

# **A Radical Proposal for the Operation of Multi-Manager Investment Funds**

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## **Abstract**

This paper proposes that large investment funds that currently employ multiple active managers convert to a system of centralized management. In such a scheme, current managers would take the role of advisers to a centrally operated fund. Although first proposed by Rosenberg (1977), funds of this kind have not been implemented. Recent analytical and technological advances have removed some of the impediments to such implementation. In addition, changes in financial market conditions have increased the attractiveness of such an arrangement.

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## Introduction

It is common practice for large investment funds to employ multiple active managers for each asset class in which they participate. This practice is most prevalent in equities, where it is typical for a large sponsor to have a dozen or more active managers, each selected on the presumption that each has some different perspective on equity portfolio strategy that will allow each manager to outperform a specified benchmark index. Since returns are additive linearly across the set of managers, the implication is that the overall fund will outperform the aggregate benchmark index. The set of managers selected is generally designed to diversify strategy and style, so that the overall fund is not dominated by any one approach and hence is protected from the risk that a predominant strategy would suffer an unsuccessful period.

These “multi-manager” schemes are implemented by simply dividing up the monies available for investment in a particular asset class. Each manager is then given full responsibility for the funds allotted. The process of determining how monies are allocated is often very qualitative. Sometimes sponsor attempt to use some form of mean-variance optimization to compute appropriate allocations, but there are a number of practical limitations of these efforts.

## The Problems with the Current Approach

The purpose of using multiple active managers is to add return, not to provide diversification. If a sponsor wishes to simply reduce the risk of under-performing a particular benchmark index, it may be accomplished efficiently owning an index fund. Such passive investment also reduces fees and trading costs. It must therefore be true that the value added by active management arises from the manager’s efforts to create forecasts that are meaningfully predictive of future index-relative security returns (that is, alpha). There may be some logic in multiple active managers in an effort to prudently protect the fund against embezzlement or other illegal actions on the part of investment agents, but this protection could be met equally well with multiple passive managers.

For plan sponsors who are committed, a priori, to active management, allocating funds to multiple active managers represents a great challenge in terms of risk control, as the sponsor must be constantly vigilant in keeping informed as to the character of the aggregate fund. Frequently, there are substantial reporting delays between when managers undertake transactions and when those transactions become known to the plan sponsor.

In the current approach, a single manager has influence over each dollar of the total fund. This methodology rests on two beliefs: that each manager is expected to produce superior performance on average and that the certainty of any particular manager producing superior performance is low. Hence, there is a need to diversify with multiple managers so as to decrease the uncertainty associated with each manager’s forecasts of future alphas. By allowing multiple managers to operate within the same universe of securities

with similar constraints, the aggregate position of the total fund with respect to any particular security is reflective of the consensus alpha forecast of the managers. In this fashion, the fund benefits from the improvement in the aggregate quality of the return forecasts.

Unfortunately, there exists the possibility that manager alphas will be correlated. For example, if a fund had ten managers, but all ten simultaneously adopted a similar strategy (e.g., mid-cap, low P/E), little improvement in the quality of the alpha forecasts would result. Even worse, the overall fund would be subject to large residual risk. The presumed diversification benefit of multiple managers would vanish if each manager held a similar portfolio. To prevent such situations, it is common practice for plan sponsors to hire multiple active managers, but with distinct mandates. For example, the sponsor would hire separate managers for large-capitalization and small capitalization stocks (or growth/value, etc.). Once we have separated the manager mandates into mutually exclusive habitats, we now have only the predictive skills of a single manager applying to each security. The improvement in aggregate forecast quality has been lost. Either, the presumed advantage that “two heads are better than one” no longer holds or it comes at a price of increased risk. If we do segment the mandates, it is also possible to leave gaps in the structure. We would then run the risk that the aggregate of the segmented mandates does not fairly represent the investment objectives implied by the sponsor’s overall benchmark index.

One possible way to preserve the benefits of multiple managers without using distinct habitats would be to allow all managers the same mandate, but to carefully select managers whom the sponsor believes will be uncorrelated in their future alpha forecasts. This unfortunately leads to the problem of internal crossing. A brief example will illustrate this point. Let’s assume that the price of stock XYZ has just dropped in reaction to the announcement of poorer than expected earnings. The fund’s Manager A (who has a “growth” style) would believe that future prospects for growth are poor and sell the stock. Manager B (who has a “value” style), believes the price decline perceives a buying opportunity to and acts on it. For the fund sponsor, the fund has just incurred two transaction costs and continues to pay two active management fees while nothing has happened to the total fund. When we expand this example to industries and sectors, a dozen active managers will inevitably spend most of their time in a meaningless but expensive tug-of-war.

The aggressiveness level of the portfolio is also hard to control with multiple managers. Let us assume a multiple manager fund with an overall benchmark of the S&P 500. By its selection of the S&P 500, the sponsor has implicitly indicated its willingness to trade the expectation of bearing risk for the expectation of return. If we assume that the expected annual return for the S&P 500 is 10% with a standard deviation of 20%, and the risk-free rate is 4% annually, then marginal rate of substitution for return / variance is .0075. A finite difference approximation may make the computation intuitive: if our

portfolio was 99% the S&P and 1% cash we get an expected return of 9.94 % ( $.99 * 10 + .01 * 4$ ) with a variance of 392.04 ( $.99^2 * 20^2 + .01^2 * 0^2$ ). If our portfolio was 101% the S&P 500 and minus 1% cash, we get an expected return of 10.06% with a variance of 408.04. The difference in the two returns is .12 while the difference in the variance levels is approximately 16, leading to the ratio of .0075.

Now let's do the same exercise with an active manager who we expect will have an alpha of 2% with a standard deviation of 4%. In this case, our returns are measured relative to the index so the risk-free rate (holding the index) is zero. If we actively managed 99% percent of the portfolio and indexed 1%, we get an expected return of 1.98% with a variance of 15.68. If we actively managed 101% of the portfolio and held a 1% short position in the index, we get a return expectation of 2.02 % with a variance of 16.32. The difference in the returns is .04 while the difference in the variance levels is just .64, leading to a ratio .0625, more than eight times the ratio implied by the choice of the benchmark.

The exercise above assumes that the investor's willingness to trade risk and reward is equivalent in total return or in returns relative to the benchmark. We believe this to be correct in most circumstances. The purpose of investment is to create wealth that can be spent for future consumption. If an investor holds an index fund and the index drops 2%, they have lost 2% of their wealth. If the investor uses an active manager, the index produces a zero return but the active manager under-performs the index by 2%, the investor has still lost 2% of their wealth. Arguments can be made that some investors should be less tolerant of certain risks. For example, it could be argued that a corporate pension fund has liabilities that are sensitive to the total returns that are achieved by the pension funds of other competing companies. If a fund produces returns that meet actuarial requirements, but which are far below returns of other companies, the pension expense of the other companies will be less, leading to a competitive advantage. However, we believe this issue to be of secondary importance and that even if there are differential risk aversions to total and relative risk on behalf of the investor, the magnitude of these differences are not sufficient to explain common industry practices.

The exercise above was meant to illustrate that the typical active manager is already too diversified given the aggressiveness level of the of the typical fund sponsor. If we further diversify the portfolio by having multiple managers, the aggressiveness level is further reduced. The return / variance rate of substitution found in multiple manager funds can often be an order of magnitude different from that implied by the sponsor's choice of benchmark index.

We believe that the observed differences in aggressiveness levels arise from two issues. First, managers are often used as "scapegoats" (i.e. they get fired) to take blame when overall fund performance has been poor. As agents, managers have business risks built into their activities that make them very averse to under-performing their benchmarks to

a substantial degree. Ellis (1997) calls this effect “playing to play rather than playing to win”. For a detailed analytical discussion of these issues, see Kritzman and Rich (1997).

The other cause is that the sponsor tends to not fully believe the representations about managers with respect to their ability to outperform indices. In the above example, we have a manager with alpha 2% and tracking error 4%. If the sponsor believed the true expectation of alpha to be only 24 basis points, the aggressiveness level of the active portfolio will coincide with the our examination of the S&P 500 benchmark. This low confidence may be justified, as past studies are inconclusive as to whether any effective mechanisms exist to predict relative manager performance ex-ante. There is an extensive literature on the persistence of active manager performance. An excellent review is found in Johnson and Sneddon (1996). Unfortunately, this lower level of alpha is probably below the manager’s fee, providing a negative active return after costs to the investor.

Another inefficiency of the current approach is the high cost of shifting investment funds between managers. A sponsor may wish to do this in order to terminate a manager and move the funds to another. Another possible motivation would be to tactically shift assets between managers based on the sponsor’s forecast of economic or market conditions that suggest one manager’s strategy will be preferable to another strategy in the upcoming period. In the current approach, the actual investment portfolio must be liquidated. The resultant cash is then given to the new manager. Transfers of securities are possible, but managers are highly reluctant to accept such accounts, as any poor performance of the inherited portfolio could now reflect badly on their reputation. This results in material transaction costs and potential tax liabilities.

A final concern about the current approach to multiple management is the difficulty of determining the optimal allocation of funds among active managers within a particular asset class. Unlike an asset class represented by some index, the composition of actively managed portfolios is subject to frequent change. As such, historical covariances of managed funds are less suitable for use in forecasts. A sponsor could forecast manager covariances based on the forecast covariances of the particular securities held by the managers at the current point in time. Unfortunately, optimization of composite assets (i.e. active portfolios) using factor models is problematic, as the assumption of uncorrelated residuals introduces the difficulty of appropriately handling the fact that the residual returns of the same security appearing in two different manager’s portfolios are not uncorrelated. A solution to this issue is proposed in diBartolomeo (1998).

### **Previously Proposed Solutions**

Rosenberg (1977) introduced the idea of the centralized multiple-adviser fund as an alternative to the usual approach. In this system, outside managers are hired to advise the sponsor. They do so by informing the sponsor of their market and security return (and possibly risk) forecasts on a continuous basis. The plan sponsor then computes a

statistical consensus of the forecasts and manages a single large portfolio in a fashion consistent with the consensus forecasts of the hired advisers. Under the restrictive assumptions used, a proof is presented that a multiple manager fund can at best equal the efficiency of the centralized multiple-adviser fund. Many of the aforementioned drawbacks to the current approach are resolved in the multiple-adviser scheme.

The primary problem with the centralized multiple-adviser scheme is that it requires managers to deliver explicit numerical forecasts to the sponsor both for market returns and for the relative returns of each security. Explicit return forecasts are created and used only by a minority of investment management firms. Many successful firms are very qualitative in their approach and use a great deal of subjective judgement that is not easily converted to an explicit return forecast. Even the majority of quantitatively driven firms rely on screening or ranking schemes to select candidate securities without even producing explicit alpha forecasts.

Tierney (1980) introduced the “completeness fund” to deal with the possibility that a multiple manager fund had segmented mandates that left gaps relative to the overall benchmark index of the sponsor. A completeness fund is simply a passive fund structured to fill in the gaps left by the aggregate of the manager mandates relative to the overall benchmark.

The problem of the unnecessary costs associated with trading between managers of the same fund was addressed by the invention of the “inventory fund”. An inventory fund is a passively managed fund that could (but was not obligated) act as the other side of trades initiated by a given sponsor’s active managers. If we reprise our earlier example of an internal cross: Manager A now sells security XYZ to the inventory fund, while Manager B now buys security XYZ from the inventory fund. As these transactions can be accomplished just by book entries, the double transaction costs of carrying out such a trade through conventional market mechanisms are vastly reduced. A good discussion of inventory funds can be found in Ferguson (1978). Wagner and Zipkin (1978) estimated the potential cost savings from the use of inventory funds.

Inventory funds have not proven popular since their conception. Such funds had the problem of how to know which of the active manager trades to take part in and which to refuse. If the inventory fund accepted all trades, this is simply nullifying the actions of the active managers. The sponsor ends up with simply a very expensive index fund. If the inventory fund acts only as an internal crossing network, allowing nothing but concurrent but offsetting trades among managers, the number of actual transactions undertaken is likely to be minimal and so will be the resultant savings in costs.

### **The Recommended Approach**

At a simplistic level, the process of managing an investment portfolio consists of three steps. First, we must analyze markets and securities to form forecasts of mean security

returns and the standard errors of those forecast mean returns. Second, we must use these forecasts to form selected securities into efficient portfolios. Third, we must implement our portfolio decisions through actual transactions. As was noted earlier, the value of active management lies largely in the security return forecasting aspect of the process. Exclusive of the element of the expectation of increased returns, risk control and trading costs are more effectively handled by passive indexing strategies.

In portfolio construction, two major schools of thought exist among active managers. The traditional approach is “seat of the pants”, where no particular effort is made to assemble portfolio securities into an ex-ante efficient portfolio. Weighting schemes may be naïve such as equal weighting or capitalization weighting or be completely ad hoc. In recent years, many firms have turned to sophisticated risk forecasting models and optimization algorithms. It should be noted that the investment management industry has given over this task to outside vendors (such as BARRA, Northfield and APT Associates) with few in-house efforts. In a sense, the practices of many active managers suggest that the risk management and portfolio construction aspects of active management have been made into purchasable commodities.

One reason that the risk forecasting side of portfolio management has been entrusted to outside vendors is that it is easier to do reliably than return forecasting. If security returns are stationary time series processes then sample variances (and covariances) will approach population variances (and covariances) at a rate proportional to the passage to time. Sample means will approach population means at a rate proportional to the square root of time.

In addition, errors in risk estimation have a smaller impact on portfolio optimality. There is a large literature on estimation error in portfolio construction, excellently summarized in Michaud (1997). Best and Grauer (1991) investigate the impact of errors in forecast means for portfolio optimality. Kalberg and Ziemba (1984) and Chopra and Ziemba (1993) researched the relative importance of forecast errors in the means, variances and covariances. There is general consensus that composition of efficient portfolios is much more sensitive to errors in the mean return forecasts than in the risk components. This result is confirmed in Broadie (1993).

Our proposal is to implement a variation on the centralized multiple-adviser scheme of Rosenberg. Fund sponsors of sufficient size and sophistication should revamp their relationship with outside their chosen external active managers. Each active manager runs a portfolio exactly as they always have, except that rather than actually doing the trades through their own trading relationships, the trades for all managers would be issued electronically to a centralized trading desk run by the fund sponsor (or a brokerage firm as agent). As use of electronic trading networks such as ITG’s POSIT are now common among active managers, this method should represent no unusual burden on the managers. It is also common practice for plan sponsors to designate the use of particular

brokers by their managers in connection with commission “recapture” programs, where brokers rebate part of commissions generated back to the plan sponsor.

Rather than implement the transactions, the trades sent to the central desk are time stamped and entered into a portfolio accounting system. This is exactly like the case of an inventory fund that accepts every trade from the active managers. Essentially, when an active manager trades, nothing happens to the overall fund (and no costs are incurred). Another perspective on this scheme is to consider that each active manager is now running a “paper portfolio”. The performance of the paper portfolio is measurable like any other portfolio. Sponsors and managers would have to agree in advance about the transaction cost assumptions managers should use in deciding if and when to undertake transactions.

We would now make an innovative use of portfolio risk models. At any point in time, a portfolio manager must believe that his portfolio contains the optimal combination of securities given his beliefs and constraints. If he did not believe his current portfolio to be optimal, he would undertake transactions to make it so. Using a risk-forecasting model selected by the sponsor, it is possible to calculate how much marginal risk is being contributed by a particular security in the portfolio. If the portfolio is optimal then the marginal contributions to portfolio risk of that security position must be exactly offset by the marginal contribution to return as well. Details are presented in Sharpe (1974) and Fisher (1975).

Given some pre-specified level of aggressiveness, we can infer the relative return forecast of any manager for any security in his portfolio or excluded from his portfolio but included in his benchmark index. As implied returns are linearly invariant to scale, even lacking knowledge of the level of aggressiveness, we can infer the rank order of the expected returns. Such a rank order can then be converted to an explicit return forecast using the two methods from Grinold and Kahn (1995). The required formulae are the “Alpha Forecasting Rule of Thumb” and the “Fundamental Law of Active Management”.

If we have multiple managers in the paper portfolio scheme, we can have multiple estimates for the expected return of each security. We can then proceed with the entirety of the centralized multiple adviser approach. The multiple return forecasts are combined into consensus forecasts for each security return and used as input to the portfolio construction process. Analytical details are given in Rosenberg. Given current technology, the process of inferring expected returns from portfolio positions, revising the total fund and initiating the required trades can all be accomplished in just seconds.

It should be noted that some investment management firms have used related approaches for some years. Bankers Trust has employed the “implied alpha” approach to translate security return estimates from fundamentally managed portfolios to quantitatively managed ones. Independence Investment Associates has maintained an investment

strategy called “Amplified Alpha” that takes on some aspects of this approach. Paradigm Asset Management defines what it believes are sets of superior managers, observes their holdings and then creates relatively passive portfolios that are designed to track the performance of these superior managers.

### Advantages of the Centralized Multiple-Adviser Approach

All return-forecasting skills of all managers are now applied to all dollars of the fund. As long as each manager has positive information on average, and the correlations of the manager forecasts is less than one, the composite forecasts will have lower standard errors than those from any one manager. For an excellent discussion of the superiority of multiple forecasts, see Johnson (1972). For the mathematical details of application to the problem of forecasting security returns see Clasing and Rudd (1982). In essence, then, we are now able to bring the *sum* of the knowledge of the managers to work in return forecasting, rather than the *average* of the knowledge of the managers to work.

Under this approach, only consensus information is ever acted upon. By definition, all of the working at cross-purposes that is built into the current approach disappears. The early work on inventory funds suggested substantial cost savings would accrue from such reduction in crossed trades. For the past ten years, investor holding-periods for stocks have been going down steadily. In 1989, the average holding-period for an S&P 500 stock was approximately three years (computed as: shares outstanding / 12 month average daily volume, Morningstar data). In 1998, the average holding-period was approximately ten months. As such, it would appear that the magnitude of the potential cost savings would have increased dramatically over the past decade, if transaction costs themselves have not declined proportionately. Anecdotal data suggests that while commission costs have come down in recent years, any reduction would be insufficient to compensate for the increased volume, in terms of total costs to sponsors. For example, Berkowitz, Logue and Noser (1988) estimated the average total execution cost of a 1985 NYSE trade at 23 basis points. A 1998 study by Plexus Group suggests 38 basis points as a typical execution cost in November of 1997. Results reported by Keim and Madhavan (1998) for trades in 1991-1993 are consistent with those of the other studies. However, these three studies are not directly comparable as different definitions of market impact are used.

The level of aggressiveness of each manager no longer has any effect on the aggressiveness level of the fund. The aggressiveness level is merely factored into the computation of the return forecasts, when they are inferred from the paper portfolio holdings. Fund sponsors can vary the “weight” or allocation to each manager, simply by changing a number in an arithmetic formula. Nothing “real” need be done to accomplish tactical shifts or to change the influence of a manager in the consensus. We can also employ specialty managers without precluding the opinions of other managers on the securities within the mandate of the specialty manager. The opinion of the specialist is

simply given greater weight in the formation of the consensus on the stocks within his realm.

The number of useable managers is doubled. If we believe that a manager is consistently inferior to the average, his inputs to the consensus can be given negative weight. Obviously, there is a question as to whether a sponsor would be willing to pay a bad manager for the service of being consistently wrong. However, it is entirely possible that a sponsor could believe that a competent manager's style had gone temporarily out of favor, and rather than firing them, give their forecasts a negative weight in the consensus.

Fund sponsors gain total control over directed commissions. New competition is encouraged. Non-manager sources of investment advice such as brokerage firm research or references services such as ValueLine can be used as "managers" as long as returns inferred from model portfolios are adjusted for transaction costs. Support for the concept of outside advisers is found in Horan and Johnsen (1997). They studied the use of third-party investment research services by managers and concluded that there was a significant positive relationship between purchases of investment research services and subsequent return performance.

Since each manager is now running only a paper portfolio, portfolio size is arbitrary. This will encourage manager compensation schemes based on the quality of the forecasts provided (or performance of the paper portfolio) rather than largely on the fund's asset size.

### **Possible Pitfalls**

There are many potential problems with the approach described herein. The most obvious is that not all managers are likely to revise their portfolios simultaneously. The consensus return forecast for a particular security could be whipsawed by the divergent actions by different managers in sequence rather than taken concurrently. However at worst, we have a situation comparable to the current situation where there is no coordination at all. To reduce simultaneity problems, we can simply generate the consensus less frequently, however there would be the potential for delays in executing transactions. If trading is motivated by short-lived information, such delays could be costly.

Obviously, the process of translating paper portfolio positions to implied returns may lose something in the translation. One could simply ask managers for their return forecasts, as was the basis in Rosenberg. However, most managers do not formulate explicit return forecasts. Therefore sponsors would be left to choose only among the small minority of managers who do create explicit forecasts.

A possible problem when using fundamentally driven managers is how to precisely define the manager's functional universe, as opposed to some permissible universe of

securities. For example, a manager may have a mandate that permits them to purchase any security in the S&P 500. However, if the manager only has enough analyst staff to examine the largest two hundred companies within the S&P 500, the manager's functional universe for which alpha inferences can be made consists of only the two hundred stocks, not five hundred. Frequently, this functional universe is not clearly defined.

Michaud (1997) notes that the sample covariance matrices are often subject to error or ill-conditioned. In this case, we would not use a simple sample covariance matrix, but rather a factor model that is apt to have greater stability. In addition, plan sponsors have almost universally adopted the practice of utilizing some form of risk model to evaluate the risk levels and performance of their managers. Our methodology simply requires the sponsor to make a different use of a model in which they have already expressed their confidence, and upon which total fund management decisions are already being made.

It should be noted that nothing in this scheme requires that the sponsor use portfolio optimization as a portfolio construction tool. Once the implied returns are formulated, any portfolio construction scheme acceptable to the sponsor is workable. However, there is a significant advantage in using portfolio optimization with the same risk model (and aggressiveness level), as was used to infer the manager return forecasts. If the risk model makes biased estimates of the variances of the stocks, it will produce biased estimates of the implied returns. For example, if the risk model overestimates the risk of a stock, it would also overestimate the implied returns. If we then use both of these upward biased estimates in the final optimization, the two effects will offset at the margin, leading to approximately correct portfolio allocation. This leaves only the errors in the security correlations as sources of potentially sub-optimal allocations.

Obviously, any new approach to the use of active managers may be subject to new forms of "gaming". One problem would be the possibility that managers would concentrate their portfolios in certain securities that had high return potential but also had high transaction costs. In effect, the scheme could create a disconnection between return forecasting and trading such that managers would undertake transactions that could not actually be executed at reasonable cost. We would argue that the currently available market impact models (i.e. Barra, Salomon, ITG, Northfield) could be applied to the transactions of the active portfolios as a means to preventing this form of bias on the part of managers. When placing "orders" into the sponsor's central trading desk, managers would still have the option to place market or limit orders as an indication of their beliefs as to the urgency of the transaction. This could be incorporated into the centralized portfolio in the form of a decay rate when combining the manager alphas into a consensus. Obviously, older or less urgent forecasts would count less depending on the sponsor's reference for portfolio turnover. For discussion of combining time-horizon dependent alpha forecasts, see Chandra (1997).

In some ways, the new scheme may actually reduce gaming. For example, managers are currently required to file SEC statements about large positions held in particular securities. As such, each manager can obtain information about major positions held by other managers. Under the new scheme SEC filings would come only from the plan sponsor, making it more difficult for a particular manager to know what strategies their competitors are pursuing. It is therefore more likely that managers will pursue independent strategies. This assumption of independence is the foundation on which the concept of multiple manager diversification rests.

Another potential problem with our scheme is that the agency issues associated with active managers could be made worse. It was noted earlier that outside managers are often terminated when plan performance is poor. If specific individuals within the plan sponsor organization believed that they were now in the position of blame-taking if performance was poor, they might adopt a defensive attitude similar to that typically taken by managers. However, in the multiple-adviser approach, this would immediately result in the total fund taking on a very index-like composition. This “closet-index” posture would be immediately apparent, where in traditional multiple-manager schemes, the overall composition of the fund is not easily understood from separate observation of each of the active portfolios. In addition, if the overall composition of the fund is found to be index-like in the traditional approach, the means to resolving this problem are not immediately clear. In the multiple-adviser approach, we need only change the aggressiveness level coefficient to the proposed portfolio from the inferred alpha values.

## Conclusion

Our proposal is that multiple-manager pension plans reorganize themselves as centralized multiple-adviser funds. In implementation, they would operate like an inventory fund that accepted all trades from active managers. However, unlike the past generation of passive inventory funds, this approach calls for a centralized fund that is actively managed based on the consensus of the forecasting skills of the active managers. More efficient use of manager forecasting skill should lead to higher returns and great improvement in the ability to control risk of the total fund. The reduction in costs that was the original reason for the conception of inventory funds is an added benefit.

If we shadows have offended,  
Think but this, and all is mended,  
That you have but slumbered here  
While these visions did appear.  
And this weak and idle theme,  
No more yielding but a dream.

Gentles, do not reprehend.  
If you pardon, we will mend.  
And, as I am an honest Puck,  
If we should have unearned luck  
Now to escape the serpent's tongue,  
We will make amends 'ere long;  
Else the Puck a liar call.

So good night unto you all.  
Give me your hand if we be friends  
And Robin shall restore amends.

William Shakespeare, *A Midsummer Nights Dream*

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