or both).

Bers and Madura (2000) found that actively managed closed-end funds (CEFs) exhibit return persistence. This finding is notable because CEFs (like ISAs) do not need to deal with regular inflows and outflows, which can make detecting skills harder (because managers of open-end funds must trade for both liquidity and informational purposes). Huij and Derwall (2008) found evidence of persistence in fixed-income fund returns, especially high-yield funds, after adjusting for multiple benchmarks.

The study by Busse, Goyal, and Wahal (2010) was one of the few to address ISAs (see Figure 1). They found up to a year of weak persistence for domestic equity and fixed-income funds but less persistence for international equity funds. They did not adjust for systematic risks (e.g., country, currency, style), however, which may explain the weaker persistence for international fund returns in their study.

Instead of examining persistence itself, Goyal and Wahal (2008) looked at the hiring and firing decisions of institutional sponsors and found that managers whom institutions hire do not outperform managers they fire.[12] Because the hiring and firing of managers involves search and transition costs,[13] the implication is that institutions should not be so eager to change managers. But because institutions often change managers for reasons other than performance, this finding is not direct evidence against persistence, though it does imply that investors should be careful when changing managers. That is, when making such decisions, investors should properly adjust past returns and consider other factors, including transition costs (additional factors are discussed later in the article).

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When assessing past performance, distinguishing between the contribution of the manager and the contribution of the fund management company can be difficult; a SAM usually needs a strong support team to perform well. Attempting to make that distinction, Baks (2003) found that, depending on the investment process, anywhere from 10 to 50 percent of return persistence is due to the manager, with the balance attributable to the fund management company or other factors. Thus, investors may want to discount prior performance following a recent change in fund managers, especially for funds that rely on "star" managers as opposed to a team approach or quant process. Similarly, investors should be cautious about chasing star managers from one firm to another.

Exhibit 1 summarizes several studies of persistence. On the basis of these and other studies, we conclude that investors can likely identify SAMs by analyzing past performance, but they should be careful to account for non-normal return distributions (such as those with skewness or fat tails) and various style/sector biases by using a sophisticated performance attribution system. Using less sophisticated techniques greatly diminishes one's ability to find true SAMs on the basis of past performance. In addition, investors should carefully assess whether any potential improvement from switching managers will cover transition costs.

Macroeconomic Forecasting. Studies of macroeconomic forecasting try to determine whether active managers, in general, perform better in certain environments and whether it is possible to predict, *ex ante*, which managers will perform best in a given environment. In other words, can IAMs become SAMs (and vice versa) under the right conditions? The results seem quite promising, but the strategies involve considerable manager turnover and may not be so rewarding after deducting manager transition costs.

To the extent that a fund's alpha varies systematically over time, this variation could be due to (1) embedded macroeconomic sensitivities (e.g., a persistent overweight in cyclical stocks), (2) time-varying skills, or (3) time-varying opportunities for managers to benefit from their skills. Although all three explanations may play a role, studies lend the most support to the third one—namely, that certain environments offer more mispricing opportunities for managers to take advantage of their superior insights. For example, many contrarian managers underperformed during the tech bubble of the late 1990s, when prices diverged significantly from fundamentals, but outperformed by a huge margin when the bubble burst. Did their skills suddenly change dramatically, or did the market simply provide more opportunities for them in one period versus the other?

Moskowitz (2000) and Kosowski (2006) found that the average active manager is more likely to outperform the market during recessions than at other times. This outcome is probably not the result of holding cash in down markets because Kosowski, in particular, adjusted returns for market risk. Instead, recessions are likely to be periods of above-average uncertainty, when superior information and analysis can be particularly valuable. Consistent with this explanation, Kosowski, among others, also found that the average active fund performs better in periods of higher return dispersion and volatility, which are also likely to be periods of heightened uncertainty—and opportunity.

Exhibit 1. Summary of Findings on Persistence

Study	Asset Class (period)	Finding
Bers and Madura (2000)	Active closed-end funds (1976–1996)	Return
Harlow and Brown (2006)	Equity mutual funds (1979–2003)	Style-adjusted return
Huij and Derwall (2008)	Fixed-income funds (1990–2003)	Benchmark-adjusted return
Bollen and Busse (2005)	Equity mutual funds (1985–1995)	Raw return during quarter +1
Baks (2003)	Equity mutual funds (1992–1999)	Fund-manager-specific return
Kosowski, Timmermann, Wermers, and White (2006)	Equity mutual funds (1975–2002)	Bootstrapping-derived alpha
Busse, Goyal, and Wahal (2010)	Institutional separate accounts (1991–2008)	Weak return for domestic equity
Fung, Hsieh, Naik, and Ramadorai (2008)	Hedge funds of funds (1995–2004)	Alpha
Goyal and Wahal (2008)	Institutional separate accounts (1994–2003)	None for termination
Jagannathan, Malakhov, and Novikov (2010)	Hedge funds (1996–2005)	Superior funds only
Kosowski, Naik, and Teo (2007)	Hedge funds (1994–2003)	Alpha computed by using Bayesian methods
Kaplan and Schoar (2005)	Private equity funds (1980–2001)	Discounted cash inflows divided by outflows

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Figure 3 shows the results from Kosowski (2006); excess returns are higher in recessions than in expansions for all the major Lipper domestic equity fund categories. **Figure 4**, from a report by Paul (2009), shows that the top-quartile manager's alpha tends to be higher in periods of higher return dispersion; in general, Paul found that the median active U.S. domestic equity fund exhibits a quarterly increase in alpha of 11–12 bps for every 1 percent increase in the spread between the 25th and 75th percentile stock returns in that quarter.

These studies focused on fund performance during periods of economic stress. Such periods, however, are hard to predict. What if we want to predict fund performance by using macrodata that are known today?

One of the first studies of macroeconomic forecasting to find superior asset managers was by Avramov and Wermers (2006), who identified outperforming funds, *ex ante*, by using macroeconomic variables that have been shown to predict stock returns—namely, the level of short-term rates, the credit default spread, the term structure of interest rates, and the market's dividend yield. They found that selecting funds on the basis of their prior correlations with these macrovariables

produces annual four-factor alphas of more than 600 bps, net of fund expenses but before any fund rebalancing costs. Banegas, Gillen, Timmermann, and Wermers (2009) applied the same approach (with additional predictor variables) to European equity funds and found even greater levels of outperformance (10–12 percent a year) owing to the greater opportunities offered by rotating among country-specific mutual funds.

Avramov, Kosowski, Naik, and Teo (forthcoming 2011) extended the predictability models of Avramov and Wermers (2006) into the hedge fund universe and found a substantial ability to predict hedge fund outperformance. Specifically, they found that several macroeconomic variables, including the Chicago Board Options Exchange Volatility Index (VIX) and credit spreads, allowed them to identify hedge funds that outperformed their Fung–Hsieh benchmarks (2004) by more than 17 percent a year, before transition costs (which can be substantial).

Note that a macroforecasting strategy can often conflict with a return-persistence strategy for selecting funds—that is, macroforecasts may recommend buying funds that have recently performed poorly, especially when macroeconomic

Figure 3. Alpha Performance during Recession and Expansion, 1962–2005
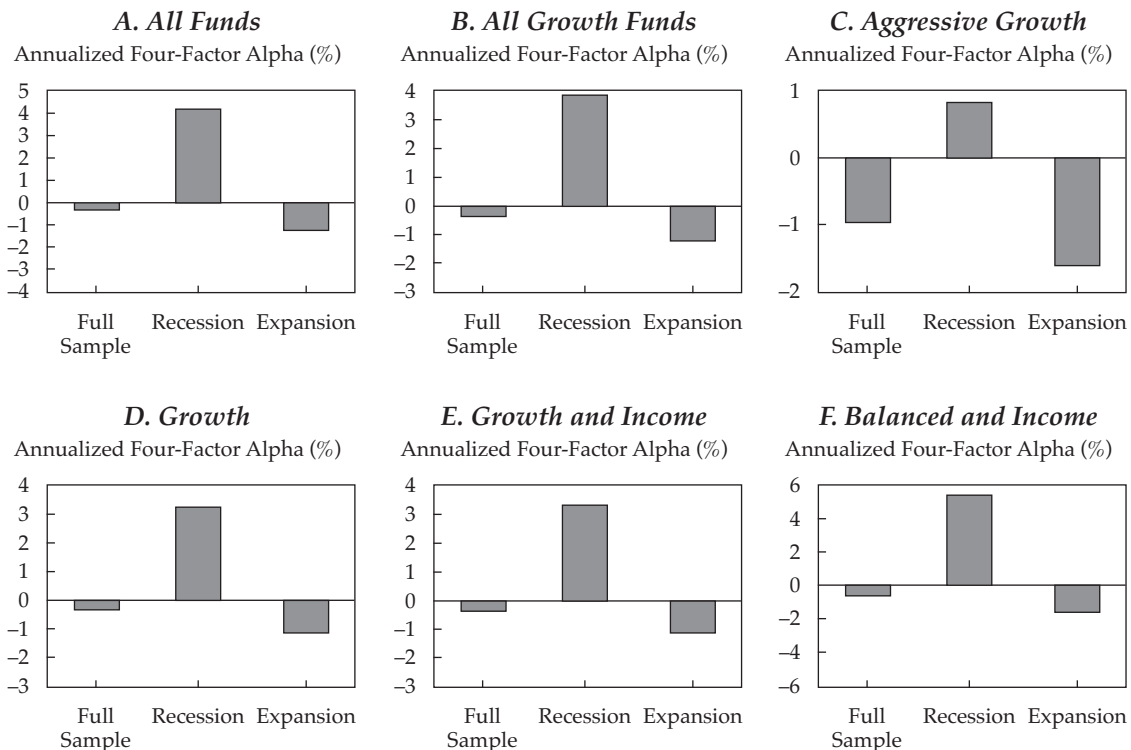
Source: Kosowski (2006).

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Figure 4.   Manager Alpha and Return Dispersion, 1980–2007

Notes: Data are through 31 December 2007. Return dispersion is the difference in quarterly total returns between the 25th and 75th percentiles of stocks in the AllianceBernstein U.S. large-cap universe. Manager alpha is the excess returns of the 25th percentile managers in the eVestment U.S. large-cap equity universe versus the S&P 500 Index.

Source: Paul (2009).

conditions have recently changed. For example, if some funds have better relative returns when short-term interest rates are low and default spreads are wide, we may decide to invest in such funds when those conditions prevail, even if their recent performance has been weak.

A word of caution is in order: Macroeconomic timing strategies can involve considerable fund turnover from one period to the next (i.e., 200–300 percent annually if implemented without constraints). This approach could prove challenging for large institutional investors if the target funds have flow restrictions in place, especially for hedge fund investors with lockup periods or penalties for early withdrawal.

Exhibit 2 summarizes the relevant studies of macroeconomic timing. *For investors who wish to pursue this approach, we recommend investing in a diverse group of funds that do well in different macroenvironments and reallocating among them at the margin on the basis of macroforecasts.* This cautious approach may provide less gross alpha but should incur significantly lower manager search and transition costs, as well as provide a partial hedge against sudden changes in the macroenvironment.[14]

Fund/Manager Characteristics. Various researchers have studied the characteristics of funds, fund management companies, and fund managers to see whether they can predict outper-

formance. See **Exhibit 3** for a summary of findings on fund/manager characteristics. Because fund management companies use different techniques and are organized differently and because fund managers come from a variety of backgrounds, certain fund companies and fund managers may be more skilled than others at collecting and analyzing information. Many studies have found that certain types of funds, fund managers, and fund management companies reliably outperform, on average. Further, because these approaches involve fairly low levels of manager turnover, we view them as being among the most effective ways to select active managers.

Experienced managers are more likely than inexperienced managers to be SAMs because unsuccessful fund managers (IAMs) are likely to drop out of the pool over time. Ding and Wermers (2009) found exactly that: Experienced managers *of large funds* (i.e., with assets under management above the median) outperform less experienced managers by 92 bps a year. Interestingly, the opposite is often true for small funds. Ding and Wermers (2009) attributed their findings to entrenchment: An experienced manager of a small fund has likely been unsuccessful (which is why the fund is small) but may be difficult to replace for institutional or other reasons. These findings point to a "mostly efficient" market for fund managers, in which most (but not all) managers survive on the basis of skill.

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Exhibit 2.   Summary of Findings on Macroeconomic Timing

Study	Finding
Moskowitz (2000)	Average active managers outperform in recessions
Kosowski (2006)	Average active managers outperform in periods of recession and high volatility/dispersion
Avramov and Wermers (2006)	Outperformance from identifying funds that do well in certain past environments and choosing them on the basis of the current environment
Avramov, Kosowski, Naik, and Teo (forthcoming 2011)	Same as Avramov and Wermers (2006) for hedge funds
Banegas, Gillen, Timmermann, and Wermers (2009)	Same as Avramov and Wermers (2006) for European equity funds

Exhibit 3.   Summary of Findings on Fund/Manager Characteristics

Study	Finding
Chevalier and Ellison (1999)	Managers from schools with higher average SATs do better
Edelen (1999)	Funds with low cash balances outperform
Liang (1999)	Hedge funds (especially those with higher incentive fees and lockups) outperform
Howell (2001)	Younger hedge funds do better
Wermers (2010)	Funds with the most variation in style exposures do better
De Souza and Gokcan (2003)	Managers who invest in their own funds outperform; hedge funds outperform mutual funds; older, larger hedge funds with higher incentive fees outperform other hedge funds
Amenc, Curtis, and Martellini (2004)	Larger, younger hedge funds with high incentive fees outperform
Getmansky (2005)	Hedge funds that are not too large or too small do better
Kacperczyk, Sialm, and Zheng (2005)	Industry- or sector-concentrated funds do better
Gottesman and Morey (2006)	Managers from better MBA programs outperform
Ding and Wermers (2009)	Experienced managers of large funds outperform; the opposite is true for small funds
Cohen, Frazzini, and Malloy (2008)	Stocks with direct school ties between board members and fund managers outperform
Massa and Zhang (2009)	Funds with flatter organizational structures outperform
Dincer, Gregory-Allen, and Shawky (2010)	Well-trained managers outperform
Kinnel (2010)	Mutual fund managers with lower expense ratios outperform

Other manager characteristics that can help predict outperformance include social connections, academic background, and co-investment:

• Cohen, Frazzini, and Malloy (2008) found that managers take larger positions in companies in which they have social connections (i.e., the officers or board members attended the same college as the manager). Further, these holdings outperform nonconnected holdings, on average. They conjectured that connected managers have better access to private information or are better able to assess the quality of the company's management team.

• Chevalier and Ellison (1999) documented that managers who graduate from colleges whose students have higher average SAT scores also tend to outperform, presumably because they are better qualified and thus better able to analyze information.[15]

• Similarly, Gottesman and Morey (2006) found that the quality of a manager's MBA program is positively correlated with future performance. They measured the quality of an MBA program by using both the average GMAT score of students in the program and the annual *BusinessWeek* rankings. Interestingly, they found no relationship between performance and other graduate degrees (including the PhD degree) or the CFA designation.

• Dincer, Gregory-Allen, and Shawky (2010) found that funds managed by CFA charterholders tend to have less tracking risk (better risk management) than other funds. Conversely, funds managed by MBA graduates (without the CFA designation) tend to have higher tracking risk, which may reflect their proverbial overconfidence. They found no significant difference in returns (as opposed to risk) attributable to either the MBA degree or the CFA designation—or, for that matter, to experience. Unlike Ding and Wermers (2009), however, they did not adjust for the correlation between experience and fund size.

• De Souza and Gokcan (2003) found that hedge fund managers who invest their own capital in their funds are more likely to outperform, possibly because such managers have greater conviction or are more likely to avoid uncompensated risks.

On the basis of these studies, we conclude that investors should look for funds directed by smart, well-networked, and well-educated managers who have some skin in the game.

Other studies have focused on the characteristics of the *fund management company*. Not surprisingly, funds sponsored by large management companies tend to perform better than those sponsored by small companies because of (1) economies of scale and scope (lower costs and fees),[16] (2) greater resources for gathering and analyzing information,[17] and (3) better technologies for executing trades with less price impact. In addition, fund management companies with a greater number of independent directors also tend to perform better, possibly because they are more demanding of their managers.[18]

Massa and Zhang (2009) found that funds managed by companies with a flat organizational structure outperform funds managed by companies with a more hierarchical structure. Funds managed by companies with a flat organizational structure also tend to be more concentrated and exhibit less herding behavior. Massa and Zhang (2009) found that each additional layer in the hierarchy reduces average fund performance by 24 bps a month, or almost 300 bps a year. The reason for this result may be that a hierarchical structure discourages managers from innovating, taking risks, and collecting private information—that is, in vertical organizations, managers may not think they have as much direct responsibility (ownership) for their funds.

Yet other studies have focused on the characteristics of *the fund itself*. Edelen (1999) found that cash holdings explain much of the underperformance of the average mutual fund. Thus, funds with large, idle cash balances are more likely to lag their benchmarks than are other funds. If so, funds that equitize idle cash balances can eliminate this "cash drag" as a source of underperformance. Conversely, if cash is used as a tactical (market-timing) tool, it may be a source of alpha. Careful attribution analysis should help investors discern whether market timing is an alpha source or whether the manager should be equitizing idle cash balances.

In a well-documented and remarkably objective study from Morningstar, Kinnel (2010) found that expense ratios (fees) are strong predictors of performance: The cheapest funds outperformed the most expensive funds in every period and every category. Whether Morningstar's star ratings had any additional predictive ability after accounting for the higher net returns of low-fee funds was unclear. Given that its star ratings rely solely on past performance, however, we suspect that they would have less predictive ability than a more comprehensive rating methodology.

Conflicting results surround the issue of specialization versus flexibility. On the one hand, we would expect managers who stick to their areas of expertise (i.e., where they have a competitive advantage) to outperform those who do not. On the other hand, any constraint can limit a manager's ability to add alpha. The evidence supports both "hands."

Kacperczyk, Sialm, and Zheng (2005) found that funds concentrated in certain industries and sectors outperform an appropriate benchmark, which suggests that specialization along industry or sector lines improves a manager's ability to gather and analyze information. In addition, some of the macrobased studies (discussed previously) found that different types of managers and funds do better in different environments, in which there are presumably more mispricing opportunities in their primary areas of expertise.

Conversely, Wermers (2010) found that funds that allow the most "style drift" (variation in exposures to such style factors as value versus growth) are more likely than others to outperform their benchmarks. In addition, many studies have shown that eliminating the "no short" constraint can improve a fund's active risk–reward profile.[19] Moreover, Liang (1999) found that hedge funds—which usually have fewer constraints—exhibit more skill and have higher risk-adjusted outperformance than mutual funds. We conclude that investors should look for funds with few artificial constraints but whose managers do not stray too far from their primary areas of expertise.

Finally, a number of studies have examined the characteristics of top-performing *hedge funds*:

- Liang (1999) found that hedge funds with "high watermarks" significantly outperform funds without such structures.[20] He also found that funds with higher incentive fees and longer lockup periods perform better than other funds. These results suggest that the best performing funds are those that best align the interests of the manager and the investor.

- Numerous studies have found that large hedge funds perform better than small hedge funds, possibly because of economies of scale (see, e.g., Amenc, Curtis, and Martellini 2004; Getmansky 2005; De Souza and Gokcan 2003). For example, larger funds may be able to attract and retain more and better analysts and managers because of their higher revenue base. Getmansky (2005), however, found a concave relationship between fund size and performance: Funds that are either too small or too

large underperform, which suggests an optimal size for most hedge funds. Funds that are too large may run up against liquidity constraints or possibly lose their competitive edge owing to wealth effects (i.e., a wealthy manager with a solid reputation and track record may have little incentive to aggressively seek strong performance).

• Results are conflicting with respect to fund age. Howell (2001) found that younger funds (less than three years since inception) outperform older funds by more than 700 bps a year, but this finding could be due to self-selection and back-fill bias (after the fact, only successful young funds choose to submit information on their returns to databases). Conversely, De Souza and Gokcan (2003) found that older funds outperform younger funds, on average. Given these conflicting results, we would ignore fund age and focus more on manager experience (and other factors) when selecting hedge funds.

Portfolio Holdings Analysis. Studies in this area have looked at the holdings of the underlying fund to determine whether there is any information that can help predict performance. Holdings-based analysis generally requires much more detailed (holdings) data and involves additional computational complexity. Results seem quite promising, however, and would appear to justify the additional analysis. In fact, because these approaches involve low manager turnover and get at the heart of a manager's strategy, we view holdings-based analysis as one of the best ways to identify SAMs. See **Exhibit 4** for a summary of findings on holdings-based analysis.

Kacperczyk, Sialm, and Zheng (2008) compared the performance of the actual fund with the performance of the publicly disclosed holdings of the fund (the "return gap"). A large negative return gap may indicate sloppy trading or a manager who is trying to hide bad trades (i.e., "window dressing" at quarter-end, when holdings are published). Both explanations are cause for concern. They found that funds with a large *negative* return gap underperform by roughly 18 bps a

month (or 216 bps a year), whereas those with a large *positive* return gap outperform by about 10 bps a month (120 bps annually).

Huang, Sialm, and Zhang (2010) compared the realized volatility of a fund (based on reported returns) with the volatility calculated by using its most recently reported holdings. They found that "risk-shifting" funds tend to underperform funds that maintain a stable risk profile. Fund managers who cut risk may be "locking in" gains to protect their fees, whereas managers who increase risk may be "doubling down" in a desperate attempt to catch up to other funds. In any case, Huang, Sialm, and Zhang (2010) concluded that risk shifting either is an indication of inferior ability or is motivated by agency issues. We conclude that investors should select funds that manage risk effectively and that maintain a reasonably stable (but not necessarily low) risk profile.

Managers who have superior information or analytical capabilities are likely to be contrarians—that is, because prices reflect consensus expectations, SAMs will trade only when their views differ from the prevailing consensus. Wei, Wermers, and Yao (2009) found exactly that: Contrarian managers outperform herding managers[21] by more than 260 bps a year. Their findings suggest that these excess returns come both from supplying liquidity to the herd and from superior information collection and analysis—in particular, the stock holdings of contrarian funds show a much greater improvement in future corporate profitability than do the holdings of herding funds.

Cremers and Petajisto (2009) found that managers who take big active positions perform better than those who take small positions. They defined "active share" as the absolute difference between a stock's weight in the portfolio and its weight in the "best fit" benchmark, cumulated across all the stocks in the portfolio and the benchmark. They found that funds with the highest aggregate active share outperform those with the lowest active share by roughly 250 bps a year. They attributed this result to greater "conviction" on the part of the manager and concluded that "the most active stock pickers have enough skill to outperform their

Exhibit 4. Summary of Findings on Holdings-Based Analysis

Study	Finding
Cremers and Petajisto (2009)	Funds that take bigger active positions outperform
Kacperczyk, Sialm, and Zheng (2008)	Funds with large "return gaps" between published and holdings-derived performance underperform
Huang, Sialm, and Zhang (2010)	Funds that change risk underperform
Wei, Wermers, and Yao (2009)	Contrarian managers (by holdings) outperform

benchmarks even after fees and transaction costs. In contrast, funds focusing on factor bets seem to have zero-to-negative skill, which leads to particularly bad performance after fees" (p. 3332).

There are some important qualifications, however, to the findings of Cremers and Petajisto (2009). First, they did not control for the capitalization of the benchmark. Thus, their results could simply mean that small-cap funds outperform their benchmarks more often than large-cap funds do.[22] Such a finding, though interesting, is entirely consistent with the "costly information" theory of Grossman and Stiglitz (1980) because small-cap stocks are more costly to research. Second, strong manager conviction is not always a good thing. The behavioral literature shows that overconfidence can cause investors to take excessive risk relative to the quality of their information or analysis. Therefore, a large active share may indicate a BUM ("behaviorally unhumble manager") rather than a true SAM. Finally, Cremers and Petajisto's own analysis does not indicate any return differences between high and low *tracking error* (as opposed to active share) funds, which implies that the best funds have high active shares but relatively low tracking errors (if the active returns are equivalent, the lower tracking error funds will have higher information ratios, *ipso facto*).

Combining these observations, we conclude that investors should look for funds with a contrarian bent and high active shares but stable tracking errors. Managers of such funds are likely to be adept at risk management (i.e., at taking large but offsetting bets) but are probably not overconfident because they hedge their largest bets. Investors should also avoid "risk shifters" and funds with a large negative return gap.

Active Risk Budgeting

Risk budgeting is the process of allocating risk to different investment alternatives. *Active* risk budgeting means determining how much risk to allocate to different *active* strategies—that is, how much and what type of active risk should investors include in their portfolios?[23] The answer is a function of the expected return to active risk (i.e., the expected information ratio) and the correlation between that active risk and other risks in an investor's portfolio. In essence, active risk budgeting is an optimization exercise that requires estimates of the expected returns, volatilities, and correlations of different active strategies.

For investors who are unwilling or unable to devote the level of resources necessary to identify SAMs, the expected return to active management will be zero or negative. Such investors should take little or no active risk, regardless of volatilities and correlations. They should focus on developing an appropriate asset allocation while embracing passive management in each asset class, secure in the knowledge that by minimizing fees and expenses, they are likely to perform at least as well as the average investor in each asset class. Such investors are essentially piggybacking on "the wisdom of crowds."[24]

Nevertheless, many of the studies surveyed in this article offer reliable ways to identify SAMs on an *ex ante* basis. Investors who can do so successfully should be rewarded with positive expected returns from active management. Further, active risk, almost by definition, should have little correlation with the systematic risks in an investor's portfolio. Similarly, little correlation should exist between the active risks of different active managers who presumably use different strategies.[25] Taken together, these observations imply that active management can provide both positive (active) returns and substantial diversification benefits. For investors who can identify SAMs, a thorough risk budgeting exercise would likely recommend a healthy allocation to active strategies.

Table 1 shows the potential benefits of adding active risk to a passive portfolio. Let us assume that an investor starts with a passive portfolio that has an expected return of 7 percent and volatility of 10 percent. Further, let us assume that the investor has been able to identify a group of SAMs—which may include hedge funds, active long-only funds, global tactical asset allocation overlay managers, and so on—with an aggregate expected information ratio of 0.25 and no correlation with other risks in the investor's portfolio. If the investor decides to add 6 percent in active risk to the existing portfolio—without any reduction in other risks—the portfolio's total expected return improves from 7 percent to 8.5 percent, whereas the expected volatility increases from 10 percent to 11.7 percent.[26] Thus, the incremental return–risk ratio (IRRR) is 0.88, or 1.5 percent/1.7 percent. An investor with a 20-year horizon can realize a 32 percent increase in expected

Table 1. Adding Active Risk to a Passive Portfolio

	Passive Portfolio	Active Strategies	Total Portfolio	Incremental Analysis
Return	7.0%	1.5%	8.5%	1.5%
Risk	10.0%	6.0%	11.7%	1.7%
IRRR	0.70	0.25	0.73	0.88

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terminal wealth—often, enough to convert an underfunded plan into a fully funded one. Of course, the slightly higher volatility also means a wider range of expected terminal wealth.

Figure 5, from Litterman (2004), shows the optimal allocation to active risk for a typical equity investor as a function of the expected information ratio (IR). For example, at an expected IR of 0.25, a typical investor should take more than 6 percent in active risk, far more than we see in most portfolios. Litterman called this scenario "the active risk puzzle." Why do we see the vast majority of investors taking active risk of 2 percent or less—which implies an expected IR of only about 0.05—instead of a bimodal distribution whereby many investors take no active risk and the remaining investors take substantially more active risk? Litterman suspected that agency issues may explain this anomaly—for example, institutional sponsors may seek to limit career risk by herding with their peers and being overcautious.

Another possible explanation, however, may be that investors misinterpret the oft-cited study by Brinson, Hood, and Beebower (BHB 1986), who found that asset allocation explains more than 90 percent of a typical plan's return variance over time. Investors may misinterpret this finding to mean that active management within asset classes has little impact on relative performance; therefore,

they should focus on setting the right asset allocation and not worry too much about finding SAMs. In fact, however, the BHB results say only that returns to asset classes explain the vast majority of a typical fund's *return variance over time*; they say nothing about cross-sectional differences in *actual long-term returns.*[27]

In recent years (i.e., after the 1986 BHB study), we have seen some investors—primarily individuals, foundations, and endowments—take on significantly more active risk, with a substantial impact on performance. In fact, many of the most successful investors over the past decade (even after the recent crisis) have had substantial exposures to active strategies—including hedge funds, active equity, global tactical asset allocation overlays, currency overlays, private equity, commodities, alternative assets, and other sources of active risk. Clearly, some of these investors have been able to identify SAMs—as evidenced by their positive active returns—and have done quite well as a result.

Finally, for investors with limited resources, focusing their search for SAMs on those asset classes whose rewards to active management are likely to be greatest may make sense—that is, asset classes for which information gathering and analysis is most difficult and expensive. *For an investor to embrace passive management in some asset classes and active management in others is perfectly rational.*

Figure 5. Optimal Active Risk Allocation for a Typical Equity Investor as a Function of the Expected IR
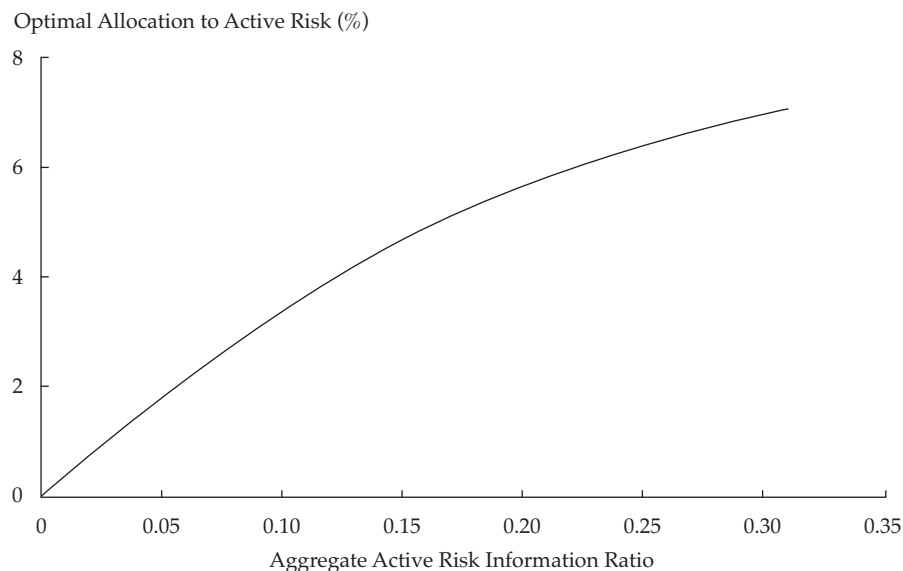
Sources: Goldman Sachs Asset Management; Litterman (2004).

Conclusion

Our review of academic studies of active management has produced the following findings and recommendations.

Active returns (adjusted for risk) across managers and time probably average close to zero, net of fees and other expenses. This finding is what we should expect in a mostly efficient market, in which fierce competition among active managers drives average (net) active risk-adjusted returns toward zero, in equilibrium. By keeping markets efficient, however, active management provides a critical function in modern capitalist economies: Efficient, rational capital allocation improves economic growth and leads to increased wealth for society as a whole.

Thus, to keep the competition fierce, the rewards to superior (as opposed to average) active management must be rich indeed, as in fact they are—for both the manager and the ultimate investor. Superior managers earn high fees and often share in their added value, whereas inferior managers are soon bereft of both clients and fees. Investors who engage active managers can earn positive alphas with modest additional risk on a total portfolio basis (i.e., an attractive IRRR). But this benefit comes at a cost—the risk that active returns may prove negative and lead to lower terminal wealth.

Investors can lessen this risk by using some of the research we have discussed. In particular, studies suggest that investors may be able to identify SAMs *ex ante* by considering (1) past performance (properly adjusted), (2) macroeconomic correlations, (3) fund/manager characteristics, and (4) analyses of fund holdings. We suspect that using a combination of these approaches will produce better results than following any one approach exclusively.

Active management will *always* have a place in "mostly efficient" markets. Hence, investors who can identify SAMs should *always* expect to earn a relative return advantage. Further, this alpha can have a substantial impact on returns with only a modest impact on total portfolio risk. Finding such managers is not easy or simple—it requires going well beyond assessing past returns—but academic studies indicate that it can be done.

This article qualifies for 1 CE credit.

Notes

1. French (2008) made this assumption in computing the "deadweight loss" from investing in active funds and concluded that 67 bps a year is lost from active fund investments. Wermers and Yao (2010), however, found large differences in aggregate holdings of active versus passive funds, which suggests that this assumption is questionable. For instance, passive funds hold more large-cap core stocks, whereas active funds hold more small- and mid-cap stocks. Nevertheless, several studies have found that, for whatever reason, the average active fund underperforms the market by roughly the magnitude of fees and expenses.

2. For example, Ferson, Henry, and Kisgen (2006) evaluated a sample of U.S. government bond funds and found underperformance, net of fees; Phalippou and Gottschalg (2009) found that private equity funds also underperform, net of fees.

3. See year-end 2010 Standard & Poor's Indices versus Active (SPIVA) Funds Scorecards (www.standardandpoors.com/indices/spiva/en/us).

4. Informed traders may have better information and/or a better ability to assess the implications of information for security prices. We use the terms *informed trader* and *superior active manager* interchangeably throughout this article.

5. Under both passive and active management, fees are lower for institutional products, but the point is the same: Active managers should be compared with the passive alternative, not the index itself.

6. For instance, Wermers (2000) found that the asset-weighted average actively managed domestic equity fund exhibited a net return over 1977–1994 that was the same as that of the Vanguard 500 Index Fund.

7. Berk and Green (2004) presented a theoretical model that captures this intuition.

8. With apologies to Dr. Seuss.

9. See Lynch and Musto (2003) for a formal model with these predictions.

10. With respect to short-term persistence, Bollen and Busse (2005) used daily mutual fund returns to rank actively managed U.S. domestic equity mutual funds on a quarterly basis. They found an average abnormal return of 39 bps (156 bps annually) for the top decile in the postranking quarter. For longer-term persistence, Wermers (2003) found that portfolios of top-decile funds, ranked by lagged one-year net return, outperform for three to four years.

11. To overcome this potential bias, Kaplan and Schoar (2005) computed returns on the basis of discounted private equity fund cash flows rather than potentially biased valuations issued by the fund managers. Nevertheless, the lack of reliable market pricing makes such studies less reliable. Also, the dataset used in the study was based on *voluntary* reporting of fund returns by the private equity firms (or general partners), as well as their limited partners.

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12. Stewart, Neumann, Knittel, and Heisler (2009) also studied the hiring and firing decisions of institutions. As they noted, institutional plan sponsors are charged with investing more than $10 trillion in assets for pension plans, endowments, and foundations. Using a dataset covering 80,000 yearly observations of institutional investment product assets, accounts, and returns over 1984–2007, they found little evidence of value added by managers picked by the sponsors over time. In fact, they estimated losses of more than $170 billion over the period owing to poor manager selection by sponsors.

13. Transition costs include the costs of identifying and interviewing new managers and the costs of converting portfolios to a new strategy/manager (trading costs).

14. Although the strategies of Avramov and Wermers (2006) and Avramov, Kosowski, Naik, and Teo (forthcoming 2011) hedge against some potential changes in the macroeconomic environment, a more cautious strategy would provide greater safety in the face of large, *unexpected* shifts.

15. Unable to find data on individual manager SAT scores, Chevalier and Ellison (1999) used college average SAT scores as a proxy.

16. Chen, Hong, Huang, and Kubik (2004) found economies of scale in large management companies.

17. Busse, Goyal, and Wahal (2010) found that funds sponsored by companies with broad research capabilities tend to outperform.

18. Ding and Wermers (2009) found that one additional independent director for a fund is correlated with an additional 20 bps a year in pre-expense returns.

19. For example, Hirshleifer, Teoh, and Yu (2011) found that the accrual anomaly is stronger on the short side; Hong,

Lim, and Stein (2000) found the same for momentum. Chordia, Subrahmanyam, and Tong (2010) found that the value anomaly has been stronger on the short side in recent years.

20. With a high watermark, the fund does not earn a performance fee until it makes up any prior underperformance.

21. A herding manager trades (i.e., has a change in holdings) in the same direction as the aggregate of other managers. A contrarian manager trades in the opposite direction from the aggregate.

22. Small-cap funds are likely to have a larger active share than large-cap funds because the small-cap benchmark has more names, with a smaller average weight, than the large-cap benchmark.

23. For a thorough discussion of active risk budgeting, see Winkelmann (2003).

24. For a cogent explanation of why consensus views are often more accurate than expert opinions, see Surowiecki (2004).

25. A more formal risk budgeting exercise would include explicit estimates of these correlations and related volatilities.

26. This example assumes that the investor can add active risk without reducing systematic risk or return. Under this assumption, total return is 8.5 percent (7 percent + 0.25 × 6 percent). Assuming no correlation between active risk and other portfolio risks, the total risk is the square root of (10 percent squared + 6 percent squared), or the square root of 136 percent = 11.7 percent.

27. For a more complete discussion, see Xiong, Ibbotson, Idzorek, and Chen (2010), who demonstrated that the results of BHB (1986) really mean that market movements explain most of a typical plan's returns and that a plan's specific asset allocation and active management contribute similar amounts to total active return and risk.

References

Amenc, Noël, Susan Curtis, and Lionel Martellini. 2004. "The Alpha and the Omega of Hedge Funds Performance." Unpublished paper, EDHEC (February).

Avramov, Doron, and Russ Wermers. 2006. "Investing in Mutual Funds When Returns Are Predictable." *Journal of Financial Economics*, vol. 81, no. 2 (August):339–377.

Avramov, Doron, Robert Kosowski, Narayan Y. Naik, and Melvyn Teo. Forthcoming 2011. "Hedge Funds, Managerial Skill, and Macroeconomic Variables." *Journal of Financial Economics*.

Baks, Klaas. 2003. "On the Performance of Mutual Fund Managers." Unpublished paper, Emory University (March).

Banegas, Ayelen, Benjamin Gillen, Allen G. Timmermann, and Russ Wermers. 2009. "The Performance of European Equity Mutual Funds." Working paper, University of California, San Diego, and University of Maryland (March).

Barras, Laurent, Olivier Scaillet, and Russ Wermers. 2010. "False Discoveries in Mutual Fund Performance: Measuring Luck in Estimated Alphas." *Journal of Finance*, vol. 65, no. 1 (February):179–216.

Berk, Jonathan, and Richard Green. 2004. "Mutual Fund Flows and Performance in Rational Markets." *Journal of Political Economy*, vol. 112, no. 6 (December):1269–1295.

Bers, Martina, and Jeff Madura. 2000. "Why Does Performance Persistence Vary among Closed-End Funds?" *Journal of Financial Services Research*, vol. 17, no. 2 (August):127–147.

Bollen, Nicolas P.B., and Jeffrey A. Busse. 2005. "Short-Term Persistence in Mutual Fund Performance." *Review of Financial Studies*, vol. 18, no. 2 (Summer):569–597.

Brinson, Gary P., L. Randolph Hood, and Gilbert L. Beebower. 1986. "Determinants of Portfolio Performance." *Financial Analysts Journal*, vol. 42, no. 4 (July/August):39–48. Reprinted in *Financial Analysts Journal*, vol. 51, no. 1 (January/February 1995, 50th Anniversary Issue):133–138.

Busse, Jeffrey A., Amit Goyal, and Sunil Wahal. 2010. "Performance and Persistence in Institutional Investment Management." *Journal of Finance*, vol. 65, no. 2 (April):765–790.

Carhart, Mark M. 1997. "On Persistence in Mutual Fund Performance." *Journal of Finance*, vol. 52, no. 1 (March):57–82.

Chen, Joseph, Harrison Hong, Ming Huang, and Jeffrey Kubik. 2004. "Does Fund Size Erode Mutual Fund Performance? The Role of Liquidity and Organization." *American Economic Review*, vol. 94, no. 5 (December):1276–1302.

Chevalier, Judith, and Glenn Ellison. 1999. "Are Some Mutual Fund Managers Better than Others? Cross-Sectional Patterns in Behavior and Performance." *Journal of Finance*, vol. 54, no. 3 (June):875–899.

Chordia, Tarun, Avanidhar Subrahmanyam, and Qing Tong. 2010. "Trends in the Cross-Section of Expected Stock Returns." Unpublished paper, Emory University, UCLA, and Singapore Management University (November).

Cohen, Lauren, Andrea Frazzini, and Christopher Malloy. 2008. "The Small World of Investing: Board Connections and Mutual Fund Returns." *Journal of Political Economy*, vol. 116, no. 5 (October):951–979.

Cremers, Martijn, and Antti Petajisto. 2009. "How Active Is Your Fund Manager? A New Measure That Predicts Performance." *Review of Financial Studies*, vol. 22, no. 9 (September):3329–3365.

De Souza, Clifford, and Suleyman Gokcan. 2003. "How Some Hedge Fund Characteristics Impact Performance." *AIMA Journal* (September).

Dickson, Joel, and John Shoven. 1993. "Ranking Mutual Funds on an After-Tax Basis." NBER Working Paper 4393 (July).

Dincer, Oguzhan, Russell B. Gregory-Allen, and Hany A. Shawky. 2010. "Are You Smarter than a CFA'er?" Working paper, Illinois State University, Massey University, and SUNY at Albany (January).

Ding, Bill, and Russ Wermers. 2009. "Mutual Fund Performance and Governance Structure: The Role of Portfolio Managers and Boards of Directors." Working paper, SUNY at Albany and University of Maryland (November).

Edelen, Roger M. 1999. "Investor Flows and the Assessed Performance of Open-End Mutual Funds." *Journal of Financial Economics*, vol. 53, no. 3 (September):439–466.

Fama, Eugene F., and Kenneth R. French. 1993. "Common Risk Factors in the Returns on Stocks and Bonds." *Journal of Financial Economics*, vol. 33, no. 1 (February):3–56.

Ferson, Wayne, Terry R. Henry, and Darren J. Kisgen. 2006. "Evaluating Government Bond Fund Performance with Stochastic Discount Factors." *Review of Financial Studies*, vol. 19, no. 2 (Summer):423–455.

French, Kenneth. 2008. "Presidential Address: The Costs of Active Investing." *Journal of Finance*, vol. 63, no. 4 (August): 1537–1573.

Fung, William, and David A. Hsieh. 2004. "Hedge Fund Benchmarks: A Risk-Based Approach." *Financial Analysts Journal*, vol. 60, no. 5 (September/October):65–80.

Fung, William, David A. Hsieh, Narayan Y. Naik, and Tarun Ramadorai. 2008. "Hedge Funds: Performance, Risk, and Capital Formation." *Journal of Finance*, vol. 63, no. 4 (August):1777–1803.

Getmansky, Mila. 2005. "The Life Cycle of Hedge Funds: Fund Flows, Size and Performance." Unpublished paper, University of Massachusetts at Amherst (January).

Gottesman, Aron, and Matthew R. Morey. 2006. "Manager Education and Mutual Fund Performance." *Journal of Empirical Finance*, vol. 13, no. 2 (March):145–182.

Goyal, Amit, and Sunil Wahal. 2008. "The Selection and Termination of Investment Management Firms by Plan Sponsors." *Journal of Finance*, vol. 63, no. 4 (August):1805–1847.

Grossman, Sanford J., and Joseph E. Stiglitz. 1980. "On the Impossibility of Informationally Efficient Markets." *American Economic Review*, vol. 70, no. 3 (June):393–408.

Harlow, W. Van, and Keith C. Brown. 2006. "The Right Answer to the Wrong Question: Identifying Superior Active Portfolio Management." *Journal of Investment Management*, vol. 4, no. 4 (Fourth Quarter):15–40.

Hirshleifer, David, Siew Hong Teoh, and Jeff Jiewei Yu. 2011. "Short Arbitrage, Return Asymmetry, and the Accrual Anomaly." *Review of Financial Studies*, vol. 24, no. 7 (July):2429–2461.

Hong, Harrison, Terence Lim, and Jeremy Stein. 2000. "Bad News Travels Slowly: Size, Analyst Coverage, and the Profitability of Momentum Strategies." *Journal of Finance*, vol. 55, no. 1 (February):265–295.

Howell, Michael J. 2001. "Fund Age and Performance." *Journal of Alternative Investments*, vol. 4, no. 2 (Fall):57–60.

Huang, Jennifer, Clemens Sialm, and Hanjiang Zhang. 2010. "Risk Shifting and Mutual Fund Performance." Working paper, University of Texas at Austin (May).

Huij, Joop, and Jeroen Derwall. 2008. "Hot Hands in Bond Funds." *Journal of Banking & Finance*, vol. 32, no. 4 (April):559–572.

Jagannathan, Ravi, Alexey Malakhov, and Dmitry Novikov. 2010. "Do Hot Hands Exist among Hedge Fund Managers? An Empirical Evaluation." *Journal of Finance*, vol. 65, no. 1 (February): 217–255.

Jensen, Michael C. 1968. "The Performance of Mutual Funds in the Period 1945–1964." *Journal of Finance*, vol. 23, no. 2 (May):389–416.

Kacperczyk, Marcin, Clemens Sialm, and Lu Zheng. 2005. "On the Industry Concentration of Actively Managed Equity Mutual Funds." *Journal of Finance*, vol. 60, no. 4 (August):1983–2011.

———. 2008. "Unobserved Actions of Mutual Funds." *Review of Financial Studies*, vol. 21, no. 6 (June):2379–2416.

Kaplan, Steven N., and Antoinette Schoar. 2005. "Private Equity Performance: Returns, Persistence, and Capital Flows." *Journal of Finance*, vol. 60, no. 4 (August):1791–1823.

Kinnel, Russell. 2010. "How Expense Ratios and Star Ratings Predict Success." *Morningstar Advisor* (10 August).

Kosowski, Robert. 2006. "Do Mutual Funds Perform When It Matters Most to Investors? U.S. Mutual Fund Performance and Risk in Recessions and Expansions." Working paper, Imperial College Business School (August).

Kosowski, Robert, Narayan Naik, and Melvyn Teo. 2007. "Do Hedge Funds Deliver Alpha? A Bayesian and Bootstrap Analysis." *Journal of Financial Economics*, vol. 84, no. 1 (April):229–264.

Kosowski, Robert, Allan G. Timmermann, Russ Wermers, and Hal White. 2006. "Can Mutual Fund 'Stars' Really Pick Stocks? New Evidence from a Bootstrap Analysis." *Journal of Finance*, vol. 61, no. 6 (December):2551–2595.

Liang, Bing. 1999. "On the Performance of Hedge Funds." *Financial Analysts Journal*, vol. 55, no. 4 (July/August):72–85.

Litterman, Robert B. 2004. "The Active Risk Puzzle." *Journal of Portfolio Management*, vol. 30, no. 5 (September, 30th Anniversary Issue):88–93.

Lynch, Anthony W., and David K. Musto. 2003. "How Investors Interpret Past Fund Returns." *Journal of Finance*, vol. 58, no. 5 (October):2033–2058.

Massa, Massimo, and Lei Zhang. 2009. "The Effects of Organizational Structure on Asset Management." Working paper, INSEAD (October).

Moskowitz, Tobias. 2000. "Discussion: 'Mutual Fund Performance: An Empirical Decomposition into Stock-Picking Talent, Style, Transactions Costs, and Expenses.'" *Journal of Finance*, vol. 55, no. 4 (August):1695–1703.

Pástor, Lubos, and Robert Stambaugh. 2002. "Mutual Fund Performance and Seemingly Unrelated Assets." *Journal of Financial Economics*, vol. 63, no. 3 (March):315–349.

Paul, Joseph Gerard. 2009. "No Time to Be Passive—Get Active Now." Research report, AllianceBernstein (January).

www.manaraa.com

Phalippou, Ludovic, and Oliver Gottschalg. 2009. "The Performance of Private Equity Funds." *Review of Financial Studies*, vol. 22, no. 4 (April):1747–1776.

Stewart, Scott D., John J. Neumann, Christopher R. Knittel, and Jeffrey Heisler. 2009. "Absence of Value: An Analysis of Investment Allocation Decisions by Institutional Plan Sponsors." *Financial Analysts Journal*, vol. 65, no. 6 (November/December):34–51.

Surowiecki, James. 2004. *The Wisdom of Crowds.* New York: Random House.

Wei, Kelsey, Russ Wermers, and Tong Yao. 2009. "Uncommon Value: The Investment Performance of Contrarian Funds." Unpublished paper, University of Texas at Dallas, University of Iowa, and University of Maryland (November).

Wermers, Russ. 2000. "Mutual Fund Performance: An Empirical Decomposition into Stock-Picking Talent, Style, Transactions Costs, and Expenses." *Journal of Finance*, vol. 55, no. 4 (August):1655–1703.

———. 2003. "Is Money Really 'Smart'? New Evidence on the Relation between Mutual Fund Flows, Manager Behavior, and Performance Persistence." Unpublished paper, University of Maryland (May).

———. 2010. "A Matter of Style: The Causes and Consequences of Style Drift in Institutional Portfolios." Unpublished paper, University of Maryland (May).

Wermers, Russ, and Tong Yao. 2010. "Active vs. Passive Investing and the Efficiency of Individual Stock Prices." Unpublished paper, University of Iowa and University of Maryland (May).

Winkelmann, Kurt. 2003. "Developing an Optimal Active Risk Budget." In *Modern Investment Management: An Equilibrium Approach.* Edited by Robert Litterman. Hoboken, NJ: John Wiley & Sons.

Xiong, James, Roger G. Ibbotson, Thomas Idzorek, and Peng Chen. 2010. "The Equal Importance of Asset Allocation and Active Management." *Financial Analysts Journal*, vol. 66, no. 2 (March/April):22–30.

www.manaraa.com