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SELECTION OF PENSION FUND INVESTMENT MANAGERS

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MR. SANDY A. LINCOLN: Our topic is using a consultant to select a money manager. I don't know about Ernie or Grant or other people who are in the consulting business, but I always feel like the client should make the selection and not the consultant. It's sort of a fine distinction, but I think our role is to assist the plan sponsor in making the selections. If we were actually the ones making the selection, I suspect we'd want to be compensated in a different fashion than we are for assuming that sort of risk. It's clearly not our pension plan. It's the client's pension plan. So I think it's a very important distinction to make.

There are four or five key points I'd like to make.

- o The first is who should and who should not use a consultant in this process. I guess it's implicit from a selfish point of view that we'd say everybody should use a consultant for this process. On the other hand, I think there are some situations where a consultant may, in fact, not be appropriate. So we will talk briefly about the areas where a consultant might be appropriate and where they might not be appropriate in helping to select a money manager.

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- o Secondly, we will talk about how you actually select the consultant who will best help you select an investment manager.
- o The third area that we'll talk about will be the process that the consultant you've selected will typically use.
- o The fourth topic is what the consultant should bring to that process.

So, who should use a consultant to help select an investment manager for a plan sponsor? And what are the considerations whether or not you should or shouldn't use a consultant?

First of all and probably most importantly we need to look at the plan sponsor: whether it is a corporate plan, a public fund entity, or a multi-employer entity. The plan sponsor should think about whether or not it has the staff to do the job internally. That's probably the key consideration as to whether or not you go out and use a consultant: Does the sponsor have internal staff? Does that staff have the expertise and the time and the prior experience to do the assignment?

Secondly, if you're about to embark into a new investment area - perhaps real estate or venture capital or international - you may also wish to consider using an outside consultant. Those new areas of investment make a material difference on how the search is conducted in selecting an investment manager.

The third is the area of urgency. How important is it to get this done in a confined period of time? If you've got sixty days to do the project, to do it right would be very, very difficult doing it internally. So I think the urgency and timing of the selection also impacts whether or not you go outside to use a consultant.

The next area is objectivity. Obviously, a consultant can provide you with objectivity and in many cases that can serve a useful political purpose in the organization. It's very common for us to encounter a corporation, for example, where the Chairman of the Board has a particular investment firm that he wants looked at and the Treasurer or the VP of Finance may feel that that firm might not be appropriate to the circumstances, but doesn't know how to tell the Chairman in a polite way. So the objectivity and the detachment of a consultant can be very useful considerations in the selection process.

Clearly, fiduciary concerns are probably a principal reason why people go outside. They want to get that "qualified expert" to help them comply with the ERISA and the fiduciary obligations that they have to discharge.

So, those are the principal reasons why we would find people going outside to use a consultant.

There are some situations where they really should not consider a consultant. One of the key ones is where the investment manager has already been selected. That happens on occasion. You will get into an assignment and find that there is already some firm that has the inside track to be selected. Perhaps they know the Chairman or they know the President or they've been calling on the firm for a long time, but it's not divulged out front to the consultant that there is a leading contender for the assignment. So if there is a secret agenda and somebody's already been implicitly hired, I think a consultant should not be employed at that point in time.

The second area is if you're really not going to work with the consultant. If you're hiring a consultant because of pressures from above and the people who will have the day-to-day working relationship with the consultant don't intend to create a positive working environment, then again the consultant is best not employed.

The third area I think you should avoid is where there's a real cost constraint. If there's a tight cost constraint, the consultant role may not be viable.

And lastly I would say that if the client is not prepared to think through the selection process in its entirety, then probably a consultant won't be as valuable as the client would like. If the client hasn't set policies and objectives, he has a low likelihood of selecting the right manager. We'll talk about that further in a few minutes.

So those are some of the principal reasons why to and why not to select or use a consultant to assist.

Now, once you decide to use a consultant, how do you select one? First of all, where do you find a list of consultants? The first place you might look would be directories such as the money market directory or publications in Pension Investment Age that detail all the consultants that are in this business. It comes out every year. So there are directories of consulting firms.

Another good source is referrals. Talk to your fellow corporate Treasurers or the VP's of Finance, or fellow administrators or trustees and find out who they've used. Get referrals for consulting firms as well as for consultants within each firm, because frequently the individual will be as important to this process as the firm which is selected.

Then, once you've identified some firms and you're interviewing them, what should you look for in the consulting organizations that you screen? One of the principal things that you should look for is the data base that they maintain on investment managers. The number one question you should ask is how large that data base is. You should ask for a list of the investment organizations the consulting firm has data on.

Secondly, ask to see the package of information that the consulting firm maintains on each firm. How complete is it? Does it have data about the organization? About performance? About people? About strategies? About turnover of people? About fees? About the accounts of the investment organization? So look at the package of data.

Then probably the most important point is how that data is accessed by the consultant and the consulting organization. Suppose that you've got data on 150 or 200 investment managers and there is a fairly complete set of information on each. Let me describe to you how investment consultants used to use this data for selection work. You'd go to a client. You'd sit down and ask what kind of a manager the client is looking for. You'd identify five or six criteria, such as a growth stock manager, being headquartered in New York, having under a billion dollars in assets, or having superior long term performance. Then you'd get back into your cab, you'd get on a flight and you'd fly back home. You'd take out a pad of paper and you'd start writing down the names from your experience that you knew that fit that criteria. You'd get back to your base of operation. You'd call in a research associate and you'd talk about the names and ask if you missed anybody. Perhaps then you'd talk to one or two other colleagues. And then you'd get data on those firms and present it. You might have had data on 200 in your organization, but you didn't have any way, in a rigorous sense, to systematically sort through the information on all those firms.

So it is very important to know how the consultant is going to access the data base of information. Today, that data base of information is often automated. For example, we maintain about a sixty page questionnaire on each of 280 firms. And every item on the questionnaire that the manager completes and sends to us is capable of being screened in the computer. In this way, I now have 100% confidence that the criteria that I'm looking at for the client are being sorted against 280 firms and I'm coming up with a broad list of firms that have at the outset the capability to respond to the clients needs.

The next important point is to discuss with the consultant his approach to selecting investment managers. If he starts with just jumping right into selecting investment managers without talking with you about setting objectives and what your policies are and how you view objectives and policies related to manager selection, you have a consultant that's really not doing his job.

So the consultant should talk to you about your objectives and policies first and then talk to you about how you put together a package of investment managers.

You might also look at it as putting together a portfolio of investment managers. Just like the investment manager selecting a portfolio of stocks, the consultant brings together a portfolio of investment managers. And you need to have his philosophy on how he intends to do that. Obviously, when you're selecting a consultant, you should also look at the experience of the individual in the business. The investment management business is a very mobile business. In order to really be effective at the investment manager selection job, you need to not only have access to quantitative information, but qualitative information as well. Whether or not people have changed jobs recently. Whether or not a key player has left a major firm. That kind of information is only really gained through experience and knowledge of the investment community. And it's such a mobile community, that you really need a very substantial base of consulting experience. Now, the investment consulting industry is only just short of twenty years old but it's very important to find people who have eight to twelve years of experience in order to really be effective at the job of selecting investment managers.

Lastly, you should look at the question of independence of the consultant. Believe me, every consulting firm has conflicts of interest. The client should be aware what those conflicts of interest are. The consulting firm might be the actuary to a banking organization. That banking organization might be the money manager to the pension plan that we're assisting. Do we have a conflict? You bet. Should the client ask us how we handle that conflict before he hires us? You bet. Should he watch for whether or not that conflict creeps into my consulting objectivity? You bet.

And obviously the client should ask questions about fees.

The next area I'd like to talk about is how you actually use the consultants during this process. What should the consultant bring to the table as you go through the process of selecting the investment manager? The first thing he should bring to the process is an evaluation of your objectives and policies. If you don't have them, he should suggest that you develop them and help you develop them. If you do have them, he should review them and evaluate them with you. In the next decade consultants will start developing a philosophy on how you put together a portfolio of investment managers, just like you assemble a portfolio of stocks. This is a whole area of theoretical development that's going on in the marketplace today. If I'm out to hire three or four equity managers, how do I mix and match them? Do I have one in growth? One in value? One aggressive? What is the right combination? How do you optimize that combination? These are areas where the consultant should have definite views which he is able to support. If he comes forward and says you should have a core position in equities with satellite managers around that core position in equities that are doing specialized things,

he should be able to support from academic studies or from an intuitive viewpoint why that structure makes sense. There are lots of studies around that support different investment philosophies and their relationship to risk and return over time. You can identify that growth stocks have made additional returns over time relative to other kinds of strategies. You can also support that small capitalization stocks and value stocks have had additional returns over time. These kinds of things should be documented and they should be put together in a philosophy of how a consultant assembles portfolio managers for a client situation.

Once you've got the structure in place, the next question is what criteria do we want for each component of that structure. Let's suppose that we were dealing with the general area of equities, and within equities, we were looking at the growth stock area. Suppose the client says, "I would like to look at large capitalization companies which have earnings growth rates greater than the market, low dividend yields relative to the market, and higher risk than the market." The consultant and the client would work together to mutually screen and develop criteria that are related to that particular investment category. Then, the consultant takes those criteria, goes back to his data base and screens the data base with those criteria to come up with a group of managers that would fit that particular component.

At this point in time, the client needs to do a couple of things that I don't think I've ever seen any client do. But if I were in their shoes, I would do it. First, the consultant will come back to the client with a group of firms that fit the criteria and a detailed package of information on each. The client should ask what other firms fit the criteria that the consultant has chosen not to present. Frequently there will be a bigger number. The consultant might have had thirty firms that met the criteria, but he knew he couldn't present detailed information on thirty, so in some fashion, intuitive or qualitative or whatever, he narrowed that list from thirty to ten. The consultant should reveal to the client all those that met the criteria and why he made the elimination that he did. I think it is very instructive from the client's point of view to understand the consultant's thinking and what he's getting from the consultant.

The second point is to ask the consultant why those firms were eliminated from consideration and pay attention to the reasons, because they frequently will reveal biases of the consultant or viewpoints of the consultants that will be instructive in the process. Then the client should use the consultant to go through the process of identifying each firm, going through page by page of the written material on each firm and identifying those that they wish to interview either in-house or on site with the investment organization. At the end of the process, you have winnowed the list down to a group to be interviewed.

The next to last step in the process is the interviews themselves. At this point the consultant should be arranging for the interviews, setting up the ground rules for the interviews and communicating as much information as possible to each prospective investment manager about the investment objectives and policies of the client, the number of managers

that are going to be hired, who the competition is in the particular investment search involved, and the time frame for making the presentation. The consultant also plays an active moderator role as the interview takes place.

The client should also use a consultant to score the interview. Construct the five or six key elements that you think you're going to evaluate in the interview process, give each one a weight and then score them from one to five or one to ten. After the interview is completed, ask each participant in the company or the plan sponsor to score each firm before any discussion takes place. The reason that's very important is that frequently you will find what we call the Chairman effect. Have the firm come in, make a presentation, then leave the room. Then there'll be a discussion about that organization. Since scores are often influenced by the discussion, the consultant should be sure that there is some mechanical way to score these interviews before any discussion takes place about the investment organizations and their appropriateness.

Last in the process is an administrative step to transfer assets from one firm to another. This step should involve reference checks. The checks should go beyond simply checking with clients who are currently using that investment firm. They should also focus on whether or not there are former employees of that investment firm that could be talked to about their feelings on the investment environment and the professional environment in that firm. It is also helpful to contact any former clients of that firm that can be identified because those are very frequently the most important and instructive references you can have. They, too, can be quite positive on the firm, but they frequently reveal some insights into the firm that the client should be aware of.

In closing there are some important points that I'd like to re-emphasize. First the consultant in this process should be very open with the client, divulging any conflicts of interest, and any biases.

Secondly, the client should observe whether or not the consultant is, in fact, knowledgeable about the manager. Does he know the people? Does he know them well? Does he know the investment organization and the investment approach? If he summarizes for you the investment approach and then the manager comes in and describes a different approach, you have a very obvious conflict to resolve.

The consultant should not be a doormat in this process. He is not there just to facilitate the clients preconceptions. He is there to really serve as a counterpoint as well. If there's something that's incorrect about a view, he should state politely and tactfully that he differs with that viewpoint and why the evidence supports a contrary opinion.

And lastly, if required, the consultant can also serve as a foil. If there's a particular investment firm out there that the Chairman of the Board wishes to have considered, a good way for the Treasurer or the VP of Finance to deal with that problem is to hand it off to the consultant.

Key elements that I would like to leave with you are:

- o Number one, when you're selecting the consultant, look at the size of the data base, the package of material on each investment firm and most importantly, the method to access that information. Is it systematic and rigorous?
- o Secondly, make sure you identify and understand that the consultant can support how you put together a portfolio of investment managers just like you put together a portfolio of securities.
- o Thirdly, ask to see a list of all firms that fit the initial screening criteria, not just a select group that the consultant chose to present to the client. And specifically ask why any firms were eliminated from consideration.
- o And, lastly, make sure that the consultant states his biases and why he holds them.

MR. ERNEST G. BIANCO: Sandy's comments are an excellent introduction to some of my own remarks. My topic is the issue of multiple manager structures.

What do we mean by multiple manager structures? What do we mean by the value of diversification? We'll talk about the pros and cons of multiple manager structures, where is it a helpful concept, and where might it not be.

A constellation of managers or, if you will, a structure of managers is very much akin to a portfolio of individual securities. So we're going to talk a little about portfolio theory. We'll discuss the concept of the efficient frontier and how it relates to an efficient structure. And then we'll discuss some dos and don'ts about putting together a manager structure. We'll identify what kinds of roles are to be filled, what the data requirements are, (both in an ex-post as well as an ex-ante sense) and where passive vehicles come into play.

I'd also like to introduce to you the concept of an opportunity fund which I view as a useful way to enhance the diversification of a manager structure. Then I'll close with an actual example.

I want to introduce the concept of "Total Investment Risk", i.e., from Modern Portfolio Theory we posit two components:

- a. Market (or Systematic) Risk
- b. Residual (or Diversifiable) Risk

Theory tells us that one cannot expect to diversify away Market Risk; it's imbedded in market price actions which cause security valuations to move, literally, en masse. The only hope for diversification, then, rests with Residual Risk.

A measure of the extent of diversification potential is reflected in the correlation of returns of one security with another, i.e., we can enjoy more diversification the lower this correlation. As we add more and more securities into a portfolio, Residual Risk begins to diversify away while some sort of "average" value Market Risk begins to emerge. This becomes, increasingly, the dominant risk element in the portfolio.

If we carry this process over into the concept of multiple manager structures, we discover that the most effective structure is one where each managed portfolio is disparate, one with another, i.e., when their correlations of returns are relatively low. A simple example of this is a bond portfolio vis-a-vis an equity portfolio. The correlation between their respective returns tends to be within the range of 0 to 0.4, expressed as a correlation coefficient. This relatively low number suggests that a combination of these two disparate asset classes within a plan's asset structure would bring about an amelioration in investment risk. And indeed it does. This is one of the principal reasons why we tend to see debt instruments as well as equity securities in most pension plan assets. The same phenomenon is at work if we think of two disparate equity portfolios. Say one is an emerging growth stock portfolio, the other a high yield equity portfolio. Table 1 illustrates how diversification is achieved by combining these two portfolios in varying proportions. (Data covers the 11.25 years ending 3/84).

Table 1
Diversification Effect

% High Yield Fund	100	75	50	25	0
% Growth Fund	<u>0</u>	<u>25</u>	<u>50</u>	<u>75</u>	<u>100</u>
Nominal Return	4.3%	4.7%	5.0%	5.3%	5.6%
Residual Risk	<u>+3.72%</u>	<u>+3.78%</u>	<u>+4.45%</u>	<u>+5.59%</u>	<u>+6.91%</u>
Ratio	1.16	1.24	1.11	0.95	0.81

In other words, an optimum structure emerges somewhere at the 75%/25% High Yield/Emerging Growth mix. You'll note that the average return relative to the level of Residual Risk peaks at about that asset mix.

In a way, this illustration supports the entire argument for wanting to use a Multiple Management Structure. It is to gain diversification advantage, i.e., to achieve the highest level of return at a given level of Residual Risk (or, correspondingly, the lowest level of Residual Risk at a given level of return). We refer to this as an "Efficient Structure". Had we built this structure with redundant styles, we would have experienced little or no diversification advantage. The return to risk ratio would be quite flat across all mixes and one would be indifferent to whatever mix one chose.

I. Pros and Cons of Multiple Manager Structures

Certainly, the major advantage to Multiple Management Structure rests with the diversification value it adds. For the very large plans in particular, it offers diverse conduits for the deployment of new cash flows. But there are limitations, both theoretical as well as practical.

From a theoretical viewpoint, a Multiple Management Structure may end up being "over-diversified". In this case, value added by each respective style or role (whether it be from timing or selection expertise) could, in this aggregation of roles, become so diluted as to reflect the characteristics of an Index or Market Fund. From a practical standpoint, small plans (say with assets less than \$10 million) may find it difficult and expensive to build an effective structure. In the case of the very large plans, the tendency is to "layer" management roles, running the risk of building redundancy rather than complementarity into the structure. Another pitfall crops up with the not unpopular practice of "horse racing" parallel managers. Here, the belief is that by placing managers in similar roles in performance competitive situations, both managers will be incented to outperform each other, allegedly to the benefit of the plan. What's lost here is the diversification advantage of risk moderation. On the contrary, such practice could well lead to risk intensification.

II. More on the "Efficient Frontier"

Modern Portfolio Theory, fathered by Markowitz over 30 years ago, gave rise to the notion of so-called "efficient" mixes within a portfolio. If one selected, say, a dozen or more stocks that seemed to be, for fundamental reasons, worthwhile investments, an issue still remains as to what weightings one should ascribe to each stock position, i.e., how much should one own of each stock. If one knew the expected return, investment risk and correlation matrix of each stock's performance, one could calculate the return and risk characteristics of any array of these stocks in a portfolio. The mechanism driving the process is represented by the following:

$$\text{Portfolio Return} = \sum_{i=1}^N W_i R_i$$

$$\text{Portfolio Risk} = \text{SQR} \left(\sum_{i=1}^N W_i^2 \sigma_i^2 + 2 \sum_{i < j}^N \rho_{ij} W_i W_j \sigma_i \sigma_j \right)$$

where W_i = proportion of i -th stock

R_i = expected returns on i -th stock

σ_i = investment risk of i -th stock

ρ_{ij} = correlation coefficient of i -th with j -th stock

N = number of stocks considered

Imagine a cloud of points which one might obtain when plotting Portfolio Returns vs. Portfolio Risk at every conceivable combination of W's. Once such a cloud was created, we would discover an outer envelope to these plotted points. This outer shell (outside which, no points would fall), is what Markowitz called the "Efficient Frontier". Any combination of stocks lying on the frontier is preferable to any combination lying inside it. He showed that the favored combinations represent the maximum possible return at that given risk level (or, conversely, the minimum possible risk for a given return level).

Building an investment management structure involves the very same principles. Here is an example of an efficient mix of managers. Five specific roles are represented:

1. "Market Risk" equities (no less than 25%)
2. "Aggressive" equities
3. Actively managed bonds
4. Intermediate maturity bonds
5. Equity Real Estate (no more than 10%)

If one chose to identify the risk tolerance level, which might be appropriate for a given pension plan, the optimum mix of these five managers would correspond to the coordinate point lying on the Efficient Frontier. As in this example, if we said our investment risk limit was equivalent to a standard deviation of $\pm 14\%$, the efficient mix would then be:

- 25% "Market Risk" equities
- 38% "Aggressive" equities
- 15% Active bonds
- 12% Constrained maturity bonds
- 10% Real Estate

having a return expectation of 11% per annum.

III. Putting Together a Manager Structure

In building a manger structure, the key step is to prepare a menu of possible investment management roles which could be filled. A worthwhile approach (not necessarily the most appropriate in every case) is to start with some kind of "Core" position, i.e., positions which assume no more than market risk, but whose management shows promise of adding value relative to the market proxies. These positions could be one or more

"balanced" managers (but disparate enough). Or perhaps a separate equity core and fixed income core. Surrounding this core would then be a constellation of "Complementary" positions. With equities, for example, we might have a small cap manager, an out-of-favor contrarian, a sector rotator, etc. Fixed income "Complementary" positions might include a market timer (i.e., massive maturity shifter), a "junk bond" specialist, etc. The trick is to prepare a menu in such a way that variety and disparity in style is one's focus. Other mitigating circumstances might include the plan sponsor's willingness to get equity exposure levels.

Those who choose that avenue may rule out any need for balanced managers. Those who are gun-shy about setting such rules might opt for a "swing" manager in the core role, where this manager's discretion plays the major role in equity exposure throughout a market cycle. And never ignore the plan sponsor's personal biases or sensitivities.

When preparing the menu, it is essential that the asset planner have, either ex ante or ex post, a good handle on the three key sets of statistics: return expectations, investment risk and cross-correlations. These are the requisite input into the "Efficient Frontier" model which, in the most objective fashion, provides the optimal management deployment structure.

IV. The Role of Passive Vehicles

Again, if it makes sense from a risk-moderation standpoint, to broaden the menu to include such passive vehicles as GIC's, Bullet-immunized bonds, equity index funds, etc., then do so. One often finds that the benefits these kinds of vehicles offer is diversification. This is especially true with book-valued assets such as GIC's since one should expect unusually low correlations of their returns with the more traditional market-valued stocks and bonds.

V. The Opportunity Fund Idea

I have a personal preference for including a kind of catch-all program in preparing my menu. I call it an Opportunity Fund which, as its name implies, is a proscribed portion (say 10% to 30%) of an asset base committed to the so-called alternative investments. The constituents within the Opportunity Fund are, of themselves, disparate (e.g., equity real estate, venture capital partnerships, international equities, etc.) with respect to one another. Even more important, in the aggregate, the Opportunity Fund is a perfect diversification adjunct to the remaining "Core plus Complementary roles" which I described earlier. There are other advantages:

- a) these vehicles often offer significant return premiums over the more traditional programs.

- b) a "home" is provided for the plan sponsor's learning experience.
- c) virtually all of these adjunct vehicles are being merchandised in the form of commingled pools. Hence, the entry barriers are virtually nil.

VI. A Simple Illustration

Let's assume that a plan sponsor had decided to restructure his equity management for his pension plan. Let's assume further that he bought into the idea that diversification made sense. Thus, he was open to the idea of multiple equity management. For simplicity we shall limit our menu of choice to two equity roles. One manager we'll identify as Risk Averse, i.e., his style tends to utilize cash equivalents as equity substitutes, his portfolio volatility (i.e., Beta) tends to be less than that of the Market, yields tend to exceed the Market's, equity sector concentrations could be called moderate to high cap equities. Additionally, there is evidence that over at least two market cycles, his investment decisions have added value from both advantageous uses of cash as well as from propitious security selection.

The other manager we will identify as Opportunistic, i.e., he tends to stay fully invested, his portfolio volatility could be as much as 20% greater than the Market's, yields less than the Market's, rather heavy sector concentration (more after-the-fact) and his focus is on the small to medium cap range. Again, we want evidence that his selection decisions have added value.

Table 2 summarizes some of the expected portfolio characteristics for each role.

Table 2
Expected Portfolio Characteristics

<u>Characteristic</u>	<u>Risk Averse Role</u>	<u>Opportunistic Role</u>
Use of Cash Equivalents	Moderate to High	Very little
Volatility (Beta)	Beta \leq 1.0	Beta 1.2 to 1.4
Yields	\supset S&P's	\leftarrow S&P's
Sector Concentration	Moderate ($R^2 = 0.9$ to 0.95)	Heavy ($R^2 = \leftarrow 0.8$)
Capitalization Emphasis	Medium to High Cap Stocks	Low to Medium Cap Stocks
Value Added (Alpha)	Selection + Allocation \supset 2%/annum	Selection \cong 2%/annum

From here, one would want to search a universe of investment managers whose portfolio characteristics not only conform to these primary screening criteria but also show evidence of relatively low correlations of returns, say less than 0.8 (as a correlation coefficient).

Here are the results of a screen, identifying two managers with these characteristics:

	<u>Averse Manager</u>	<u>Opportunistic Manager</u>
Beta	0.84	1.24
R ²	0.90	0.69
Alpha	2.20%	3.98%
Real Returns	3.60%	6.10%
Total Inv. Risk	+10.0%	+12.6%
Ave. Yield	5.5%	3.5%
Correlation		0.71

To assure that the plan's total equity exposure has no more investment risk than that of the market and further requiring that the configuration itself is efficient, we construct the Efficient Frontier as shown in Figure 1. Assuming that the market risk is on the order of +11.0% (expressed as the standard deviation of quarterly returns), we can locate an "equivalent-risk" efficient mix of managers along the frontier. This turns out to be, roughly, point "M", or a structure deployed 2/3 to the Opportunistic fund with 1/3 to this Risk Averse fund.

This is not too surprising a result. A rational investor would have preferred the Opportunistic program simply on the basis of its higher return/risk ratio (i.e., 6.1 + 12.6 versus 3.6 + 10.0). However, this would expose the plan to a highly volatile equity position (Beta = 1.24). One can temper this volatility through a complementary portfolio, even though its return/risk ratio is lower.

Another way of looking at this is through the concept of duration. Duration can be viewed simply as a measure of the sensitivity of a security's market value to changes in interest rates. As a first approximation, the duration of an equity portfolio is $1 + (\text{yield})^{-1}$. If we want our configuration to reflect a duration about equal to the market's (i.e., 23.2), we locate, along the frontier, an equivalent-duration efficient mix which is also at point "M".

VII. Summary

The benefits of Multiple Manager Structure is the risk moderation which proper diversification provides.

It is important to consider as broad a menu of disparate styles of management as is appropriate. Equally important, one must evaluate the impact of the structure's cross-correlations upon the final decision as to which managers to include and what positions they each represent.

MR. MICHAEL KANTOR: My topic is evaluating past performance of prospective investment managers. I will take a statistical approach as opposed to some of the qualitative approaches that are being proposed.

When we look at past performance of a fund manager, one naturally thinks about looking at return. Return begins with the letter "R," but there are three other R's that we should look at as well;

- o Risk - the likelihood of performance less than what is expected.
- o Repeatability - the likelihood of repeating past performance.
- o Redundancy - similarity amongst fund managers, especially if you are looking to hire not one but several managers for your pension fund.

I don't propose to go into the detailed mathematical formulas, but to go conceptually from the most naive to most sophisticated methods of evaluating past performance. Let me handle some preliminary definitions.

Return. By return I mean return due to price change plus return due to dividends or yields. Since we are dealing with pensions, we do not have to worry about the tax consequences of capital gains versus ordinary income since the investments are primarily tax exempt.

Also, how long should we measure investment performance? Most opinions are that we should at least look back for one market cycle, which is a minimum of four or five years. I personally believe that if at all possible, you should extend that to as much as eight or ten years, if the data is available.

If we look at past performance or past returns only and we make a money manager selection on that basis only, we are likely to experience disappointments. It's only when we look at not only return, but these other three factors also, that we are likely to select an investment manager who will fulfill our expectations.

Figure II shows the return for two managers. Manager A returned 16% while Manager B performed only 15%. On the most superficial level, Manager A did a better job. He produced a higher rate of return. If we thought that type of return was typical in a year like 1983, you would have beaten the rate of inflation by 12%. You would have beaten the rate of salary increases by as much as 8% to 10%.

If the actuaries put these returns in as actuarial assumptions, most pension plans would probably never have to make another contribution in order to meet their funding obligations. Realistically, we don't think that this type of performance is going to be repeated. Now, let's look why Manager A achieved a higher rate of return. The most obvious reason is that Manager A had a higher equity commitment. He had 70% equities versus only 50% equities for Manager B and this was a period of time that equities performed much better than bonds.

Let me give you some historical perspective on these assets. Figure III shows the long run returns of bonds and stocks as well as the rate of inflation. Over the last eighty year period, inflation averaged 2.9% a year. Had you gone into treasury bills you would have achieved that rate of return. You would have met the rate of inflation. For actuarial purposes, you probably would have fallen short of your salary increase. Usually actuaries like to find investments whose returns exceed those of salary increases. Historically, bonds returned approximately 100 basis points above inflation with a risk standard deviation of return of 6.8%. I don't expect that historical event to repeat itself, especially in today's environment with high inflation and bond yields in excess of 12%. A more reasonable expectation of bonds in the future is probably 9% to 12% return in an environment where inflation may be 5% to 8%. Since interest rates are volatile, bonds also will have a much higher standard deviation of return in the future than they've had in the past.

We finally go to equities. That is a higher risk asset, which as a result has to provide a higher expected return. If bonds are going to return 9% to 12%, I would expect the long term return on equities to be more like 12% to 15% in the future rather than what we had in the past.

Now let's look at the performance shown in Figure II in this context. Equities returned 24% which is much higher than we would expect to see in a typical year. If we look at repeatability, we cannot count on equities performing 24% in any given year.

Conversely, bonds only performed 2%. And that's well under what I would expect bonds to perform in the future. So as equities performed much higher than expected, bonds performed much less than what we would expect to find in the future.

Let's look at another level. Let's look at the performance of these managers within asset class. Even though Manager A achieved a higher overall rate of return, Manager B was the one who had a higher return within equities. He also had a higher return than Manager A in bonds. In both cases, Manager B beat the hypothetical index. So another standard of performance is to take each portfolio, decompose the returns into returns due to the various asset types like equity and bonds, and then see how well the equity portfolio compares with an index, and how well the bond portfolio performed compares to its benchmark.

What I'm going to introduce now is the single index model which Ernie introduced previously. The idea of the single index model is that individual portfolios are influenced by both the market risk and the specific risk. Some portfolios are more sensitive to the market. Other portfolios are less sensitive to the market.

Figure IV shows the performance of a high beta fund. A high beta means that this particular portfolio tended to magnify the return on the market. When the market went up, this particular portfolio went up even more than the market. When the market went down, the portfolio

underperformed the market. Instead of looking at the market index, we are now looking at a market index which is risk-adjusted. The reason for this is that if we had done this analysis in the late 1960's, there are a class of so-called high risk funds which significantly outperformed the S&P 500 and the Dow Jones Index. Had we made a managerial selection on the basis of performance in the last half of the 1960's, we would have been very disappointed in the early 1970's. That was a period of time that the market fell and these high performing funds of the late 60's were the worst performing funds of the early 1970's.

The single index model seems to offer a partial explanation of why the heroes of one era were the bums of the next era.

We've also developed a so-called risk adjusted measure of performance. In a market environment where the market goes up 20%, this portfolio would not be expected to go up 20%, but perhaps 25% to 28% because it is typically a fund that magnifies the impact of the market. Suppose this high beta fund only returned 22%. Even though it outperformed the index, it did not outperform the risk adjusted performance standard and, therefore, the single index model would have said that this manager's performance was actually disappointing even though he exceeded the return on the market.

Let's contrast this with a low beta fund. A low beta fund consists of stocks which tend to move with the market, but not as drastically. When the market goes up 20%, a low beta fund may only go up 10% to 15%. Conversely, if the market drops by 20%, the low beta fund will drop by a lesser amount. So the next generation was not looking at absolute performance or comparing the performance with an index. Rather risk adjusted performance was examined based on the single index model.

However, the single index model was still inadequate. Why? Let's take an example. Suppose I had a portfolio of utility stocks. Utility stocks are considered to be defensive, and not vulnerable to the business cycle. They are not expected to go up sharply with the market or down sharply with the market, especially a market that's driven by the business cycle forecasts. But in recent years, we've had markets that have been driven up and down because of inflation fears and high interest rate fears. Utilities are probably the most vulnerable sector to inflation and high bond yields. Utilities are heavy borrowers in the equity market so they have to pay higher interest costs. Utilities also have to get regulatory approval to raise their rates in periods of inflation. So here we have a phenomena where utilities by beta theory would be expected to diminish the effect of the market and yet you could have a market change generated by inflation fears where utilities actually underperform a declining market, contrary to what the single index model tells you is going to happen. So the next stage of development is the so-called extra market effect. The extra market effect says that stocks are driven not only by the general market level, but also by energy crises, the business cycle, interest rates, and inflation fears.

One area of development was called cluster analysis which was developed by Jim Farrell. Jim Farrell took a universe of stocks and performed a technique called cluster analysis where he correlated rates of return on individual stocks and clustered those stocks which displayed the highest degree of correlation. The universe of stocks clustered into four distinct groupings and we labeled them cyclical, growth, energy and stable. Once you have four groupings of stocks, we can now take something like an S&P 500 index and develop subindexes. Figure V gives a hypothetical example where the S&P as a whole returns 16.5%, yet we see that individual sectors had different performance. Energy, for example, had a much higher performance. Growth stocks had a much lower performance.

Let's take a typical fund manager. His return was 15.3%, below that of the S&P 500. By traditional standards, he underperformed the S&P 500. By even the single index model, he may very well have had a beta of one and did less well than the S&P 500 and underperformed.

However, suppose this particular manager said, "I am a growth fund manager, I will invest primarily in growth funds". This is what he actually did. He put 70% of his portfolio in growth funds, over a period of time that the S&P comprised only 35% growth funds. Growth funds underperformed. Growth stocks underperformed. As a result, his performance was below that of the S&P 500.

When we do this analysis, the manager who would appear to have underperformed may actually have performed extremely well considering the policy he had. If we look at his returns within each of the sectors, we find that in most of the sectors, especially the growth sector, he outperformed the subindex. So here is another dimension of evaluating past performance. His underperformance was due to the fact that he was in the wrong sector, for his policy was in a growth sector and his performance was being measured over a period of time when growth stocks underperform the market.

Another development we've had is so-called peer group analysis. By peer group analysis I mean the process of taking money managers and comparing them with money managers with similar objectives and similar types of portfolio mixes.

I'll show you a couple of examples of peer group analysis. Figure VI plots returns of the funds versus the risk that they incur. The X axis has the risk, and the Y axis has the returns. As you see in this particular diagram, the fund managers that incurred more risk were, in fact, awarded with higher rates of return. One way of looking at this past performance is to take a hypothetical fund manager, calculate the amount of risk he assumed and compare him with other funds assuming similar amounts of risk. If he underperformed his particular peers, his performance was disappointing.

Figure VII also looks at peer group analysis. On the X axis is risk, and rate of returns is on the Y axis. You have the risk and the return of the Standard & Poor 500 as well as the risk and the return of the various type of managers. In this case, the managers are classified as defensive yield, rotating, broadly diversified and growth. And you can see the average risk, and the average return of each of these categories of managers.

In this particular period of time, the worse performing funds were growth funds. The best performing funds were the defensive yield funds. Had you made a money manager selection based on the performance through the end of 1975, you may very well have been impressed by the defensive yield funds. At that time, they seemed to have been the highest performing fund with the lowest risk. A way of having your cake and eating it at the same time.

But had you then hired a defensive yield fund over the last half of the 1970's, you would have been disappointed because over the next five-year period the defensive yield stocks were the worst performing stocks. That growth fund manager that you ignored based on the performance through 1975 turned out to be the best performing fund during the latter half of the 1970's. So here's another example of not only how peer group analysis applies, but a warning that if you select a money manager strictly on what return he produced in the past, you will be disappointed. It's only when you look at not only return, but the amount of risk he incurred, the repeatability of his process and the redundancy of his managerial that style are you able to make the best portfolio manager decision based on past performance.

MR. GRANT McMURRY: My subject areas of setting investment objectives and investment performance measurement have of course been touched upon in earlier presentations this morning. Setting objectives is a fundamental prior step to developing appropriate multiple manager investment programs. Monitoring performance is important in evaluating a manager to determine confidence (or a lack of confidence) in the investment skills being employed. My subjects, as I see them, cover more the strategic planning aspects of effective pension investment programs than in the implementation techniques covered by Ernie and Michael.

SETTING INVESTMENT OBJECTIVES

In days past, we often saw investment objectives articulated as... "I would like my pension assets to achieve the highest return with the least amount of risk;" or "I would like to achieve the highest return commensurate with the risk undertaken." The trouble with these objectives is that they can't be effectively measured. It's like having as an objective; "I would like to be the happiest passenger on the 4:20 train to Stamford."

To correct this vagueness, a next generation of objectives seemed to be tied to the plan's actuarial earnings assumptions. Thus, six percent or seven percent absolute return objectives become the standard. In addition to being specific (and measurable) this objective, on the surface at least, provided some tie into the liability program which the invested assets were attempting to cover. Further improvements in investment objective articulation took into consideration the dynamic nature of a plan's liability structure and the need to tie the investment return objective to a factor which would reflect this. An objective of a return above inflation would be an example of such an attempt.

This brief background (or set of personal observations) brings us up to date as to where we now find ourselves in the definition of pension plan investment objectives. What's important, however, is not just the definition or articulation of the objectives but the process we go through in determining the appropriate objectives. This process is quite simply the first step in a typical planning task.

In order to determine what we would like to accomplish (set objectives), we should have some idea of: "where are we now". For a pension plan, where we are now (as it pertains to investment information) could be the current funded position, contributions as a percent of payroll, etc. More important however, is knowing "what is the sensitivity of these factors to future experiences in salary growth, participant demographics, investment earnings, etc. Plans certainly differ in sensitivity to investment return. And plan sponsors differ as to their ability to deal with this sensitivity when, on the negative side, it may substantially increase contribution levels.

What we are talking about has a direct bearing on the two important dimensions of our investment objective - Return and Risk. Shaking out the sensitivities of the plan (this generally involves actuarial projection modeling) is very important to the development of appropriate objectives. For it is important to remember that an investment objective seeking high investment return will be accompanied by a higher degree of risk than one which pursues less heroic objectives. Where a plan has little sensitivity to investment return volatility or where such sensitivity can be effectively absorbed by the sponsor, a high or aggressive investment objective may be appropriate.

As we know, a pension plan itself is generally thought of as long-term. The liabilities tend to project far into the future. Argument for a long-term investment objective for a pension fund thus seems well supported. What we have been discussing relates most generally to long-term objectives measured over periods of at least five years. We find, however, that it is also appropriate to set shorter-term objectives for our investment program and to measure progress based upon our success in meeting these shorter-term objectives. Meeting or exceeding the return of the S&P 500 and doing it on a quarterly basis, would be an example of an objective for the equity portion of our assets. An appropriate market index may be identified for the fixed income and other portions of the fund. Comparative bench marks of both market and managed

portfolios are becoming increasingly more specific and more useful in this area.

I do not have time to get into the definition of risk or volatility objectives such as an expected return standard deviation or an expected portfolio beta. I will comment that such objectives must be consistent with the return objectives. In other words, the more aggressive our return objective, the more volatility we should expect to observe in the returns.

MONITORING INVESTMENT PERFORMANCE

Determination of investment objectives is, of course, paramount to effectively monitoring the performance of a pension investment program. The objectives provide the standards against which investment performance can be measured. The problem we often run into in the monitoring area is in looking at short-term performance and making judgements as to the potential success in meeting long-term objectives. I will only touch on this issue and how it may be dealt with.

Figure VIII is what I will call a "Control Chart". Ernie Bianco was quite instrumental in the development of the concept. This graph is constructed for a fund (or segment of a fund) specific to the long-term objective of the fund and to the expected volatility of the fund returns. The "Action Line" shown is a mathematically constructed boundary which, using the fund characteristics of expected return and volatility, is intended to show the point where if the cumulative annualized rate of return of the fund over time falls below this line, the fund has only a 25% chance of achieving the objective return. The "Action Line" will differ from fund to fund. The primary factor driving the difference is the expected volatility of the fund; the higher the expected volatility, the steeper the curve in the action line (or, the more forgiving the standard in the early years).

The real value of the "Control Chart" seems to be that all parties to the monitoring program agree at the onset that such a tool can be used to show that a problem exists. It may very well be that in breaking the line, the problem is that the objective was too aggressive and that no fund investment program could have avoided breaking the line. In such a case the objective may need re-examination. In other cases the manager of the assets may require re-examination.

In closing, setting appropriate investment objectives and monitoring investment performance in a meaningful way are very important elements in successful investment programs. It represents the underpinnings for the use of techniques described earlier this morning. They are areas where, in my opinion, substantial progress and sophistication will be seen in the upcoming years. They are areas where the contribution of actuarially trained individuals can and should have significant impact.

MR. MALCOLM HAMILTON: I'd like to address a question to both Mr. Lincoln and Mr. Bianco. It has to do with the idea of assembling a portfolio of managers to improve your performance. From time to time, I've seen proposals as to how this might be done. Effectively you identify managers who, over a five or ten year period, have generated superior performance and then you look for an absence of correlation between their performance on a year-by-year or quarter-by-quarter basis. The problem I have with this is that if you can attach credibility to those statistics, seemingly you'd just pick the one with the superior performance. If you can't attach credibility to those statistics, how do you combine them in some way to arrive at a rational allocation of assets between the two managers?

MR. LINCOLN: It's a good question and it's one for which I don't think we have a quantitative answer yet, because work is still being done in the area of combination theory for portfolio managers.

I'm not sure that active management can add value over a protracted period of time. But if you believe that you can, then the question becomes, "Is there some optimal way to achieve that superior performance over time, given certain risk parameters?" I think it would be instructive to put together a portfolio of investment managers, not so much classified by the correlation of their returns but rather by factors in the market place that are related to return and risk. For instance, if you could establish that small capitalization companies have, over a long period of time, produced additional return for a given level of risk and you can document that, then the portfolio ought to be exposed in some percentage, whatever efficient portfolio that would be, to that effect.

Our work right now is pretty primitive in this area. We have identified three major factors that we think are related to risk and return over time and we're trying now to identify managers that expose you to those factors. We are doing this rather than trying to correlate the residual returns between the managers.

I'm not sure there's going to be a good answer to your question until the academic work is done.

MR. BIANCO: Another approach is to create a synthetic fund that expresses the risk reward relationship that you would like to have seen over the last ten years. Then with the accessible data base that Sandy referred to, find those managers whose residual returns have the highest correlation with the residual returns of the synthetic fund. Then you'd have to know who those candidates are, how they manage money, and what their respective styles are.

MR. LINCOLN: One other thing I'd point out is that you may also want to consider that you're better off spending your time figuring out diversification by asset classes than you are figuring out diversification by managers. There's just not much value in correlation coefficients which are 7 or 8. Let's find meaningful correlations -- negative correlations if we can find them or random correlations if we can find those.

I think the plan sponsor that spends a lot of time in the equity area trying to build portfolios of managers should only do so after he has spent a lot of time figuring out the asset class diversification problem.

MR. HAMILTON: Has any study been done that would show that there is a value added by assembling portfolios of managers?

MR. LINCOLN: I'm not aware of any that have been done or even necessarily any that are going on. The problem you have is that it's a fairly recent phenomena in terms of the multiple manager environment, so we don't have enough information yet.

And it's very hard to itemize or isolate the independent variables that would contribute to the returns. So you don't know whether you have an independent variable in the way the managers were structured or not.

MR. YAFE: Most of the clients in our practice have relatively small pension funds, \$2,000,000 to \$10,000,000. Obviously some of the things that have been talked about this morning are really not practical for our clients.

I have two or three questions. One: what aspects of what's been presented this morning do you feel are most applicable to the small pension plans? They're just as frustrated, perhaps more frustrated, than the larger ones over investment management.

The second question is that I've heard it suggested that some of the principles that I've seen described this morning for a small pension plan could be applied to mutual funds. Good mutual funds could be selected in various categories and you would not have to worry about portfolios of investment managers per se. I'd like your comments on that as one possibility for small pension plans. And, third, to the extent that we help clients do this sort of thing, where do we begin to cross over the line into becoming or providing investment advice in violation of some kind of federal registration?

MR. MCMURRY: The line's pretty blurry, starting with your last question. But there are some organizations who, because of the fuzziness or the blurriness of the line, have registered as investment advisors in case the issue comes up as to whether you stepped across that line.

The second issue you addressed was the use of mutual funds. I think it's an excellent idea, not only perhaps for small clients, but for small parts of large programs.

No load funds are relatively inexpensive when it comes to the budgeting process. And they're pretty predictable. They tend to have longer track records you can look at. You can look at the data, if you like. It's readily available. You can do statistical studies on the funds, if you like. Mutual funds are required by law to definitively tell you what it is they're going to do with assets. The funds cannot be changed unless there's a meeting of the holders of the shares of the mutual funds.

I guess another reason for the use of mutual funds is that you can move without a tremendous amount of expense. If you find that a particular mutual fund is not working out well it's somewhat less painful to move out of that, especially for small funds. If you're talking about \$50,000,000, there will likely be some type of a provision within that mutual fund to pay a penalty for somebody playing games. But for a couple of million dollars, it generally is easy for the plan sponsor or the consultant for that plan sponsor to move the assets to another mutual fund.

So for those reasons, it's a very attractive idea.

The particular area of issues we addressed this morning that might be more applicable to small funds is setting objectives. The smallest of organizations have some type of strategic planning exercise they go through in running their business. It's simply applying that technique to their investment program for their pension funds that we're talking about. So it's not foreign to them. And there's a lot of value in it. It gets them started.

MR. KANTOR: One approach that I've seen for small funds is that there are consultants who do nothing but consult small plans on whether they should have the money in stock funds or a money market type fund. This is something that's ideal for the smaller plan who can't afford to get involved in more complicated analysis.

MR. LINCOLN: There is a risk in the approach of moving between mutual funds, in that you're essentially overlying a timing sort of approach to the money management process, and so you do introduce the probability that you may have a high yield fund at a time when a growth stock fund is in favor. So you have more than one dimension of measurement involved and more than one dimension of investment management involved.

MR. YAFFE: It appears that what you've talked about breaks down into four steps. One is setting the strategy and objectives. Second is the selection of the major categories of investment type. Third would then be a selection of the various management styles. And fourth is the measurement.

Now, in particular, if you start to use mutual funds setting strategy doesn't involve investment advice. I'd like a little more comment about where you feel you move over the line into giving investment advice.

MR. BIANCO: One of the difficulties in using mutual funds, as was just pointed out, is the fact somebody has to direct the trustee as to which mutual funds to buy and how you're going to deploy your assets with respect to the variety of mutual funds if you have a variety of them. That's a fiduciary responsibility. Now, sometimes the plan sponsor is willing to take that on. Sometimes he's not. When he's not, one must find someone who will do it for him who is a fiduciary. And he would have to be registered under the 1940 Act.

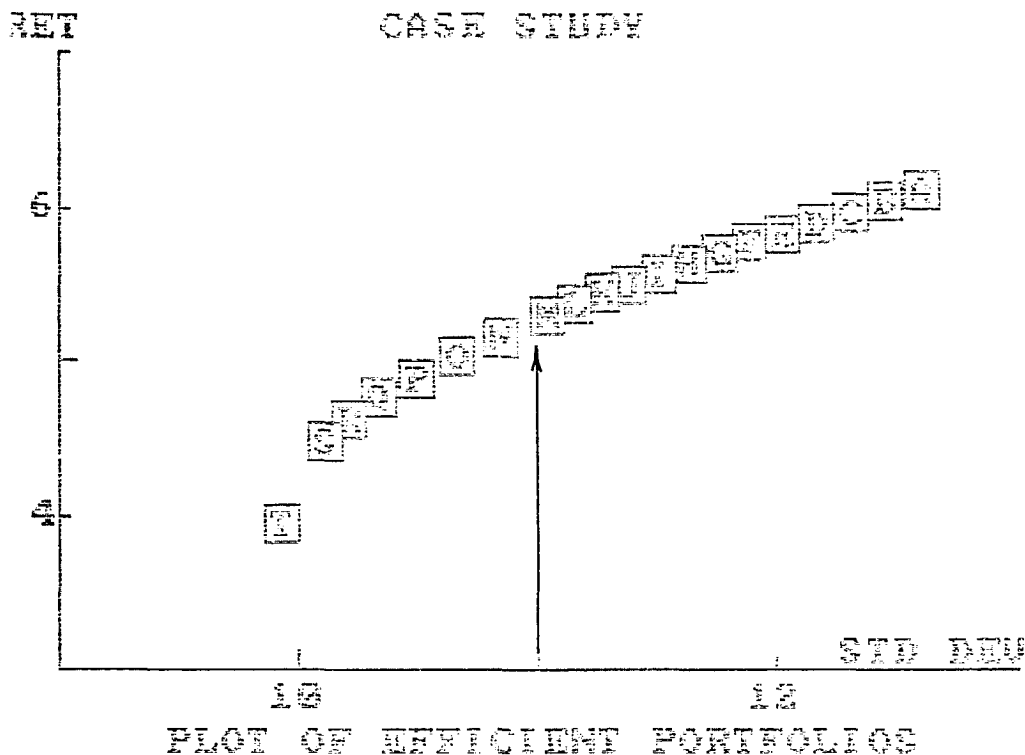


Figure I

Figure II

	INDEX	MANAGER "A"		MANAGER "B"	
	RETURN	% ALLOCATION	RETURN	% ALLOCATION	RETURN
STOCKS	24%	70	22%	50	25%
BONDS	2%	30	2	50	5
TOTAL			16.0		15.0

Figure III

ANNUALIZED RETURNS

1900 - 1983

		ANNUAL RETURN	STANDARD DEVIATION
STOCKS	S & P 500	8.6	19.7
BONDS	S&P HIGH GRADE CORPORATES	3.8	6.8
INFLATION	CPI INDEX	2.9	5.5

SOURCE: FRANK RUSSELL COMPANY

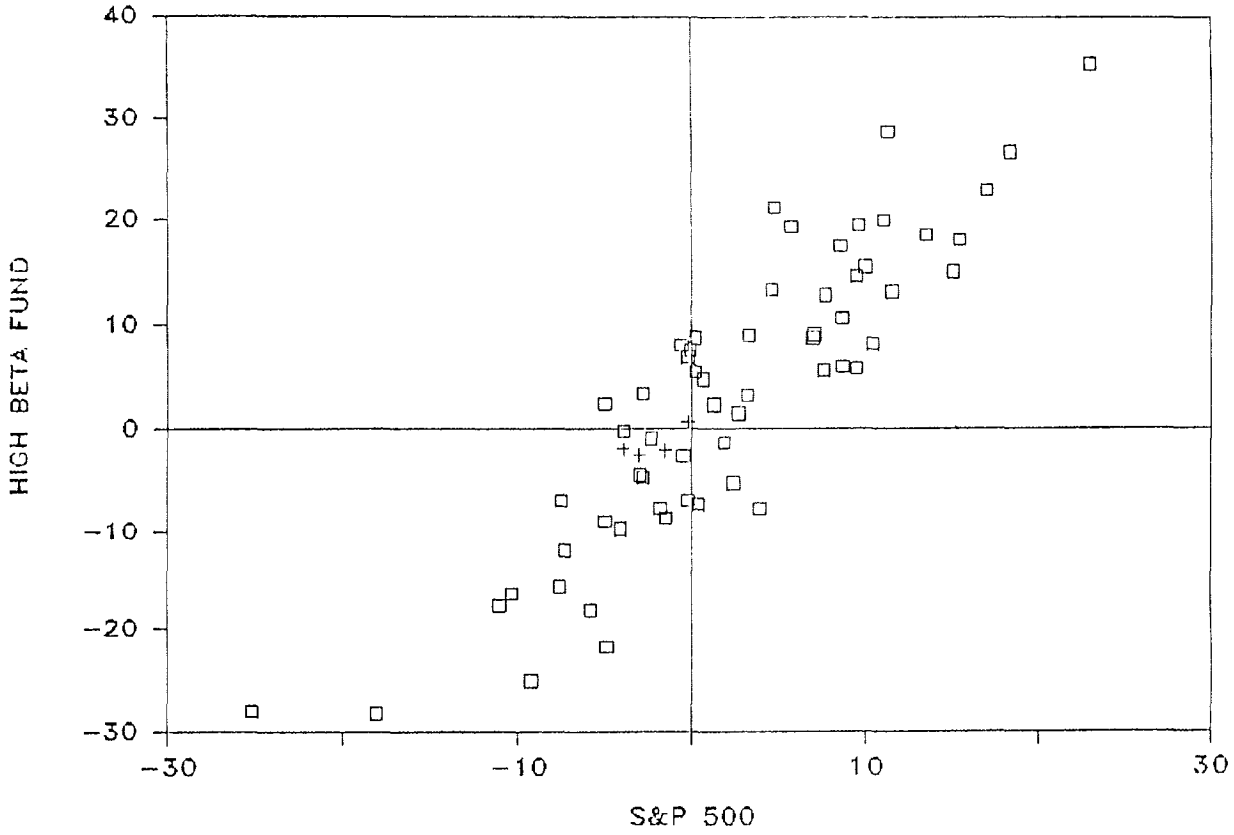


Figure IV

Figure V

SECTOR	S & P 5 0 0		F U N D	
	% ALLOCATION	RETURN	% ALLOCATION	RETURN
CYCLICAL	20	15%	10	14%
GROWTH	35	10%	70	13
ENERGY	20	25%	10	26
STABLE	25	20%	10	22
TOTAL	100	16.5	100	15.3

Figure VI

COMPARISON OF PERFORMANCE BY STYLE

5 YEARS ENDED 12/31/75

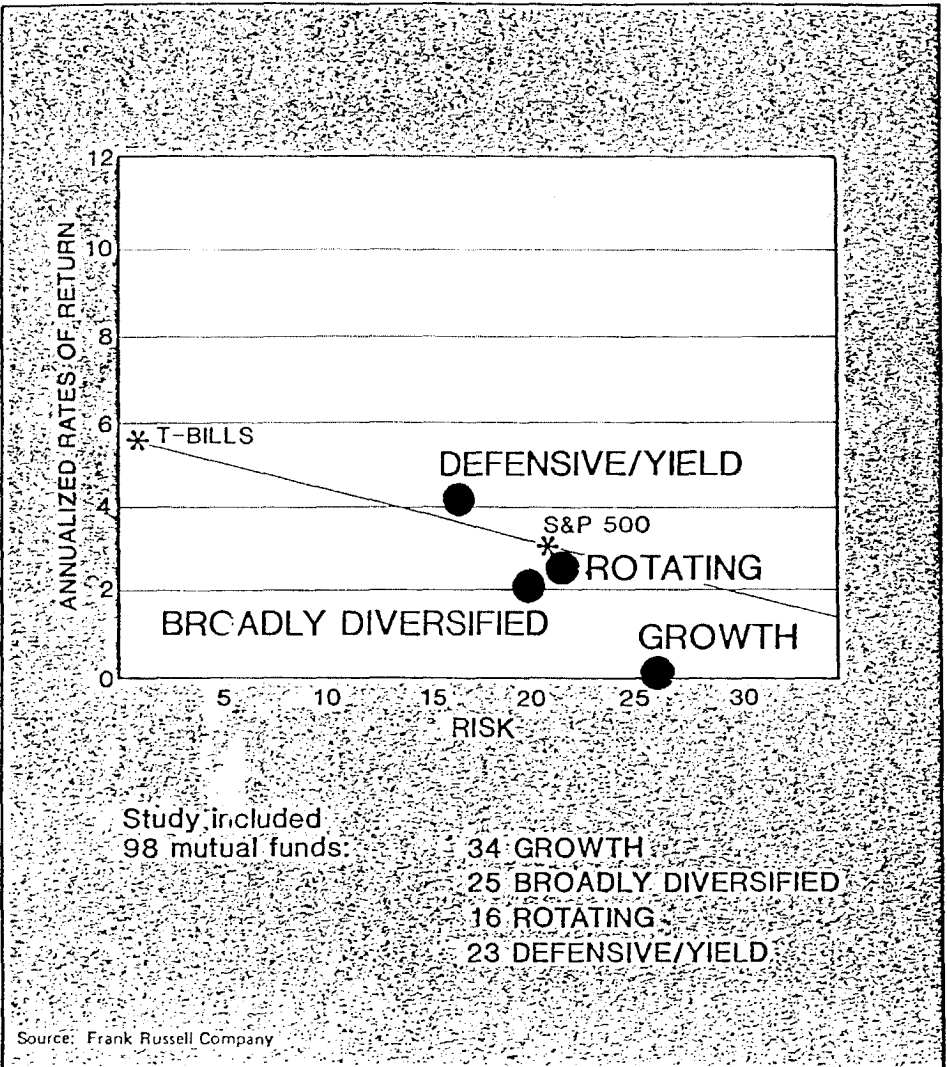


Figure VII

COMPARISON OF PERFORMANCE BY STYLE

5 YEARS ENDED 12/31/80

