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## Session 136PD
## Methods for Measuring Investment Performance


**Track:** Investment
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**Moderator:** MARTIN P. KLEIN
**Panelists:** FREDERICK JACKSON
STEVEN P. MILLER



*Summary: Investment performance has a large impact on insurance company financial results. In this session, the panel discusses and presents various methods for measuring investment performance and benchmarking investment performance against liabilities.*


**Mr. Martin P. Klein:** I'm with a company called Zurich Investment Management, part of Zurich Kemper Investments, and we manage money for institutional investors including insurance companies. Steve Miller has been with Mutual of Omaha for seven years. He started out doing asset/liability (A/L) and management work, but has since moved on to being a derivatives portfolio manager, primarily in Mutual of Omaha's GIC and single premium deferred annuity (SPDA) lines. We also have with us Rick Jackson from Scudder Insurance Asset Management. Rick has been with Scudder for five years, where he has been responsible for A/L management and developing investment strategies for Scudder's life insurance and annuity clients.

I'll open up our discussion and, again, this is a fairly informal session, so if you have questions, unlike a panel discussion format where you wait until the end to ask questions, please feel free to ask questions as we go. I'll start out with a general overview and a quick review of a number of different approaches to measure an investment performance. Steve will talk about a particular type of approach and go into more detail, and then Rick, to clean up, will go over some other miscellaneous issues.

I'm sure all of you have been at other meetings and as you've read insurance and actuarial periodicals there has been a lot of discussion, analysis, and documentation on insurance investment strategies. I think everybody is aware of the fact that insurance investment strategies, unlike those of other institutional investors, have other aspects that need to be incorporated. The liability obligations and the financial return objectives of the insurance company need to be incorporated, as well as the particular risk constraints of the insurance company because these portfolios are being managed to achieve certain financial targets. Finally there are the perceptions of outside parties, the regulators, and rating entities. It's important that the investment strategies reflect the concerns of those outside parties. Obviously, if the investment strategies themselves reflect these considerations, the performance benchmarks also should reflect these exact same considerations. This seems to be common sense, but in fact if you look at the way certain insurance companies have measured their performance historically, they don't incorporate these aspects. As we talk about a number of different approaches in measuring investment performance for insurance companies, let's keep in mind these particular aspects and considerations, and as we think about these other approaches we will evaluate them realizing that they need to reflect these considerations.

The first approach is the one that probably many of you are most familiar with, and in fact some of you may work for companies that currently use this approach. It's called the do nothing approach. This has a couple of advantages actually. It's a fairly common approach, so you have the comfort of knowing other companies do this, which I guess is an advantage. It's also very easy to implement. But, obviously, if we think about the considerations we just talked about, it obviously doesn't reflect any of them. Nevertheless, it is a very common approach.

We will now move along to some more rigorous approaches. One that's used is what I'll call the peer approach, where basically the performance of the insurance company's portfolios is compared to the performance of several peer group insurance company portfolios. There are some advantages to this. Because of the annual statements, annual reports (if it's a public company), GAAP financials, and so forth, there's a lot of information on the portfolios that's available. Although it's not necessarily an exciting task, it is not difficult to obtain some of this information.

As companies look at what their peers are doing, it helps them understand their competition. The disadvantage, however, of reading annual reports and annual statements is there's a lot of information to sift through, much of which is not particularly useful. Some information necessary for a comparison may not actually be available from the reports. Key information may be hard to amass. If you're part of a multiline company and you're looking at peers who are also multiline companies, the liability obligations can be very different. Various insurance

companies have a hodge-podge of different liabilities, and it's hard to identify peers that have that same mix of liabilities. The financial objectives may also be different for other insurance companies. The return objectives and the way they measure their return performance, whether it's return on equity or GAAP earnings or growth in statutory surplus, can be different among companies. That impacts how their portfolios are managed. The asset class sector and credit criteria might also be different among various insurance companies. Those are qualitative criteria that sometimes come down from senior management, binding a portfolio manager to direct funds in a particular way. That may differ among peer groups of insurance companies.

Finally, the trading constraints for a portfolio manager may be very different. Some companies enable their portfolio managers to manage under pure total return, while others greatly limit that flexibility from a tax standpoint; they don't want to realize a number of particular gains or losses in a quarter. The trading constraints can be different. Again, that would make a peer approach, where you're comparing your own company's performance to that of a peer, not necessarily an apples and apples comparison. We have an approach that's probably more commonly used, what I'll call the generic index approach, where the performance of a portfolio is compared to that of a generic fixed-income market index. Some of the big Wall Street firms have these broad fixed-income market indexes such as the Lehman Brothers Aggregate Index. Some of these broad indexes also have various subcomponents that a company can look at, whether it's the Treasury index or the government corporate or aggregate index, or even the intermediate part of the index versus the long part of it. The advantage of this approach is that these indexes are readily available, and, in fact, in institutional asset management on the fixed-income side practically everybody compares their performance to these broad indexes in some fashion, so these indexes are readily available. The other advantage is that they are fairly indicative of general conditions in the investment grade bond marketplace. But there are some disadvantages. These generic indexes, although they're indicative of the general bond market, do not reflect the particular issues that an insurance company may have. Take liability obligations for example. If you think about the Lehman Aggregate index as an example, the duration of that index is between four-and-a-half to five years. If you're an insurance company and you have liabilities that are much shorter or longer than that, say four-and-three-quarters year duration, it becomes an inappropriate benchmark. The index can also ignore various asset class and sector allocations.

Again, using the Lehman Aggregate for example, roughly half that index is in government bonds. If you're an insurance company and you don't want to have half your portfolio in government bonds, that becomes an inappropriate index. Similarly, comparing against the generic market index can ignore credit criteria. For

example, we have a couple of clients who do not allow in their portfolios anything below single A. These broad bond market indexes include triple B because they're including the whole investment grade universe, so if you have an index that includes triple B bonds but your own portfolio isn't allowed to be in triple B bonds, you now have an inappropriate benchmark. Finally, the mortgage components of these indexes only reflect mortgage passthroughs, not collateralized mortgage obligations (CMOs). Again, many insurance companies do invest in passthroughs, but many of them also invest in different types of CMOs. To make up for these deficiencies, you can take a generic index, again, using the Lehman Aggregate as an example, and customize that particular index to reflect the liability duration that you're dealing with, as well as customize it for the asset class and sector allocations that are germane to the particular company, and adjust it for credit quality. This is a fairly simple approach to develop, always a great advantage, particularly if you're the one responsible for developing the measurement process. It can address the liability obligations because you can customize the broad market index to fit with the particular duration that you're dealing with. It can also reflect asset class, sector allocations, and credit quality. For example, if you don't want triple B bonds in your index because you're not allowed to invest in triple B, you just go to that part of the index and take it out. There are some disadvantages. This particular approach does require access to the various components of the index. You can't customize an index if you don't have access to the pieces. This is not a major disadvantage because if your firm has a relationship with either Lehman Brothers, Salomon Brothers, or Merrill Lynch and it's a fairly active and productive relationship for that street firm, then oftentimes you can get access to that index. Certain liability obligations may not be adequately addressed. If there's a lot of negative convexity in the liabilities it's hard to adjust the index to have the negative convexity aspects of a index set with those of the liabilities. Again, as with the generic approach, the mortgage part of the index is for passthroughs and not so much for CMOs. But, again, with just a few refinements on the generic index approach, you can enhance that particular way of doing things.

As an example, we've taken the Lehman Aggregate index, looked at the various subcomponents, and basically adjusted it to fit with a particular portfolio that we were managing to customize that index. You have the government index, the mortgage-backed index, the corporate index, the asset back index, and various duration bands in that particular index. What you can do is change the weighting of these various indexes to come up with something that's appropriate for your particular insurance company portfolio. As I had mentioned, the Lehman Aggregate index is a little bit shy of five years. There is a target duration in this particular portfolio; the liabilities have a duration of about three-and-a-quarter years, so we basically changed the weightings on some of the longer duration categories so that we have an overall duration of three and a quarter years. We now have a

benchmark of three-and-a-quarter years, which fits with the asset portfolio that we're managing. Now we have an apples and apples comparison. Similarly, for this portfolio, this company has a very high credit quality bias so the government index is about half the Lehman Aggregate index as I mentioned, and even with its customized version it's still about half. But again, if you wanted to reduce that down to 5%, 10%, or 0%, that's very easy to do. You just change the weighting to 0% for governments. It's a way to greatly enhance the value of using some of these generic market indexes without doing a lot of work.

I now want to move to some model driven approaches. These are approaches where you use A/L models to develop benchmarks and because of all the considerations that are reflected in A/L models, it can reflect all the various considerations that we talked about at the beginning of my remarks—liability constraints, the financial targets, the perceptions of outside parties.

One of the disadvantages of these approaches is they're very model intensive; you have to develop these models, but for most everybody who's working for a life insurance company, you already have many of these models in place for cash-flow testing, or in the normal course of developing your investment strategies. As a disadvantage, the model-intensive approach can be fairly time-and-effort-intensive. There is also some subjectivity involved. Actually, in some cases there can be a lot of subjectivity involved. Whenever you're dealing with models, the data that come out of them are only as good as the assumptions that go into them. There are many assumptions with respect to lapse rates and credited rates that have to go into your model. That's the same issue you have in cash-flow testing or in pricing and developing products and so forth. The first model-driven approach that we'll talk about is what we'll call the market value of surplus approach. This is an approach where from period to period you mark both the assets and liabilities to market, and the portfolio manager is evaluated on the difference, or, hopefully, the growth of that surplus. It makes sense conceptually and hypothetically, but in practice there are some complications. One is that there's not necessarily any clear cut liability market valuation approach that's available right now. For companies dealing with a GIC portfolio, it's a relatively easy exercise to determine the market value of the GICs, but it's more difficult for SPDAs or Universal Life, or for a multiline property and casualty company. Even when *Financial Accounting Standard (FAS) No. 115* was developed, it was initially conceived with the market value balance sheet in mind, but eventually FASB realized that they weren't going to have a standardized approach for marking liabilities to market, so they supported, as everyone knows, a model that basically said just mark the assets to market. That reminds me of the movie, The Graduate, when Ben Bradock, the Dustin Hoffman character, describes to his father how he plans to marry Elaine Robinson, who's Mrs. Robinson's daughter. His parents, who are very excited, ask, "What do the Robinsons think?"

Ben says, "Well, I haven't actually told anybody yet. I haven't even asked Elaine yet." The father says, "Ben this seems like it's a half-baked idea to me." Ben replies, "No sir, it's completely baked." I always liked that phrase. So I'll show you a completely baked way to come up with market value reporting for a balance sheet. This approach is a little bit difficult. As the surplus of a company grows or shrinks, that surplus is impacted by more than just the investment performance, obviously. There are many things on the liability side, the expense side, and so forth that impact the surplus of a company. To evaluate the portfolio manager you'd have to back out those other influences on the surplus, or the change in surplus. That leads us to a second approach, which I'll call the cost of funds approach. Here we measure the difference between the return on assets and the liability cost of funds. The liability cost of funds might be expressed in terms of a spread over, or if you're particularly profitable, under Treasuries. It might also be expressed in terms of the London Interbank Offered Rate (LIBOR). There are some issues to consider. The cost of funds for liabilities can be difficult for certain products. Again, for GICs it's a fairly easy exercise to determine your spread over Treasuries, or if you want to convert it to LIBOR, and so forth.

Even with SPDAs there have been a few different papers published that talk about a methodology for evaluating SPDAs and marketing them over a Treasury index or comparing them versus LIBOR. But it can be very complicated for a more complex product. Finally, the cost of funds can fluctuate for reasons that aren't under the control of the investment manager, so if your portfolio manager is managing assets against an SPDA portfolio that has a certain crediting strategy and a certain market environment and the company decides to deviate from that crediting strategy, you have to back that type of influence out if you're evaluating how the portfolio manager is doing on a spread basis. This is actually an approach that Steve will address. The third, and you may be happy to know, the final approach is what I call the baseline investment strategy approach. In this approach the company develops the baseline investment strategy for its product line or its group of liabilities. Once it has that basic investment strategy, it selects a basket of securities that reflects that particular strategy. That basket of securities and the return on that basket becomes the benchmark against which the actual portfolio's results are measured.

**From the Floor:** How does it differ from the generic index approach?

**Mr. Klein:** The generic index approach really reflects the entire bond market. This approach looks at a handful of securities that reflects the particular strategy that an insurance company wants. But, again, this generic index approach basically includes the entire investment grade bond market. Let's say we want to develop a benchmark for a portfolio backing an SPDA block. There have been a number of presentations and sessions on how to develop investment strategies behind

products, and, in fact, SPDAs are the quintessential example in these types of presentations. There are a number of ways to do this, but here's the approach that we might take. First of all, as we think about our block of business and the insurance company that we're managing assets for, we want to think about the financial objectives of the insurance company. What are its return goals and its particular financial risk constraints? There's a number of different approaches. Let's say we want to shoot for expected or average present value of profit of *x* dollars, whatever that is. You can look for a certain average annual spread, but this is just an example of a particular profit goal that we may have as we're developing an investment strategy. A risk constraint we might have is that we want the probability of statutory insolvency to be kept at some certain level of *y* percent.

Again, there are other measures of volatility that we might incorporate. You may want to make sure that our GAAP earnings or statutory earnings don't fluctuate too much, so you may want to look at the standard deviation of our earnings results period by period. As we model different investment strategies we want to make sure those investment strategies fit with our financial goals and constraints. This is often done qualitatively by senior management working closely with regulators and rating agencies to develop asset class sectoring and credit criteria. Let's say that we want the average quality of our portfolio to be double A. We want to limit to 35% any particular asset category. These are some other qualitative limits that we're going to put on our investment strategy. That way we don't come up with 100% in 5-year corporates, or something like that. Once we have these objectives and constraints in place we then go ahead and model the liabilities over a set of scenarios, either deterministic or stochastic, to get distribution results. We finally come up with a strategy that fits with our return goals and risk constraints. There also needs to be various asset class criteria and so forth.

Let's say we finally decided the appropriate investment strategy for this company and this liability is 35% in 5-year noncall corporates, 25% in 5-year pacs, 20% in 1-year ARMs (these are adjustable rate mortgages that reset off 1-year Treasuries), and 20% in LIBOR index. That becomes our investment strategy behind this product. Next we go out to the marketplace and select securities that fit this particular investment strategy. We find an actual LIBOR index note. We find an actual series of 5-year noncall corporate bonds. We eventually come up with an actual basket of genuine securities. These aren't necessarily things we're actually investing in, these are securities that we're selecting for our benchmark that fit with our investment strategy. That basket of securities, which again is a very small subset of the entire broad fixed-income universe that's measured by generic market indexes, and the return on that basket of securities becomes our portfolio benchmark. Period by period you measure the manager's actual performance of the actual portfolio versus this benchmark portfolio. Again, the manager may be constrained so he or she has

to invest exactly in this particular strategy, but he or she may be using different securities or trading within the strategy to use actual securities to add value. Or it may be he or she'll have some latitude to deviate from some of these percentages. He or she might be able to go up to 50–60% in noncall corporates for example. But in any event, the actual results of the portfolio are compared to the returns on the basket, and that becomes the basis of the comparison. This, if the company has the desire to do it, can be a powerful approach. It uses models that should be, for the most part, already in place. But it's a very refined process, so not that many companies actually use this in practice.

**Mr. Steven P. Miller:** I'm going to talk about something that's actually a little bit old fashioned. It's not the new, cutting edge way of measuring investment performance. It doesn't involve indexes or total return. It's measuring investment performance on a spread calculation. You may wonder why it is that I'm bringing something like this up—it's because many people care. We went through a reengineering project where we were trying to figure out how to measure how we were doing, and we thought of all the great ways to measure investment performance. From an investment department standpoint some of the other ways were a lot more appealing, such as trying to beat the market, but we discovered that there were a large number of people who cared about investment spread. For example, although for Mutual of Omaha 1998 is when they're actually going to be ongoing with their GAAP statements, the FASB cares about investment spread. If you look at *FAS No. 97* it says you will amortize your costs on certain products according to gross profit, and for a large number of products the biggest component of gross profit is equal to the investment income minus the credited rate. The NAIC cares about spread. The Illustration Actuary Reform says that you have to be able to illustrate a credited rate that you can afford to pay, and the easiest way to show that you can afford to pay that is to assume some sort of level spread that you know that you can earn. Rating agencies care about spread. Standard & Poor's (S&P) has a profit measurement. One of the things that they say is that good, quality companies earn a high return on assets. A return on assets for many companies is the spread of investment income minus the credited rate. For industry stock analysts, I've seen stock analysis of annuity companies where they decide whether or not it's a buy or a sell or a hold. One of the pieces of information that they use is the spread that they're earning, its length of duration, and its stability. Also, GAAP and statutory earnings depend predominantly on interest rate spread. Actuaries care about spread because one of the bases of analyzing a product, a line of business, a merger, or an acquisition candidate is something called distributable earnings, which is the amount that you can take and redeploy in another line of business or pay out as dividends. An unrealized capital gain, which is a component of total return is not distributable. All of these things are based on insurance companies, and how to measure insurance companies.

We haven't talked much yet about how to measure investment managers. However, at least internal investment managers are reflecting more and more what an insurance company does during an accumulation product. If the investment department is doing poorly and you are a company that sells a lot of annuities, universal life, or structured settlements, your insurance company depends heavily on your investment department's performance. That's the case in at least the life half of Mutual of Omaha, so we decided that we needed in our performance measurement to measure how the company was doing and how the investment department was contributing to the entire company was doing. If we're going to measure performance, what criteria do we have for a performance measurement? The first criterion is, Is it descriptive; does it actually describe what is happening? We also wanted it to be descriptive for a large number of people—our auditors, the rating agencies, our top management, and our marketers. In terms of being descriptive, we also wanted it to be easy to understand. As a second criterion, it needs to be prescriptive. What we came up with, at least as a first try, is a measure called net interest spread. Maybe it even should be called net-net or net-net-net interest spread because it's a number for which zero is OK. That's one of the disadvantages—we then have to report another number to rating agencies because they may compare gross interest spread to some other insurance company. I'm calling the net interest spread the net yield on assets minus the gross cost of funds. The net yield on assets is equal to the gross yield on assets, which you can get from your annual statement or your investment accounting system, plus a compounding adjustment assuming that most of your insurance liabilities are paid on an annual basis minus investment expense in basis points minus an expected default rate in basis points minus hedging cost, perhaps. That may also go on gross yield on assets. What I'm calling the gross cost of funds is equal to the credited rate, and on some products there isn't an official credit rate but you may find a pricing rate, and an assumed investment yield rate plus the amortization of acquisition costs, the maintenance expenses, plus a charge for unhedged policy options and the rent on surplus. The fact that I'm adding the rent on surplus means that if I can pay all those things and end up with zero, I have done my job. Before I go on, are there any questions about these numbers so far?

**From the Floor:** Are you talking about a nominal yield for the asset side?

**Mr. Miller:** Yes, on the very top the gross yield is a nominal yield, then you annualize it and subtract all of those charges that I mentioned earlier so you end up with a very, very net annualized yield. Now that we've come up with this measurement, we want to find out whether it meets the criteria that I listed. First is the descriptive requirement. It will expect a GAAP profit in excess of cost of capital. It's descriptive in the fact that if you take the margin and multiply it times the amount of assets that you have, you will have something that people can

understand. It accounts for credit risk. However, it doesn't account for A/L mismatch, so if you get some of those extra yields by going out way on the yield curve or making a bet by going short on the yield curve, it's not going to catch that at least right away.

One thing that we have to do, and we've always done, is use portfolio constraints for duration and convexity. That's part of what the customer wants and that's part of our constraints on our portfolio. Another possibility is that you may want to vary your surplus charge for C–3 risk according to mismatch if you don't want to constrain your investment department. You may want to say, if I'm going to be so far out on my mismatch, then the surplus charge, the cost of capital, my margin, must be higher. Is it prescriptive? From an entire insurance company's standpoint it is. One of the problems that Marty alluded to is that it's sometimes hard to decide whose fault it is. Maybe that's good, maybe that's bad, but it's hard sometimes to define the difference between the investment department's problem and the marketing department's problem. However, it does give managers of the whole insurance company a range of targets to work on. You could ask, is it the gross yield? Maybe we need to increase our gross yield by increasing risk. Or maybe it's the defaults or the expenses, the credited rates, the policy benefits that become unhedged costs, or the cost of capital. If you're trying to solve a problem there's a number of things that point out the magnitude of those various numbers. If you can fix those, how much would it fix your entire problem? For example, if a portfolio manager wants to increase the credit risk in order to increase the gross yield, in your calculation your gross yield and default charge increases, and your required surplus will increase, which then increases your cost of capital. Does the net margin increase? Are you doing any better by increasing gross yield using credit risk? Let's say from the liability side you wanted to increase renewal rates in order to improve persistency. Your cost of funds increases because your credited rate increases. You may have to look at the amortization of the deferred acquisition cost (DAC) piece to see how that works. In this particular example I like doing things in basis points because they're easy to understand and to compare year to year, but you will have to look and see whether that's a good idea. You will have to look at the dollars involved because you will have more dollars if your persistency actually does increase.

You then ask the question, "Am I better off than before?" One of the big things that you need to do is check recoverability of DAC. If you're concerned about your persistency, the first thing you need to do is to compare the recoverability of DAC because you need to put that in your calculation when you're comparing whether you're better off doing nothing or increasing your credited rates. The entire premise behind this, is that your investment department is part of the management of the insurance company; it has a particular job to do and on a management level it has

input on what other people do. This is actually an old acronym but it's something that we still use a lot. Insurance companies need to AIM: they need to have their actuarial people, their investment people, and their marketing people all talking to each other in order to optimize the entire insurance company's profits. This particular method needs to work in that paradigm because the investment people can easily complain that the marketing people are making their gross cost of funds too high. The marketing people can easily complain that the investment people are not investing high enough, and the actuarial people can certainly find two other people to blame, you need to have an integrated management approach. In our interest-rate-sensitive products we have a committee that includes our chief investment officer, our chief actuary, and our chief marketing officer. Those people are in charge of setting credited rates on our policies. Then, of course, they delegate that to other people. They are the ones who are officially in charge of that. Let's go through some of the things of the investment department, since we are really talking about the investment area that can be changed in this paradigm. You can change the gross yield, and you normally have to change the gross yield, by increasing risk. If you can do it without increasing risk you should do it anyway. When we try to change an investment strategy, the actuarial department should review the target surplus that they've come up with before and say, OK, if they're increasing the risk how should our target surplus change? That will then change any costs of funds. The marketing department should also review the market perception of more aggressive companies. If your marketing department has been saying we don't do junk bonds, or whatever has been bad press earlier, if you decide that's now a good thing to do then you should check with marketing and ask, OK, we think from an investment standpoint that's a good idea. How is that going to be perceived in the market?

The other thing you can play with is your investment expenses. It's normally not a huge thing, but in some products one or two basis points can sometimes make a significant difference on your bottom line. You should vary your investment expenses by asset types, so if you find things that have a higher yield that are harder to analyze or have more legal risk or maintenance involved, you should vary those investment expenses by asset type. You should also be able to say, "This is what I think it ought to cost me to manage a portfolio of mortgage-backed securities. What is Zurich Investment Management's price? You should be able to compare it to an outside management firm so that you can justify the expense, assuming that you're inside an investment department. Then you hold the investment department to those numbers, saying, for example, "This is your budget. If you are under budget, that's good, you guys have done a good job for the company. If you're over budget then maybe we should look at talking to Zurich again." That never happens. This is one of the things I think that we did when we were developing this particular method, which was actually quite a change for us. Before we tried to pass defaults

on as they affected the product lines. We changed our minds and started providing default charges. A default charge is an insurance premium against a default on a particular bond, which is going to obviously vary by the grade of the bond. The investment department is charged with managing defaults at or below the default charges. Actually, the way we have it set up the investment department should be able to avoid sandbagging because we try to hit their expected default charges over a cycle. The reason we're trying to hit their expectations rather than some sort of insurance premium that would include a risk premium is in our company the target surplus, including the C–1 target surplus, is the responsibility of the line, so they're already paying a risk premium to the whole corporation for default risk. What we try to do is insure you against having a volatility in that number. We're trying to say that if B-AA privates have an average 25-basis-point-annual-default risk you're going to get that with certainty. If you increased your risk you would have to increase your default charges, and they would have to increase the risk premium that they paid for the default charges. Another thing the investment department can look at is hedging costs. Since I'm the derivatives portfolio manager, this is very important to me because we would have an unhedged risk I would hedge and then I'd get blamed for increasing the costs.

For this design, I calculated an option-adjusted spread or acquired spread on assets on the liability side and talked about how much of that was unhedged, and, if we wanted to budget some of that for hedging costs, we would move it from the unhedged policy cost up to the hedging costs. You could include that with the entire asset portfolio, depending upon your opinion on whether or not you should keep track of those separately. There is good reason to in terms of showing to your auditors that it really is an effective hedge. Or you can put it in with all of your assets and say this is what all of my assets are earning. The last thing that we can talk about is the entire group of the gross cost of funds. Since this is a forum on investment management, I just wanted to go over that somewhat. I don't want to go into great detail, but setting creditor rates should involve the entire AIM triangle. The investment department should have input into what credit rates we should be able to set. Remember that all elements of gross profit can affect the amortization of DAC. When you're making sweeping strategy decisions, you should always try to at least model how that will affect your amortization of DAC, which may change your actual gross cost of funds.

Sometimes with investment decisions, there are different costs of funds because some costs are fixed for some decisions but not for others. If you're in a situation where you are worried about the survivorship of the company, you might look and say, "Well, I don't care that accounting says my acquisition costs are really a sunk cost. I'm going to ignore them and try to maximize what I have in the future." Also, your profit margin is equal to the net interest spread plus your cost of capital,

your rent on surplus. That can become important because if you've gone from two basis points extra to one basis point extra, people start thinking, "Oh, my gosh, I cut my profit in half." So you have to at least tell people what your actual profit is so that they can relax about one or two basis points. In conclusion, the net margin has a number of advantages, the biggest one being it's an easily understood measure of an insurance company's success. That you can communicate to practically anyone. It's consistent with insurance company accounting practices, at least until we go to a market value approach and handle the liability side of the balance sheet on a market value basis. It does measure against liability requirements, at least when you include the constraints that you're putting on the portfolio that are due to the liabilities. It also identifies various sources of profit or loss. However, it obviously has a number of disadvantages. It is very slow to recognize an A/L mismatch. It will eventually recognize it, but it may be too late. It does not recognize the discontinuities between insurance markets and capital markets, meaning that sometimes other than for reasons of relationships, distribution channels, the fact that your agents have to eat it may make it stupid to sell an insurance product for a short amount of time, but from a pure capital market standpoint you have to do it anyway. That's not the investment department's fault. It's not really even the marketing department's fault, although that's who we try to blame. It's similar to what Marty was saying in that there are times when the cost of funds has nothing to do with the investment function. It is very difficult to use with outside managing firms, so if we go to this investment expense and say that you guys can't do it as well as Zurich can, we will have to come up with a different way of measuring their performance. It can encourage passive management even when active management is appropriate because you get to rest on your laurels. For example, I bought a great yielding bond five years ago and even though the spread on that has been narrowed by 100 basis points it doesn't really encourage me to sell that and go find something else.

**From the Floor:** How was the default charge determined?

**Mr. Miller:** The way we did it was actually similar to the way a small insurance company might do a mortality table in that they went to certain public types of data in terms of Moody's by credit rating and then compared what we had done in the past to those Moody's ratings. We came up with 50% of what Moody's public bond data had said, so we used that as a bogie. But that's very difficult, and if it so happens that when you set up your performance measurement that happens to be the down part of the cycle, it's going to be hard to convince upper management to let you wait until things come back later. That was the way we did it.

**From the Floor:** What about taxes?

**Mr. Miller:** Don't you know that you always assume away all taxes? That's a standard answer on every actuarial exam. My boss says that no matter what you're encouraged to do you should do the right thing. That's sometimes easier said than done. If things get really bad, like with lower guarantees and things like that, and it hasn't happened yet, it has been our opinion that we would hold what somebody could do this year. If this thing came up with minus ten basis points with what a really good investment department could do, then minus ten basis points was what they're going to have to do for this year. That's a bad answer, but that's also inherent sometimes in the total return calculations, especially if you try to do it with a liability you start reaching your guarantees. Your total return on your liabilities is going to look really good and be hard to beat also, so that's not really a criticism only involving this particular method.

This one is pointing towards the idea that everybody is in the same boat, but there is also a great deal of validity to the idea that the investment department shouldn't be held responsible for what product development does. There is a tendency to say that we're trying to force everybody to hold up everybody else by managing them on the same basis and creating a situation where you get people together and announce, "I can work on this piece and you can work on this piece." But we have recognized all of those things that you're talking about; unfortunately, we weren't able to find another method that included those either, or if even included, created an adversarial relationship between the marketing people and the investment people.

**Mr. Klein:** Often in a broad-based financial plan there should be, in addition to the spread component of the financial plan, the plan experience results. Within that you have, say, our expected lapse experience to the extent it deviates. That then goes into the category of the financial plan of the actual deviation versus the plan and lapse experience and gets backed out of the investment spread aspect. You actually look at insurance company's financial results in three or four different categories, perhaps how they do versus actual expenses, how they do managing the spreads, and how its mortality, morbidity, and lapse "experience" play out. If you look at a financial plan that deviates from those three or four different categories, "lapses" would go into that experience category and not be part of the investment spread aspect.

**Mr. Miller:** Now my official SOA stopwatch says that we have to give Rick some time to make his remarks.

**Mr. Jackson:** As Marty said I'm going to talk about some miscellaneous issues. I'm going to address some of your questions about what to expect of an investment manager versus the rest of your management. I have to talk within my context,

which is A/L management and a focus on profitability, optimization, and risk management. Let's revisit AIM. A marketing group wants high credited rates, new money rate resets, many contract options, high up-front commissions, and multiple products. The investment group wants low-credited rates, portfolio rate resets, few contract options, low up-front commissions, and limited product offerings. In the middle is most of us, the actuarial group playing referee. We're trying to put all of this work of the two groups into an ALM modeling context, risk quantification, scenario testing, profitability studies, and regulatory issues. Since I run money, I work with portfolio managers who run money, I view it as trying to play referee between competing groups that are hopefully working together.

Before I get into investment benchmarks, I still have to put some of what a portfolio manager can be expected to contribute into context here. We ran three different scenarios for an annuity company: level interest rate environment, falling interest rate environment, and rising interest rate environment. This is in the context of spread management. When interest rates fall in this annuity product, you're going to be able to get your spread. In this particular case it's a market interest crediting strategy. For the market interest crediting, basically you're crediting five years (CMT), so if interest rates fall your portfolio crediting rate and your interest crediting falls. You get a lot of spread. Interest rates stay level, so you don't get as much as the 150–175 basis point spread that you want. But if interest rates rise that's where this product puts the company at risk. The investment manager can only do so much to address this particular product design, which is a bull market product. When interest rates rise this annuity product can produce negative spread, so the investment manager can't fix that product design. What do you do? The investment manager with a big S on his chest puts on hedge and everything's just fine. It pays off at 7.5, but that's the hedge you put on the interest rate cap. Here's what happens to the profitability picture. You actually give up 40 basis points in the level and down interest rate environment to pay for the hedge, which doesn't pay off if interest rates go down or stay level. But if interest rates go up, the hedge does pay off. You get some spread, but you're not getting the spread you need to make this product profitable if interest rates are going to rise. The investment manager can contribute to the profits, but he can't be the sole determiner. Instead of following market crediting rates up, the whole company may have to look at changing interest crediting strategy and perhaps lag the market rise and rates. You may then widen this spread and have the liability management address some of your profitability needs.

One more A/L management perspective. This is a scenario test of another annuity product, SPDA, to see which strategies have the most impact. The base case credits a portfolio crediting rate. You have your current portfolio in place. Over five years your surplus increases on average by $14.5 million, and you have a reasonably

narrow band of profitability between $16.1 and $5.2 million of increase in surplus. You try a few different alternative management strategies, one of which would be to replace a CMO portfolio with a noncallable bond portfolio. You tighten the range of volatility to your profit, but you reduce the average surplus to $11 million increase. So you look at that and say these portfolio managers not really helping us terribly right there. There's only so much they can do in this situation. You can look at two other alternatives, changing interest credit as you go into a market basis and increasing the average surplus increase to around $30.5 million, but you introduce a lot of volatility. With this particular company we focus on the last strategy, which primarily is a hybrid interest crediting strategy, what I mentioned earlier, lagging as rates rise and following the market as rates go down. That was the best profit profile.

We didn't test this, but I put this on as a rough approximation of what the portfolio manager could then do to narrow the volatility by putting a hedge on this particular lapse scenario. Instead of having a $40 million increase, you have a $37 million increase. But you do get rid of some of the worst-case scenarios of rising interest rates. You tighten the volatility of your results. The portfolio manager can help in some ways, but he or she has to look in part of that AIM triangle to the actuarial folks, the other people managing the liability side of the balance sheet. In many cases the liability management can be more important than investment management. Don't look to your investment manager to answer all the problems. What do you have for tools? These are the tools at their disposal. The asset managers can work with duration and duration mismatches. There have been some nice duration mismatches for the last ten years that has made single premium deferred annuities pay off very well. As interest rates came down, significant mismatches have made annuities very profitable historically.

Going forward, now that we're on a 6% buy yield, those opportunities aren't really there the way they were in the last ten years. You have to be aware of that. The portfolio manager can use credit risk, embedded options, liquidity, private placement issues, and some cases on a limited basis because of basket clauses, primarily using foreign currency as an asset class, even equities. Also keep in mind active management. That's the ability of the portfolio manager to take advantage of, say, shifts and credit ratings with Moody's where you get improved credit rating. When your spread over Treasuries comes down, your bond would go up. That's maybe a total return play that works with the portfolio manager, or in some situations insurance companies give license to portfolio managers to sell deteriorating credit. That's active management. Some companies don't do any active management, and some take a very aggressive approach to maximize total returns. Those are the tools that the portfolio manager has to work with.

Here's an example of performance. I'm going to go to the benchmarks now. Let's use the performance of Scudder's life and annuity portfolio over the last 10 years. The performance of this portfolio over 3 years or 10 years has risen from around 80 basis points to about 130 basis points. You want to see this performance, but you also want to know why. You also want to know that over the last ten years part of this out performance has been due to conscious mismatch on duration. Some of this has been achieved by conscious mismatch on duration. For some companies we've worked with it's an unconscious mismatch on duration. In this particular case the average total return is 6.8% for the last 3 years and 9.7% over the last 10 years. You have the Lehman Brothers aggregate index, which I believe is 50% government, 30% mortgage stock securities, and 20% corporate: the other is the Lehman government corporate, which I think is 72% government, and 28% corporate. You want to be able to outperform these indexes. I guess I'm an advocate of Marty's customized benchmarks. These are the standard benchmarks that most companies use. We use these benchmarks for most of our clients because they're not sophisticated enough to move to customized indexes. With some of those, however, we balance based upon the desired asset allocation, and we will have something different from the 50/30/20. We'll be able to take the feeds from Lehman and create customized benchmarks. The question is whether you take the next step and create customized liability based benchmarks, where you've gone through and done the A/L management work to identify the market value and your liabilities.

If you go through and do the market value of your assets, you can get a benchmark that fits a liability benchmark. You'd be matching durations and convexity in this particular situation. This is as sophisticated as you can get with setting up these benchmarks. What I don't agree with yet is I've seen many people who are proponents of actively changing this particular process measure the liabilities one week and then maybe a month later when it changes a little bit so you adjust their portfolio significantly. I don't believe that the costs involved with the trading are necessarily worth it. But I think that where you can identify a constant spread, that's a good place to set your liability-based benchmark. Unfortunately, sometimes this spread may not be enough to meet your profit goals, so, therefore, your asset manager may be called upon to take a little variation off this, take some risks, and some bets off this portfolio, and introduce additional mortgage-backed securities. That's going further than I wanted to go in the liabilities-based benchmark. You should establish some benchmarks, I believe, to work with.

I'm now going to give a case of what you shouldn't do. In 1996, mortgage-backed securities outperformed the broader indexes by 200 basis points. It hurt if you didn't have mortgage-backed securities in some measure in your portfolios. It's an interesting asset class. Let me show you three examples of mortgage-backed

securities. One company we dealt with had this kind of benchmarking. We had a company index that was an inappropriate benchmark. They really didn't understand what they were working with. They had a one-year T-bill from 1992 through 1996 as their benchmark and switched to the Lehman Aggregate thereafter. The Lehman Aggregate would have been a better benchmark all the way throughout, but there is a 20.72% cumulative total return for that particular benchmark. A greater problem proved to be their mortgage-backed securities manager who had 40% of their portfolio but managed only mortgage-backed securities. They looked at this number and said, "Oh, we got a 28.8% return versus a 20.72% return." They outperformed their index, so their conclusion was that their manager was doing a good job. However, the Lehman mortgage-backed index was returning 30.5% over that same period. They should have been comparing that manager's performance to a Lehman mortgage-backed security index, which they were not. So, in this situation what you don't know can hurt you. Last week we looked at a mortgage-backed securities structure for Goldman Sachs that promised a return of 5-8 basis points above the Lehman mortgage index, which sounded interesting to us. I asked one of our analysts how they can do this. Because Goldman expects to be able to earn 20 basis points above the mortgage-backed index, they will take the profit of 10–12, or 12–15 basis points as they're putting this deal together. It was a triple-A rated security last week, a 144-A private placement with a 1-to 2-year maturity. Principals guaranteed by Goldman, minimum coupon 0%. Our portfolio manager's conclusion was that for an investor seeking mortgage allocation preferring passive returns to active management, this structure is an attractive investment. If you take an active management approach, what can you actually earn? Does active management of mortgage-backed securities make sense? Given out performance of the asset class over the last five years, portfolio weighting definitely makes sense, but does the active management mortgage-backed securities make sense?

We did some back testing. One of our quantitative analysts looked at back tests over the last five years of the best mortgage-backed security structures. With the benefit of hindsight and taking no duration, the duration was held pretty much constant. You could get the best positions by only providing 30–40 basis points annual out performance. For there to be successful assets, active management would depend on duration mismatching strategies which require that your investment department have an above-average ability to predict movements of interest rates. Some companies do take these positions. We tend not to take that kind of position of taking interest rate bets.

These are characteristics of effective benchmarks. They're unambiguous. They have benchmark securities and weights are clearly identifiable in keeping with the Lehman Aggregate and the Lehman government corporate. You can invest in the

benchmark. It's possible to replicate and hold the benchmark. The returns can be frequently measured. It can be appropriate, such as the benchmark is consistent with your manager's investment style. In the case where you don't have good mortgage-backed securities capabilities, you might want to go with a Goldman Sachs type structure. Try not to manage mortgage-backed securities if you don't have the in-house personnel. The benchmark should be specified in advance. My conclusion is consistent with what Marty and Steve were saying previously. You should know the skills of your investment department—where positions are to be taken and bets are to be placed—and be certain the benchmarks adopted are clearly defined and well-understood, and, in the evolving area of risk management, incorporate A/L management and appropriate risk metrics into the benchmarking process.