

“WITHOUT MORE”: TRUST INVESTMENT MANAGER SELECTION AND RETENTION

PATRICK J. COLLINS

In this article, the author explores the topic of investment manager selection and retention. The author believes that selection and retention of actively managed investments benefits from clear and appropriate decision criteria that are, in part, quantitative in nature and that evidence a prudent decision making process. He also discusses the design and implementation of policy for incorporation of actively managed investment strategies into a trust portfolio.

The design and implementation of investment policy requires trustees to address a variety of asset management issues. Although much commentary focuses on the role of strategic asset allocation decisions, comprehensive investment policy must, within the scope of the fiduciary duty to comply with the terms of the trust, also consider beneficiary needs (“spending policy”), the sufficiency of capital available to discharge legitimate financial objectives (“distribution policy”), portfolio management protocols (asset rebalancing strategies, tax management techniques, monitoring frequency, performance reporting conventions, etc.) and other critical tasks.

This article explores the topic of investment manager selection and retention. Although it is neutral regarding the active versus passive management debate, it discusses certain characteristics of each approach that trustees must consider if they are to fashion a prudent and suitable investment selec-

Patrick J. Collins, a financial advisor with over 25 years of experience, is a principal of Schultz Collins Lawson Chambers, Inc. He can be contacted at patrick@schultzcollins.com.

tion and retention policy. Trustees are rarely engaged either to “beat the market,” or to “replicate a paper portfolio.” Rather, the goals of most settlors are best expressed in terms of quantifiable risks and returns required to discharge the “purposes, terms, distribution requirements, and other circumstances of the trust.”¹ Risk in this context is not usually defined in terms of failure to outperform a market index, or in terms of tracking error against an index; but, rather, as the risk of failing to achieve financial success in terms of settlor goals and beneficiary needs. The non-satiation principle (more money is better than less) will not save the trustee from fiduciary surcharge action in the event that the trustee places wealth at inappropriately high levels of risk. This observation holds true for both trustees pursuing active strategies that provide little or no expectation of investment success, or for those employing passive strategies that track an index wholly inappropriate to the liabilities that the trust must discharge.

This article assumes that the trustee does not build customized portfolios from securities selected by in house personnel;² but rather, invests, all or in part, in pooled investment vehicles such as common collective funds, mutual funds, exchange traded funds, or similar pooled accounts. The primary focus is on the prudence of the trustee’s decision making process with special attention to the design, development and implementation of investment manager selection and retention policy. This article’s observations, in many cases, can be easily generalized to the common situation in which a trustee hires a consulting firm to identify, evaluate, and recommend suitable investment managers. Under this type of fact pattern, the trustee must determine that the consultant’s recommendations flow from a credible and defensible analytical process.³

It begins with an acknowledgement of the Restatement’s comment:⁴

In the absence of contrary statute or trust provision, the requirement of caution ordinarily imposes a duty to use reasonable care and skill in an effort to minimize or at least reduce diversifiable risks.... Because market pricing cannot be expected to recognize and reward a particular investor’s failure to diversify, a trustee’s acceptance of this type of risk cannot, *without more*, be justified on grounds of enhancing expected return. [Emphasis added]

Restatement Third develops the implication of the “without more” phrase in General Comment “f”:⁵

Departures from an ordinarily suitable, diversified portfolio may be justified by special circumstances or opportunities of a particular trust or by peculiar risks facing its beneficiary families. Departures might also be justified by: specialized investment capabilities of or available to the trustee.... The greater the departure, the heavier the trustee’s burden to justify the strategy in question.

The Restatement provides a rationale for investing in index funds and notes that such passive strategies are a “practical investment alternative to be considered by trustees seeking to include corporate equity in their portfolios.”⁶ However, it also recognizes that trustees may employ active investment management approaches: “Prudent investment principles also allow the use of more active management strategies by trustees.”⁷ Specifically, the Restatement advances the following proposition:

Active strategies, however, entail investigation and analysis expenses and tend to increase general transaction costs, including capital gains taxation in private trusts. Additional risks also may result from the difficult judgments that may be involved and from the possible acceptance of a relatively high degree of diversifiable risk. These considerations are relevant to the trustee initially in deciding whether, to what extent, and in what manner to undertake an active investment strategy and then in the process of implementing any such decisions.

If the extra costs and risks of an investment program are substantial, these added costs and risks must be justified by realistically evaluated return expectations. Accordingly, a decision to proceed with such a program involves judgments by the trustee that:

- a) gains from the course of action in question can reasonably be expected to compensate for its additional costs and risks;
- b) the course of action to be undertaken is reasonable in terms of its economic rationale and its role within the trust portfolio; and

- c) there is a credible basis for concluding that the trustee — or the manager of a particular activity — possesses or has access to the competence necessary to carry out the program and, when delegation is involved, that its terms and supervision are appropriate.

In addition, the course of action and the overall strategy of which it is a part must be suitable to the particular trust in light of its objectives, risk tolerance, liquidity requirements, and other circumstances.

One benefit of the listed criteria lies in its clarification of the phrase “without more.” When is it prudent for a trustee to select actively managed investment funds, how should trustees monitor such investments, and under what circumstances should they be retained in or eliminated from the portfolio? The article argues that selection and retention of actively managed investments benefits from clear and appropriate decision criteria which are, in part, quantitative in nature, and which evidence a prudent decision making process.⁸

THE TRUSTEE’S DILEMMA

Conditional Versus Unconditional Return

As Laurence Siegel points out in his research monograph, “...benchmarks are paper portfolios....They embody the opportunity set of investments in an asset class.”⁹ Thus, in formulating a plan of asset allocation, the trustee must decide what percentage of a trust’s wealth to expose to the expected returns and risks of any asset class.¹⁰ The trustee can capture the risks and returns of each asset class unconditionally and at low cost by investing in a passively managed index fund that serves as a proxy for the asset class.¹¹

Alternately, the trustee may use an actively managed investment fund in the expectation of receiving additional gain. Unlike market-based returns, however, the returns from actively managed investments are conditional on the manager’s skills. By definition, an active manager must deviate from the investment positions of the benchmark index in order to add value sufficient

to justify increased costs and risks. Furthermore, such deviations constitute a form of “active risk.” Active risk is the likelihood that the manager’s net returns will underperform the index. For portfolio’s of financial assets, this type of risk is a function of (1) the breadth of the series of bets taken with respect to the portfolio’s individual security weightings; plus, (2) the magnitude of such bets. Thus, unlike market-based investing that provides an unconditional expectation of a reward in excess of the risk-free rate, active management is not inherently rewarded — a manager’s stock selection and market timing elections may or may not generate rewards sufficient to justify their extra cost and risk. This is at the heart of the trustee’s dilemma. Under what circumstances is it prudent to forsake unconditional, low-cost return in favor of higher-cost programs seeking to outperform the comparable asset allocation benchmark?

There is an additional consideration that must be factored into the decision to employ active investment strategies: the returns achieved by all active investors within an asset class sum to the asset class return. This is a characteristic of a zero-sum game in which the relative gains of one investor must be the relative losses of another.¹² Given that the costs of actively participating in a zero-sum investment tournament are high, it is to be expected that the average participant will be unable to achieve the average result. This proposition is sometimes advanced as one reason why the majority of professional money managers are unable to beat the market.¹³

Preconditions

Important preconditions for electing to manage actively all or a portion of the trust portfolio include a belief that active managers can systematically add value at an economically significant rate after adjusting returns for both cost and risk. This precondition amounts to assuming that security returns are predictable and that superior managers can form investment strategies capable of exploiting return predictability. However, the performance of a money market fund manager who adds three basis points per month value to an appropriate short-term fixed income benchmark index should be viewed much differently than that of an equity fund manager who adds three basis points per month value to a stock index. Given the low volatility character-

istic of the time series of money market returns, adding small amounts of value may be indicative of manager skill. Given the high volatility of equity returns, it is more difficult to conclude that the market-beating manager is adding value through skill — as opposed to mere chance. The trustee would probably not want to hire the equity fund manager “without more” — that is, without further investigation into the skill vs. luck issue. The primary reason for the prudent trustee’s caution is that the high costs of active management strategies are unconditional, whereas the gains from such strategies are conditional.

Likewise, trustees must have a credible process to identify those managers that have a high probability of producing positive future excess returns.¹⁴ Turning again to the stylized example, the ability to predict that the equity fund manager will outperform the money market fund manager over a long planning horizon is not sufficient to justify selection of such a manager. The equity fund manager has higher expected returns as a byproduct of higher systematic investment risk (as measured by the value of the Beta statistic). Although future performance in excess of the risk-free rate is not guaranteed, without such an expectation risk-averse investors would invest only in the money market fund.

Evidence

Until recently the preponderance of the academic evidence suggested that security returns were not sufficiently predictable to allow professional managers to formulate profitable investment strategies capable of generating abnormal future profits. With few exceptions, academic research tends to uphold the theory of market efficiency, at least to the limited extent that beating the market after accounting for a variety of portfolio frictions such as trading costs, management fees, and taxes, is not, on average, a reasonable expectation for professional money managers. Furthermore, it is relatively easy to verify empirically that the average professional manager, within both the mutual fund and the bank common collective trust universe, fails to add sufficient value to justify the extra costs that their strategies entail.¹⁵ Academic studies have evaluated active management performance over approximately forty years, and most conclude that it is extraordinarily diffi-

cult for active management to add value consistently.¹⁶ A comprehensive report by the Funds Management Research Centre reviews over 100 research papers published globally on the issue of the persistence of performance in managed funds.¹⁷ The report concludes:

- “Good past performance seems to be, at best, a weak and unreliable predictor of future good performance over the medium to long term. About half the studies found no correlation at all between good past and good future performance. Where persistence was found, this was more frequently in the shorter-term, (one to two years) than in the longer term.”
- “More studies seem to find that bad past performance increased the probability of future bad performance.”
- “Where persistence was found, the ‘out-performance’ margin tended to be small. Where studies found persistence, some specifically reported that frequent swapping to best performing funds would not be an effective strategy, due to the cost of swapping.”

Plausible explanations for these conclusions, in the authors’ opinion, include:

- Methods that work well in one set of market conditions will not work well in new future economies;
- Fund managers, seeking to emulate the performance of their successful competitors, will copy investment methods and/or poach investment staffs;
- Large inflows of money to successful funds makes it difficult to find profitable new investments and to maintain relative performance; and
- Future investment returns are difficult to forecast accurately and a significant portion of a fund’s past performance may be attributable to random luck.

In the 30th Anniversary issue of *The Journal of Portfolio Management*, Burton Malkiel, former chair of the Princeton University Department of

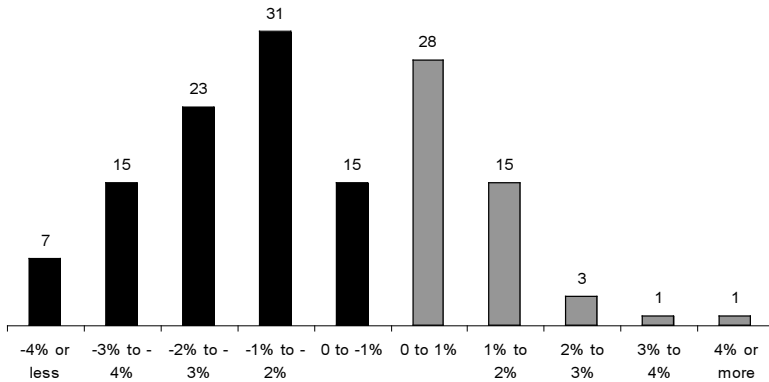
Economics, summed up the arguments in favor of the efficient market hypothesis:¹⁸ “If prices accurately represent the future prospects of each firm, then one stock would be just as attractive as another, and an investor who tries to switch from security to security in an attempt to gain excess returns would be unsuccessful.” Despite recent academic evidence regarding the predictability of certain return series, Malkiel argues that managers are generally unsuccessful in exploiting predictability “...with respect to active portfolio management strategies as well as strategies designed to alter asset allocations over time on the basis of relative valuations.”

According to Malkiel, although value firms may earn higher returns than growth firms over long planning horizons (1965-2001), when considering shorter time periods there is no consistent dominance of one type of stock over the other. Indeed, the pattern of returns appears to reflect “changes in the popularity of investing styles rather than any consistent exploitable opportunity.”¹⁹ Malkiel extends this conclusion to attempts to exploit the small capitalization stock premium, the short-term price momentum effect, the long-term reversion to the mean effect, and the relative valuation effect.²⁰

Of special interest, however, is his update on professionally managed investment programs using active management strategies. Malkiel argues: “...the most convincing evidence that unexploited opportunities to earn excess returns do not exist comes from an analysis of the returns earned by professional investors. If market prices were highly predictable, and if it were possible to isolate times when individual stocks or the market as a whole were under- or overvalued, then surely professional investors who are highly motivated to earn excess returns would be able to do so.” Malkiel’s survey of results has two components: (1) a long-term “average” point of view; and (2) a focus on specific “top funds” during the period 1996 through 2003. The first component notes that 63 percent of large-capitalization equity mutual funds failed to outperform the S&P U.S. stock index over a five year period ending December 31, 2003. Extending the period to 10 and 20 years, increases the failure rates to 86 percent and 90 percent respectively. The magnitude of the average annual underperformance over the 10 and 20 year periods equals 2.52 percent and 2.24 percent. Finally, Malkiel notes that of the 355 equity mutual funds in existence in 1970, only 139 survived through 2003. Although it is reasonable to suppose that the survivors represent the

population of successful managers (managers in the upper half of their peer group), when the returns of the “successful” group are compared to those of the S&P U.S. stock index, only a small number beat the market. The odds of selecting a market-beating manager from the “successful manager” group are given by the following distribution of excess returns — i.e., returns above or below the S&P 500 benchmark:

Distribution of Returns from Surviving Mutual Funds
(1970 through 2003)



Of the 139 surviving equity mutual funds, only 20 beat the S&P 500 by an average of one percent per year or more during the period under evaluation. The odds of selecting a manager that delivered negative performance are considerably higher than those of selecting a manager providing market-beating results. If one includes the population of 216 funds that went out of existence, the odds of selecting an active equity manager with the objective of beating the market by an average of two percent or more per year, become vanishingly small.

The second component of Malkiel’s survey examines the phenomenon of return “persistence.” How likely is it that the winners in period one will also be the winners in period two? The survey identifies the top performing

20 mutual funds in the four year period ending December 31, 1999. It then records each fund's subsequent performance for the four year period ending December 31, 2003. Each of the top 20 funds outperformed the S&P 500 index (26.39 percent) during the initial period. However, only two managed to outperform the S&P 500 (-5.34 percent) during the subsequent period.

<i>Fund</i>	<i>4 Year Return ending 12/31/1999</i>	<i>4 Year Return ending 12/31/2003</i>
RS Inv: Emerging Growth	51.09%	-16.83%
Janus Twenty	47.56%	-17.84%
PBHG Select Growth	43.55%	-21.28%
Janus Mercury	42.23%	-15.54%
Fidelity New Millennium	42.23%	-4.09%
Fidelity Aggressive Growth	41.63%	-25.89%
Van Kampen Emerging Growth A	40.77%	-15.49%
WM Growth A	40.71%	-16.81%
Van Kampen Emerging Growth B	39.68%	-16.14%
Janus Enterprise	38.43%	-20.15%
Morgan Stanley Institutional: MC Growth I	38.25%	-10.44%
Janus Venture	37.88%	-14.23%
IDEX: Jan Growth T	37.57%	-16.84%
Legg Mason Value Trust	37.35%	-0.50%
IDEX: Jan Growth A	37.29%	-17.23%
MFS Massachusetts Inv. Growth A	37.12%	-11.53%
Morgan Stanley Special Growth B	36.69%	-26.76%
Janus Growth and Income	36.39%	-7.18%
Vanguard Growth Equity	35.00%	-14.51%
Fidelity OTC	34.72%	-12.77%

Malkiel suggests that, on average, it remains difficult to beat the market by incurring active risk despite recent academic research indicating predictability in certain return series. He advises investors to avoid market timing strategies and to adopt a low cost passive asset management approach.²¹

A recent research paper in financial economics utilizes a more mathematical approach to the topic but reaches similar conclusions.²² The authors posit the existence of two investors. Investor one is “uninformed” in the sense that he bases decisions on the unadjusted historical distribution of market risk and return. They term this investor the “i.i.d.” investor which is a shorthand for the statistical phrase “independent and identically distributed.” Such a distribution is characteristic of a normal (bell curve) distribution of a random variable such as a coin flip’s results. Assuming a fair coin, each result is independent of all previous results, and there is no period in which it is more likely to flip either heads or tails. Investor two, by contrast, is a professional, “informed” investor that uses predictive (conditioning) variables to formulate beliefs regarding the future evolution of stock prices. They term this investor the “mutual fund” investor. The mutual fund investor uses combinations of three conditioning variables: (1) lagged stock returns to exploit information regarding serial correlation of time series; (2) lagged dividend yields to take advantage of earnings based information; and (3) book-to-market price ratios to capture information in relative valuations. The mutual fund investor continuously updates (on a quarterly basis) the parameters of predictive models so that he may capture the dynamics of the unfolding stock price process. However, the mutual fund investor is only permitted to use data that was actually available at the time in which an investment decision is made.²³

The authors’ work helps clarify the nature of “active risk” because it calls attention to the fact that the mutual fund investor not only faces all of the uncertainty in parameter estimates faced by the i.i.d. investor, but also faces uncertainty regarding the coefficient estimates of the predictor variables. For the purposes of this article, however, the questions of primary interest are (1) do the predictor variables allow the informed investor to generate *future* gains which are both statistically and economically significant when compared to those generated by the i.i.d. investor; (2) are the excess returns stable over time; and, (3) do the gains persist after expenses. Results are expressed as

units of investor utility with each investor exhibiting quadratic utility at various risk aversion values. The i.i.d. investor optimizes utility by developing a portfolio that uses only the sample mean return and the sample covariance matrix which are both updated each quarter. The informed mutual fund investor optimizes utility by forming portfolios based on *predicted* returns by employing a more complicated set of factors and factor loadings.²⁴

The paper presents a matrix of test results. Tests are based on portfolios formed from either single or from multiple risky assets, on investors with various risk aversion parameters (low, moderate and high), on various combinations of the predictor variables, on various methods of adjusting for uncertainty in parameter values, and over various subperiods using market data from January 1954 through December 1998. In each test, the performance of the i.i.d. investor's portfolio is compared to that of the mutual fund investor's portfolio in terms of its Sharpe (Reward to Risk) Ratio and to the Certainty Equivalent measure [(mean return – 1/2 variance) x (risk aversion coefficient)]. In order to mitigate the problem of data snooping and to determine if results are robust, tests are based on simulations of bootstrapped (resampled) data. This is an important extension of Malkiel's approach which considered only the single sample of historical returns. Another critical extension is that the authors test on out-of-sample data by allowing each investor to use a five-year learning period prior to forming portfolios. Portfolios are then evaluated on a go forward basis.

The major findings are:

- Under most tests, the predictor variables are unstable over time and have only period specific value;
- Performance gains, if any, realized by the mutual fund investor are not robust and are unlikely to persist into future periods;
- Combinations of two or more predictor variables do not improve the mutual fund investor's performance; and
- Utilizing predictor variables does not result in an increased ability to time markets ("...the market timing ability of the mutual fund strategy is fairly dismal.").

It is noteworthy that the performance of the mutual fund investor significantly lags that of the i.i.d. investor over the most recent subperiod (1985 through 1998).

PRUDENT ELECTION OF ACTIVELY MANAGED INVESTMENT PROGRAMS

Preconditions

As stated, an important precondition for selecting active managers for all or a portion of the trust portfolio is a conviction that active managers can systematically add value at an economically significant rate after adjusting returns for both cost and risk. This precondition amounts to assuming that security returns are predictable, that superior managers can form investment strategies capable of exploiting return predictability, and that trustees or their consultants can successfully identify successful managers *ex ante*. Under the efficient market theory, prices are unpredictable mainly because they rapidly impound all relevant information. Thus, according to both random walk versions of the hypothesis as well as later versions based either on martingale mathematics,²⁵ or on zero sum game theory, price predictability is an illusory goal. The process that guarantees this result is known as the “no-arbitrage” condition. This condition specifies that securities (or bundles of securities) offering the same payoff over various future economic states must sell for the same price today. If this condition were violated, investors (known as “arbitrageurs”) could simultaneously purchase the cheap security and sell the expensive security to earn a riskless profit. Alternately, if they spotted undervalued securities, they could earn abnormal profits by borrowing funds at the risk free rate to exploit the perceived mispricing. According to this theory, the group of sharp eyed analysts patrolling the capital markets for investment opportunities are the very force that assures that security prices never stray far from their justified value. That is to say, profit maximizing investors constitute the force that pushes the markets towards an equilibrium that minimizes opportunities for arbitrage profits.

This is, of course, a highly stylized model of real world capital markets. Nevertheless, the no-arbitrage condition is the closest thing in financial eco-

nomics to the types of natural laws found in physics. Although there is a large collection of books and articles on the topics of behavioral finance and of persistent market anomalies, these are not particularly relevant issues for this article.²⁶ However, examination of the nature and limits of the no-arbitrage condition is, at least theoretically, more to the point. A primary source of academic research calling into question the hypothesis of a no-profit-opportunity equilibrium is the seminal article authored by Grossman and Stiglitz.²⁷ The authors point out that arbitrage is costly (requiring time and money for security research) and that, under conditions of costs and risks, markets are never in a perfectly arbitrated equilibrium: “we propose here a model in which there is an equilibrium degree of disequilibrium.” Prices in such a market are shaped by the limited-scope operation of arbitrageurs (informed investors) acting in an environment also containing uninformed investors. Security prices, therefore, may not fully reflect justified value if there are a sufficient number of uninformed (or misinformed) investors in the market. If such were not the case, the authors argue that the arbitrageurs who expended resources to acquire information would receive no compensation for doing so. This in itself would lead to an absence of arbitrage and, ultimately, to imperfect price formation — hence the equilibrium degree of disequilibrium.

This line of argumentation has recently received support from Harry Markowitz — a Nobel Prize recipient for his solutions to the portfolio selection problem under conditions of uncertainty.²⁸ Markowitz’s early research forms the basis of the Capital Asset Pricing Model (“CAPM”) which, in turn, is often cited as an important intellectual wellspring for justifying indexed investment approaches. The current Markowitz viewpoint argues that the condition of market efficiency derived from CAPM mathematics is itself the result of certain simplifying assumptions. Two assumptions are critical to the hypothesis that the market portfolio is an efficient portfolio: (1) investors must be able to borrow and lend at the risk-free rate; or, alternately, (2) investors can sell short without limit and use the proceeds to purchase securities. Should these assumptions fail (i.e., should there be limits on the use of arbitrage), then, according to Markowitz, “...the market portfolio need not be an efficient portfolio. This departure from efficiency can be quite substantial....that is, the market portfolio can be about as inefficient as a feasi-

ble portfolio can get.” Real world constraints on borrowing and arbitrage, together with certain budgetary constraints and limitations on permitted portfolio holdings, make certain CAPM conclusions unrealistic. Chief among these are: (1) there is a linear relationship between risk and return where risk is measured by the Beta statistic; and (2) there is a single, ideal portfolio for all investors which is maximally diversified according to market weighting. The latter CAPM conclusion is, of course, the intellectual justification for a passive, capitalization weighted, indexed investment approach. To what extent does this call into question the prudence of blind adherence to investment strategies designed to track paper portfolios?

Note, however, that Markowitz’s criticisms of the CAPM model do not extend to criticisms of the efficient market hypothesis (“EMH”). EMH assumes that the price of individual securities rapidly impound all relevant information and, therefore, remain close to their justified or intrinsic value. That is to say, security pricing is “efficient enough” to make it difficult to form strategies that are able to generate excess returns.²⁹ How do these insights affect the decision to select actively managed investment portfolios? In one respect, they may constitute an argument for focused portfolios built from a relatively small subset of securities within the opportunity set. Those wishing to assume “businessman’s” risk will own a few stocks with high expected returns; those wishing to assume only “widows’ and orphans” risk will own more fully diversified portfolios built from securities with lower expected returns — i.e., portfolios of securities best fitting the purposes, terms, distribution requirements and other circumstances of the trust. In another respect, Markowitz’s observations may constitute an argument against active management by reaffirming the fact that undervalued securities are difficult to find. That is to say, it may be difficult to justify truncating the opportunity set solely on the basis of valuation metrics — i.e., the attempt to pick a few “good stocks.”³⁰

COUNTER EVIDENCE

The concept of “average manager” or “average result” often appears in evaluation of the historical track record of actively managed investment portfolios. If the average active manager fails to outperform a comparable bench-

mark index, does this also imply that the investor cannot identify a subset of highly skilled managers that are likely to generate future abnormal returns? If the answer to this question is no, what data collection and evaluative tasks are necessary to accomplish this objective — that is to say, what criteria are appropriate for the design and implementation of a prudent investment selection and retention policy with respect to professionally managed funds employing active asset management strategies?

These questions are at the heart of several recently published studies concerning the probability that investors can identify successfully a group of superior active managers likely to produce *future* risk-adjusted profits.³¹ This question is of great interest in that many trustees expend considerable resources hiring consulting or brokerage firms to assist them in locating managers who can consistently outperform a comparable benchmark index.³²

The Harlow and Brown paper contends that substantial economic gains can accrue to the benefit of those able to pick winning managers; but, concedes that this task is not easy because, on average, managers appear to underperform a comparable benchmark. However, the goal is not to pick the “average” manager but to identify managers who will deliver future out-performance: “our underlying premise in this investigation is that the central issue defining the debate between active and passive management has not always been framed correctly. Specifically, rather than judging the quality of active management solely on the basis of such factors as how the ‘average’ fund performs relative to its benchmark or where a given manager ranks relative to his or her peer group, it is our contention that investors are better served by concentrating their efforts on finding the subset of available managers who are consistently able to deliver superior risk-adjusted returns.”

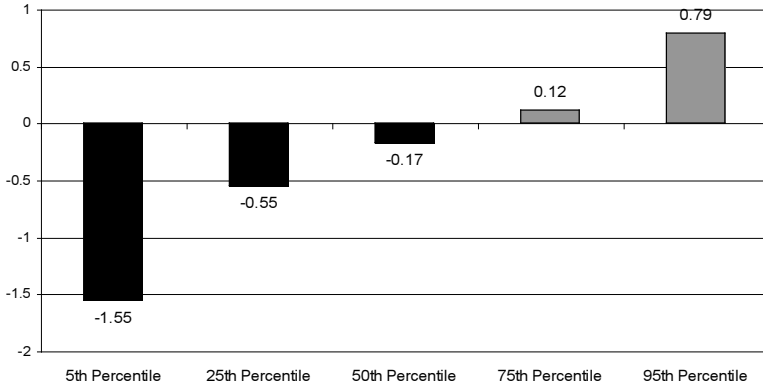
Their study focuses on the “alpha” performance measure, where alpha is defined as the difference between the actual return earned by the manager and the expected return [alpha = actual return – expected return]. They calculate expected return by reference to the three-factor asset pricing model developed by Fama and French. This model says that the return on any security “i” is equal to [alpha_i + Market Beta_i (Market Return) + Small Cap Beta_i (Small Cap Factor Return) + Value Beta_i (Return to High Book-to-Market

“Value” Factor) + an error term]. The Beta values are the coefficients on the factor loadings; the factor loadings are determined either by observed market returns, or by returns generated by “mimicking” portfolios. For example, a mimicking portfolio may own the set of value stocks long and the set of growth stocks short; or it may own small cap stocks long and large cap stocks short. The return of the long/short investment positions is a proxy for the actual, but unobservable, return to the Factor. Finally, the error term measures the uncertainty of the expected three-factor return estimate. Each active equity manager is placed in one of nine style groups corresponding to the Morningstar mutual fund classification system. The data used for the study covers the period January 1976 through December 2003.

Initially, beta coefficients and the returns to the three factors are estimated using three years data (1976 through 1979 for funds in existence at that time; or, by using the initial three years of data from the inception of the fund, if the inception date is later). The returns for each factor (Market, Small, and Value) are calculated, and the factor loadings (price change sensitivity as measured by the Beta coefficients) of each mutual fund are estimated. The difference between the fund’s actual returns and the returns estimated from the three-factor model is designated “past alpha.” Each estimate is revised by moving the entire data set forward one month at a time through the end of 2003. This gives a partially overlapping set of 300 past alpha estimates for funds in existence throughout the entire period. Finally, to isolate the managers providing positive past alpha, the authors calculate the average of the sequence of monthly alpha values for each fund. This calculation, based on a total of 19,765 observations, provides them with a distribution of historical fund performance statistics. Examination of the distribution provides insight into the probability of finding managers with positive average past alpha over the evaluation period as well as the magnitude of the positive past alpha values. The distribution of past monthly alphas is shown in the accompanying table.

Not surprisingly, the graph highlights the fact that the average (50th percentile) actively managed fund fails to add value to a comparable (three factor model) benchmark. In this respect, the Harlow/Brown study confirms previous research findings. The overall probability of finding a manager with an historical track record evidencing positive alpha is 33.97 percent — odds

Distribution of Past Monthly Alphas
(1979 - 2003)



of approximately one out of three. For each of the nine equity style categories, the probability of a manager adding positive past alpha is shown in the table.

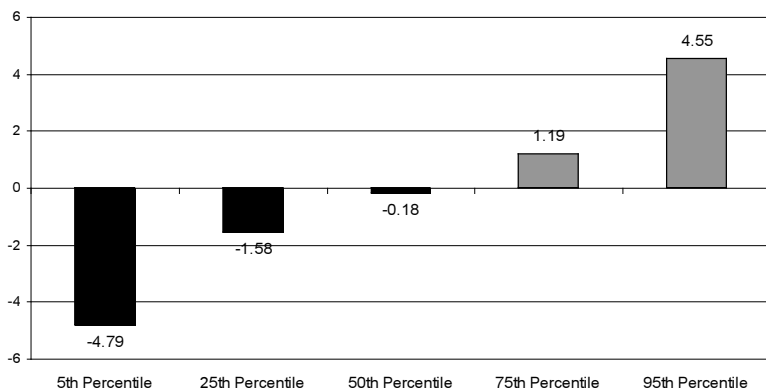
For some equity styles, it is particularly difficult to find managers that add positive alpha. For example, only approximately 25 percent of the Large Company Blend managers provided positive alpha over the evaluation period. Likewise, the graph suggests that the risk/reward distribution is not symmetrical. The reward for picking a 75th percentile manager (threshold of the top quartile) is 12 basis points per month. The penalty for selecting the 25th percentile manager (threshold of the bottom

<i>Equity Fund Style</i>	<i>Percentage of Funds Exhibiting Positive Monthly Alpha</i>
Large Company Value	30.23%
Large Company Blend	24.74%
Large Company Growth	42.65%
Mid Cap Value	32.75%
Mid Cap Blend	29.21%
Mid Cap Growth	35.40%
Small Cap Value	25.30%
Small Cap Blend	31.80%
Small Cap Growth	48.86%

quartile), however, is a negative 55 basis points per month.³³ “Without more,” it appears that the choice between active and passive management is akin to Pascal’s wager.

The study then considers whether it is possible to use the current information set to increase the probability of identifying the subset of managers who are capable of delivering positive future excess return. The investor devoting time and effort to this task has the potential to reap a significant economic advantage. A 79 basis point positive monthly alpha translates into excess returns of 9.9 percent per year at the 95th percentile of results. The authors test the hypothesis that it is possible to identify a subset of managers likely to provide superior future performance by employing an econometric estimation procedure to derive “future” alpha values, or “forecasted alpha.” Briefly, from each initial three year fund evaluation period, they estimate the value of the beta coefficients in the three factor model. In other words, they use the estimated values derived from their calculations of past alpha. However, for the subsequent 36-month period, the authors track the actual returns generated by each of the three factors (market, small and value). Actual subsequent factor returns are linked to the beta parameters estimated from previous data to determine each manager’s future expected return. The future alpha value is the difference between expected returns and the actual returns earned by managers during the 36-month out-of-sample period. Rolling forward on a month-by-month basis, the authors arrive at a distribution of future (i.e., forward-looking) positive alphas over the period 1979 through 2003. The distribution of forecasted monthly alphas is explained in the accompanying chart.

Again, the future-looking alpha distribution indicates that the average fund manager (50th percentile) fails to add positive value. However, the distribution is more symmetrical,³⁴ and it indicates the availability of a substantial positive reward for investors able to identify the managers, before the fact, likely to be successful. To test the hypothesis that it is possible to identify the subset of superior managers, the authors develop a regression equation in which the dependent (prediction) variable is forecasted alpha and the independent (explanatory) variables include past alpha (a “success” variable), expense ratio (a “cost-of-management” variable), amount of assets under management (a “capacity” variable), turnover (a “rate of trading” variable),

Distribution of Forecasted Monthly Alphas
(1979 - 2003)

diversification (a “benchmark tracking” variable), and the level of return volatility (a “risk” variable). Following a series of regressions on various combinations of the independent variables, the authors conclude that the most important forecast variables are (1) past alpha; and, (2) fund expenses. By focusing primarily on these two items, investors should increase the likelihood that they can identify managers who will generate future excess returns.³⁵

As a final step, the authors calculate the standard deviation of each of the independent variables. Each fund is ranked according to the standard deviation of the fund’s independent variables from their means. Thus, if we consider an “average” fund exhibiting past alpha and expense variables standardized to their median levels, there is only a 44.34 percent probability of selecting a manager able to generate superior future return. However, if we select funds that are two standard deviations or more above the median level of past alpha and two standard deviations or less below the median fund expense ratio, the odds of selecting a fund that will produce abnormal future profits rise to 50.61 percent. Furthermore, if we include the entire set of explanatory values and rank the universe of funds according to the most favorable two standard deviation direction from the mean, the probability of selecting a winning manager increases to 59.65 percent. The authors calculate that the

back-tested historical benefits of selecting managers from the favorable two standard deviation multivariable group generate an excess return of approximately 300 basis points (three percent) per year. Additionally, the authors argue that a quantitative approach to identifying the subset of managers likely to generate abnormal future profits, is superior to more commonly used systems, such as the Morningstar one-to-five star ratings, that have somewhat dismal predictive track records.³⁶

Cremers and Petajisto's study also seeks to develop quantitative measures that are positively correlated with future excess fund returns. Their performance evaluation approach, which is a holdings-based analysis rather than a returns-based analysis, develops a new measure of active management that they label "Active Share." In this case, each actively managed equity mutual fund over the period 1980 through 2003 is decomposed into two components: (1) the portion of the fund's holdings that corresponds to a comparable benchmark index; and, (2) the portion of the holdings that differs from the index. The latter portion is termed "Active Share" and, in turn, can be decomposed into active share attributable to (1) a manager's stock selection decisions or (2) factor timing decisions where the factors can be market timing, sector rotation or other type of bets on systematic risk factors. The authors assert that managers emphasizing stock selection "...can largely diversify away their idiosyncratic risk and thus achieve a relatively low tracking error." However, the managers that place large bets on a few industries or sectors may exhibit a correspondingly higher level of tracking risk.³⁷ Although both sets of managers may exhibit significant active management risk, relying solely on a tracking error metric tends to overstate the risks of factor timing and understate the risks of stock picking. The Active Share measure, however, can identify managers who incur large amounts of non-benchmark risk even when their tracking error remains low. Although, by definition, actively managed portfolios must deviate from their benchmarks if they are to generate positive alpha for investors, the authors maintain that tracking risk is not related to future returns; but that Active Share is, in many cases, positively related to excess future returns:

Fund performance is significantly related to active management, as revealed by a two-dimensional sort of non-index funds by Active Share

and tracking error. Funds with the highest Active Share exhibit some skill and pick portfolios which outperform their benchmarks by 2.00-2.71 percent per year. After fees and transaction costs, this outperformance decreases to 1.49-1.59 percent per year. In contrast, funds with the lowest Active Share have poor benchmark-adjusted returns and alphas before expenses... do even worse after expenses, underperforming by -1.41 percent to -1.76 percent per year.... Economically, these results suggest that the most active diversified stock pickers and concentrated stock pickers have enough skill to generate alphas that remain positive 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.”

In a process similar to Harlow and Brown's, the authors sort the universe of mutual funds in a two dimensional matrix format. Each fund is assigned to a cell that records its percentage of Active Share (the extent to which its holdings differ from the benchmark) and its degree of tracking error. The matrix format is ordered by deciles sequenced from high-to-low Active Share and high-to-low tracking risk. The value of each matrix cell is calculated as the excess return (alpha) relative to the comparable benchmark. Further dimensions of return are explored by considering each fund's expense ratios, turnover, and size characteristics. Both univariate and multivariate regressions on the independent variables of tracking error, turnover, expense ratio, number of stocks, fund size, age, manager tenure, cash inflows, and benchmark returns provide econometric measures for the determinants of Active Share that are both economically and statistically significant.

The wide scope of fund analysis enables the authors to develop a model with explanatory power for identifying the subset of superior active managers. In particular, superior active management appears to be a function of high amounts of Active Share, small amounts of assets under management, prior year performance, and low tracking error relative to the benchmark. The extent of Active Share emerges as the most highly significant predictor of future fund returns. The authors conclude: “ from an investor's point of view, funds with the highest Active Share, smallest assets, and best one-year performance seem very attractive even after fees and transactions costs, out-

performing their benchmarks by about 6% per year.” They recommend that investors avoid “closet index funds” and mutual funds with large amounts of assets under management.³⁸

IDENTIFY AND VERIFY

The processes described above can be used to identify a subset of active managers offering the prospect of producing attractive future returns. It is easy to see that both the Harlow/Brown and Cremers/Petajisto manager-identification systems are extremely data intensive; and, it is worth noting that they are only two of many systems purporting to help investors pick well-managed funds.³⁹ Irrespective of the manager identification system that the trustee chooses to employ, it is also important to take appropriate measures to verify that the extra costs and risks of active management are “...justified by realistically evaluated return expectations.”⁴⁰ This inquiry leads directly to a consideration of the measures that are used to evaluate manager performance. Among the more commonly used performance measures are the Jensen’s differential alpha statistic, the Treynor and Sharpe ratio values, the Modigliani (M^2) risk adjustment measure, and the Information or Appraisal ratio value. These measures trace their intellectual roots to the Capital Asset Pricing Model and, in the main, they assume that portfolio risk is stationary. More recently developed dynamic risk measures allow the evaluator to account for changes in volatility throughout time (heteroskedasticity) or for evaluation of conditional parameters where the parameter values depend on economic variables.⁴¹ Finally, applications of econometric analysis, and other mathematically based approaches such as spanning set theory provide a number of powerful and elegant performance evaluation tools and techniques.⁴²

The bad news is that not only is there an infinity of admissible performance measures, but many of these measures will assign different or conflicting performance values. As one study puts it: “...if a fund’s return is not achievable by an uninformed investor, then by suitably choosing an admissible performance measure any performance value can be assigned to the fund. Furthermore, for two funds whose returns are not achievable by any unin-

formed investor, there will always be admissible measures that rank the two funds totally differently: if one measure ranks one fund higher, there exists another measure that will simply reverse the ranking (so long as the two funds are not perfectly correlated).⁴³ There are managers that may be assigned a positive performance rating by some measures but a negative performance rating by others.⁴⁴ It is, therefore important to test performance by one or more methods which are appropriate, as Restatement Third specifies, to the "...purposes, terms, distribution requirements, and other circumstances of the trust."⁴⁵

How then can the trustee establish a credible investment selection and retention policy for actively managed funds? One solution path suggests itself by viewing the portfolio design and implementation process as a top-down investment activity in which the construction of a portfolio suitable to the needs of the trust follows a process of asset allocation.⁴⁶ Admittedly, in the extreme, such a view considers the investment policy statement ("IPS") as a static, "architectural" document in which investment managers, evaluated in isolation, are merely placed into the available allocation slots. A contrasting view of the IPS sees it as a dynamic or evolving "systems engineering" guideline to portfolio management. Nevertheless, fiduciaries must decide to hire or fire specific managers; and each manager must stand or fall based on suitable performance evaluation factors.

If a primary goal of the manager selection and retention policy is to select a suitable candidate to provide the risk/return exposures called for by the portfolio's strategic asset allocation, then it may be possible to justify the extra costs and expenses of active management by determining (1) the extent of positive excess returns relative to a reasonable proxy for the asset class benchmark (a measure of "magnitude"); (2) the probability of positive excess returns in any period (a measure of "consistency"), and (3) the likelihood that positive excess returns are the product of skill rather than luck. Several elements are key to the design and implementation of such a process. These include:

Benchmark Selection — what benchmark (i.e., notional portfolio or "paper" index) is the appropriate proxy for the risks and rewards of the asset classes selected for the portfolio. Not only may a specific index be

either wholly appropriate or inappropriate for a specific investor, but the benchmark decision is critical for both asset allocation decisions and for establishing the “bogey” for manager performance evaluation.⁴⁷

Style Analysis — does the manager’s effective investment mix provide a reasonable proxy for the asset class (“style consistency”), or does the manager attempt to beat the bogey by tactical allocations to a variety of asset class exposures. Obviously, if a manager is selected to provide exposure to a particular capital market, the dominant factor explaining the manager’s returns should correspond to return history of the capital market (asset allocation) benchmark.

Out performance — has the manager compensated investors adequately for the extra costs and risks of the investment. To a great extent, this is the “without more” that is required for a prudent selection and retention policy.⁴⁸

Hypothesis Testing — given that active manager returns are conditional, how confident can we be that positive excess returns will continue in future periods. To prevent unjustified costs and risks, the null hypothesis is that a manager’s excess returns are not statistically different from zero. Hypothesis testing allows us to accept or reject the null at a specified level of confidence.

Having screened the universe of active managers by whatever criteria the trustee deems appropriate to the purposes, terms, distribution requirements and other circumstances of the trust, the trustee can now test the null hypothesis that the manager’s track record is a product of chance rather than evidence of skill. A common method of hypothesis testing, under reasonable assumptions such as finite variance or stationarity, is to establish confidence intervals. A note on confidence intervals is in order. Statistical testing can never prove the existence of skill to an absolute certitude. Rather, given certain distributional assumptions, it indicates how likely a realized performance track record (in this case, returns above those of a comparable asset class benchmark) is, in fact, a product of skill. Basically, the test sets an upper and lower bound around the annualized time series of excess returns. The location of the upper and lower boundaries is a function of (1) the desired level

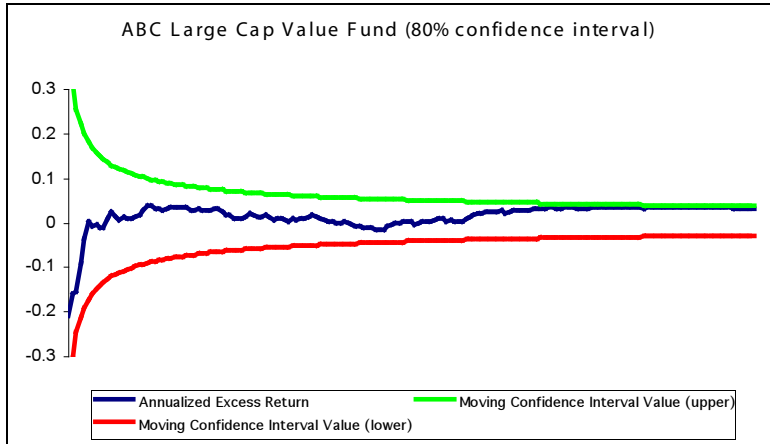
of statistical confidence; (2) the volatility in the return series; and (3) the magnitude and persistence of the manager's excess returns. If the cumulative annualized return generated by the manager exceeds the upper confidence interval boundary, this is suggestive, but not determinative, of skill. The evaluator knows the outcome of a return generating process, but the nature of the process remains unobservable. Therefore, the issue of skill or luck can never be resolved with certainty. What remains, however, is a statistical test designed to determine the likelihood that the observed outcomes (i.e., returns) could have arisen by chance alone. If there is a low probability of observing the realized returns by chance, the test allows the evaluator to conclude that it is "more likely than not" that they are the product of skill.⁴⁹

AN EXAMPLE

An example of hypothesis testing may help clarify both the statistical power as well as the limitations of the procedure.⁵⁰ Suppose that we have identified the ABC U.S. Large Cap Value Fund manager as providing above average risk-adjusted returns (perhaps by determining that the fund has a positive information ratio, or that the manager has outperformed his or her peer group, or because the ABC fund is listed in *Money Magazine's* list of the 10 best funds to own now); and, that we suspect the manager's skills may be sufficient to incur the extra costs and risks of active management. That is to say, the decisions to select (or, to retain) the manager are "justified by realistically evaluated return expectations." Further, suppose that the IPS investment selection and retention policy sets the test threshold for accepting the hypothesis of manager skill such that the ABC fund's track record (as measured by cumulative annualized return in excess of the benchmark) is at least 1.28 standard deviations above the null hypothesis of zero-percent expected outperformance. A realized excess return 1.28 standard deviations above or below the mean corresponds to an 80 percent confidence interval — 10 percent of all observations are expected to be below the lower bound and 10 percent are expected to be above the upper bound. Whereas the purpose of the test is to identify manager skill, the relevant evaluation period is the tenure of the manager at the fund rather than the fund's entire history of realized returns generated by a succession of managers. Unless the manager has

directed the fund throughout its entire history, the relevant evaluation period will be less than the fund's full historical track record.

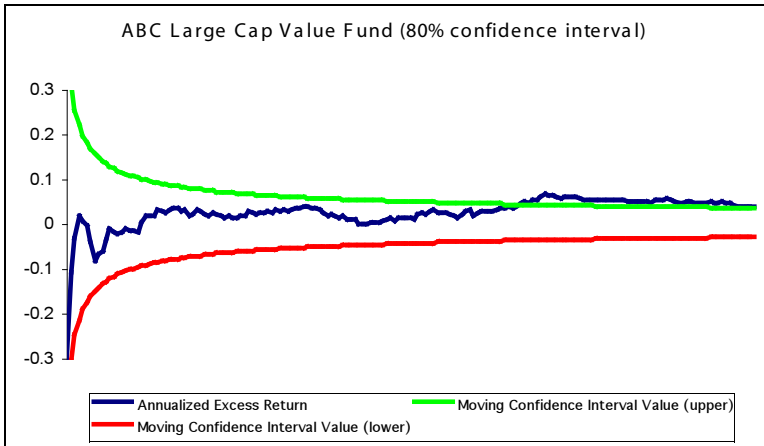
The following chart uses actual returns generated by a U.S. Large Cap Value mutual fund manager over a period of 15.5 years (the length of the manager's tenure at the fund). The excess annual returns are calculated by (1) subtracting the monthly returns of a suitable benchmark (in this case, the MSCI U.S. Large Cap Value Index) from the fund's returns; and (2) cumulating the difference over time and determining the annualized rate of the return differential.



The chart's x axis measures time; its y axis measures percent annualized cumulative return above the benchmark. The smooth lines are the upper and lower confidence interval boundaries; the more jagged line is the cumulative annualized excess returns produced by the fund manager. Given the volatility of the U.S. Large Cap Value index, to be confident of manager skill when tenure with the fund is short requires annualized excess returns in the two to three percent range. However, as the number of data points (months) increases, the confidence bounds become more narrow — the longer the track record, the more confident we become in the power of the test to detect

manager skill. It is not until approximately the 12th year of the manager's tenure that the track record is sufficient to determine skill at the 80 percent confidence level. At approximately the seventh year, the data indicates that the manager's track record evidences no skill because it approaches the 80 percent lower bound confidence interval. Past results are never a guarantee of future performance.

In fact, the cumulative annualized excess returns never reach or exceed the critical 80 percent confidence interval values. Depending on the stringency by which the trustee adheres to IPS criteria, this fund manager may fail to pass either selection or retention criteria. Consider, however, the following chart which compares the fund's excess returns to the Fama/French U.S. Large Company Value Index.



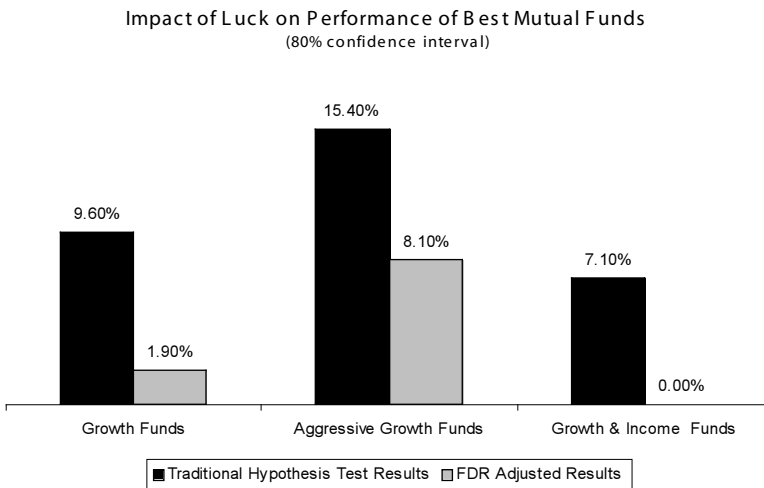
When compared to the alternative U.S. large company value stock index, the fund clearly sails through the IPS criteria. Which benchmark is correct? There are several possible answers to the fundamentally important — and often overlooked — question of benchmark choice. If the the risk/return characteristics of the Fama/French benchmark best suits the IPS asset allocation requirements, then the trustee can justify using it to verify manager skill. The rationale for

this approach lies in the fact that the trustee is selecting an active manager to add value above a pre-specified asset allocation benchmark. Under a different perspective, however, the MSCI value index may be the more appropriate benchmark. The value of the Coefficient of Determination (R^2) statistic calculated by regressing fund returns on those of the MSCI index (80.89) is higher than the R^2 of the Fama/French index (64.34). This suggests that the MSCI index “explains” approximately 80 percent of the return variance of the ABC fund, while the Fama/French Index explains approximately 64 percent. Whereas the systematic risk of the fund is most closely matched to the systematic risk of the MSCI benchmark,⁵¹ the trustee may conclude that the ABC fund does not pass muster; and may wish to search further for a suitable active manager. The important point is that there is no set of statistical measures or evaluation procedures that are “best” under all circumstances.⁵² That is to say, the path to prudence is relative not absolute.

Needless to say, the wider the confidence bounds, the more certain we become that the track record evidences manager skill. However, even as we approach the extreme tails of the distribution of excess returns, there is the expectation that some funds will achieve superior results merely by chance. An interesting and useful paper on statistical methods to further distinguish between skilled managers and lucky monkeys is a recent study by Barras, Scaillet & Wermers, entitled “False Discoveries in Mutual Fund Performance: Measuring Luck in Estimated Alphas.”⁵³ The authors apply a statistical procedure termed the False Discovery Rate (“FDR”) which is defined “...as the proportion of lucky funds among the significant funds at any significance level...” The authors note that standard hypothesis testing, even assuming Gaussian-like return distributions, will miscategorize a certain proportion of funds by either failing to assign skill to managers who are truly skilled (incorrectly accepting the Null hypothesis); or by categorizing unskilled managers as truly skilled (incorrectly rejecting the Null hypothesis). Using statistical adjustments based on the p-value of the hypothesis test as well as on the (bootstrapped) distributional characteristics of the proportion of statistically insignificant alpha in the middle of the distribution relative to the proportion of statistically significant alphas found in the tails of the distribution, the authors develop a technique to estimate the most probable number of funds with true alphas in the tail regions. If the FDR is high, then there is a likelihood that fund managers

identified as skilled may, in fact, be merely lucky. If this is the case, the trustee has no expectation that the manager's future realized returns will be sufficient to justify incurring active management risk. In short, FDR is a statistical tool enabling the authors to take a closer look at the validity of test results in the tail regions of the alpha distribution.

Utilizing a variety of asset pricing models as relevant comparative benchmarks, the authors examine U.S. equity mutual funds over the period 1975 through 2002.⁵⁴ The complete universe of evaluated funds numbers 1,456 (each fund has at least 60 monthly returns during the period). The study decomposes the fund universe into three subgroups: Growth Funds (1,025); Aggressive Growth Funds (234); and, Growth and Income Funds (310). The analysis of greatest interest is the impact of luck on the right-tail of the alpha distributions—the area suggesting greatest manager skill. At an 80 percent confidence interval, the following graph depicts the study's right-tail adjustments to the empirical evaluation:



Clearly, the impact of miscategorization error is most heavily noticed in the subgroup of Growth & Income funds. Although traditional hypothesis

testing suggests that 7.10 percent of these funds are run by skilled managers, adjusting results for the FDR measure, reduces the number of identifiably skilled managers to zero! Across the universe of funds it is apparent that the FDR adjustment reduces the number of managers that can be considered to have truly positive alphas to only a small fraction of the total.

What are the implications for developing and implementing active manager selection and retention policy? Interestingly, close examination of the entire distribution of manager alphas indicates that most active managers are sufficiently skilled to overcome the costs of their funds. That is to say, despite being unable to generate a statistically or economically significant positive alpha, investors are not likely to be significantly harmed if they invest in the 76.6 percent of active funds that exhibit no differential performance capabilities. This means that it is especially important to avoid the remaining 21.3 percent of funds that exhibit significant negative differential performance (i.e., negative alpha values). The conclusion that the average actively managed mutual fund is unable to beat its benchmark should be restated: “about 80 percent of the funds perform well enough to cover their expenses....negative performance is only due to a minority of 20 percent of the funds.”

Additionally, if the investor avoids actively managed Growth & Income funds, it appears that there are a sufficient number of funds with truly positive alphas in the distribution's right tail so that trustees may be able to form profitable portfolios of actively managed mutual funds. This is equivalent to the proposition that miscategorization risk (in this case, the risk of mistaking a lucky manager for one with skill) can be substantially mitigated by selecting several active managers. The investor cannot know with certainty which managers are skilled; however, as the confidence interval narrows, the number of “false positives” decreases. At a 95 percent confidence interval, the authors report that traditional hypothesis tests indicate that 56 mutual funds occupy the skill region of the distribution. The FDR adjustment indicates that 50 percent (28 funds) are likely to be miscategorized. Fortunately, however, the miscategorized fund managers are likely to have skill sufficient to overcome their costs (i.e., produce a zero-net alpha) while the remaining managers are likely to produce market beating returns. This result should leave the investor in a net positive economic position assuming manager diversification across all asset classes.

Other solutions to the development and implementation of prudent investment manager selection and retention policy also are possible — prudence is not only relative but is also n-dimensional — there are many paths to prudence. An important article by Baks, Metrick and Wachter, for example, utilizes a Bayesian approach to manager performance evaluation.⁵⁵ They distinguish between two extreme investment viewpoints. The first is termed the “diffuse” viewpoint in which the investor holds no “informed” beliefs concerning a manager’s past track record, where “informed” may be defined as akin to “preconceived” or “preexisting.” It is as if each manager starts with a blank slate and is judged to be skilled or unskilled depending on how results unfold over time. This type of investor will feel comfortable selecting any active manager that exhibits a positive alpha. In terms of this article’s vocabulary, the diffuse investor identifies but does not verify. At the opposite extreme, the second type of investor is termed the “dogmatic” investor. This investor has a rock-solid preconception that there is no persistency in investment management skill and, therefore, all active managers should be avoided no matter how attractive their investment returns. The authors explore the middle ground between the extremes and show how Bayesian statistics can be used to calculate the mean of the posterior distribution of alpha where posterior alpha is defined as the manager’s expected future alpha. The article develops a closed-form solution for both individual managers and for multiple manager selection in a single-period context.

Of special interest is the authors’ careful distinction regarding the Bayesian approach (prior beliefs are adjusted as new data becomes available) and the “frequentist” approach which is akin to traditional hypothesis testing over the entire historical data set. The frequentist approach tests the null hypothesis that alpha is zero for each manager in the data sample. For example, in the data sample of mutual funds over the period 1962 through 1996, the alpha of 1,437 funds is calculated relative to the returns of the Fama/French three factor asset pricing model. When the p-values for each test are ranked from lowest (highest probability of confirming either skill or lack thereof) to highest (lowest probability of confirming skill or lack thereof), the lowest right-tail p-value is achieved by Robert Sanborn, former manager of the Oakmark Fund, who generated a positive alpha value of 92.1 basis points. The p-value of 0.00014 suggests that under the null hypothesis that

true manager alpha is zero, we expect to see such a p-value by result of mere luck approximately 1.4 times in a sample of 10,000 managers. Mr. Sanborn seems to have “aced” his hypothesis test. However, under the null hypothesis that true alpha is zero for the entire universe of fund managers, the probability of observing one result with a p-value of 0.00014 is $[1 - (1 - 0.00014)^{1,437} = 0.18]$ 18 percent. Thus, a case can be made that under the frequentist approach even a 1.4 in 10,000 probability outcome is barely sufficient to reject the Null at an 80 percent confidence interval.

In the Bayesian approach, however, “we combine the return evidence with a range of possible prior beliefs and then map them into posterior beliefs.” The authors provide the following example. Suppose the investor believes that a manager has no skill and that the excess return is merely the benchmark return decremented for expenses and fees. Assuming six basis points per month in transaction costs and 6.8 basis point per month expense ratio, the expected “prior” monthly alpha is -12.8 basis points. Given certain reasonable assumptions concerning the variance of manager returns and the standard error of estimate for the alpha statistic, if the investor has a prior belief that only one manager out of 100 has true investment skill, and that only one in 1,000 has sufficient skill to generate a monthly alpha equal to or greater than 25 basis points, for a fund earning an alpha of 24.1 basis points over the period July 1972 through 1996, the revised posterior alpha estimate is a positive 13 basis points. This assessment leads the investor to commit capital to the fund by virtue of the expectation for positive future alpha. The authors conclude that a Bayesian approach is able to constructively utilize evidence that the frequentist approach would ignore as “insignificant.” They caution the reader that “...nobody knows the correct model of performance evaluation; however, revisions of prior beliefs in the face of new data can lead investors “to economically significant allocations to active managers.”⁵⁶

THREE NON-TRIVIAL HURDLES TO PRUDENT ACTIVE MANAGEMENT SELECTION AND RETENTION POLICY

Fund Size and Fund Capacity

The ability to generate positive future excess return may, for a fund pur-

suing active management strategies, be a function of assets under management. This argument implies that managers that have successfully invested small amounts of money cannot replicate past levels of success when called upon to invest larger sums. A review of the research suggests that the nature and extent of investment “capacity” is an important variable with respect to a trustee’s decision to elect active management strategies.

In a seminal paper, Andre Perold and Robert Salomon establish a link between the ability to generate positive alpha (i.e., risk-adjusted returns), and the amount of assets under management.⁵⁷ The authors posit that there exist “...diseconomies of scale in active management, which stem from the relation between market impact and transaction size.” In a nutshell, as the amount of assets under management increases, the conditions under which the manager must execute buy and sell orders become increasingly less favorable. At the limit, profitable active management ceases to become feasible due to “implementation shortfall.”

The authors define implementation shortfall as the difference between a notional portfolio, such as a cost free paper index, and the actual portfolio under management. As the trade size increases, so also, the market impact, commissions and other transaction costs. Furthermore, it is likely that trade costs will result in unexecuted trades because the forecasted alpha which the trade wishes to capture is not sufficient to overcome estimated trading costs. Failure to execute trades is a major contributor to implementation shortfall—the manager’s good ideas cannot find implementation in a real world portfolio: “As assets under management grow, more shares go unexecuted as the desired block size rises above the wealth-maximizing trade size. As more shares go unexecuted, opportunity costs increase, and the portfolio’s rate of return declines as a percentage of assets.” It is the portion of trades that remains unexecuted that, according to the authors, stymies the manager’s ability to generate future excess returns.

One reason why the Perold & Salomon study attracted considerable attention is their assertion that optimal portfolio size may be relatively small when compared to the size of mutual funds operating in the marketplace: “...with billions of dollars under management, a firm has to have very low market impact costs and/or a high alpha to create wealth. For what many would regard as a “good” alpha — in the one to three percent range — and

“reasonable” transaction costs — market depth in the 0.25 to 0.35 per cent range—the right amount of assets is only a few hundred million dollars....” Beyond this critical point, continued flows into a fund cannot be expected to earn abnormal returns and serve only to dilute the interests of the existing shareholders.

The Perold/Salomon thesis sparked a series of empirical investigations into the size v. performance question. Ciccotello and Grant, for example, examine mutual fund returns for the period 1982 through 1992.⁵⁸ They conjecture that funds having large amounts of assets under management may have structural advantages over smaller funds either because of the ability to spread fixed costs over a larger asset base, or because of the ability to negotiate better terms for larger trading volume. As a counterpoint, funds with larger amounts of assets under management may have disadvantages because they grow to resemble market proxies and present the manager with the task of “maneuvering a battleship in a bathtub.” The study employs descriptive statistics (funds are ranked according to performance, asset growth rates, and investment objectives) with the aim of conducting hypothesis tests concerning the subsets of mutual funds. The null hypothesis is that there is no performance difference between large and small funds. The authors conclude that small funds outperform larger funds, at a level of significance measured by the p-value statistic,⁵⁹ but that the null hypothesis can be rejected only for the subset of aggressive funds. For equity funds with other investment objectives: “there is no systematic relationship between fund size and future performance.” Managers of aggressive funds, however, are more likely to invest in small company stocks; and, the authors speculate, “finding these ‘diamonds in the rough’ may become more difficult as the fund grows.”

A study presented at a 1998 conference sponsored by the Association for Investment Management and Research (“AIMR” — now renamed the CFA Institute), takes a different approach to the manager fund size/future alpha question. This study, also based on purely observational data, presents an in-depth look at a specific private management firm that has internally tracked its trading costs, asset growth, and investment performance results.⁶⁰ The author contends that “the intrinsic value of investment management arises from two components: an intermediary function and a value-added function. In the intermediary function, management firms take the customer’s assets

— typically, cash — and convert them to the desired asset-class exposure. The value-added function is the generation of returns in excess of the return of the asset class.” After pointing out that the average active manager is not successful with respect to the value-added function, the author asserts that the primary factor causing performance shortfall is transaction costs. The firm’s internal data suggest that as assets grow the marginal benefit of active management increases on a parabolic curve until benefits peak at the point where the marginal cost of managing the extra dollar of assets equals the marginal benefits of the manager’s gross alpha: “if active managers understood their transaction costs, they would realize the impact of size on returns and concede that they cannot forever increase their business and honestly expect to generate positive added value...Every strategy thus has a point beyond which the dollars of excess return will decline. No investment strategy should grow beyond that point.”

If a rise in a fund’s assets under management triggers, at some point, adverse consequences for future investment performance, there may be fiduciary issues concerning the appropriateness of selecting large, historically successful, actively-managed funds. Questions present themselves on several fronts:

- If superior past performance is not “scalable,” there is no expectation that it will persist in the future; and,
- The trustee’s selection and retention policy for actively managed investment programs should “incur costs that are reasonable in amount and appropriate to the investment responsibilities of the trusteeship.”⁶¹

The Restatement’s augmentation of trustee duty to avoid inappropriate or unwarranted costs requires that the costs and risks associated with electing actively managed investment strategies may receive heightened scrutiny in the event that the fund’s manager is not successful. Such a possibility argues for care and attention to crafting a manager selection and retention policy that is legally defensible, academically sound and administratively reasonable.⁶²

A study published in 1999 pursues an empirical approach to the size/performance question by examining a sample of 683 actively managed equity mutual funds over the 1993 through 1995 period.⁶³ The authors consider

four factors that may be responsible for diminishing returns to scale in active investment management:

1. Transaction costs for purchases and sales of large blocks of securities (market impact costs);
2. Inability to implement trades because larger funds attract attention by market participants whose “frontrunning” activities cause prices to move away from the manager’s preferred buy/sell range;
3. Administrative stress caused by large influx of new money into successful funds; and
4. Limited investment opportunities for new cash inflows that may require a manager to invest in assets that are suboptimal with respect to his or her preferred strategy or investment style.

Following an econometric analysis that regresses investment performance on a variety of explanatory variables including a fund’s Beta, residual risk, price-to-earnings and price-to-book ratios, median market capitalization, expense ratio, turnover, and asset size factors, the study concludes that “...the efficiency of an active investment management strategy depends on the size of net assets under management.” There is a minimum size below which the returns of a fund are not sufficient to justify the extra costs of active management. As funds increase in value above the break even point, there is an increasing return to active management. However, a decomposition of this return indicates that it is best captured by a function that incorporates a linear term (benefits increase with the size of assets under management) and a quadratic term (benefits increase at a diminishing rate). This means, the proportional gain to active management becomes smaller as asset size increases. The maximum net gain occurs in funds with assets in the range of \$894 million to \$2.1 billion range. Given the linear and quadratic nature of the regression function, taking the first derivative with respect to fund size indicates that “...an optimal fund would have [between] \$946 million and \$1.1 billion of net assets.” The econometric evidence for the three-year sample of mutual fund returns indicates that (1) approximately 20 percent of funds failed to reach a threshold size where active management benefits were sufficient to overcome costs; and, (2) approx-

imately 10 percent of funds suffered negative marginal returns because they exceeded their optimal size.⁶⁴

Two important research studies appeared in 2004. The Ciccotello/Grant hypothesis (size is a decrement to performance for funds investing in small company stocks) receives additional confirmation in a study examining mutual fund performance for the period 1962 through 1999.⁶⁵ Before controlling for differences in fund investment styles, the data indicates that, net of fees, mutual fund managers are unable to match market performance. However, after dividing the fund universe according to the amount of assets under management, the data indicates that smaller funds (Quintile 2) outperform larger funds (Quintile 5) by an economically significant 96 basis points per year. The authors provide an insightful discussion regarding hypothesis testing issues. For example, funds that are merely lucky will tend to grow in size because of the joint affects of high investment returns and additional investor fund flows. However, as the returns from these larger and lucky funds revert to the mean, the data may encourage a spurious conclusion that size contributes to poor performance. Likewise, failure to adjust for fund style, for “closet indexers,”⁶⁶ and other size-related characteristics such as fund age and turnover may influence analytic results. One of the paper’s more interesting insights is that membership in a large fund family has a positive association with future fund performance. The authors conjecture that large fund families are able to negotiate for favorable security transaction terms; and, therefore, it is important to control for the size of the fund family when examining the relationships between individual fund size and the ability to generate performance in excess of a comparative benchmark.

After conducting a series of regressions (fund return is the dependent variable),⁶⁷ the authors conclude that the log-of-total-net-assets variable has “a strong negative effect on performance regardless of the sub-periods....” The authors advance three possible explanations:

1. A Liquidity Hypothesis — larger fund’s have greater transactional costs (especially market impact affects);
2. A Clientele Hypothesis — investors are less concerned with mediocre performance of larger funds because marketing success has created an advertising “brand;” and,

3. An Agency-Risk-Taking Hypothesis — as fund manager compensation increases in step with the amount of assets under management, the manager has an incentive to lock-in fund size by tilting more towards passive management.⁶⁸

The study focuses on the liquidity hypothesis. For example, "...funds that have to invest in small stocks are more likely to need new stock ideas with asset base growth, whereas large funds can simply increase their existing positions without being hurt too much by price impact." After extensive testing of the liquidity hypothesis, the authors conclude that liquidity "plays an important role in eroding performance;" but, "for Large Cap funds there is no effect of fund size on performance." Further investigation suggests that key variables for fund performance prediction are the size of the fund, a tilt towards investing in small companies, and certain organizational "dis-economies" characteristic of larger funds which adversely impact the ability to make optimal decisions in a hierarchical structure.

A second paper appearing in 2004 takes a much different approach to examining the size/performance issue.⁶⁹ The authors begin with the observation: "the relative performance of mutual fund managers appears to be largely unpredictable using past relative performance. Nevertheless, mutual fund investors chase performance.....The evidence that performance does not persist is widely regarded as implying that superior performance is attributable to luck rather than differential ability across managers." Rather than investigating empirical data, however, the paper develops a mathematical model that seeks to reproduce the "salient features of the empirical evidence as equilibrium outcomes in a rational model." Beyond its contribution to understanding the size/performance question, the paper stands as an important contribution to the rational market school of thought in that it provides a powerful and elegant model of the underlying rationality of seemingly irrational individual investor behaviors.

The model parallels standard corporate finance models. Many economists note that absent special intellectual property protections such as patents, the ability of a commercial enterprise to generate earnings growth significantly higher than its industry competitors usually exists only for a very limited time. Excess profits attract competition and, in the long run, are not

expected to persist in the absence of identifiable and persistent competitive advantages. The Berk/Green model incorporates three elements: (1) a competitive provision of funds by investors; (2) a differential ability across fund managers who, in their investment operations, are faced with decreasing returns to scale; and, (3) a learning process on the part of investors where information is inferred from the time series of past fund returns. A key finding of the model is that “rational learning and strong response of flows to performance can be consistent with no persistence in performance....these outcomes are not only consistent with investor rationality, but also with efficient provision of portfolio management services.”

The logic of the model unfolds as follows: differential ability exists within the cross-section of investment managers; and, investors identify superior managers based on analysis of past track record. Managers have an incentive to increase the size of their funds (thereby increasing their compensation) and investors have an incentive to allocate investment resources where they are likely to be most productive. Funds attract positive cash flows to the point where the marginal dollar invested generates a benefit equal to the return of the market. Although this partial equilibrium condition assures that a manager’s ability to outperform the market will not persist, it does not constitute proof that investment managers lack skill. Additionally, it suggests that skilled managers are rewarded for their differential abilities. The model reconciles elements of the efficient market hypothesis, as espoused by Malkiel, with the Grossman/Stiglitz hypothesis of an equilibrium degree of disequilibrium. As the authors point out, their model does not provide support for the proposition that “...gathering information about performance is socially wasteful, or that chasing performance is pointless. It merely implies the provision of capital by investors to the mutual fund industry is competitive.”

Although the mathematics of the model are somewhat complex, it is worthwhile to discuss some implications important for the task of developing and implementing prudent investment manager selection and retention policy. As stated, investors learn of a manager’s ability to beat a benchmark by observing the history of the portfolio’s returns. Historical returns can be decomposed according to the following equation:

$$R_t = a + e_t$$

Where,

R_t = The history of returns in excess of the relevant comparative benchmark from time zero to time “ t ,”

a = the source of the manager’s differential ability; and,

e_t = the uncertainty associated with the estimate of differential ability (the error term) where the error terms have an expected value of zero, a positive variance, and an independent distribution through time.

If the error terms are idiosyncratic to the manager, by investing in a number of separate managers each of which evidence skill, it may be possible to diversify away much of the active manager risk that confounds fiduciaries trying to justify seeking the “best” investment manager for each asset class within the portfolio’s asset allocation structure. The Berk/Green model suggests that prudent fiduciaries seeking to elect active management for some or all of their portfolio positions may diversify among active management strategies utilizing a risk-budgeting structure, an “optimization” of active management algorithm, or other such risk control techniques. Such an approach should be more defensible than the treasure-hunting approach that seeks to find the single fund with the top performing track record. The key is to determine that the error terms across managers are uncorrelated. Under this condition, “. . .by diversifying across funds with positive excess expected returns, investors can achieve the average excess expected return with certainty.”

A second implication of the Berk/Green model is that costs matter. A skilled manager must be able to find undervalued securities without adversely moving the price. However, given the model’s assumptions that market costs are independent of investment ability, and that all managers face cost functions that are increasing and convex in the amount of funds under management, a sufficiently skilled manager attaching large sums of money will be faced with growing price impact and execution costs (including opportunity costs that contribute to implementation shortfall). If, in the limit, a successful manager ceases to be able to outperform the comparative benchmark, the “ R_t ” term in the above equation will tend towards zero. At that point, expected manager ability, as measured by the net returns received by investors, will depend solely on the nature of the cost function. This is not

all bad news for investors because under conditions of competition, managers should adjust the cost function (i.e., their compensation) to optimize their ability to remain competitive. However, “as in any equilibrium with perfect competition, the marginal return on the last dollar invested must be zero. In this case, however, since all investors in open-ended mutual funds earn the same return, *all* investors earn zero expected excess return in equilibrium....the average excess return of all managers will be zero, regardless of their overall level of skill.”⁷⁰

Although papers published in the recent past indicate that portfolio size, controlling for other variables, may be detrimental to future investment performance, there is no consensus agreement on this point. The authors of a recent study of Australian equity mutual funds assert that their “...findings do not support the assertion that size acted as a performance constraint in the long term for large equity funds of the period studied” (1991-2000).⁷¹ However, a followup study of Australian mutual funds concluded that small sized funds outperform funds with greater amounts of assets under management not primarily because of measurable market impact costs; but, rather, because managers of large funds, anticipating transaction cost hurdles, reconfigure their security selection algorithms to account for anticipated portfolio frictions. This reconfiguration often results in a tilt away from owning smaller, less liquid stocks and leads to sub-optimal portfolio implementation: “...the decision to alter portfolio configuration in an attempt to reduce market impact costs is itself costly....”⁷²

In contrast to studies of mutual funds, an important new research paper on institutional money managers hired by large pensions, endowments and trusts develops a strong link between asset flows and future performance.⁷³ The study investigates 6,674 portfolios managed by 1,549 investment firms during the period 1979 through 2004. The authors rank U.S. equity, U.S. fixed income, and foreign equity portfolios into deciles (decile one is the worst 10 percent / decile 10 is the best 10 percent) according to alpha measurement against a variety of factor models including the Fama/French three factor model and the Carhart four factor model, as well as against a factor model developed to measure fixed income portfolio performance. The study’s primary focus is on performance persistence with special attention to whether institutional investors can identify and exploit superior historical

investment results. The data indicates that positive excess return performance persists for equity managers for a period of approximately one year; and, for fixed income managers, for approximately two years. Subsequently, however, there is a sharp reversal in relative performance with the poor performing managers exhibiting above average performance while the top managers fail to match the comparative benchmark returns.

The authors suggest that capital inflows toward the current top managers and outflows away from the poorly performing managers may account for future reversals in relative manager performance rankings: "...it is likely that new capital flows into extreme winner portfolios and flows out of extreme loser portfolios. If there are decreasing returns to scale in investment management, then capital flows could account for the reversals that we observe in persistence." Indeed, this seems to be exactly the case. With respect to U.S. equity portfolios: "there is a monotonic relation between flows in year 1 and decile ranking based on the prior year return. In year 1, decile 10 receives a flow of over 32 percent whereas decile 1 loses almost 6 percent of its assets, a spread of 38 percent.... In the following year (year 2), the alphas revert. For winner portfolios, the alpha declines from 0.97 percent per quarter in year 1 to -0.13 percent in year 2. Analogously, the loser portfolio alpha goes from -0.34 percent in year 1 to 1.00 percent in year 2. Portfolios in the intermediate deciles follow consistent patterns." These observations, in the authors' opinion, provide empirical support for "the quantity-based equilibrating process that is at the heart of Berk and Green."

Taxes

Active asset management often entails higher amounts of trading when compared to the predominantly buy-and-hold approach of passive asset management. This observation motivates inquiry into the question of whether active management strategies generate sufficient value to overcome potential tax liabilities for taxable investors. A good point to begin a brief survey of research is with an article published in 1993 by Robert Jeffrey & Robert Arnott: "Is Your Alpha Big Enough to Cover Its Taxes?"⁷⁴ The authors pose a challenge to the investment management community by noting that, for taxable investors, taxes are a major cause of portfolio inefficiency and,

therefore, of mediocre investment returns. However, taxes "... are generated by the very activity that is intended to enhance returns, namely turnover." Buying and selling of putatively mispriced securities creates portfolio turnover which, in turn, triggers recognition of taxable gain. They observe that most active managers do not add value (alpha) sufficient to overcome the fees, trading costs and taxes of their trading strategies: "Because the preponderance of evidence is so convincing, we conclude that the typical approach of managing taxable portfolios as if they were tax-exempt is inherently irresponsible, even though doing so is the industry standard."

Jeffrey and Arnott show that, assuming a blended effective tax rate of 35 percent, an investment horizon of 20 years, and a six percent compound growth rate, an initial investment of \$100 grows to \$321 in the absence of turnover, to \$284 at a five percent turnover rate, to \$235 at a 50 percent turnover rate and, finally to \$215 when turnover is 100 percent. Thus, at a 100 percent turnover rate (which is not abnormal for actively managed equity portfolios), a manager must generate an extra 2.1 percent of return every year to compensate for the taxes his trades impose on his investors. But when the authors compared the performance of professionally managed equity mutual funds over the 10 years ending 1991, they found that on a full liquidation, after-tax basis, only two funds (CGM Capital and Fidelity Magellan) beat the relevant bogey, the S&P 500 Index.

Jeffrey and Arnott recommended that portfolio managers should realize investment losses whenever possible in order to offset realized gains. Additionally, they advised investors to "build a portfolio that you can live with for a long, long time ... A passive, well diversified, low-turnover index fund is an obvious answer." These observations have had a profound effect on subsequent research.

In 1993, two Stanford economists, Joel Dickson (now a Principal in the Portfolio Review Group at Vanguard) and John Shoven published groundbreaking research on the desirability and feasibility of creating tax-managed mutual funds.⁷⁵ Their research quantifies the tax drag on index returns from 1963 through 1992. Over that period, the S&P 500 Index compounded each dollar of initial investment to a terminal pre-tax value of \$22.13. The median equity mutual fund produced \$21.89. After tax, the Index produced \$9.87, while the median mutual fund generated \$9.17. The authors con-

cluded that mutual funds are often tax inefficient but found no significant correlation between a fund's tax liability and its turnover rate. This is a puzzling result, because turnover rate is often used by economists as a proxy for capital gains recognition rate.

A 1997 article by Jean Brunel of Morgan Guaranty examined many portfolio management maxims originally developed for tax-favored portfolios. Brunel sought to determine how well the conventional wisdom fares in a taxable environment.⁷⁶ He concluded that the key to successful tax-aware investing is in limiting, not the rate of turnover, but net realized gains — i.e., gains net of losses. Not all turnover is created equal. Whether a manager is trimming a successful position or dumping a loser, the turnover statistic for his fund will grow; but the former transaction will most likely generate taxable gains, while the latter may generate offsetting losses. Turnover for the sake of loss harvesting, therefore, has beneficial rather than detrimental tax consequences, despite the fact that it increases the overall portfolio turnover rate.

Paradoxically, therefore, in taxable portfolios, volatility can be desirable, because it increases the number of opportunities to harvest net losses that can go to reduce net gains. Such opportunities act like cost-free options contracts for the portfolio, operating across investments as well as over time. This may explain why high turnover does not, in practice, necessarily entail high tax costs; after all, fund managers are as alive to the utility of unrealized tax losses as any of their clients, for they often invest family money in the funds they manage.

These insights may, in some cases, lead to counterintuitive conclusions. For example, on a pre-liquidation basis, portfolios holding negatively correlated assets — i.e., assets whose prices tend to move in opposite directions in a given economic situation — may seem tax-inefficient, because the need — or rather, opportunity — for frequent rebalancing increases the likelihood of gain recognition in any given tax year. However, on a post-liquidation basis — i.e., after payment of all taxes on the complete embedded gain — frequent rebalancing of negatively correlated assets “refreshes” the tax basis and enhances final after-tax value.

An important theme of Brunel's article is an extension of the concept, first developed by Jeffrey and Arnott, that the initial portfolio should be highly

diversified because of its propensity to build up embedded gains over time. Brunel contends that successful active management of a portfolio concentrated in just a few securities will eventually destroy both the need for and feasibility of continued portfolio management. When embedded gains become so great that the tax cost of any trading is prohibitive, the few surviving positions are frozen in place, greatly increasing portfolio risk: “It also may well expose the portfolio to the risk that it ‘freezes’ at some point — when there is so much unrealized gain in all positions that no further trades, and thus management, can possibly make sense. Once frozen, the portfolio no longer can earn excess returns, and may in fact trail the market because of bets which are no longer attractive. Further, it is exposed to rising risk over time ...” To minimize the risk of such a freeze, taxable portfolios must be sufficiently diversified at inception that investors can be comfortable holding them for the long term, and so that, from one year to the next, gains embedded in successful bets can be reduced by losses recognized elsewhere in the portfolio.

In 1998, David Stein and James Garland emphasized several important themes in the management of taxable portfolios:⁷⁷

- The decision to sell or retain a security held within a taxable portfolio should be the subject of a cost/benefit analysis. Specifically, the benefits of security sales must be weighed against the tax on realization of gain. Future investment benefits are uncertain whereas current tax liabilities are certain.
- The present value of a taxable portfolio is neither its market value nor its after-tax liquidation value, but rather — approximately — to an average of these two values. For example, when confronted with the decision to diversify a concentrated portfolio by selling low basis assets, the solution includes, “the expected horizon, the expected return of the proposed assets, the expected return of the existing assets, the tax rate, and the risk tolerance of the investor.”⁷⁸
- Because the tax code imposes asymmetrical taxation, assets with higher volatility may have higher expected returns on an after-tax basis. All else equal, taxable investors should have a higher tolerance for volatility, because of the concomitant increased opportunities for timing gain and

loss recognition.

- Commingled accounts such as open-ended mutual funds may subject investors to tax externalities because of the actions of other investors; however, tax-sensitive separate accounts may quickly devolve into a mere handful of concentrated, highly appreciated securities over time. The ideal taxable portfolio is well-diversified, with low turnover rates: “[The] need to refresh a portfolio can be delayed by diversification.”

A 1999 study by David Stein and Premkumar Narasimhan offers further insight into the portfolio lockup problem by pointing to the advantages of broadly diversified portfolios built from passively managed index funds.⁷⁹ The authors introduce the concept of “active tax management,” which is to be distinguished from the security selection and market timing activities characteristic of active investment management. A simple method of tax management is to invest in a capitalization-weighted index fund. Such an investment has three advantages:

1. It is broadly diversified and, like the market it tracks, reflects the consensus opinions of all investors.
2. The fund tends to move in lockstep with the index and, because it requires little rebalancing in order to stay in alignment, it tends to delay realization of capital gains.
3. Turnover within the Index is usually low, so the tax cost of trades that harmonize an index fund portfolio with the index should likewise be low.

Given these factors, Stein and Narasimhan argue that it may therefore be preferable to be passive with respect to investment management and active with respect to tax management.

Traditional tax management techniques include tax-lot accounting, loss harvesting, assuming a degree of tracking risk to avoid triggering gains, and tax-aware transitions of undiversified portfolios. But the utility of these techniques depends in part on the condition of the market. Extended bull markets progressively reduce the number of profitable opportunities for active

tax management. “The dynamic conflict between lockup and diversification is crucial to the management of portfolios in the presence of taxes.” As a bull market continues its run, active investment management becomes more and more difficult because, “the dual goals of seeking a security selection alpha and a tax-managed alpha work against one another....”

The Wall Street Journal observed in 2000 that not all indices are truly tax-efficient wealth accumulation vehicles.⁸⁰ On average, index funds are more tax efficient than actively managed funds, but this is not always the case. Certain index funds distribute large gains to investors (e.g., in 1997 the Galaxy II Small Company Index Fund distributed capital gains of 34.4 percent of the fund’s net asset value). In purchasing an index fund, taxable investors should consider the unrealized capital gains embedded in the fund’s holdings.

Starting in 2000, Robert Arnott, Andrew Berken and Jia Ye published a series of studies relevant to this discussion. The first in the series, “How Well Have Taxable Investors Been Served in the 1980s and 1990s?” extends the research done in the 1993 Jeffrey & Arnott article.⁸¹ The authors used historical tax rates and adjusted for mutual fund survivorship bias in order to gauge the after-tax performance of mutual funds. In the original (1982-1991) study, only six funds beat the S&P 500 Index (with average outperformance = 0.9 percent) while 65 lagged (average shortfall = 3.1 percent) on a pre-liquidation basis. During 10 years (1989-1998) only 33 funds beat the Vanguard 500 Index Fund (average outperformance = 1.79 percent) while 322 funds lagged (average shortfall = 4.79 percent). Similar results held over 15 and 20-year periods.

The second article in the series advances the thesis that too often, a certain tax alpha is “tossed aside in the quest of uncertain alpha in active management.”⁸² Although tax liability on unrealized capital gains is like an in-the-money option held by the IRS, it is the investor who holds the right to decide the time of the option’s exercise. Thus, the investor enjoys an economic benefit comparable to a free option plus an interest-free loan. In selling an appreciated security, the manager is betting that the trade is more valuable than this package of economic benefits. The authors pointed out also that investor reluctance to realize losses is extremely damaging to taxable portfolios: “...the tax credit created by realizing losses is like invisible cash in

the portfolio, and the value of the loss is multiplied by the tax rate. Upon harvesting that loss, the value of the portfolio effectively increases.” The increase is instantaneous, and free of risk.

More recently, Mulvihill explored the inherent tension between active investment management and the increased recognition of tax liabilities it causes.⁸³ Mulvihill asked if investors are better off with an active manager who beats the market or a passive indexed investment. The key issue is the amount of excess return that the active manager must generate to equal the after-tax results of a passive strategy. Because of the relationship between turnover rate and implied holding periods, most of the tax damage is done in the first 20 percent of turnover. At an 80 percent turnover rate, the active manager must beat the passive alternative by approximately 80 basis points per year, while at a 20 percent turnover rate, the advantage must be approximately 40 basis points. “Adopting active strategies in a taxable portfolio is similar to paying a cover charge to enter a casino. The investor agrees to subject market returns to taxation in the hope that the active management will generate sufficient excess returns to cover the taxes. Even if the active strategies are successful, the benefit to the investor is only the net of the excess return and the taxes.”

The CFA Institute published a monograph dedicated to the topic of investment management for taxable investors.⁸⁴ Each author is a well-respected member of the community of active investment managers. Nevertheless they suggest that, whereas markets are at least quasi-efficient, taxable investors are better served by tax management than forecasting: “...investors are well advised to base their strategies around a default position that presumes they will not be able to forecast most price fluctuations...we believe that adding value to private client portfolios is far easier through reducing effective tax rates and through after-tax control of risk appropriate to the client’s lifestyle needs and aspirations than it is through beating the market.” The authors stress that the tax system makes the government into a “risk-sharing partner.” Thus investors should have a greater tolerance for risky assets as their tax rate increases.

The authors suggest that, although separately managed accounts might seem ideal investment vehicles for high-bracket investors, “...these programs provide no customization; rather, in these programs, investors own a legally

separate copy of a model portfolio formulated by an external investment manager... Unfortunately, SMA arrangements provide few benefits to investors not provided by a portfolio of mutual funds ... Once the additional costs of active management and taxes are considered, passive funds are a natural way to produce competitive returns in these markets while minimizing turnover so as to defer realization of capital gains.”

When considered in the aggregate, the thread of research into the tax drag of active management suggests that the optimal location for owning actively managed investment portfolios is in tax-favored environments such as pensions, endowments and charitable trusts. The burden of proof to demonstrate the “without more” needed to justify high turnover/high gain recognition investment strategies is particularly difficult for trustees of taxable trusts.

Manager Tenure and Manager Change

One event that has a great potential to produce unfavorable economic consequences is the trustee’s replacement of a fund manager. Termination of a manager, according to one study, may be due to (1) poor performance; (2) organizational reasons such as personnel turnover or mergers; or, (3) reallocation of assets following changes in investment policy.⁸⁵ Further issues may arise if the fund changes its investment approach or, in the extreme, its stated investment objective. This phenomenon has been termed “style drift.” For example, one study concluded that 65 percent of the growth funds rated by Morningstar between 1977 and 1988 had been miscategorized.⁸⁶ When the portfolio consists primarily of actively managed funds where each manager exhibits style-drift tendencies, the ability to monitor the effective underlying asset allocation may rapidly approach infeasibility.

The fact that returns to actively managed funds are conditional sets up the possibility that trustees may periodically terminate one or more fund managers in favor of a competitor. This transition is not costless. The Goyal/Wahal study estimates that transition costs for qualified retirement savings trusts, foundations and endowments range between 0.5 percent to over two percent of assets.⁸⁷

Additionally, turnover in the key personnel of money management firms

constitutes a second significant risk to trustees. According to the Morningstar Mutual Fund database, average tenure for actively managed mutual funds is 4.5 years.⁸⁸ The transitory nature of manager tenure also presents evaluative difficulties. For example, if the universe of eligible active managers is defined as the subset exhibiting positive information ratios during their tenure at a fund, the trustee may be tempted to focus only on the managers achieving the highest ratio values. But the significance of the information ratio is also a function of time. As the hypothesis testing method based on confidence intervals indicated, active manager track records must often span many years before the trustee can justify their inclusion into the trust's investment portfolio.

One advantage of using the information ratio to identify skilled managers is that it also allows for an estimation of the length of time required to demonstrate investment skill at a statistically significant level (80 percent confidence interval = t-stat of 1.28 assuming 30+ data points). Thus:

$$IR = \frac{\alpha}{\sigma_{\alpha}} = \frac{t - \text{stat}}{\sqrt{T}}$$

Solving for T,

$$T = \left[\frac{t - \text{stat}}{IR} \right]^2$$

Thus, if a money manager has an annualized information ratio of 0.4, and the investor requires an 80 percent confidence level for determining that the manager is skilled as opposed to lucky, the required length of the manager's track record must be

$$T = \left[\frac{1.28}{0.4} \right]^2$$

= approximately 10.2 years. This can be a problem because most active managers have information ratios less than 0.50, but have tenure of less than five years. It is difficult to extend the analysis of individual manager's track record to prior periods when they might have managed other funds. Changes in

operating environments, staff support systems, analyst capabilities and depth of research, as well as other unique factors make the attempt to “chain link” track records problematic. To complicate the matter further, if a trustee has identified a successful manager at the requisite confidence level, the likelihood that the manager is close to retirement might also be a factor in fund selection.⁸⁹

In general, performance evaluation uncovers statistical properties of data sets. A statistical property may be suggestive of manager skill but a statistical property is not an identifiable or verifiable object. There is an information gathering and learning process (“discovery heuristics”); which is followed by appropriate validation tests. The data set, however, presents a conundrum — the longer the return series, the seemingly more confident the researcher can be in the accuracy of the evaluation. However, the larger the data set (i.e., the greater the number of active managers), the greater the likelihood of an unskilled manager producing an excellent return purely by chance — we are tricked by a false discovery rate.⁹⁰ In an ideal world, this means that the trust’s manager selection and retention policy should (1) identify potentially skilled managers; (2) perform verification tests; and (3) extend the evaluation to cover the entire data set to approximate the probability function (in the example used in this article, a probability assignment for a calculated “p value”) for the realization of a particular investment return series given the magnitude of the entire manager universe. Given the discontinuities in the data set, however, (differing manager tenures, market conditions, volatility regimes, regulatory environments, etc.), this is a methodologically laudable but practically infeasible objective for most trustees. But this is merely another way to restate the concept of active manager risk; and to reiterate the importance of the “without more” component of a prudent investment manager selection and retention policy.

CONCLUSION

Trustees choosing to delegate investment functions to professional money managers must define the terms of the delegation. As Restatement Third states: “the terms and manner of delegation, the competence of agents, and the supervision or monitoring of agents’ activities all remain critical

aspects of prudence. The need for delegation may be most readily apparent when complicated or challenging investment strategies are pursued....”⁹¹ A written investment policy statement memorializes the terms of the delegation and provides useful guidelines for portfolio monitoring and management.

This article discusses relevant issues in the design and implementation of policy for incorporation of actively managed investment strategies into the trust portfolio. When is it prudent to elect active investment management and what are reasonable tests for verifying that a manager continues to remain a prudent and suitable choice? Restatement Third provides a helpful clarification of the types of judgments that trustees must make regarding active investment management strategies. When this decision-making criteria is evaluated in light of the academic literature regarding active manager investment performance measurement several points become clear:

- There is no set-in-stone formula of prudence. The heterogeneity of academic approaches to identifying and verifying management skill makes it difficult to identify a consensus opinion on many important issues. Under such circumstances, the prudent trustee seeks not the “right” answer but an answer that is legally defensible, academically sound and administratively reasonable in light of the purposes, terms, distribution requirements, and other circumstances of the trust.
- The decision to consider active managers for some or all of the trust portfolio is first and foremost a qualitative decision. That is to say, the prudent trustee carefully considers the context in which the manager will operate; the objectives that the manager will be asked to achieve, the characteristics of the manager’s return generating process (enhanced indexing, quant/algorithmic oriented, fundamental stock selection, factor timing, etc.), and, most importantly, the degree to which the manager’s goals and procedures align comfortably with the investment goals and needs of the trust.
- Active manager selection is something more than turning to magazines or newspapers to find a list of top funds. Both the identification of candidates and the verification that selection of a candidate is justifiable in light of extra costs and risks is a formidable task for trustees lacking the

experience and technology required for this undertaking.

- Many trustees seeking to delegate investment management functions will seek the assistance of an independent consulting firm. Although designed to alleviate the burden of manager evaluation, the trustee cannot select the consultant blindly. Many consulting firms remain under a cloud of suspicion regarding recommendations that may have been biased because of undisclosed or poorly disclosed relationships between consultants and investment products and services firms. At a minimum, the prudent trustee should require the consultant to acknowledge a co-fiduciary status with respect to matters lying within the scope of the consultant's engagement.
- If the decision to hire an active manager is "contextual," then it is also correct to assert that the evaluation tools used to justify manager retention must also be contextually appropriate. The academic literature provides many quantitative performance methods and measures. Ideally, the prudent trustee would like to use evaluative approaches that align well with the trust's investment goals [e.g., terminal wealth vs. distributional/liability tracking objectives], and would like to use more than one approach to manager performance evaluation.
- Active Manager risk is, by definition, idiosyncratic, diversifiable, or unsystematic risk (risk that is unrelated to a comparative benchmark or asset class proxy). Restatement Third, however, tells the trustee: "in the absence of contrary statute or trust provision, the requirement of caution ordinarily imposes a duty to use reasonable care and skill in an effort to minimize or at least reduce diversifiable risks."⁹² This suggests that prudent investment and selection policy should consider pairing active managers in such a way that the idiosyncratic risk of one manager is "offset" (or, in the language of linear algebra, "orthogonal") to the portfolio's other active managers. This is not an argument for "closet indexing," which, according to the academic literature, appears to be an unjustified expense and a wasteful use of trust resources, but rather a recognition that it is also prudent to consider active manager risk within the portfolio context. Restatement Third's caution regarding unsystematic risk is not an argument for defaulting to indexed investing especially when

indexed investments do not meet the unique needs of the trust.

- The preponderance of academic evidence suggests that it is difficult for active managers to achieve positive excess returns on an after-tax basis. Research into the “asset location” question confirms that the ideal location for employing an actively managed investment strategy is in charitable trusts and foundations. The burden of proof regarding the prudence of electing active management for taxable trusts is considerably higher. That is not to say that it is impossible to justify the extra tax expenses under all circumstances. Rather, the trustee of a taxable trust should prefer tax-managed investment strategies (e.g., mutual fund or separate account management employing tax-loss harvesting, tax-lot accounting, etc.), all else equal.
- It is clear that trustees seeking to delegate investment functions should generally avoid poorly performing “proprietary” funds offered by bundled trust company / investment product service packages. Investment Policy Statements written by vendors (or by affiliated consultants) with investment selection and retention provisions along the lines of “it shall be the policy of the trust to select funds offered by the ABC mutual fund company,” may not be defensible. Again, however, this is not an argument that all proprietary funds are inappropriate; rather, each investment program should be evaluated with the requisite degree of care, skill and caution.

Finally, the above eight observations should not be codified into “rules.” Delegating the investment function to outside managers requires the prudent trustee to be skeptical at all times.

NOTES

¹ Restatement Third, Trusts §90 [1992 §227] General Standard of Prudent Investment. References to Restatement Third, Trusts are from Volume 3 §§70-92, As Adopted and Promulgated by The American Law Institute (May 18, 2005).

² This is a model often found in trusts operating on brokerage company or bank investment department platforms that are linked to affiliated trust companies. Aspects of prudence for the separate account management approach to trust invest-

ment policy are more fully discussed in Collins, Patrick J., "Prudence," *The Banking Law Journal* (January 2007), pp. 29-96.

³ The SEC *Staff Report Concerning Examinations of Select Pension Consultants* (May 16, 2005), issued by The Office of Compliance Inspections and Examinations, for example, states "...that pension consultants may steer clients to hire certain money managers and other vendors based on the pension consultant's (or an affiliate's) other business relationships and receipt of fees from these firms, rather than because the money manager is best-suited to the clients' needs." www.sec.gov/news/studies/pensionexamstudy.pdf.

⁴ Restatement Third, Trusts §90 [1992 §227] General Comment "e(1)" Risk management.

⁵ Restatement Third, Trusts §90 [1992 §227] General Comment "f" Background principles for prudent investing.

⁶ Restatement Third, Trusts §90 [1992 §227] General Comment "h(1)" Passive strategies.

⁷ Restatement Third, Trusts §90 [1992 §227] General Comment "h(2)" Active strategies.

⁸ A helpful complement to this article is found in Cackowski, Ted "Separating Credible Objective Analysis from the Chaff of Armchair Economics," (October 8, 2002), www.cfainstitute.org/centreissues/comment/pdf/TCackowski_ros.pdf. Cackowski argues that "the investing public will be best served if all advice and recommendations are accompanied by analysis reflecting the three prongs of Federal Rule of Evidence 702: (1) that it be "based upon sufficient facts or data;" (2) that it is the "product of reliable principles and methods;" (3) that have been applied "reliably to the facts of the case." The article suggests that much investment advice "...does not have a credible quantitative method supporting a strategy or valuation..." and, therefore does "not rise to the level of an admissible opinion under the judicial standards" [*Kumho Tire Co. v. Carmichael*, Supreme Court (1999), 119 S.Ct. 1167].

⁹ Siegel, Laurence B., *Benchmarks and Investment Management* (The Research Foundation of The Association for Investment Management and Research, 2003), p. xi.

¹⁰ Where an asset class is defined as a grouping of securities exhibiting common legal, economic, accounting, and statistical characteristics. As an example, the asset class of U.S. large company stocks differs from the asset class of foreign government bonds. A trustee may decide that no more than x percent of trust assets should be exposed to U.S. large company stock risk; and no more than y percent should be exposed to the risks of foreign government bonds.

¹¹ Despite issues surrounding the difficulties of tracking paper portfolios due to

index construction principles (e.g., full replication vs. sampling indexes vs. optimized indexes); index operational principles (reconstitution adjustments, dividend reinvestments, float adjustments), and index weighting principles (equal weighted, fundamental indexes, capitalization weighted), this article makes the simplifying assumption that index product manufacturers are capable of matching the risks and returns of an asset class at low cost. For a discussion regarding evaluation of passively managed investment vehicles see, Collins, Patrick J., "Monitoring Passively Managed Mutual Funds," *The Journal of Investing* (Winter 1999), pp. 49-61.

¹² Siegel, *supra*, p. 12. See also, Sharpe, William F., *Investors and Markets: Portfolio Choices, Asset Prices, and Investment Advice*, (Princeton University Press, 2007), pp. 130-131; and, Sauter, George U., "Medium- and Small-Capitalization Indexing," *Perspectives on Equity Indexing*, Second Edition Frank J. Fabozzi & Robert P. Molay, eds. (Frank J. Fabozzi Associates, 2000), pp. 135-150.

¹³ See, for example, Ellis, Charles D., "The Loser's Game," *Financial Analysts Journal* (January/February 1995), p. 99: "...how can institutional investors hope to outperform the market by such a magnitude when, in effect, they *are* the market... The disagreeable numbers from the performance measurement firms say there are *no* managers whose past performance promises that they will outperform the market in the future. Looking backward, the evidence is deeply disturbing: 85 percent of professionally managed funds underperformed the S&P 500 during the past 10 years." For a survey of mutual fund performance evaluation studies see, Anderson, Seth C. & Schnusent, Oliver, "A Review of Studies in Mutual Fund Performance, Timing, and Persistence," *Working Paper* University of North Florida (June 2005).

¹⁴ Excess returns that are also adjusted for risk are often termed "abnormal" returns. This article uses both terms in contexts that should make the risk-adjustment issue clear.

¹⁵ For bank funds see, "Sahu, A., Kleiman, R. & Callaghan, J., "The Timing and Stock Selection Abilities of Bank Funds: Evidence Based on Meta-Analysis," *Journal of Financial Services Research* (Vol. 13, 1998), pp. 137-152. The authors conclude that, as a group, bank fund managers do not evidence superior stock selection or market timing ability; although when funds are considered individually, there is evidence that "the best trust fund managers delivered significant risk-adjusted returns."

¹⁶ One performance study concludes that, on average, active mutual fund managers are, in fact, able to select stock portfolios that consistently outperform relevant comparative benchmark portfolios. However, once returns are adjusted for cash (non-stock) holdings, expenses and transactions costs, net returns underperform the market by one percent. Wermers, Russ, "Mutual Fund Performance: An Empirical Decomposition into Stock-Picking Talent, Style, Transactions Costs, and Expenses," *The Journal of Finance* (August 2000), pp. 1655-1695.

¹⁷ Allen, David; Brailsford, Tim; Bird, Ron & Faff, Robert, "A Review of the Research on the Past Performance of Managed Funds," Funds Management Research Centre (June 2003). *See also* the survey of investment research findings in Anderson, Seth C., *Investment Management and Mismanagement: History, Findings, and Analysis* (Springer, 2006).

¹⁸ Malkiel, Burton G., "Can Predictable Patterns in Market Returns be Exploited Using Real Money?" *The Journal of Portfolio Management* (30th Anniversary Issue, 2004), pp. 131-141.

¹⁹ *See, also*, Jurek, Jakub W. & Viceira, Luis M., "Optimal Value and Growth Tilts in Long-Horizon Portfolios," Working Paper Harvard University (October 31, 2006).

²⁰ Each of these factors has been advanced as a basis for forming profitable investment strategies. Small capitalization outperform large capitalization stocks during certain periods; recent winners continue to exhibit short-term momentum to the upside; some long-term return series exhibit negative serial correlation; and certain valuation measures (dividend yield, relative P/E ratios, etc.) carry predictive informational content regarding future stock returns. In each case, Malkiel argues that investors would be better off, after accounting for the costs of active management, with naïve buy and hold investment strategies.

²¹ In the main, table results primarily act as a caution against chasing the funds with recent high returns rather than as persuasive evidence that successful active management does not exist.

²² Handa, Puneet & Tiware, Ashish, "Does Stock Return Predictability Imply Improved Asset Allocation and Performance?" *Working Paper* University of Iowa (2000).

²³ The authors select the three conditioning variables based on a rich history of academic research into the predictive content of numerous accounting, fundamental, and macroeconomic variables. Although some trust companies and investment consulting firms produce performance reports with page after page of data charting trends in industrial production, inflation trends, growth in gross domestic product, energy prices, consumer confidence surveys, and so forth, the data's primary value is explanatory rather than predictive — a fact that is sometimes not made sufficiently clear to the report reader.

²⁴ Each investor uses the updated but unadjusted sample covariance matrix. The mutual fund investor updates using a Bayesian approach where the predicted returns are conditional on the information set.

²⁵ A strict martingale process is one in which the best prediction of the value of a variable at time $t+1$ is the value of the variable at time t . Security prices are often modeled as a martingale process incorporating a deterministic component for "drift"

(mean expected return) plus a stochastic component for “noise” (variance).

²⁶ Behavioral finance argues that the “normal” investor is not necessarily a “rational” investor. Anomaly literature speculates on the existence and nature of exploitable opportunities to generate abnormal returns, and whether such opportunities are structural or systematic and whether they are persistent in capital markets.

²⁷ Grossman, S. & Stiglitz J. “On the Impossibility of Informationally Efficient Markets,” *American Economic Review* (1980), pp. 393 – 409.

²⁸ Markowitz, Harry M., “Market Efficiency: A Theoretical Distinction and So What?” *Financial Analysts Journal* (September/October, 2005), pp. 17-30.

²⁹ See also the discussion of market “micro-efficiency” in the pricing of assets vs. “macro-efficiency” in the allocation of assets in Vardharaj, Raman & Fabozzi, Frank J., “Sector, Style, Region: Explaining Stock Allocation Performance,” *Financial Analysts Journal* (May/June 2007), p. 60.

³⁰ Sharpe, *supra*, p. 146, concludes “A case can still be made for active management by a minority of managers.” However, Sharpe ‘rebuilds’ the equilibrium arguments of CAPM as well as the linear Beta relationship between systematic risk and expected return by reference to the state preference theory developed by noted economists Kenneth Arrow and Gerald Debreu. Sharpe modifies the traditional advice that encourages all investors to form portfolios based on combining a market index and a risk free asset — “...the index fund premise is far too extreme.” However, Sharpe maintains that index fund investors can “free ride” on the research done by others. The practical implications of the “old” CAPM and the “new” state/preference CAPM are “few of us are as smart as all of us, it is hard to identify them in advance, and they may charge more than they are worth.”

³¹ This article reviews research by Harlow, W.V. & Brown, Keith C., “The Right Answer to the Wrong Question: Identifying Superior Active Portfolio Management,” *Journal of Investment Management* (Fourth Quarter, 2006), pp. 15–40; and, by Cremers, Martijn & Petajisto, Antti, “How Active is Your Fund Manager? A New Measure That Predicts Performance,” Working Paper, Yale University (January 2007).

³² For example, many brokerage firms offer Wrap Fee accounts that purport to allow investors access to private (separate account) money managers who have outperformed the market. For insight into the Merrill Lynch Mutual Funds Research Department see, Hanachi, Shervin, “Can the Average U.S. Equity Fund Outperform the Benchmarks?” *The Journal of Investing* (Summer 2000), pp. 45-52. Hanachi asserts: “we believe a subset of active managers have sufficient skill to generate excess returns net of fees and costs. The average mutual fund should not be expected to outperform market benchmarks any more than the average stock would.”

³³ The authors’ percentile ranking convention is the reverse of Morningstar’s. In the

Morningstar system, a percentile ranking of one indicates top performance, while a ranking of 100 indicates bottom performance results.

³⁴ Although the consequences of betting wrong increase in magnitude.

³⁵ The forecast horizon is limited to one year. The study does not examine the rate of turnover among the “successful” manager group over longer planning horizons, nor does it make allowances for discontinuities in management caused by fund mergers and acquisition, manager terminations and retirements, or other factors contributing to manager change.

³⁶ See, for example, Morey, Matthew R., “The Kiss of Death: A 5-Star Morningstar Mutual Fund Rating?” *Journal of Investment Management* (Second Quarter, 2005), pp. 44: “[results] show strong evidence that performance falls off dramatically after a fund receives its first 5-star rating....for the sample that excludes only index funds we see that at least 80% of the funds show a drop off in performance....” Morey opines that a plausible explanation for performance fall off is the issue of “capacity.” An initial five star rating attracts additional investor interest with the result that fund inflows are 53 percent above normal.

³⁷ Where tracking risk is defined as the standard deviation of the return differential between the managed portfolio and its comparative benchmark.

³⁸ The results of the many studies examining the persistency of manager performance are mixed. For a survey of the literature see, Kazemi, Hossein, Schneeweis, Thomas & Pancholi, Dulari, “Performance Persistence for Mutual Funds: Academic Evidence,” University of Massachusetts Center For International Securities and Derivatives Markets (May 2003).

³⁹ See, for example, Olson, Russell L., *The Independent Fiduciary* (John Wiley & Sons, 1999), especially chapter 5: “Selecting Investment Managers,” pp. 96-120.

⁴⁰ Restatement Third, Trusts §90 [1992 §227] General Comment “h(2)” Active strategies.

⁴¹ An excellent survey of performance measures is found in Amenc, Noel and Le Sourd, Veronique, *Portfolio Theory and Performance Analysis* (Wiley, 2003).

⁴² For example, the well-known Sharpe Selection Ratio (“returns based” performance analysis) approach lies at the intersection of spanning set theory and constrained multivariate regression analysis. This approach is available in commercial software packages. See also, Sharpe, William F., “An Algorithm for Portfolio Improvement,” *Advances in Mathematical Programming and Financial Planning*, eds. K.D. Lawrence, J.B. Guerard, Jr. & G.D. Reeves (Vol. 1, 1987), pp. 155-170; and Huberman, Gur & Kandel, Shmuel, “Mean-Variance Spanning,” *The Journal of Finance* (September 1987), pp. 873-888.

⁴³ Chen, Zhiwu & Knez, Peter J., “Portfolio Performance Measurement: Theory and Applications,” *The Review of Financial Studies* (Summer 1996), pp. 511-555.

Managers whose results are in the span of returns achievable by linear combinations of equity and fixed income indexes are not credited with superior performance.

⁴⁴ The difficulty of using the Sharpe ratio to evaluate manager performance highlights this ambiguity. If the investment objective is to maximize the utility of terminal wealth, the Sharpe ratio may be an applicable evaluation metric. However, if the objective is to manage assets so that a portfolio tracks liability exposures throughout the planning interval, portfolios with lower Sharpe ratios may be preferred.

⁴⁵ Restatement Third, Trusts §90 [1992 §227] General Standard of Prudent Investment.

⁴⁶ Restatement Third, Trusts §90 [1992 §227] General Comment “g” Risk and the requirement of diversification: “Asset allocation decisions are a fundamental aspect of an investment strategy and a starting point in formulating a plan of diversification (as well as an expression of judgments concerning suitable risk-return objectives).”

⁴⁷ Schoenfeld, Steven A., “Benchmarks: The Foundation for Indexing,” *Active Index Investing* Steven A. Schoenfeld, ed. (John Wiley & Sons, 2004), pp. 59-61. Bailey, Jeffrey V., Richards, Thomas M. & Tierney, David E., “Evaluating Portfolio Performance,” *Managing Investment Portfolios: A Dynamic Process*, Maginn, John L., Tuttle, Donald L, McLeavey, Dennis W. & Pinto, Jerald E. eds. (John Wiley & Sons, 2007), pp. 731-732 define a benchmark as “...a collection of securities or risk factors and associated weights that represents the persistent and prominent investment characteristics of an asset category or manager’s investment process. At the asset category level, we can think of a benchmark as the collection of securities that the fund sponsor would own if the fund sponsor were required to place all of its investments within the asset category in a single, passively managed portfolio. (In other words, the benchmark is the fund sponsor’s preferred index fund for the asset category.) At the manager level, we can think of a benchmark as a passive representation of the manager’s investment style, incorporating the salient investment features (such as significant exposures to particular sources of systematic risk) that consistently appear in the manager’s portfolios.”

⁴⁸ Out performance relative to a comparable benchmark is commonly measured by the information ratio which is defined as the differential between the managed investment return and the benchmark return divided by the standard deviation of the differential [(return of investment – return of benchmark) / standard deviation of return differential]. See, Goodwin, Thomas H., “The Information Ratio,” *Financial Analysts Journal* (July/August 1998), pp. 34-43. Using a slightly different vocabulary, the information ratio is “active manager return” divided by “active manager risk.” Care must be taken by trustees not to place too much reliance on any single performance evaluation measure. For example, Constable and Armitage point out that the information ratio is constructed using only the first two moments of

return distributions. Including higher moments such as skew may change performance rankings. Constable, Neil & Armitage, Jeremy, "Information Ratios and Batting Averages," *Financial Analysts Journal* (May/June 2006), pp. 24-31. A positive information ratio, however, is *prima facie* evidence of manager skill. For a more complete discussion of portfolio construction using higher moments (including the skew and kurtosis of return series distributions) see, Malevergne, Yannick & Sornett, Didier, "Higher-Moment Portfolio Theory," *The Journal of Portfolio Management* (Summer 2005), pp. 49-55. The authors develop an optimization algorithm that, for empirical distributions differing from the normal or Gaussian distribution, enhances returns and reduces risk when compared to traditional mean/variance (two moment) optimizations. A detailed exposition regarding the strengths and weaknesses of using information ratios as predictor variables for future investment success appears in Molitor, Jeffrey S., "Evaluating managers: Are we sending the right messages?" *Vanguard Investment Counseling & Research* (Valley Forge, PA, 2006).

⁴⁹ Examination of probability distributions is receiving more emphasis in the legal community. See, for example, Fast, Steven M, Gianopulos, Christiana N. & Maccauley, Leiha, "Prudence — From Fuzzy to Precise," *Representing Estate and Trust Beneficiaries and Fiduciaries*, ALI-ABA (Boston, July 19-20, 2007), p. 189: "...it seems that we are at a new stage of accountability. That new stage seems to be one where prudence is measured less by process and more by probability — because there is now the capacity to know with more than intuition the likelihood of a good or bad outcome from a particular investment course.... it is increasingly difficult to say that judgment has been thoughtful if it has not given any thought to probability analysis."

⁵⁰ This discussion draws from Bailey, Richards & Tierney, *supra*, pp. 771-782.

⁵¹ The Beta (slope of the characteristic line of the regression equation) value of the ABC fund relative to the MSCI index is .93. The Beta relative to the Fama/French index is .68.

⁵² A number of complementary manager evaluation approaches, for example, may assist the trustee to accept or to reject the null hypothesis that the manager's return generating process is not the product of skill. Although space restrictions prohibit detailed discussion regarding the merits and disadvantages of various approaches, the reader is directed to (1) a series of articles by Ronald Surz that employ simulation analysis to compare the results of the actual portfolio choices of managers to the opportunity set of all feasible portfolio choices [Surz, Ronald J., "Portfolio Opportunity Distributions: An Innovation in Performance Evaluation," *Journal of Investing* (Summer 1994), pp. 36-41; "Portfolio Opportunity Distributions: A Solution to the Problems with Benchmarks and Peer Groups," *Journal of Performance Measurement* (Fall 1996), pp. 24-31; and, "New and Improved

Investment Performance Evaluation,” *Journal of Performance Measurement* (Fall 1997), pp. 58-61; and, (2) an article on the performance evaluation metric known as the “efficiency ratio” that provides insight into the performance of the managed portfolio relative to the performance of the ex-post efficient frontier portfolio at a comparable risk level: Cantaluppi, Laurent & Hug, Ruedi, “Efficiency Ratio: A New Methodology for Performance Measurement,” *The Journal of Investing* (Summer 2000), pp. 19-25. Trustees hiring consultants to identify superior managers should verify that the consultant employs a credible process (rather than a “pay-to-play” compensation kickback) prior to making recommendations. The SEC *Staff Report Concerning Examinations of Select Pension Consultants, Supra*, notes: “A majority of the pension consultants examined...have affiliated broker-dealers or relationships with unaffiliated broker-dealers.... Concerns exist that these arrangements may provide an incentive for a pension consultant to recommend an active trading strategy, because the pension consultant or its affiliated broker may receive more money in commission payments.”

⁵⁵ Barris, L., Scaillet, O. & Wemers, R., “False Discoveries in Mutual Fund Performance: Measuring Luck in Estimated Alphas,” Working Paper, University of Maryland, (July 2006).

⁵⁴ Results are reported primarily based on the four factor Carhart model. The Carhart model extends the three-factor Fama/French model by adding a “momentum” factor to the asset pricing equation.

⁵⁵ Baks, Klass, P., Metrick, Andrew & Wachter, Jessica, “Should Investors Avoid All Actively Managed Mutual Funds? A study in Bayesian Performance Evaluation,” *The Journal of Finance* (February 2001), pp. 45-85.

⁵⁶ Pastor, Lubos & Stambaugh, Robert F., “Investing in Equity Mutual Funds,” *The Center for Research in Security Prices Working Paper No. 532* (August 2001), extends the Baks *et al.* research into cases where asset pricing models fail to capture all sources of relevant risk. They build a case for active management that rests on the hypothesis that actively managed funds may provide risk exposures not found in passive index funds and, therefore, “investing in active mutual funds can be optimal even for investors who believe active managers cannot outperform passive indexes.”

⁵⁷ Perold, Andre F. & Salomon, Robert S., “The Right Amount of Assets under Management,” *Financial Analysts Journal* (May/June 1991), pp. 31-39.

⁵⁸ Ciccotello, Conrad S. & Grant, C. Terry, “Equity Fund Size and Growth: Implications for Performance and Selection,” *Financial Services Review*, Vol. 5. No. 1 (1996), pp. 1-12.

⁵⁹ The p-value of a hypothesis test quantifies the chance of finding evidence that contradicts the null hypothesis that is at least as strong as finding evidence that the null hypothesis may be correct. In fact, the null hypothesis is either right or wrong;

the p-value clarifies the chance of getting evidence to contradict the null given the working assumption that the null is correct.

⁶⁰ Wheeler, Langdon B., "The Value of Added Value: The Small Active Manager's Approach to the Future," *AIMR Proceedings* (December 1998), pp. 49-57.

⁶¹ Restatement Third, Trusts §90 [1992 §227] General Standard of Prudent Investment.

⁶² For a discussion of the difficulties surrounding trustee investment policy with respect to the decision to incorporate active management strategies into a portfolio *see*, Halpern, Philip, Calkins, Nancy & Ruggels, Tom, "Does the Emperor Wear Clothes or Not? The Final Word (or Almost) on the Parable of Investment Management," *Financial Analysts Journal* (July/August 1996), pp. 9-15. The authors are members of the Washington State Investment Board.

⁶³ Indro, Daniel C., Jiang, Christine X., Hu, Michael Y. & Lee, Wayne Y., "Mutual Fund Performance: Does Fund Size Matter?" *Financial Analysts Journal* (May/June 1999), pp. 74-87.

⁶⁴ A 2001 study based on simulation (numerical approach) rather than econometric analysis of empirical observations also argues the proposition that in active investment management, success can be self-defeating. However, the simulation output suggests that there is "...no such thing as optimal fund size, in that the potential to add value invariably drops as a fund grows." Beckers, Stan & Vaughan, Greg, "Small is Beautiful," *The Journal of Portfolio Management* (Summer 2001), pp. 9-16. Recently, the CFA Institute published a study of the capacity of Barclays Global Investors to generate positive information ratios in the face of increasing assets under management. This study concludes, "...although managing asset levels beyond capacity leads to eroded performance, the effect is modest. In going from \$20 billion to \$100 billion of assets under management, we lose only about 25 bps [basis points] of net alpha... with optimal portfolio management, asset levels have a surprisingly small impact on alpha. But suboptimal portfolio management leads to a steep drop in net alpha with growing asset levels." Kahn, Ronald N., "Asset Growth and Its Impact on Expected Alpha," *Global Perspectives on Investment Management* (CFA Institute, 2006), pp. 197-212.

⁶⁵ Chen, Joseph, Hong, Harrison, Huang, Ming & Kubik, Jeffrey D., "Does Fund Size Erode Mutual Fund Performance? The Role of Liquidity and Organization," *American Economic Review* (2004), pp. 1276-1302.

⁶⁶ Larger funds may have a greater propensity to mirror the market because they cannot easily take large positions in a few stocks.

⁶⁷ Fund cash flow and fund age variables were not found to be significant predictors of future performance.

⁶⁸ A more recent study [Edelen, Roger M, Evans, Richard & Kadlee, Gregory B.,

“Scale effects in mutual fund performance: The role of trading costs,” *Working Paper*, Boston College (March 17, 2007)] discusses agency risk in “soft dollar” arrangements. They conclude that some fund managers trade not because they expect a transaction’s informational content to exceed its cost, but rather because of soft dollar compensation benefits to the fund. This avenue raises fiduciary concerns that, although important, lie outside the scope of this paper.

⁶⁹ Berk, Jonathan B. & Green, Richard C., “Mutual Fund Flows and Performance in Rational Markets,” *Working Paper*, University of California, Berkeley (May 18, 2004).

⁷⁰ The Berk/Green article has an extensive discussion of the nature and magnitude of the cost function and managerial compensation. Managers of larger funds may be more prone to “closet indexing” thus adjusting the amount under active management in order to optimize compensation. This topic is of importance to fiduciaries but lies outside of the scope of this discussion. *See, also*, Miller, Ross M., “Measuring the True Cost of Active Management by Mutual Funds,” *Journal of Investment Management* (First Quarter, 2007), pp. 29-49.

⁷¹ Gallagher, David R. & Martin, Kyle M., “Size and Investment Performance: A Research Note,” *Abacus* (Vol. 41, No. 1, 2005), pp. 55-65.

⁷² Chan, Howard W. H., Faff, Robert W., Gallagher, David R. & Looi, Adrian, “Fund size, fund flow, transaction costs and performance: Size matters!” *Working Paper* Monash University (March 31, 2005).

⁷³ Busse, Jeff, Goyal, Amit & Wahal, Sunil, “Performance Persistence in Institutional Investment Management,” *Working Paper* Emory University (November 2005).

⁷⁴ Jeffrey, Robert H. & Arnott, Robert D., “Is Your Alpha Big Enough To Cover Its Taxes?” *The Journal of Portfolio Management* (Spring 1993), pp. 15-25.

⁷⁵ Dickson, Joel M. & Shoven, John B., “Ranking Mutual Funds On An After-Tax Basis,” *National Bureau of Economic Research Working Paper No. 4393* (July 1993); and, Dickson, Joel M. & Shoven, John B., “A Stock Index Mutual Fund Without Net Capital Gains Realizations,” *Working Paper No. 4717* National Bureau of Economic Research (April 1994).

⁷⁶ Brunel, Jean, “The Upside-Down World Of Tax-Aware Investing,” *Trusts & Estates*, (February 1997), pp. 34-42.

⁷⁷ Stein, David M. & Garland, James P., “Investment Management for Taxable Investors,” *Handbook of Portfolio Management*, edited by Frank J. Fabozzi (1998), pp. 93-106.

⁷⁸ This line of analysis is of great importance in the literature on “asset location.” For example, a dollar in an IRA may or may not be worth less than a dollar in a personal account. Valuation is dependent on a host of factors including the character of the IRA (Roth v. traditional), the life expectancy of the portfolio owner (assets held in

an IRA may be heavily taxed if the decedent is subject to estate taxes), the embedded liability (market value less cost basis) of the personally held asset, and so forth.

⁷⁹ Stein, David M. & Narasimhan, Premkumar, "Of Passive and Active Equity Portfolios in the Presence of Taxes," *The Journal of Private Portfolio Management* (Fall 1999), pp. 55-63.

⁸⁰ Lucchetti, Aaron, "Index Funds Aren't Always Tax Efficient," *The Wall Street Journal* (July 28, 2000), p. C.1.

⁸¹ Arnott, Robert D., Berkin, Andrew L. & Ye, Jia, "How Well Have Taxable Investors Been Served in the 1980s and 1990s?" *The Journal of Portfolio Management* (Summer 2000), pp. 84-93.

⁸² Arnott, Robert D., Berkin, Andrew L. & Ye, Jia, "The Management and Mismanagement of Taxable Assets," *The Journal of Investing* (Spring 2001), pp. 15-21.

⁸³ Mulvihill, Don, "Equity Portfolio Structure," *Modern Investment Management* edited by Bob Litterman (2003), pp. 579-593.

⁸⁴ Wilcox, Jarrod, Horvitz, Jeffrey E. & diBartolomeo, Dan, *Investment Management for Taxable Private Investors*, Research Foundation of CFA Institute (2006).

⁸⁵ Goyal, Amit & Wahal, Sunil, "The Selection and Termination of Investment Managers by Plan Sponsors," *Working Paper* Emory University, (November 2004), p. 19.

⁸⁶ Brown, Stephen and Goetzmann, William N. "Attrition and Mutual Fund Performance," *First Boston Working Paper Series* (New York 1993).

⁸⁷ Goyal & Wahal, *supra*, p. 6.

⁸⁸ Morningstar Principia as of March 31, 2007. The database lists 6,662 distinct mutual funds.

⁸⁹ Evans, Richard B., "Does Alpha Really Matter? Evidence from Mutual Fund Incubations, Termination and Manager Change," *Working Paper* (June 15, 2006), provides an in depth study of mutual fund termination that includes both a discussion regarding decisions to promote or terminate fund managers, and a survey of the literature. Ronald Surz, *Supra*, "Portfolio Opportunity Distributions," p. 26, estimates that it requires "...at least ten years of performance history to achieve confident inferences of success or failure against custom benchmarks. Of course, in most cases the management team has changed enough during this time to render the success/failure inferences invalid...."

⁹⁰ Fabozzi, Focardi & Kolm, *Supra*, p. 421: "...additional care is required in a large data set...."

⁹¹ Restatement Third, Trusts (Introductory Note: Principles of prudence #5).

⁹² Restatement Third, Trusts §90 [1992 §227] General Comment "e(1)" Risk management.