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SETTING INVESTMENT POLICY FOR PENSION PLANS

Moderator: WILLIAM B. SOLOMON. Panelists: MARTIN L. LEIBOWITZ, ROSS N. STEEVES**,
ROBERT A. SWAN***. Recorder: MICHAEL J. MAXWELL*

MR. WILLIAM B. SOLOMON: Science can't tell us which way to go, but after the decision is made on other grounds it can tell us the best way to get there and so it is with pension funds. Sponsors of private pension plans are becoming increasingly cognizant of the importance of establishing objectives for their pension funds and then monitoring the performance of the fund on a periodic basis in terms of the objectives. For the fund manager this translates into assessing the goals and objectives of the plan sponsor and establishing from it an investment policy unique to that client. Typically, the investment policy will define risks for various components of the pension fund and for the fund as a whole. Our panel of experts today will view the challenge of setting an investment policy through different eyes. Representing the investment community, we have Martin Leibowitz of Salomon Brothers. Bob Swan of Timmins and Associates in Toronto will share with us his ideas as manager of pension fund assets. And to add a practical element to the proceedings, we have with us Ross Steeves of General Foods of Canada. I am sure you will find his comments on his actual experiences in the objective setting exercise as a plan sponsor to be both entertaining and informative. Finally, in the absence of an advertised panelist who was unavoidably absent, I will play the role of the token actuary on the panel and offer some comments on the subject.

Various techniques exist to measure risk and reduce the volatility of pension fund assets. It is the quantification of those techniques that leads a plan sponsor to establish an investment policy for a corporate pension plan. Perhaps the simplest example of this is the purchase at retirement of an annuity to provide benefits to a retiring member of a pension plan. Effectively, all risks related to the underlying assets have been eliminated. There was a price to pay for this security - namely the profit margin built into the annuity by the insurer as well as the lack of opportunity for future excess earnings gains. In the general form, such a technique is known as immunization and it may be applied to any liability class. Traditionally, the retired life liability has been used to demonstrate how this technique might be used successfully. However, its application is by no means restricted to this class of actuarial liability. The various applications of immunization techniques using fixed income securities will now be discussed in the remarks by Marty Leibowitz.

- * Mr. Leibowitz, not a member of the Society, is Managing Director of Salomon Brothers.
- ** Mr. Steeves, not a member of the Society, is Treasurer of General Foods - Canada.
- *** Mr. Swan, not a member of the Society, is a Vice President of Timmins and Associates.

MR. MARTIN L. LEIBOWITZ: I am going to talk about the role of fixed income in a policy sense in the funding of pension liabilities. I will focus, on that role particularly certain forms of immunization.

I think its important to start off by distinguishing that fixed income as an asset category can serve many different roles. In particular, these roles fall into two broad categories. A lot of confusion, argument, discussions, and misdirected actions take place because there is not a clear cut distinction between these two functions. A lot of the problem has to do with the thrust of modern academic theory in the investment area. If you go back far enough, one finds that the role of fixed income was to provide a flow of nominal dollar payouts in the future for an investment today--all specified, all deterministic. That was seen to be useful in terms of being applied to liabilities that more or less match those payouts. Therefore, you have a role for fixed income which, for a lack of a better term, we might call the "matched funding role." The fact that you can take a schedule of payouts and lay it down against some schedule of liabilities and partially fulfill that overall liability flow. Fixed income can do it almost by definition of fixed liabilities. Very few other types of asset classes can. Equity certainly can't do it except in very extreme cases. Most of what academics these days talk about in most of the models are based on a different type of approach - an approach which seems very rational, one which is hard to argue with, one which we all sort of have internalized and believe in, to a certain extent, as the basis of the risk return type of approach, of the types of required returns that one should expect from different types of asset classes both on historical and a logical basis. I call this projective funding, i.e. attempting to project the types of return you will get out of a particular type of asset class.

If T-bill rates are at 11%, then we should be able to get, by going into long term fixed income securities over the long term, a 2 or 3% liquidity premium. On top of that we should be able to extract, if we are going into taking some credit risk, another 1 to 1½% credit risk premium. Add 50 or 100 basis points for active management, and 300 or 400 basis points for equity risk and you build up to the expected return levels from the different asset categories. Then one can go through many, many complex processes of ascribing variance and co-variances among these different asset categories.

This approach is wonderful for developing asset allocation models, you can get beautiful results showing over long spans of time what the returns will be under various types of simulative conditions. And it is this type of analysis which leads you in the direction of the fairly traditional asset allocations that we have today. Basically, they lead you that way because, I think that, if one explored the nature of most pension funds and saw that the pension fund as a very long lived creature, in general, that equities will give you the best wealth ratios over the long term and if there ever was an instrument that was better suited for a vehicle, that was better suited for accepting interim variations in value, it is the pension fund. Therefore, most of the asset allocation models would have given you 100% equity allocations on this projective basis except that you have to say that that doesn't quite make too much sense. So you pull back and you say, "well let's talk in terms of the risk tolerance, the variation tolerance that the fund can accept over interim periods," and you get back into more reasonable types of 65-35, 70-30, 60-40 types of allocations which are very, very common place. I guess the only problem with this is that what you are doing

with fixed income securities is using them again in this projective sort of way. You're assuming that they will have a lower return but a much dampened variance, that they will give you better, smoother results in this kind of context. You are again lumping everything into a projective group. The only problem with a projective group, and I think that over long periods of time they have historical evidence to support this, is that it is a stochastic process we're talking about here. It is a highly modeled stochastic process. It is something that is not deterministic. It is not even conservatively deterministic. It is not something we can predict with any assurance where we will be at any given point in time. I don't mean to knock the projective funding process, I think we can't make any kind of balanced investment decisions without it. I think we all use it in some form, but I think that it is important to distinguish it from the matched funding use of fixed income. Once again, fixed income can be used in both a matched funding basis as well as a projective funding basis. Most of what I am going to talk about today deals with the matched funding purpose.

Earlier, I was talking with the other speakers about how the interest in matched funding (usually expressed as interest immunization), rises as interest rates rise. As we're nearing 14% on long term U.S. treasuries, it is interesting to see the interest in fixed income starting to get more and more intense in terms of potential reallocations and immunizations. From a projective funding basis, that doesn't make sense. After all, the building block, the laddering approach of the risk premium that we talked about when bill rates were at 8% should apply just as well, when rates are at 11% or 12% or 14%. The kinds of return that one should expect from equity in this environment should be even higher. Somehow it doesn't work that way and I think while it is hard to articulate why it doesn't, I think the answer lies in the difference between the projected funding and the matched funding. From a projective funding point of view nothing should have changed. The relative relationships basically should remain the same among asset classes but the appeal of and interest in matched funding clearly grows with higher interest rates. One way of distinguishing clearly between projective funding and matched funding is that projective funding focuses at the outset on short term total returns. Now, short term total returns and long term returns obviously relate to each other and are both important. In a projective environment, short term total return is the one thing you can hang on to. It is the one thing that you've got, it's real and you can measure it. It is hard to measure long term return in a projective sense. In a funding sense that is not the case. You can measure its long term deterministic return.

Now, what are you trying to do when you go for matched funding? You are trying to match off your asset goals with your liability goals, but what does that mean? What are you doing? Well, for openers, in a certain sense, it is the least risk portfolio. Not in the alpha/beta sense, nor in the variance or semivariance sense but in the sense of what came before the newer measures. You are minimizing the risk of nonfulfillment of your objectives. If that's not minimum risk, then what

is? This concept says that 1 year bills or 2 day bills are not the least risk income instrument. That's not a particularly unique thought these days. The second aspect is frankly the reason of why, at the outset in 1980 and 1981, there grew such enormous interest in this technique in the U.S. And that was because there was a gap between market rates that were available and actuarial rates that were in common use. That made it very irresistible for many corporations and many fund sponsors to try to find ways of capturing and marketing the investment realities that existed at that time. In the future I think that the actuarial process will follow a more market type of procedure which, speaking as a non actuary, seems kind of inevitable. What will be important will be to find a procedure which controls the risk of variation in the actuarial charges that are imposed upon the client. Matched funding in that kind of context will do that. There is whole panoply of matched funding techniques which is just starting to unfold.

INFORMAL MATURITY STRUCTURING

Going after long liabilities with long bonds is something people have been doing for years and years. That's hardly new. In some ways, weirdly enough, it's being rediscovered!

FORMALIZED BASELINE TARGET

This is the kind of concept which is a formalization of the above concept. The idea is to say that, "look, I am not going to try to exactly match my liabilities but what I do want to do is ask the following question. Aside from any market judgments that I, the fund sponsor, want to make or have the managers make on my behalf, aside from any judgment about where the market is going tomorrow, next month or maybe the next six months, what sort of portfolio would I put in place which would be the least risk portfolio serving my many types of purposes?" Only my base line. If I make any departures in my actual portfolio from that base line then they represent some sort of judgment on my part as to what I believe is the direction of the market, quality spread, etc. It can be useful for gauging deviations from a long term policy goal.

FORMALIZED MANAGEMENT PROCEDURES

Contractual arrangements with insurance companies, annuities are well known, well discussed.

DEDICATION

The technique which has had the most application during this period in terms of actual investments made has been dedication in the form of cash matching. In some ways it is the simplest form of what might broadly be called immunization. Basically, this is focused on the retired life component of pension funds for reasons that are fairly obvious. Take a schedule of liabilities in retired lives and discount it. Obviously you get different present values, for different discount rates. It used to be between 6 and 8% if that overall rate was applied to the retired lives portion, you would get present values in the area indicated. Now, let's see how we can take a particular bond flow which is coupon payments with a large principal redemption and crank it into something that looks like an exponential curve. In a more real sense, what you want to do is to take the full range and depth of

the full fixed income market, set up realistic investment criteria for the portfolio in terms of call protection, quality, equity, and so forth and then extract the least-cost best-suited portfolio that will fit these goals. You can require that there be an exact match, that the dollars come in in the morning of the afternoon you have to pay them out. That turns out to be an enormously expensive way of doing things and it far better to try to go and assume some reinvestment rate even a low reinvestment rate and then have anticipatory flows so that you have the money in hand. You always have a balance in the bank to pay out the liabilities. If you do that, basically what you've done, is taken a portfolio constructed at market rates which is in the 14 to 16% range and you have used it to offset liabilities that are on the books discounted at a lower interest rate. So there is significant savings. And this savings in an actuarial sense is in terms of reduction of unfunded liability. I hesitate to talk this way because I am talking to actuaries who know that unfunded liabilities and the types of considerations which I am so blindly and ignorantly talking about is a blend of many, many subtleties and many, many deeper considerations that go into this equation. But, the only way that I can finish up in time is to be simplistic.

You can get a savings in the sense of having replaced unfunded liabilities on the books say of \$245 million as an example with asset that cost you \$160 million. One can make various types of choices about the reinvestment rate assumed on those that occurred prior to the expenditure. You can make various assumptions about the various constraints and the quality involved. All of these have to be essentially market judgments but they surely should be conservative because one is putting into effect a portfolio which, while it will probably not be preserved throughout the entire payout period for several reasons, it should be able to function as if it were not touched throughout the payout period.

There are a lot of reasons why this became interesting and important in the course of 1980 and 1981, and we touched on many of them. A lot of them have to do with the character of the pension plans themselves, the growth of pension burden on expenses and cash, the growth of the retired lives in many companies in terms of the magnitude of their overall liabilities, the apparent easing of the inflation threat back in that span of time. Least but last is the high level rates available at that time. One of the reasons why these portfolios do not stay intact is because it was an enormous incentive to have them professionally and actively managed. While you are obviously managing within a very constrained criteria in some ways that is almost an advantage. If you can replace a portfolio that was put in place six months ago, with a certain amount of transactions into a new portfolio, which cost 1/2% or 1% less yet meets those same criteria, you've done a very clear cut valuable act of management if it fits all the dimensions. In fact, the experience in 1980 and 1981 was anyways serendipitous because it came at a time when there was a lot of yield curve thrashing around and introduction of new types of securities and many of the take outs that were subsequently realized were in the 2 or even 3% area. Certainly unsustainable, but in any case active management I think of this type is something which is here to stay.

Let's just talk briefly about some of the techniques. We focused on dedication or cash matching. The immunization technique introduced by Reddington in the UK in 1952, is a way of doing present value matching, if you will, and there is a lot more that can be said about that, where you matched interest rate sensitivity of the assets to the interest rate of the liability.

ties. That aggregate type of approach which is not pinned to the actual nitty gritty of actual cash flow if it works on overall portfolio values, has actually been used relatively little in the U.S. over the past four years. Most of the portfolio dedications have been done through cash matching in some form. It's interesting to raise questions as to why that is the case, but that would take a longer talk. Basically I think it is the appeal of the simplicity of cash matching, i.e. it is easily explained to Boards, that it is not vulnerable to various types of assumption breaking real events such as yield curve movements. Various techniques have been used to improve the robustness of immunization including some which try to mix and match it with some of the cash matching techniques. Integrate a portfolio but cash match in a conservative way the first three or five years with an overall duration matching immunization type of approach. It turns out to have various advantages. Another whole class of matched funding class of techniques is use of contingent procedures. Contingent immunization, contingent dedication, there are lot's of them. The key idea here is if you can get a 15% rate in the market place, why not settle for a 14% rate and use that 1% cushion or 5% or 6% of extra market value in the portfolio, extra market value to manage it for hopefully much higher returns, to insert some degree of active management in the portfolio, to provide some chance of something better than a lockup and basically by developing control techniques which depend upon the fact that the present value of your liabilities to a certain extent is deterministically correlated with the movement of the assets. It gives you a fairly long range, even involves the markets so you can get a fair amount of active management introduced for what is apparently a small cost. There are a lot of things that can be done. Basically, the key message I want to leave you with is the difference between matched funding and the unique role of fixed income matched funding and projected funding.

MR. SOLOMON: Thank you very much for those informative comments. The task of implementing investment policy falls on the shoulder of the fund manager and whether or not he likes it he will be subjected to careful scrutiny by the plans sponsor on a periodic basis. Perhaps some lessons were learned during the 1970's by plans sponsors not the least of which involve the cult of performance measurement and the difficulties that could be encountered by worshipping this God. Bob Swan has had considerable experience in the managing of pension fund assets and the implementation of pension plan sponsors investment policies. His remarks today will tell us how to take that giant step from objectives to the actual implementation of an investment policy.

MR. ROBERT A. SWAN: I'll leave it to you to decide whether or not this turns out to be a giant step. What I have first of all to confess to you is that the title is really a lie. It's a lie because it suggests that there is some kind of truth. As I have gone through my experiences over the last 15 years of trying to deal with sponsors and agree with them on what are appropriate objective and then implement the policies that flow from them, one of the things that have become clear is that there is no such thing as truth. So I would have, 15 years ago, probably written a title like this and had the word "The" written in front of it and been serious about it. What I hope to do here is to look at the general question of establishing objectives from your point of view, from the point of view of-how do you as actuaries interrelate with clients and investment managers to try and establish a dialogue that comes forward with the kind of statements of policies that make sense to you and are understandable and operational from a managers' points of view and accomplish your clients' objectives. I'm going to

suggest a plan that we think works for us in terms of working on this problem. It really becomes a Socratic kind of process where we ask questions and there are no answers to a lot of the questions but in the process of asking the questions we actually learn a lot. I guess parenthetically out of this might come some indications of what kind of procedures we as investment managers might feel are appropriate in the actual selection of investment managers. I guess by the time I'm finished probably what you will conclude is that everything that we are talking about in regard to investment planning or the future is really a statement of judgments that we have to make - that all three parties in this process have to make. It's necessarily judgmental and the implication of that is that we really have to try and keep it simple. The way that we have approached this is that there are four parts to the investment plan - objectives, policy, strategy and performance assessment. We like to separate it out this way because we think there is a great deal of clarity that comes from these four elements. Everybody in this entire process has a very different definition of what these different words mean so I am going to try to establish what I mean. Objectives - I think are pretty clear. That's what the plan sponsor wants to accomplish at the end of the road and Ross Steeves will probably deal with that a little bit more. I think the key element in this definitional process is the idea of a policy implying a very crucial step in this discussion process. That's the step that sets out an investment policy which is the bet judgment that we can collectively come to that sets out a neutral position which we believe will accomplish the clients' objectives. You'll see in a minute what I mean by that. The strategy is the strategy of the investment manager. This is how he is going to do his job. This is a clear definition of his role. And the fourth part of any plan has to be an organized and previously agreed upon set of performance standards.

What going through this process of dialogue with our mutual clients does is very clearly the attention on the implications of each one of these judgments that we have to make. This clarifies the roles expected to be played by the different players and hopefully it avoids the greatest sin that is almost always committed in investment objectives - that of motherhood. But let me be a little more specific about this. We find that we can classify our clients objectives into three broad categories. We often have a great deal of difficulty in getting them to make a clear cut choice. The basis of the choice is often very much related to individuals rather than more concrete factors. The three categories of objectives are nominal rate of return, real rate of return, and relative performance. In most cases our clients who adopt a nominal rate of return objective are clients who either are insurance companies or have insurance kind of backgrounds. This I contrast very much with the real return objectives which we will get to and that of course is the "to beat inflation" objective. The third category of objectives is a relative performance objective. Most plan sponsors want to beat the other guy. And that's often what it comes down to. The whole focus of my discussion is going to be on the appropriate policies that would be adopted given the assumption that the plan sponsor can identify one of these three classes of objective.

Mr. Liebowitz dealt at great length with the way we would approach answering the investment policy question for someone who had nominal rate of return objectives. If someone says, "I have these defined liabilities, they are fixed and not related to rate of inflation and a 14% return is going to meet those objectives", then immunization techniques are absolutely marvelous for this and so if a client says nominal, we say immunization. If a client says

"I'm only concerned about beating the other guy", this horrible relative performance game, then the policy we would suggest to him is very simple. We would suggest he match his asset mix to the average fund and track it each quarter. If every once in awhile as we're tracking the investment markets we develop a conviction that there's a valley of an opportunity then we'll move a little bit away from this neutral - follow the median fund-approach and that overtime, if we're good investment managers, should accomplish that objective of beating the other guy. I'm sure this audience will agree with me that that's not really the way pension funds should be operated so I'm going to concentrate on the real objective.

I've chosen a set of sample numbers. Because we have to live in the real world the objectives of this client, and I suspect most clients who listen to your advice, would be to maximize the real return on the fund, subject to a risk constraint. I've chosen, for example, real returns on the five year basis, exceeding 2%, 75% of the time. That sounds somewhat complicated but the reason we set it up that way is obviously five years is long enough to get away from the very short term kind of radical swings that we're getting both in inflation rates and in interest rates and stock prices. Two percent, I think, is a level that most actuaries would agree would successfully fund the liabilities in a plan and perhaps provide a buffer for future plan improvement. Seventy five percent of the time, simply to recognize that there are always going to be times when real returns are not available, almost no matter what you do. So this is the first part of the exercise I'm proposing to you. What I'm doing is proposing this in the context of the entire plan. What policy should we adopt assuming we adopt this objective? Well, let's start off by looking at history.

AVERAGE RETURNS OF DIFFERENT INVESTMENTS (1926-83)

	<u>Average Return</u>	<u>Real Return</u>
Equities	11.8%	8.2%
Bonds	4.6	1.0
Money Market	3.3	-0.3

These asset class results are widely known. In order to meet the objective it's very clear that we should have as much as we can in stocks. We got an 8% return after inflation. Unfortunately, during the 48 year period here, there were a number of periods when the real return over a five year period was below 2%. What we have to do in developing an investment policy is to add in enough other assets to balance that off. The logic of the numbers that I actually choose in my example, leads to an asset mix with 75% equities, 15% bonds and 10% in the money market. I choose the "75% of the time" because it actually worked out that in 19 of those observed periods, the return was actually below 2% but the real return over that period with this neutral policy was 6% so that the plan objectives were well met. There are two more parts to the plan both of which necessarily involve judgments. The first really defines the role of the investment manager. It is our job to manage the assets in an investment strategy designed to do better than that neutral policy. We can do that by adjusting the asset mix-being more heavily in stocks or less heavily in stocks at the right time. We can do that by security selection. This is what I was implying when I suggested that

possibly in this framework you might find something that might help you in organizing an investment management selection process, because if you've gone through the first two steps of defining the objectives, and a neutral policy that given your best judgment will accomplish those objectives, then the selection process becomes choosing the people that you believe can do better than that. Now we come to the questions of specialized managers or what you think your manager is good at. If you have a manager who is good at asset mixed management or market timing, then you give him a big range of discretion. Do you have someone who is a good security selection? So you can see how once you have adopted a policy and have some concept of how an investment manager actually functions, you can choose the investment manager that will be more likely than not to accomplish your objective through this idea of strategy.

The fourth element that must always be combined into this is performance assessment. The benefit of going through this four step process is that you have the neutral policy whose performance you can track and what that does for you is divides up the round numbers that the performance measurement services will give you into two categories. What the policy return was and how your manager did in relation to that policy so that you can ask that important question "how are we doing?" because in the end the reason for performance measurement is to improve the way you manage the money. I think it's very important to be absolutely clear up front about the policy, the job the manager is trying to do, and make it as unambiguous as possible. This whole process including that extra step of defining policy, is one that we think is really meaningful.

Now I've glanced very quickly over this general topic of what is an appropriate policy. One approach of course is to rely on historical data and say that the future is going to be like the past. But when you look at the last 60 years, we've had a pretty good range of economics in there. We've had a depression. We've had something bordering on hyperinflation. We've had wars. We've had all manner of activities so that should be a pretty good sample. I think there's a couple of important differences that we take into account when we're trying to help our clients make these judgments. So what I'm going to suggest to you now is that there are three houri myths out there in investment land that may not come true over the next five years.

The first houri myth is that equities represent an inflation hedge. What I did was simply regress the return on equities against consumer prices and it came as a bit of a surprise to me that there was no strength to the relationship. I did it firstly annually over the 58 year period, expecting to find some explanatory power in the inflation. That didn't come out. I said, "well then annual data is too volatile", so I tried other things and essentially the answer keeps coming back that there's no relation between inflation and the rate return on equities. The reason for that, when you think about it, is reasonably clear. The return on equity within the corporation rises with inflation but price earnings ratios go down. I thought then I'd have a look at the shorter period and look at the most recent inflation period because I was sure I'd find some positive correlation - but no. I just wanted to bring this to your attention because when we think about trying to devise the kind of policy that is going to meet that 2% real return objective, equities aren't necessarily the inflation hedge that most people suggest they are. I don't want to make too strong a statement on that, but I do want to cause you to think about that a bit.

The second hour myth that is becoming even more popular every day or every morning as Marty suggests, is that bonds are really appropriate investments perhaps one year in five. You saw the previous historical data - they've given a real return of about 1% over a long period of time. They've become enormously volatile now and they're really pretty unsatisfactory investments. But one of the things that's most important at this point in time is it's important to look at the mathematics underlying bonds currently, with current coupon levels.

RETURN MATHEMATICS FOR FIVE YEARS BONDS

Interest Rate	<u>5%</u>	<u>14%</u>
Reinvestment Component	2.67	22.54
Coupons	25.00	70.00
Par Value	100.00	100.00

This chart is just a very naive kind of model. It says you invest \$100 today and five years later you get back \$100 from your bond. I'm just comparing here the total dollars that come back to you when interest rates are 5% as they were over the 60 year period we were looking at and when they're 14% as they are currently. Obviously there is a great deal more coupon income and there is also a very strong reinvestment rate effect as you're well aware, that over five years with rates at 14% would add another \$22. The implication of this when you take these mathematics and apply them to, say the average bond portfolio that might have a term of maturity of 8 to 10 years with a duration of five, without going into all the sophistication of having an effective immunization policy as Marty would suggest but just taking a look at that bond portfolio over the next five years, the return on that portfolio where the rates go up or down is going to be pretty close to 14%. If rates go up you get a higher reinvestment rate effect. If rates go down, you'll get a lower reinvestment rate but more capital so one of the things we can say about the next five years is that the return on most bond portfolios is going to be pretty close to 14%.

The third hour wisdom is that cash gives a zero return. This has been pretty much disproved over the last ten years but looking at the long term, the 60 year period, the return on the money market was essentially zero after inflation.

T BILL RETURN
Regression Analysis

	<u>Slope</u>	<u>Interest</u>	<u>R Square</u>
1926 - 83	(0.1)	11.8	0.25
1960 - 83	(0.4)	13.8	0.56

Over the period this asset class had the strongest correlation with inflation. Over the past 23 years there was a 56% R-square in looking at the relationship between return on money market investments and consumer prices. One of the adjustments we would suggest making to the longer term future view, is that inflation is going to be a problem that is going to be facing the policymakers for the foreseeable future and we think the implication of that is that short term interest rates are going to stay above inflation. This is one of the elements where you have to do a little bit of ongoing investment analysis but probably the most realistic way of making sure that that kind of a forecast is on track, is to once a month read the minutes of

the Federal Reserve Open Market Committee meeting. They tell you whether or not inflation is one of the things they're concerned about. As long as it is you can be reasonably comfortable in believing that the return on short term investments is going to be above the rate of inflation.

What does all this mean when we put it together? What I'm going to do now is to use these projected returns in a model looking at a couple of different alternative portfolio policies and I'm going to set up three economic scenarios with the basis of inflation. You will recall what I said first of all about equities was that equities cannot be viewed as an inflation hedge. I will say very naively the most likely return on equities during the next five years is going to be the same as it was over the last 58. The return on bonds very clearly is going to be something near 14% and the standard deviation might be 1% of so around that. I think we can reasonably assume the money market is going to give you a real return of say 3%.

What kind of policy comes out of this? Well, unfortunately, there's no way of solving this problem without making a judgment on the rate of inflation. Clearly if inflation is going to be above 11%, money market is the place to be. If inflation is going to be below 11%, the bond market is the place to be. So you can see that it's impossible without making judgments to develop a policy. When we're looking back we know what inflation was and it's easy to figure out what the neutral policy should have been. But looking forward it's not quite as nice and neat. You can see what one of the things that we're doing here is moving forward in the dialogue. When we're in a client session, the client says, "11.8% on equities is ridiculous! You can't possibly have that as a forecast. I mean look you've got 14% on essentially a riskless asset." Theory says you have to have a higher return on a more risky asset so you have to have equities returning at least 17% and you can see how the dialogue will start to build.

A plan sponsor would very likely say, "I don't know what inflation is going to be so I want to have a large lock-in, a solid base of inflation protection." That 14% is pretty nice. It's been very rare in the past but equities have over a five year period returned 14% so I'd like to have some of that. So what I did then was construct a portfolio policy which on the basis of some of these thoughts might accomplish the objectives of a 2% real return. So let's put together a policy of 50% money market, 25% stocks and 25% bonds. Then I said I was going to try and test what would happen under a number of different inflation forecasts because that's what we're keying in on at these real returns.

ANTICIPATED RETURNS (1984 - 89)

Equities	11.8%
Bonds	14.0
Money Market	3.0 Real

PORTFOLIO OF 50% MONEY MARKET; 25% EQUITIES; 25% BONDS

Inflation Rate	<u>5%</u>	<u>10%</u>	<u>15%</u>
Projected Return	10.5%	13.0%	15.5%
Real Return	5.5	3.0	0.5
Probability That Real Return Exceeds 2%	85.0	65.0	30.0

Based on those anticipated returns, we have projected returns for this portfolio mix, if inflation is 5%, of 10-1/2%. A real return of 5-1/2% which is pretty good, close to the 6% that we got over the 60 year period on the previous policy. When you make some assumptions about standard deviation correlation between the asset classes you can estimate that that policy has an 85% chance of accomplishing the 2% objective. With inflation at 10%, the portfolio has a projected return of 13% (3% real return) and has a 65% chance of beating inflation by 2%. Not quite the 75% we were hoping for, but not too bad. If inflation is 15%, this portfolio projects 15.5% return, a real return of only .5% and that's below what we're hoping for. And here is certainly a place where we can get into a meaningful dialogue. My understanding of the actuarial numbers, is that the higher the actual inflation rate, the less premium that you need between wage costs and the return on the portfolio. So, here we can get into the discussion of what is the most interesting kind of mix of portfolio policies. That portfolio projects a 30% probability of making the 2% real return.

One of the things that comes out of a discussion like this is that a plan sponsor will start to discuss his underlying fears. What he will really be talking about and one of the judgments that you'll have to make is, what kind of probabilities do you assign to each one of these three scenarios? Plan sponsors have to make these kind of judgments. Whether they make them implicitly or explicitly, you will start to ferret them out as we go through this kind of discussion process. As they object to these kind of numbers, you get that discussion process going that's just so important. Let's go on and compare how this set of anticipated returns would react in the previous portfolio policy we looked at.

We take 75% stocks, bonds at 15% and money at 10%. If inflation is at 5%, the real returns on this portfolio are better, in fact quite a bit better, 6.9%. Unfortunately with the volatility of return on this portfolio, the probability of achieving 2% has fallen to 65%. In the high inflation scenario, at 15%, the real return looks to be substantially negative.

PORTFOLIO OF 75% EQUITIES; 15% BONDS; 10% MONEY MARKET:

Inflation Rate	5.0%	10.0%	15.0%
Projected Return	11.9	12.4	12.9
Real Return	6.9	2.4	(2.1)
Probability that Real Return exceeds 2%	65.0	55.0	30.0

This is very simply a comparison of the probabilities of accomplishing that 2% under two different policies. What it shows very clearly is, in order to accomplish that 2% real return objective, you have to adopt that second policy. And now this is where your dialogue really becomes serious, because all of a sudden your plan sponsor starts to see that he's really been forced into a corner. If he accepts the logic of the entire process, he has to say, "yes, I want a policy with 50% money market." I think for most people, that would be kind of a gut-wrenching decision, because it's so far different from the average fund and you're always going to get people who say, well, what happens if stocks return 20%? Well this portfolio policy is going to be really zinged and when you talk about the guy next door, you're going to be in bad shape. But what this does is highlight these issues for you, brings them out, focuses your attention on them and puts them in a way that you can have a meaningful dialogue. I think where we end up is that we

realize that there is a set of necessary judgments that must be made and we come down to a statement that really does avoid motherhood to a considerable extent.

To summarize, we've set up a situation where the client really has to make a choice among his three alternatives of objectives. He can't have a real return objective and a relative return objective at the same time because when you go through this process it becomes very clear in the performance assessment section, that if you've set up a real return objective and a relative return performance assessment, that you have gotten inconsistency. Everyone recognizes that and highlights it. So what you accomplish is, first of all, a choice or more likely, I have to admit, a prioritization of objectives where a client will say, "yes, real returns are number one, but don't forget the relatives". That's a difficult situation to deal with, but that's where they typically end up. If you are successful in developing this kind of a plan, one of the implications is that you can work towards a longer term investment horizon, which has very important implications for the way you manage the money. I think it has implications for the financial health of the country, because it's clear that when such a massive pool of money as pension funds is invested on a short term - beat the next guy over the next three months - kind of a view, that it really is more disruptive of the capital markets than productive. I guess I probably have to just end up with a recommendation that this plan has worked for us, not in all instances, but successfully. I have to caution you that when you go to do it, it's necessarily judgmental and there just are no answers to some of these judgments that you have to make. In order to get your clients to come into this process willingly, it has to be simple. Not to suggest clients are not able to understand the sophisticated parts of it, but when you're trying to encompass such a large amount into a small package and you're dealing in future unknowns, simplicity is a virtue. You have to write it down. We find it very useful to review every quarter with our clients - very quickly, because we know for sure that no matter how much we go back at this and go back at it, someone is always going to say, how did the next guy do?

MR. ROSS N. STEEVES: While preparing to speak to you today, I had several mixed emotions. On the one hand what could I possibly say that will be of interest to you - given that you are so knowledgeable about the subject of pensions. On the other hand, I must live with the results of the decisions made regarding the pension fund. As such, I have some practical experience, which most of you have not enjoyed. Therefore, my comments today will be directed toward the practical side of managing the pension plan and our methods at General Foods - Canada. Before beginning, I would like to state clearly that the opinions expressed today are personal and not necessarily shared by my employer. In addition my responsibility relates to General Foods - Canada and as such does not necessarily represent the experiences, concerns or beliefs of other General Foods locations.

Today's topic, Setting Investment Policies for Pension Funds, is in some ways rather inappropriate. There is an implication that investment management and pension fund management are the same thing. They are not. Unfortunately, my experience is that most sponsors act as if they are the same thing, paying little or no attention to the various elements of pension fund management, other than investments, which should also be considered in order to properly manage the total plan. Today I will provide you with an overview of the management process I believe should be utilized with the pension fund and discuss briefly some of the specifics at General Foods - Canada.

Then I will look at the process we have used to develop specific policies and objectives for our assets and review some of our actual results. Finally, I will review some of the practical considerations we have encountered and suggest some ways the actuarial profession might help sponsors meet their responsibility of properly managing the pension plan.

Turning then to the process of managing the pension plan, the key steps that should be taken are similar to the steps that are used in managing the organization. Namely, first - setting fund objectives, second - developing fund policy, third - setting policy and objectives for each component, fourth - implementation, fifth - monitoring results and sixth - taking corrective action when and if necessary.

Looking at these steps briefly, setting fund objectives should not be interpreted as setting investment objectives. They are not the same thing. Rather, fund objectives are similar to an organization's objectives and must be established to insure the effort spent on the pension fund is directed appropriately. In order to establish appropriate fund objectives, various factors must be considered. These factors should include the sponsor's business objectives, financial health and risk tolerance, and the sponsor's philosophy regarding its responsibility to employees and pensioners, in addition to items such as the type of plan, its financial health, etc. At General Foods we have established fund objectives summarized as first - within any reasonable forecast of the future, to have adequate funds available to meet the plan's current obligations to its beneficiaries; second - to develop or to invest the funds in a professional manner so that future liabilities can be met and third - keep company contributions at a level which contributes to company cost-competitiveness while benefits remain competitive within the community. Although these objectives are relatively broad in general, they create a focus towards which all our fund management effort is applied.

Having established fund objectives, the next step is to develop some policy. This policy broadly outlines how fund objectives will be achieved and the range of acceptable action. My experience has been that once the fund objectives have been established, this broad fund policy is relatively easy to establish. At GF-Canada, our fund policy could be summarized as first - some assets will be placed in high quality, liquid securities, to insure that cash requirements can be met during periods of economic adversity. Second - the funds assets will be reasonably balanced between various acceptable investment vehicles. Third - investment managers will have the discretion to select investment vehicles within prescribed types and be measured against pre-agreed investment objectives and fourth - the investment approach will be directed to the long term, but not ignore the short term. Once fund objectives and policy have been established, the next step is to establish appropriate policies and/or objectives for the various elements that in total add up to pension fund management. Key components, I believe, are investment management, actuarial or funding management and benefit level management.

Looking at these elements in reverse order, GF has established objectives regarding the level of pension benefits that is appropriate as part of our total compensation package and these objectives are consistent with our fund objectives. More appropriate for our discussion today, the company has also set actuarial or funding objectives. These could be summarized as first - annual costs should be reasonably stable as a percentage of pay from year to

year. Second - funding should be a level that maintains the long term financial integrity of the plan. Third - funding should adjust as necessary to keep the level realistic and fourth - there should be a fair sharing of costs between today's and tomorrow's management. On the investment side, a detailed investment policy has been established which is consistent with the basic fund objectives. A key element in establishing this policy is the development of possible future economic scenarios and how these scenarios impact on investment results, liability growth and most important of all, the company's costs and the plans funded ratios. In our case, we concentrate on a five year horizon, but also check against a ten year horizon. By using this method, we are able to understand the risk/reward relationship of various investment structures and approaches within various actuarial approaches. The end result is the ability to set investment strategy and objectives in a manner that is consistent with the plans objectives and hence afford us the sponsor's business objectives. Does this approach really work? I believe so. We started it about seven years ago and you might be interested in some of our results.

At that time, following an examination of the risks and rewards under different economic scenarios, an investment policy and strategy was approved and implemented. Five years later, our actual investment results were in. And our funds earning rate proved to be .5% less than forecast. More importantly, however, our company's costs as a percent of payroll had also been forecast and the actual number after five years came in at 0.3% over the forecast. Four years ago, following a re-examination of our investment policies and strategy, using the same approach, we again made a five year forecast. Today, our results are running favorable by about .5% on the investment forecast and costs, as a percent of payroll, are currently about 1% favorable to a forecast. To date, GF is pleased with the results obtained by using this approach to setting investment policies and strategy. But I should emphasize that it does not involve setting a policy and strategy and then waiting five years to see what happens. Rather, the process is like the company's approach to strategic planning. We regularly review our strategy, monitor our results and take new action as deemed appropriate. However, in re-examining our policy and strategy, our focus is on the five and ten year period rather than on the next quarter or the next year. I should also mention that as a result of using this technique as a key input in setting investment strategies, it was concluded some time ago that investment risk per se is relatively unimportant to us. Rather, the important risk item is a level set of contributions as a percent of payroll. In addition, this technique has allowed us to better understand the impacts of possible future scenarios. As a result, we are today more aggressive investors than was previously the case. In other words, prior to asset/liability modeling, there was a tendency to be more conservative than necessary because of our lack of understanding of the risk rewards involved. Although I've talked about these three components, i.e. investment management, actuarial management and benefit level management separately, they are in fact inter-connected. To properly manage the pension fund, each of these components must be consistent with each other and with the fund objectives.

The final steps I mentioned that are necessary to properly manage the pension fund are implementation, monitoring the results and taking corrective action when and if necessary. Since these steps are reasonably self-explanatory, I won't expand on them today. Finally, I promised to talk about some of the practical considerations we have had to deal with and suggest how the actuarial profession might help sponsors meet their responsibilities. Some

thoughts are - it is natural for most sponsors to concentrate on the investment aspects of pension fund management. After all, results are easily measured, the board of directors require regular reports on results and relative measurement firms regularly let you know if you are winning or losing the battle to be above median. I believe this approach is a loser's game. After all what is wrong with being the low median? If your results are supporting your fund's objectives, and meeting the sponsor's requirements. On the other hand, what is good about being above median, if your results are not supporting your fund's objectives, hence, not supportive of the sponsor's requirements. I believe actuaries could do more to help and encourage sponsors to recognize the difference between pension management and investment management. I encourage you to fully utilize the opportunity.

Second - most sponsors, I believe do not understand the actuarial process and the degree of flexibility available to them regarding actuarial methods and assumptions. As a result, it can be difficult for a sponsor to really merge their actuarial approach with the investment approach so that both assets and liabilities are managed in an appropriate manner, working together in support of the fund's objectives. Since as a group you are known for your communication skills, use those skills and talk to us in a language we can understand. Try to be more of a consultant than an actuary, working with your clients to increase their understanding of the flexibility available to them and the implications of different funding approaches and assumptions.

Third - seven years ago when we decided to try our skills at forecasting, the models available in the marketplace were sophisticated, complex and highly accurate. Every possible variable was built into the models and as a result we would know to the last dollar all details of our fund for the next 25 years. As a result of all this accuracy and detail, we could not afford the models available and even if we could, probably would not have understood them. We certainly would not have believed them. Therefore, our asset liability model was developed internally with a pencil, paper and calculator. Although today a computer is used, we still assume most of the variables away, concentrating on the key items of wage increases, benefit changes, and investment returns. The cost of our model was a fraction of the ones we could purchase and because it only deals with a few key variables, it has the advantage of being understood. Today, although available models have improved, my perception of them is that the shortcomings of seven years ago, continues very much in evidence. When working with sponsors, I would encourage you not to create, for want of a better term, information overload. Concentrate on the important items, so the sponsors understand how their objectives might be impacted as changes occur. Forget about the relatively insignificant items.

Fourth - in managing their investments, most sponsors have modernized their methods and approaches over the years. As a result, we have seen this side of pension management change from the annual purchase of a deferred annuity to trustee plans. And investments from bonds only into equities, real estate, international, venture capital, etc. What has changed on the actuarial side over this period? From my perception, very little. Granted, efficiencies such as computers have come along, but practices such as assuming investment results will be 6.5% forever, appear questionable, given the constantly changing financial market environment we have experienced during the past several years. There appears to be an opportunity for some new

approaches. Maybe an effort to use realistic assumptions should be introduced into the actuarial process. If insurance companies in the pricing of an annuity, can use 2 or 3 different earning assumptions over the expected term, is such an approach inappropriate in pricing the pension plan? Are there other techniques which could make a pricing of the pension plan more realistic? To be competitive in the future, companies must be innovative in their approaches and processes. I suspect the same is true about the actuarial process. Innovative techniques that lead to better fund management would be of value to the sponsor.

In summary, I believe it is important to manage both the asset and liability side of a pension fund, developing policies and objectives for each that are consistent with each other and with the total fund objectives. Within this approach, I believe actuaries can have an important role. To realize that role, they must work with the sponsor to understand the sponsor's needs, concerns and objectives and make sure that his sponsor understands the key alternatives available and the potential implications of those alternatives. Your profession should encourage the sponsor to develop appropriate policies and objectives and be innovative with the actuarial process to better support the objective of effectively and efficiently managing the pension fund.

Finally, in Canada and the U.S., certain trends are very much in evidence. These trends include government regulation of the level of benefits, funding standards to insure promised benefits will be delivered, an aging population and a rapidly growing pool of capital and pension funds. Given these trends, the importance of good pension fund management will continue to grow to meet our responsibilities to sponsors, beneficiaries and society will require the expertise of all the professionals involved in the industry.

I'll restrict my comments to some material on actual implementation of asset liability modeling in the U.S. on the basis of a survey conducted by Meidinger in 1983 to determine to what extent U.S. Corporate pension plan sponsors were actually implementing some asset liability matching techniques. There is a lack of perceived linkage between the funding of pension plans and the investment of those assets. This was the same for both large and small plans. The formal procedures are strongly biased towards the asset side of the actuarial balance sheet. Of those who were actually involved in this, 75% of plan sponsors claimed that actuarial assumptions and method changes had no effect on the investment program. The largest portion, had no such plan for the liabilities while many plans did have a structure for the asset side. So there seems to be a concentration of effort involved on the asset side of the pension plan without coordination with the liability side. This seems to be true regardless of the size of the pension plan.

Finally the last one which asked the question - how have recent changes in benefit formulas, actuarial assumptions, actuarial methods influenced the investment program? And by and large, it had no effect or little effect on such programs. So if we can learn anything from the results of this survey, it is that we, as a profession probably have more work to do if we believe that there is merit in setting objectives for pension plans on both the asset and liability side.

MR. RYAN YAFFI: I sort of have an observation to make and I'd like some comments, perhaps from the panelists and maybe from some of my colleagues. Most of our clients are fairly small. I'd say their pension plans range from about a couple of million to maybe 15 million. I was very happy to see

what Mr. Steeve's presentation was because we're struggling to do that sort of thing for our clients, but obviously smaller clients have limited amounts that can be paid for what needs to be done. I'm beginning to think that since as actuaries, we can be so precise and project liabilities fairly easily, at least in the short term, that clients of our size are wiser to spend their fees on the total pension fund management idea, and do a little less of annual actuarial evaluations, particularly when one of the objectives, which I agree with and most of our clients agree with, is stability of the pension contribution as a percentage of payroll. An annual actuarial evaluation, as opposed to a biennial triennial valuation, really doesn't accomplish very much and I would suggest that the liabilities in the short term can be projected without much risk of being very wrong and that fee dollars spent on the overall management would be more important. I think that your warning, in a sense, to our profession is an important one because I think we ought to get on with it because what we've been doing traditionally may not be the greatest need in the future.

MR. STEEVES: Directionally at least, I would certainly have to agree with your remarks. At the same time, I think that we can sometimes get carried away by what we think is a cost for a small fund. I got involved with the area of pensions when my sponsor's fund was roughly \$8 million, by no stretch of the imagination in either country what could be considered a large fund. When I made reference to a pencil, paper and calculator as a liability model, it was exactly that. It took me I guess to run through a few scenarios, two or three days. I sort of locked myself in a room and pulled out the calculator. It was an interesting thing because I then took that and I'll admit I was fortunate to have the resources of a computer department, and I said, why don't you guys now computerize this for me. We set up our liability model for a total in-house, for a cost of about \$5,000. Available models out in the market place were running \$35,000 to \$50,000. A lot more sophisticated, but to be quite honest, there was no extra value added in terms of what I was trying to do and that was develop a good understanding of what the direction of the future might be under different scenarios. I really don't need breakdowns to the last dollar. What I really was looking for was to get some feel for the interrelationships of higher or lower inflation rates, etc. and how they were impacting on both sides of the equation, and it's done that fairly successfully for us. So I think maybe one of the biggest tricks really is for the sponsor to recognize the importance of the pension fund and be willing to set aside resources to start doing that. I was very fortunate in that General Foods did recognize the growing importance of it and ended up giving me reasonable time to get involved in some of those things and that's not always an easy one to have happen.

I think it becomes very, very important at that same time, that by asking the right questions, getting them to focus in on the right questions, to make sure they really understand. I get a little disappointed with the sponsor side when I hear them talking only about the investments and the "gosh I like 14% rate of returns, why don't I lock them up". That's great if in fact, the 14% is the peak, but if inflation's going back to 20%, you might be in trouble if you got them locked up for twenty years at 14%. Start focusing on it, you'll make better decisions. You won't always come out better in the relative measurement performance, but I think working on it, it can be done and it's not necessarily as expensive as might be implied.

MR. MALCOLM HAMILTON: I'd like to ask a question of Mr. Steeves. I was wondering how do you value the assets of your pension fund when you do your valuations.

MR. STEEVES: Within the evaluation, we use a smoothing device recognizing market values. Our particular case at the moment is to recognize the difference between actuarial book and market to the extent of 1/3 per year on a rolling basis. Having said that, however, that happens to be for the moment. Just as we change investment policies and strategy from time to time as appropriate, we also change actuarial methods and assumptions and valuation on the assets to really try to meld the two together.

MR. HAMILTON: What I've found in my practice of consulting, is that any time you try to build a model, be it stochastic or otherwise, the first problem that you hit are there two ways of smoothing contributions. One is to change your investment policy so that you get predictable investment results and one is to change your actuarial valuation method so that you either smooth the assets and leave the liabilities predictable or so that you try to value the liabilities in a fashion consistent with the way the market's valuing assets. I'd be interested in the comments of any of the panelists because it seems to me if you just set up a general model what it will automatically kick out is that you should smooth to beat the band in the actuarial process to get your stability and then go for high risk, high return investment strategies. I'd just like comments from any of the panelists as to whether they think that that's fair ball or not.

MR. STEEVES: I don't think it's fair ball. Stable costs were certainly one of my actuarial objectives, but also realistic funding to maintain the financial integrity of the plan was also one of my objectives, and I think within the extreme in the scenario that you're talking about I would find those two not totally compatible.

MR. SWAN: I'd just like to make the comment, I sighted my disquiet with those three houri wisdoms of investment lore and I think part of that is this general question of what is risk? Risk is very much a function of your time horizon I guess you could probably state absolutely certainly that venture capital funding would be high risk investing. I think the mathematics of the last five years would suggest that investing in the bond market has been very risky. I think it's very important that you ask yourself and make very clear that you understand exactly what is risk. Over the last ten years it's definitely not been true that what is commonly referred as high risk assets have yielded higher returns. The best return has actually been on bills better than stocks or bonds. So those are the kind of considerations I think of.

MR. LEIBOWITZ: There is a relationship in the sense that if you take a 14% market rate on fixed income securities, you can look at two ways of capturing that. One is just by investing in the market. You will get that on smooth lag basis over time. The smoothing, if you go to a five year type, which is not uncommon in the U.S., the benefits come in very, very slowly. Contrast that with a matched funding type of dedication where you will get the actuarial savings essentially accelerated. It becomes very dismal prospect for a fund sponsor who says look, ya know, we got the same investment process and the same investment gains over expected experience.

MR. STANLEY TANNENBAUM: I've had the pleasure of working in multiple areas, both for the plan sponsor as a consulting actuary and also as an auditor. So having had both sides of the same picture, the one thing that was not even mentioned today, except in passing, is things such as the Financial Accounting Standards Board, which may very well tell actuaries and plan sponsor investment managers how you shall put numbers on a corporate balance sheet or plan balance sheet irrespective of what your policies or objectives are. It will tell you that you may have a long range policy, but you must take a measurement and recording on a year-to-year basis. The first question might be, if such legislation or regulation were passed, would a long term policy be feasible from a corporate point of view if you knew that everyone looking at it was not going to see your policy, they were only going to see your current results. Another thing apropos of what Mr. Swan said about assessments. Is it right to assess an investment manager based on the policy, so that his compensation is related to his achievement of objectives and if so, is there a temptation to say, you'd like to regulate your revenues?

MR. LEIBOWITZ: I think the FASB thing is what I was referring to in terms of one of the ingredients leading to the market type reporting procedure. The sense that I've gotten basically by talking to sponsors and actuaries is that the nature of the FASB is the answer that much of the fears of implications of the FASB proposals is overdone.

MR. STEEVES: In terms of actually putting onto a balance sheet the market values on a year-to-year basis, I don't think that there would be a material change in the underlying processes of trying to manage the fund from my point of view. I used the term material because it would obviously have to be looked at and if we felt that there was a high risk of unacceptable volatility within the balance sheet and the implications that would obviously be one of those factors that I made reference to from the sponsor's side, sort of separate to the pension side, that would have to be taken into account. There are other things that show up in the balance sheet on the year-to-year basis and I hope that we wouldn't in the pension area, fall into the trap of managing our business inappropriately simply because of the year-to-year statements that have to be produced.

MR. TANNENBAUM: Your comments regarding the assessment and compensation of the management based on assessments?

MR. STEEVES: Conceptually, from a sponsor's point of view, I'd love to find a way that I could feel comfortable to do that. I have not yet found it because I end up with this major concern that if he has run below those objectives, I do not want him to take inappropriate action to make it up at the latter part of the period at what may be an unacceptable risk from my point of view, and I personally have played with the idea in the past but I've certainly not come up with a workable way that I could feel comfortable as the sponsor of putting it into place.

MR. SWAN: On that last topic, it's one that we've wrestled with a great deal. I think as Ross points out, the thing that you must avoid at all costs is accumulative kind of measure that breeds in that let's play catch up ball and you get in some very awkward situations. It's much easier to conceive of a workable situation where you might use discreet time periods. For instance, in the proposed structure that I set out, the neutral policy has a definite return in any particular period and the actual strategy

implementation either works out better or worse. If every quarter you find that your manager is consistently below the policy, then I don't think you have to wait for five years before taking action.

MR. RONALD LEVIN: I'd like to ask Marty Lebowitz if you could explain the dynamic hedging strategy and how it might be appropriate for pension plans.

MR. LEIBOWITZ: Basically dynamic hedging is a catchword which is used to describe a series of procedures whereby you try to replicate option like return behavior by having a discipline, usually based upon some of the mathematics of Black-Scholls mechanisms, for altering the balance between a riskless asset and a risky asset, usually for example, equity and T-bills in response to the market movement. In a real crude sense without any kind of mathematical finesse which it's proponents would say is an intrinsic part of the game, what you basically do is increase your asset allocation into a running market and you pull it out of a declining market. The claim is that you can get yourself an option-like behavior for an overall portfolio from using traditional asset classes.

MR. LEVIN: That's directed specifically at a bond portfolio?

MR. LEIBOWITZ: Oh no, these are directed at equity portfolios as well as bond portfolios. I included them under contingent procedures because they can be used against immunized bases in order to achieve a matched funding of liabilities.

MR. LEVIN: What typical time horizon do you use?

MR. LEIBOWITZ: The analysis technique which would be things like contingent dedication, contingent immunization which would be using the five to six year duration type techniques.

MR. SWAN: Could I just display my own ignorance here? It seems to me that dynamic hedging is merely a sophisticated word for trend following investments and as long as you're in a period when trends are sustained that would be a successful strategy and when you're in a period of when markets go either up or down or sideways that would be a very unsuccessful strategy.

MR. LEIBOWITZ: You're not displaying your ignorance, but rather your insight. I must say that I'm not a proponent of dynamic hedging, because it's a bit too mechanical for my taste, but it is based upon very sophisticated stochastic calculus which clearly obscures such a simple and clear statement as you have made, but may look like that at times.

MR. HAMILTON: A couple of the panelists expressed a preference for real rate of return objectives versus relative rate of return objectives. How is this applied in evaluating investment managers? It seems to me that the Canadian experience shows, let's say at the end of 1974, nobody met CPI, let along CPI plus 2 over four or five years or probably 10 years for that matter, whereas right now probably all investment managers are meeting that objective. Can you turn a CPI plus 2 objective into something useful for evaluating manager's performance?

MR. SWAN: I think one of the benefits of the proposal that I made is that you can, once you establish at the range of discretion within which your manager would operate that neutral policy, establish what the neutral pol-

icy's performance actually was, what the high side of the range would have done and what the low side of the range would have done. You would develop a range of possibilities. All manner of performance assessment is necessarily judgmental, although it does not always seem to be so. If you look at the midpoint, the high side, and the low side of possible range, given your policy structure, you can see to what extent your manager was able to capture the available returns given that policy and make an assessment as to whether it has been successful or better than you would have expected. I think when you set up this kind of structure, you have a neutral policy because you say I don't need a manager to do anything else. So the manager's job is to beat the neutral but if he only captures 10% of what's available between neutral and possible, then probably that's not worth the cost of it all.

That's the only approach that I've ever been able to think of that might address that question.

MR. STEEVES: From my prospective, I find it somewhat difficult to have a real return objective for my investment manager. I have a conceptual real rate of return objective for the total plan, but from an investment manager's and my measurement of his performance, he has to work within the markets that are available to him and as such I tend to have measurement relative objectives for my individual investment managers that are related to the markets they work within.