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Session 11PD Pension Plan Investment Strategies

Track: Retirement Systems Practice Area, Nontraditional Marketing

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Summary: Our panel of experts discusses different investment strategies for pension plans, expected asset returns, appropriateness of these strategies for use with different types of plans and effects on a plan's annual contribution requirement and pension expense. Attendees gain a better understanding of the issues surrounding investment of pension assets and the accompanying fiduciary responsibility as well as the impact of these decisions on the stability of the plan's funded status and its actuarial calculations.

MR. MARK RULOFF: We're going to have three speakers, and we're going to each do a little bit less than a half-hour presentation. I'm one of the speakers, and the other two are Bill Badger and David Hauptman.

The first speaker is going to be Bill Badger. Bill has joined Palmer & Cay Investment Services as a principal and has consulting responsibilities in the Atlanta office.

MR. BILL BADGER: Palmer & Cay is a large consulting firm with \$135 million in revenue. It has 900 employees and has headquarters in Savannah, Ga. We're in three businesses: property and casualty (P&C) brokerage; human resources, including actuarial staff; and investment consulting.

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†Mr. Bill Badger, not a member of the sponsoring organizations, is principal at Palmer & Cay Investment Services, Inc., in Atlanta, Ga.

I want to discuss four items, and I'm hoping I'm going to depress you severely. Number one is asset allocation. Number two is the 2003 capital market projections that we're using. By the way, the Callan staff is now in the process of preparing the 2004 projections, which will be published in January. I know we're all interested in that. I'm going to go into optimal mixes and the efficient frontier and finish with additional investment strategies.

What's asset allocation? Asset allocation is the process of determining the optimal allocation of the portfolio among broad asset classes—that's U.S. stocks and bonds, etc.—based upon, among other factors, the investor's risk tolerance and time horizon. We're not trying to figure out how much of your portfolio you should put with a large cap growth manager or a large cap value manager. What we're talking about is at the growth level. Speaking of which, my comments are intended to be at the 30,000-foot level, not the 250-foot level. If we got into the 250-foot level, we could have a panel of six people discussing things for six hours, which you'll see when I get into the presentation.

First we have the asset allocation/liability study overview, and when a client goes through this process, we have both the liability modeling and the asset projections. I know all of you in the room are familiar with this. Then we simulate the financial conditions and define the risk, and we put the two together to determine the right allocation.

Let's talk about the 2003 capital market outlook. The objective when these are prepared is to give our best thinking regarding the five-year outlook. I know you people have an infinite outlook, so when people like me come in on a quarterly basis and talk to their clients, it aggravates you because the quarterly returns are not relevant, but that's what we do. In the capital market outlook, you need to have results that are defensible. The input has to be reasonable. We're conscious of the level of change as suggested by our allocation, so we have to make sure that everything is reasonable and based on common sense.

The consensus on the economic recovery is fairly interesting. This is as of last December, but it happened much the way they said it was going to happen. Economic recovery continues. Inflation is low. Fiscal stimulus from the federal government will help. Ultimately the Fed will shift to tightening monetary policy. It hasn't happened yet, but it's going to happen as all of us are sitting in this room, which should have interesting investment implications. Capital spending is starting to pick up. The dollar should continue to weaken.

Underlying fundamentals matter. Price/earning ratios (P/Es) have come down from astounding highs. It made no sense to invest in the equity market with P/Es so out of whack. The yield on the Lehman Aggregate is low, and the return on cash equivalents is below inflation. In fact, if you're in a money market fund, after you subtract the money manager fee, you probably have a negative return.

Let's talk about the 2003 capital market projection. This is based on an index level. For large cap, the index we use is the Standard & Poor's (S&P) 500. Broad domestic equity, which includes large and small, has a return of 9 percent, with a risk of 17.3. The large cap is less than that, but what's astonishing to me, and we've had this same projection for several years, is that the international equity is 9.6 percent versus 9 percent for the domestic. This year the S&P is up 17. The weakened dollar helps with that.

Fixed income Lehman Brothers aggregate is 4.75 percent. As I said before, the style decisions within the broad markets are more efficiently made at the structural level, not at this level. We're not trying to say that next year it's going to be whatever the actual return is. This is a five-year allocation. Correlations in this context have to be reasonable, and it takes a lot of work to develop reasonable correlations. They don't change from year to year very much. If you change them very much, you get wacky results.

Let's talk about the mean variance optimization, and you can see conservative is over on the left (Table 1).

Table 1

All Liquid Marketable Securities							
2003	Asset Mix Alternatives						
<i>Asset Classes</i>	<i>20%</i>	<i>30%</i>	<i>40%</i>	<i>50%</i>	<i>60%</i>	<i>70%</i>	<i>80%</i>
Broad Dom Eq	16%	22%	29%	36%	42%	49%	56%
International Eq	4%	8%	11%	14%	18%	21%	24%
Dom Fixed	73%	64%	55%	46%	37%	28%	19%
International Fixed	7%	6%	5%	4%	3%	2%	1%
Cash	0%	0%	0%	0%	0%	0%	0%
Totals	100%	100%	100%	100%	100%	100%	100%
Projected Return	5.63%	6.07%	6.51%	6.96%	7.40%	7.84%	8.28%
Projected Risk	5.56%	6.70%	8.02%	9.46%	10.96%	12.51%	14.08%

The numbers in blue are asset classes, which are the allocation to equity at the broad domestic equity and international equity. On the left we have 20 percent in equity and the balance in fixed income. If you go all the way over to the right, you can see you're 80 percent in equity and 20 percent in fixed income. Obviously the returns associated with those are different.

What I wanted to point out here is that many people consider 8 percent a threshold. You have to earn 8 percent on your assets. But if you look over there you can see 8 percent is at about the 75 percent equity level. The 8 percent used to be down around here. Now it's all the way up here; you need to find out how and what you have to do to make your 8 percent return assumption. You can see here

that you can either invest in this large equity exposure to meet the same expected return or, with the same target percentage of equity, obtain a lower return.

This is from Greenwich Associates, which conducts a survey every year. I talked to Roger Smith, and he gave me permission to use this. You can see the assumptions for corporate funds. These are the 2003 results of his survey. You can see that 36 percent of the corporate funds have assumptions of 8 percent and 8.5 percent, but they're not supposed to be able to get 8 percent over the next five years. That's okay.

But these assumptions, obviously from our point of view, are for five years. From your point of view, this is an infinite assumption. What difference does five years make? There are differences in opinion here. We found that 74 percent of people surveyed about actuarial assumptions of corporate funds have assumptions over 8 percent, which is fascinating.

Let's look at additional investment strategies of how you're going to meet all these goals. Let's talk about real estate first, which includes timber. The returns are generally between stocks and bonds and real estate. It has a strong income component, isn't volatile and provides diversification. We'll show you that in a minute. But there are several disadvantages. It is illiquid. You must remember in the 1980s when people were standing in line to get out of real estate. Sometimes it took years to get out of the funds. They had relatively high fees relative to the liquid markets. They are cyclical, and anybody who's been in real estate for a long time can give you lots of horror stories about the cyclicity. Real estate can be difficult and time-consuming to monitor. As one of my clients said, "I have 5 percent of my portfolio in real estate. Why am I spending 80 percent of the time earning 5 percent of my portfolio?"

Let's talk about real estate investment trusts (REITs). I'm talking about publicly traded REITs. They're more liquid than real estate. You can get in and out of them because they're publicly traded. You have additional property types. They provide your diversification. Remember, the whole object here is to make the 8 percent come back this way so we have less in the liquid market and more in these other markets.

The disadvantages are that REITs are highly correlated to small and midcap. In fact, generally we put REITs in a small cap value box if you're looking for a box to put them in. You may have some exposure through your equity holding, and there is a capacity from a market point of view. You can't put a lot of money in REITs.

Let's discuss liquid marketable plus real estate.

Table 2

Liquid Marketable Plus Real Estate							
2003	Asset Mix Alternatives						
<i>Asset Classes</i>	<i>20%</i>	<i>30%</i>	<i>40%</i>	<i>50%</i>	<i>60%</i>	<i>70%</i>	<i>80%</i>
Broad Dom Eq	15%	22%	28%	35%	41%	48%	54%
International Eq	5%	8%	12%	15%	19%	22%	26%
Dom Fixed	67%	57%	47%	37%	27%	16%	6%
International Fixed	7%	6%	5%	4%	3%	2%	1%
Real Estate	6%	7%	8%	9%	10%	12%	13%
Cash	0%	0%	0%	0%	0%	0%	0%
Totals	100%	100%	100%	100%	100%	100%	100%
Projected Return	5.80%	6.28%	6.76%	7.24%	7.71%	8.19%	8.67%
Projected Risk	5.92%	7.25%	8.74%	10.34%	11.99%	13.68%	15.40%

You can see in the table the 8 percent is now between 60 percent and 70 percent, not between 70 percent and 80 percent, and the risk has been lowered here. That has been some help. For some allocations, the real estate is approximately the same percentage as international of the whole, but for others you can see that real estate is quite a substantial piece.

Let's talk about private equity. These are private equities including mezzanine financing and all those interesting complex things that nobody understands. They have higher returns than public equities. They come from a different source because most of them are not publicly traded. You get more diversification, and you can get fund to fund, so you can have several kinds of investments in a mutual fund and you're protected from loss. The only problem is a big one—high fees, 150 basis points and up. You have to have a long-term commitment. Investment patterns can produce losses in the early years. As you start investing your money, you get lower and lower returns until it starts to take effect, and then you come out of it. You have to realize this when you go into it, and people do.

Unless you select top quartile managers, you can't beat the S&P. This is a high management type of area. You have to make sure you understand what's going on. Remember, we're suggesting alternatives to what you're going to do. You can't make 8 percent in the equity market without having 80 percent invested. We're trying to come up with alternatives, and these are the standard ones that people do. Let's look at the alternatives.

Table 3

All Including Alternatives							
2003	Asset Mix Alternatives						
<i>Asset Classes</i>	20%	30%	40%	50%	60%	70%	80%
Broad Dom Eq	14%	20%	26%	31%	37%	43%	48%
International Eq	4%	7%	10%	13%	15%	18%	21%
Dom Fixed	68%	58%	48%	38%	28%	18%	8%
International Fixed	6%	5%	4%	3%	2%	1%	0%
Real Estate	6%	7%	8%	9%	10%	11%	12%
Alternative Inv	2%	3%	4%	6%	8%	9%	11%
Cash	0%	0%	0%	0%	0%	0%	0%
Totals	100%	100%	100%	100%	100%	100%	100%
Projected Return	5.83%	6.35%	6.86%	7.38%	7.90%	8.41%	8.93%
Projected Risk	5.98%	7.41%	9.02%	10.72%	12.48%	14.28%	16.10%

You can see now the 8 percent is much closer to 60 percent, 60 meaning the liquid assets. You can see that real estate at 60 percent is 10 percent of your portfolio. That's a big number. It also has to be managed, as I mentioned before, and you have to hold everybody's hand to do that. The 8 percent has lowered the risk level of the fund. These first two are the most common that people will get into.

Let's talk about easy street. I didn't realize until last week that not too long ago, there were 100 or 150 hedge funds. Now, as of not too long ago, there are 4,500. What are the characteristics? They're known as absolute return strategies. They rely substantially on the manager's skill level. They involve short selling, leverage and derivatives. There are both equity and fixed hedge funds. You can't measure them against anything because each fund is a little bit different from the other, and you can get directional bets and nondirectional bets—in other words, long or short market exposure. For example, a guy will buy 10,000 shares of Microsoft and short it at the same time.

The essence of nondirectional strategies is the simultaneous purchase and sale of equivalent or similar securities to profit from price discrepancies. There are five examples: market-neutral equity, merger (or risk) arbitrage, convertible arbitrage, fixed-income arbitrage and derivatives arbitrage. These are complex strategies. They're not something the faint of heart should go into. I wouldn't suggest that there are going to be 4,500 hedge funds in the future.

The essence of directional strategies in the hedge fund is opportunistic market exposure as well as issue selection. You're looking at both the market and the issue: net long/short equity, global macro, distressed security and managed futures. There are lots of subsets. We could talk about this for six hours.

What are the advantages? There's potential for high risk-adjusted returns. They came into being because we have two or three years of negative returns in the

market. People ask what they can do to upset that negative return. The returns are usually some stocks and bonds. Generally you have capital preservation. The total portfolio has reduced volatility. It's attractively correlated. Those are all good reasons for putting it in your fund.

What are the disadvantages? It's liquid. One of the main disadvantages we as a consulting firm must face is that most of these are not registered with the government. Some of the key risks cannot be quantified. There's also a potential for fraudulent behavior, and it's difficult to cover that up. You'll find a lack of transparency, and the fees are high. You're relying solely on the manager's skill for your return. There's no custodian, it's difficult to monitor, and that drives people like us crazy. They do have some capacity restraints.

What's the optimal hedge fund allocation? About a year ago I put in place what I think is an optimal allocation. One of my clients decided to invest a small amount in hedge funds—\$25 million in equity—and he had five fund of funds. In each one of the fund of funds, he has about 30 or 40 hedge funds. If one of the hedge funds has a little problem, it's not going to present a problem for the whole, and it's doing well. But this is important: Allocations should be based on qualitative versus quantitative. Qualitative is important. You need to get into the heads of the people who are running your money.

Mean variance optimization can be misleading. Regarding the percentages that I showed you before, generally what you have to do is take the allocation and do it without hedge funds and drop in the 5 percent allocation for the hedge funds, otherwise, as you'll see in a minute here, neither of which is reasonable. You have to layer your mean variance optimization. Between 5 percent and 10 percent would make a difference. If you have lower than 5 percent, why bother? It doesn't make sense for the effort involved.

This is the latest. What about high yield or what some people call a junk bond? We'll call it high yield. It has a high level of income. It improves diversification and provides good risk/reward characteristics. However, it can be illiquid. It has capacity constraints. It is an equity-like investment. The only problem is the high yield can be good performing or you will wish you never got into it. What I usually do with my clients in high yields is give the investment advisor who runs the Lehman aggregate portfolio the ability to get into this stuff on an optimistic basis. That generally works a lot better, not that they're always right or wrong, but it prevents my clients from getting stomachaches when they see the volatility.

The same comments apply to non-U.S. bonds. If you're in a non-U.S. bond portfolio, recently you've done pretty well, but there are times when you can do poorly. Consequently, we have the Lehman aggregate portfolio manager. There are opportunities for return enhancement. You do get a diversification benefit. Now we have a weakening dollar. The volatility can be double that of the U.S. market. Some committee members now get stomachaches when they have to do this.

Let's talk about achieving the unachievable. A typical 60/40 bond mix may not return the earnings assumption over the next five years by higher equity exposure or adding alternative asset classes. All of these subjects that I've talked about offer return enhancements. They can lessen investors' anxieties. They will perform as predicted. But you have to make sure that you can follow the long-term time commitment, the high fees and the capacity constraint. I just touched the surface of this.

MR. DAVID S. HAUPTMAN: Mark Ruloff is an FSA with Winklevoss Technologies in Greenwich, Conn. Mark heads up the pension consulting practice, and prior work experience includes Citigroup, Mercer and Ernst & Young.

MR. RULOFF: Here are the areas that I plan to cover. I'm going to be talking about excess efficient frontiers, or what many of you might call a surplus efficient frontier. I'll go into how those efficient frontiers would differ depending on which liability we're measuring. Then I'll bring into consideration the plan sponsor's goals and concerns and how they will impact our asset allocation decision. I doubt I'll have time, but if a miracle happens, I might go into asset smoothing of volatility and how that comes into play in the asset allocation decision as well.

First I'll cover excess or surplus efficient frontiers. Chart 1 is a graph of a classic efficient frontier. My information is based on old data. I keep using a demo from a long time ago. Don't pay too much attention to the returns here. The classic efficient frontier is a graph of what the optimal asset allocations are. On the y axis we have the expected return, and on the x axis we have the standard deviation of return. The efficient frontier line, shown in red, is the allocations that give us the highest return for any given level of risk. At the far left are low-return/low-risk portfolios, and at the top right are our high-risk/high-return portfolios. There are other asset allocation options, but they all fall below this line. Normally you would not consider those options.

There are limitations to the traditional efficient frontier. Liabilities have not been considered, and while the definition of risk is the standard deviation return, a plan sponsor's definition of risk might relate more to how high its contributions are, or its surplus level, or let me say excess return, and that excess return is defined as how the assets grow in comparison to liabilities.

Chart 2 shows two graphs of efficient frontiers, but they're different from what we saw before, and I have two efficient frontiers. On the left I have the traditional asset-only efficient frontier, and on the right I have the new excess efficient frontier. The shading graphs represent five asset class choices that both of these have.

The graphs on the far left are a low-risk option, and you have to look at these in a column. If you can imagine, there are slim columns going from left to right across

this graph. The high-risk asset allocation option under the traditional efficient frontier here would be 100 percent small cap stock. If I go to the excess efficient frontier, we see the same thing. At the far right we have 100 percent small cap stock, but as we move from the high-risk area down to the low risk, we start picking up large cap stocks, and then we start picking up some of the fixed-income asset classes.

Under the traditional asset-only efficient frontier, the low-risk investment is cash. If you have your money invested and you are worried about risk, what do you do? You take it out of the market. You take it out of the stock market or bond market and put it in cash. But if you consider the liabilities of a pension plan that are long term, the low-risk investment is not cash. It's a long bond. That's why the low-risk, left-hand side of my chart includes a long bond portfolio. I'm going to be showing a lot more graphs like this.

We go back to the traditional way to graph efficient frontiers, and I'm looking at the one on the left in Chart 3. I've included another set of options, and they fall below the traditional efficient frontier. Those are allocations we would normally not even bother to consider because they're not thought to be efficient. In that graph on the y-axis, I have return. On the x-axis, I have the standard deviation of return. If I instead use excess return, and that is how the assets grow when compared to the liabilities, I do that on the graph on the right. My expected excess return is on the y axis; my standard deviation of excess return is on the x axis, and those two allocation options flip-flop. What was once thought to be inefficient on one basis is now thought to be efficient when you measure it on this new basis.

How do we make use of this new excess efficient frontier? Let's say we have a client who has a simplistic goal. I want 8 percent mean returns. That's what I'm shooting for. The risk that I'm concerned about is not standard deviation of return but is high accounting expenses. Can we come up with an asset allocation that is going to outperform the classic asset-only efficient frontier? The answer is yes. Let's concentrate on the graph on the left-hand side here. How will I select a portfolio?

I'm going to go to the nominal returns in the y axis of my classic efficient frontier, (Chart 4) and I see an 8 percent grid line. If I go down that grid line, I come across an asset allocation that's supposed to give me 8 percent excess returns: One on the efficient frontier, on the classic asset-only efficient frontier; and one that we normally wouldn't have even bothered to consider because it was thought to be inefficient.

But if I run them in a stochastic model and forecast into the future (I did a forecast, and this shows you that is it somewhat old even in this study) starting in 1999, and I'm forecasting to next year or the year after that or several years into the future, I know both of these portfolios are going to give me my 8 percent mean return goal, but now I look at the risk. I look at when bad things happen, so I'm looking up in

what I loosely define as the worst-case scenarios, the 95th percentile (Chart 5). Ninety-five percent of the time my results will be lower than what's shown here, and 5 percent of the time, they'll be higher. If I look at the results from the classic efficient frontier, shown in red, I see my accounting expense. If I look at the results using my new excess efficient frontier option, my accounting expense is shown in blue. I managed to reduce the risk for this client.

I'm glad to say that forecasting and asset/liability studies have been on the rise. They're being done more frequently. Some clients call and say they have an evergreen policy, meaning they're always monitoring this, and we're doing it for more small plans, but I believe that we should make this part of our pop culture, part of our everyday thinking as actuaries. I've been going around with some of my friends singing songs like bonds over troubled water, that bonds are a better low-risk investment than cash for a pension plan. Other songs we're singing are measure risk this way and excess efficient frontiers are a better manager of risk.

Let's talk about how we match up assets to different types of liabilities. We're back to these graphs. Again, this is the traditional asset-only efficient frontier (Chart 6). We're going to be concentrating on the left-hand side of these graphs, and we see the traditional efficient frontier with a lot of cash. That's our low-risk investment, a large allocation to cash.

We do an excess efficient frontier using the accrued benefit obligation (ABO) for accounting purposes (Chart 7). We see the low-risk investment as long-term bonds. There's a lot of blue. When the ABO's going to be moving with long interest rates, and if we invest in assets that move with it, we've reduced our risk. It's all something we've known. This was just using a computer to prove it.

If I go to the projected benefit obligation (PBO) (Chart 8), we see a little bit more cash at the low-risk end, and then also we can pick up some aggregate bond portfolio. Why is that? Let's think about the difference between a PBO and an ABO. It's the future salary increase. What do future salary increases have built into them? They have inflation expectations. Long bonds do not protect you against inflation. This is seeking out a little bit of cash and has a lower duration because of the impact of inflation.

Let's go to the actuarial liability (Chart 9). This looks strange. We have a lot of cash again. We're doing an excess return but using actuarial liability. That's because I ran this model with the traditional approach actuaries use, and that is I'm forecasting into the future, and every year the actuary calculates the liabilities at 8 percent.

What's the duration of a pension plan liability that's always calculated at 8 percent? It's zero. You could calculate it at 7 percent and come up with a duration calculation by that, but in practice the liability is not moving with market rates. In practice the duration is zero. It's seeking out an asset allocation that matches it. It's seeking out

cash. Let's pretend that this actuary is maybe different from the majority and is going to move his assumptions with market rates. Then we go back to an allocation that's similar to the PBO.

The current liability's a strange animal. You get a lot of cash, maybe half cash and half long-term bonds. The current liability gets calculated at a four-year average of rates. Part of it is moving with market, but some of it's not. That's why you get such a strange low-risk investment.

You have to consider different plan features. The most obvious one is a cash balance plan in that the liabilities are not going to move as much with interest rates because lower interest rates will also produce lower benefits in a cash balance plan. You won't be seeking out long bonds as much in the cash balance plan.

Again, some of the songs we're singing are let's have assets and liabilities stay together, long bonds are generally a better risk tool than cash and interest rates shook me all night long. We need to know how much the liabilities are going to move with interest rates. We should be aware that some liabilities in practice don't move with interest rates.

Let's bring in the plan sponsor's goals and concerns. If we take the efficient frontier and then start taking into consideration different plan sponsors' goals, it's going to restrict us to different parts of the efficient frontier. I have a piece of software that will do that restriction for me. Basically, the sample plan's currently underfunded. If we put in a goal that says we want to get the actual funded ratio back up—in this case back to 100 percent—by the end of our forecast with a 50/50 shot, it's put in a red line. And it grays out or dims out all the portfolio options below that. It says the returns of those options are not high enough to meet the goal that I put in. Those are no longer ones I want to consider.

I put in another goal this time about the RPA current liability funded ratio. I want to keep it above 80 percent. It's maybe not a good example, but I wanted to have an 80 percent confidence that I could keep it above that level. It draws a yellow vertical line, and it grays out or dims out everything to the right of that. It says if we have a lot of standard deviation, we're going to tend to have the assets bounce down, and we'll not be able to meet that goal. Let's rule those out. We can put in goals of plan sponsors and be able to rule out different parts of the efficient frontier. We can narrow down their selection from the infinite number of options to ones that are appropriate to that plan sponsor.

These are the usual results of plan sponsors I work with. They put in goals that are not impossible to meet. Everything's dimmed down. I put in three conflicting goals here. It's grayed out, but this is to help me make a particular point. We all think about time horizon. We always know the longer your time horizon, the more aggressive you can be. Again, this is maybe just using a computer model to prove that. But I have three different goals that are similar that are impacted only by the

time that I'm considering. In all cases I'm looking at the funded ratio. I'm trying to maximize the funded ratio and have 75 percent confidence that I'm above a particular level.

In the first case, I tried to maximize it one year down the road. There are a few asset allocation options that meet it, and it's a conservative portfolio. If I'm trying to maximize my funded ratio next year, I'm going to be conservative. If I'm trying to maximize in five years, I could get more aggressive. I can move out the efficient frontier. If I try to maximize it in 10 years, I can move at the extreme other end of the efficient frontier.

Again, I have three similar goals. They're all dealing with a funded ratio. They're all trying to maximize the funded ratio, but I want certain levels of confidence. For the first one I want to have 95 percent confidence that I'm above a certain funded ratio. For the second one, I want 50 percent confidence that I'm above a certain level. For the third, I want to have 25 percent confidence of being above a certain level.

In the first case I'm being conservative. I'm worrying about having the funded ratio drop down even further. I want 95 percent confidence that doesn't happen. That's what I would call a concern or a risk that I'm worried about. I get conservative. At the other extreme I want 25 percent confidence that I'm going to make it back to some level. That's what I would call a goal, and that pushes us out the efficient frontier. Even though a plan sponsor might tell you that my biggest concern or thought is about the funded ratios, that doesn't necessarily point to a particular place on the efficient frontier. You have to dig a little deeper.

Asset allocation is more than a feeling. The particular plan sponsor's goals and concerns need to be considered when determining an asset allocation. You need to be thinking about every risk you take. That time horizon has a dramatic impact, but so does the level of desire or concern.

How does actuarial smoothing come into play? Let's think about some of the smoothing options we use as actuaries on a regular basis and how they will impact our asset allocation decision. We do five-year smoothing of assets' gains and losses in coming up with our actuarial value of assets. On top of that, we usually amortize any gain or loss that's calculated over some period. Maybe when looking at a large allocation of stock, we also are smoothing the results by constantly using an 8 percent assumption year after year rather than moving it with market conditions.

Let me first show you a chart of what the employer contributions would look like if we did not have those options (Chart 10). You basically suffered the loss, and then you had to put in a contribution to offset it. What I'm showing in my chart are two different asset allocation options. The one on the left is with 100 percent long bonds, and the one on the right is with 100 percent stocks. I forecast it one year

into the future. I'm looking at stochastically generated results, and I look at the output of those numerous stochastic results.

In the dark blue area are 50 percent of my results. They go from the 25th percentile to the 75th percentile. In the light blue and dark blue area combined are 90 percent of my results, and in the white, light blue, and dark blue all together are 100 percent of my results. You can see the volatility in the bond option versus a stock option. You see a lot of volatility in the stocks, and therefore you think that stocks might not be a good idea.

Now we bring into account all those smoothings, and if I put it out the same scale, you wouldn't even see it. I had to change the scale. You smooth out that volatility. How bad do stocks look compared to bonds now? Not bad. I have clients call me up and say, "I'm running a stochastic model, and every time I look at the contributions it tells me to put 100 percent stock." That's because you smoothed it all away. You smoothed the risk away, or at least deferred it.

There are some things you can't smooth away. You've shouldn't concentrate solely on the contributions and expenses that you smooth, but you have to remember there are some other things, such as a PBO-funded status in the footnotes. Although you might be smoothing the Financial Accounting Standard (FAS) 87 expense and be proud about the new number that you can report for a particular employer, you have to remember it's also going to have to put something in the footnotes about its PBO-funded status. There are smart analysts out there who will look at the PBO-funded status and make a judgment about a company based on that information.

Chart 11 shows the volatility in the PBO-funded status for my particular example. Now you start to see things come back. Again, maybe stocks are not such a great deal. They may be something to be worried about, anyway. Worse yet, look at the ABO-funded status in Chart 12. This was a bad example because I never fell below 100, but if I had a plan that was just above 100 percent funded on an ABO status, you can definitely see a situation where the volatility in stock would take you into places where you'd have to have reductions to shareholders' equity.

We're singing songs to our clients about twist and smooth—that we can smooth out some of the volatility of contributions and expense—but there are some things that we cannot smooth away at all.

In closing, when you're developing an investment strategy you should be doing asset/liability management studies. I think forecasting asset/liability management and risk management should be part of our everyday thinking as actuaries. We should stop thinking like lawyers about pension plan design and start thinking about being risk managers. We should make that part of our pop culture, and I'll hope you join our band.

Our next speaker is David Hauptman. David is a senior managing consultant in the New York office of Mullin Consulting, a national firm specializing in advising clients on nonqualified benefits and funding. David has been with Mullin for 11 years. Prior to joining Mullin Consultants in 1992, David worked with Milliman & Robertson. David is a frequent speaker, including presentations, for the National Association of Professional Financial Advisors, the Boston Security Analysts Society, the Boston Society of Financial Service Professionals and the Benefits Management Forum & Expo. He has been featured in numerous publications, including *Business Week Online*, the *Journal of Deferred Compensation*, and *Compensation and Benefits Management*. David holds a B.A. degree in both mathematics and economics from Boston University and is an Associate of the SOA.

MR. HAUPTMAN: I have a couple of points about my presentation today. It might differ from what you thought you were going to get when you decided you were going to come to this session because I'm focusing on nonqualified benefits, typically executive benefits. Today I'm going to cover qualified versus nonqualified plans, which I don't have to spend a lot of time on because the audience seems to understand them; the question of whether to fund or not to fund; comparing funding vehicles; benefit security considerations; and prevalence of benefits and funding.

The need for nonqualified plans basically comes about because IRS limits have precluded executives from being able to set aside money for generation of wealth for retirement. These are 2004 limits on benefits: the 402(g) limit in 401(k) plans goes up to \$13,000, 401(a)(17) is \$205,000, 415(b) is \$165,000 and 415(c) is \$41,000. The 402(g) and 401(a)(17) are the limits that set the standard for companies putting in nonqualified deferred compensation plans and nonqualified pension plans, commonly known as supplement executive retirement plans (SERPs).

Most of you have said you're familiar with the difference between nonqualified and qualified. The basic thing to focus on is qualified plans must be funded. They must be funded, and assets set aside in qualified plans need to be set aside in bullet-proof trusts, which basically means that, if there is a bankruptcy, the participants in these plans would receive some benefit payments. In nonqualified plans there's an ERISA requirement that they are not funded because nonqualified plans are not subject to Sections 2, 3 and 4 of ERISA. When we talk about funding, which I'll do today, nonqualified plans, if they are funded, must be informally funded.

Regarding perception versus reality, we're talking about executives. They are not the rank and file. They are typically the top 5 percent highest-paid employees in a company, and their wealth generation—their retirement benefits—typically come from nonqualified plans because of those Internal Revenue Code (IRC) limits, not from qualified plans.

This is an example of a CEO's salary and compensation and where his benefits come from. Chart 13 is based on a CEO client of ours. Based on his current salary and bonus and certain growth assumptions, we anticipate that at retirement his final average compensation is \$1,077,000.

We costed it out or calculated how much of his retirement income would come from the qualified plans, which is in the bar chart. The orange on the bottom is Social Security benefits. The one above that represents 401(k) benefits, and the one above that is the qualified pension plan. Somewhere in the vicinity of maybe a little bit less than 15 percent of his retirement benefits will come from qualified plans, and the remainder will come from nonqualified plans. You see the importance of nonqualified benefits for senior executives. The numbers change a little when you're talking about someone who's a bit lower paid, but still the difference exists between the qualified and nonqualified.

The question that's come up as I've met with our clients in the past six months or so, ever since the president signed into law the new reduced capital gains tax and dividend tax rate bill, is why do they need nonqualified benefits anymore? Why would executives want to put money into deferred compensation plans? Now executives can take their pay and invest it outside of deferred compensation plans. With 15 percent capital gains tax rates for long-term capital gains and 15 percent dividend tax rates, why do it?

I want to mention that the economics for deferred compensation plans are the same as the economics for 401(k) plans. The main difference is that, for deferred compensation plans, the benefits must not be funded. If they are funded, they must be informally funded. If the benefits are not funded, and the company goes into bankruptcy, the benefit payments are at risk of nonpayment. Basically, the plan participants become general creditors in a bankruptcy and risk not being paid.

The economics are the same, but let's just run through an example. John and Mary have \$10,000 of pretax disposable compensation. They have to decide whether to defer—this is over and above the 401(k)—or whether to take it in pay and invest it outside in the market. Here are some further assumptions. Mary's going to put her money in the deferred compensation plan. John is not. They're both subject to a 40 percent ordinary income tax rate based on federal, state, and maybe local.

Both earn, for simplicity, 10 percent, and John's earnings are subject to a 25 percent blended tax rate. What that means is John receives his \$10,000 in pay. He pays \$4,000 of tax. He receives \$6,000 in after-tax dollars and invests that \$6,000 such that the earnings on the \$6,000 are taxed at a 25 percent blended rate because part of his investment, if it's in mutual funds or stocks or bonds, will be taxable at ordinary income, and the part that's not ordinary income is the part that's either dividends or long-term capital gains. Mary's earnings are subject to 40 percent ordinary income tax rates, the same as they would be if she were in a 401(k). When she takes the money out five, 10, 15 or 20 years from now, she pays

ordinary income tax on all of the money, the amount she contributed and the earnings.

Table 4

Qualified Versus Nonqualified Benefits

After one year, the deferral plan's after-tax balance is higher, despite the reduced tax rates.

Net After-Tax Balance After One Year	John (Outside Investment)	Mary (Deferral Plan)
Compensation	\$10,000	\$10,000
40% income tax	(4,000)	0
Net investment	\$6,000	\$10,000
10% earnings	600	1,000
25% blended tax rate	(150)	0
Balance	\$6,450	\$11,000
Tax on distribution @40%	0	(4,400)
Net after-tax balance	\$6,450	\$6,600

The longer the deferral period, the greater the deferral plan's advantage.

Net After-Tax Balance After One Year	John (Outside Investment)	Mary (Deferral Plan)
5 Years	\$8,614	\$9,663
10 Years	\$12,366	\$15,562
20 Years	\$25,487	\$40,365
30 Years	\$52,530	\$104,696

Higher tax rates make deferral plans even more advantageous.

In essence, John gets \$10,000 in pay, pays \$4,000 tax, has \$6,000 to invest, grows the money at 10 percent and has \$600 of gain. At a 25 percent blended tax rate, that's a \$150 tax hit. His balance at the end of one year, assuming \$10,000 of disposable salary, is \$6,450. Mary doesn't pay tax because she defers the \$10,000 on a pretax basis. She earns 10 percent or \$1,000, and at the end of one year, she terminates employment and is due to receive her deferred compensation balance. She'll be taxed at 40 percent of her \$11,000 balance, or \$4,400. At the end of one year, Mary is exactly \$150 better off than John.

If you expand upon that, just on the \$10,000 initial investment, and take that out five years, you see that the difference between investing on the outside market and investing on a pretax basis begins to diverge, and ultimately, if Mary leaves her money riding for 30 years, she'll be doubly as well off as John will be. In essence, this is based only on a one-year, one-time contribution. Most of our clients that have participants who have deferred compensation available to them will put in money year in and year out. The difference becomes even greater. Despite the

lower tax rates, there's still a need for nonqualified benefits like deferred compensation.

To fund or not fund? Again, companies do not have to informally fund these plans, but they have to consider what happens if they don't. First, there's financial statement volatility. People in deferred compensation plans earn money or lose money. To the extent they earn money, there's a profit and loss (P&L) expense. The company has to decide whether it wants to back up that potential expense with assets so that the assets may grow in line with how the participants' monies grow. Regarding benefit security, many people, when they know there are no assets being set aside, whether formally or informally, will not participate in plans. They want to have some sort of benefit security.

Let's discuss tax advantages. The difference between qualified and nonqualified is that when you make a contribution and when a company contributes money to a qualified benefit trust, it gets a deduction. When a company makes a contribution to a rabbi trust to informally fund a pension plan or a nonqualified pension plan, it does not get a deduction. Another thing to mention is the Social Security syndrome. Should the shareholders of tomorrow pay for the benefit expense of today?

Here are some reasons why many companies choose not to fund, and for nonqualified pensions about 50 percent fund informally and 50 percent do not. The considerations might include whether the company is a taxpayer. Is the company an alternative minimum tax (AMT) taxpayer? What is its cost of money? If the company feels that it can set aside an asset and earn perhaps 8 percent, but its return on capital is 15 percent, why set aside an asset? Why not invest it back in the business? We hear that a lot from many of our clients. How long is the benefit promise? Is this a two-, five- or 30-year promise? Participant perception is important. Do the participants in the plan want assets to be set aside? In general they do.

Three major funding vehicles that are used to fund nonqualified benefit plans, SERPs, or deferred compensation plans are life insurance, taxable securities or mutual funds and company stock. Companies that choose to fund basically are going to use mutual funds. They're either going to use mutual funds inside of a life insurance product or mutual funds outside of a life insurance product. The difference is if a company is a taxpayer, in general, it will choose to use mutual funds inside of a life insurance product.

If a company is not a taxpayer, perhaps with net operating losses (NOLs) for five, 10 or 15 years, or is an AMT taxpayer, in general, it will use mutual funds. It'll never use life insurance. There's the gray area. A lot of companies have moral reasons why they decide that life insurance doesn't work for them. Life insurance is essentially insuring the plan participants, the people in these benefit plans, by buying life insurance on their lives and setting the cash value assets aside in mutual fund-like investments that will offset the benefit liability that these participants are

causing the company to have to incur. In essence, the decision could be a financial one or it could be a moral one.

Mutual funds are great for funding benefit liabilities, deferred compensation especially. The problem is that in a deferred compensation plan, which is a typical plan, plan participants will get 10 or 15 choices, similar to a 401(k). They'll invest the money in those different choices. As their assets grow, they're not taxed until the money comes out. If the company wants to set aside assets in the same mutual funds—it wouldn't be giving these assets to the participants because they have to be informally funded—the company will buy these mutual funds.

But unlike the plan participants, the company will incur tax on dividends, on capital gains generated inside of the fund. When the money managers transact or move money or buy and sell shares, taxes will be generated. Worst of all, when plan participants move money on an aggregate basis, the company will want to be hedged similarly to the asset/liability mix of the plan participants.

The company will move money, as well, and hence will generate tax, and that's why many companies choose to use life insurance. Life insurance allows companies to move money inside of a portfolio, which is essentially a separate account life insurance product, without incurring the tax, but there's no free ride because with life insurance, they may not pay tax, but they pay insurance charges. Let's talk a little bit about that. By the way, we see company stock as an investment or as an asset vehicle or asset alternative typically when company stock is also offered to the participants in the benefit plan. If it's offered, we're going to see company stock in a rabbi trust.

I have a financial example. It's going to be hard for me to describe, but basically life insurance has an advantage over taxable securities or mutual funds because of the tax. Let me go back into this example, which might illustrate it a little better. This is a 30,000-foot view, but what I talked about before, Chart 14, is an example of taxable securities with a 25 percent turnover. The company essentially is going out and buying mutual funds, and there's a low turnover. The managers aren't generating turnover, and the plan participants are not generating turnover. Despite that, because there's a mix of stocks and bonds—this example has a 9 percent gross earnings rate, so it's probably 60 percent or 65 percent stock and 35 percent bonds, but it's probably a little bit high—the tax being generated is 3.03 percent off of the total 9 percent.

The company is earning 9 percent total. It's paying, we're assuming, 75 basis points in money management fees, but then it's paying a little bit more than 3 percent in tax generated from turnover. The after-tax return is 5.22 percent.

Go over to the far right, and look at the same return with 9 percent inside of a life insurance product. It's a strong assumption. Can a life insurance product earn the same 9 percent gross as mutual funds? Sometimes it can. But if you have 10,000

mutual funds available at your disposal as a company or 30 mutual fund-like choices inside of a life insurance product, there's probably a strong argument that you may not be able to earn the same 9 percent inside the life insurance as outside. This comparison is simply to show how the life insurance stacks up to the mutual funds if you can earn 9 percent and 9 percent. Over the long term, the life insurance charges are going to be 52 basis points on assets. We see this number go as low as 25 and as high as 150 with competitive life insurance products in today's market.

Bill and I didn't work this out before, but as Bill was talking, he spent a lot of time on investing in hedge funds to generate a higher return. I want to go a little bit off the track here and say that we've talked to a lot of our clients recently, and they would love to be able to earn 8 percent without additional risk. Our clients are seeing that hedge funds are a great way to manage risk without impacting the expected return. The problem is the 8 percent return you generate is pretax.

Many of our clients are talking to us about using hedge funds inside of life insurance products. Typically in today's private placement life insurance marketplace, we see at least two or three hedge funds in any private placement products: Met Life; Pacific Life; Equitable; The New England, which is part of Met Life; and I think The Hartford. The private placement products are being set up with hedge fund investments because companies love to be able to make that 8 percent, but how great would it be to make the 8 percent and not pay 3 percent or 4 percent in tax, because there's no more tax-inefficient investment than a hedge fund. What if you were able to eliminate the tax? It's food for thought. What I'm covering is funding benefit plans, but as an aside, the hedge fund interest from our clients has peaked.

A *Wall Street Journal* article says that corporate-owned life insurance is evil. It is evil. It's more evil than the executives that it's purchased on. There's an article at least once a week on corporate-owned life insurance, and today, more so than ever, there's been a lot of talk in the marketplace about what's going to happen to the future of corporate-owned life insurance. Sen. Jeff Bingaman (D-NM) has been on a crusade for probably three years to try to eliminate corporate-owned life insurance.

He has a constituency within which there's been enough of a movement to push Congress, and the Senate Finance Committee two or three weeks ago voted to put an amendment inside of the nest egg bill that's in the Senate right now that would tax death benefits from corporate-owned life insurance to the extent executives died after they were no longer employed. That would, in essence, kill corporate-owned life insurance because executives typically don't die while employed.

There are two benefits of corporate-owned life insurance. Ultimately corporations will receive death benefits tax-free. The death benefits they will receive in 20, 30 or 40 years will ultimately pay for the cash benefits they've used to pay the executives today. But the real reason why companies buy corporate-owned life insurance is it's

a way to shelter assets so that the cash value grows tax-deferred or tax-free, that 52 basis points we talked about before. If you're following the *Wall Street Journal* today or in the next few weeks, you'll see a lot on corporate-owned life insurance.

Sen. Kent Conrad (D-ND) has said there is a lot of evil in corporate-owned life insurance. We feel that corporate-owned life insurance is important to allow companies to set aside assets to fund executive benefit plans, but here's what we think is wrong. First, we don't think companies can insure people without getting their consent. Second, we think if companies insure people, they have to insure people who are eligible for these benefit plans. Third, there has to be some tie between the amount of life insurance being purchased and the aggregate liability being funded. We're talking about a \$10 million liability. You can't buy \$10 billion worth of corporate-owned life insurance unless the assets are set aside in some sort of trust-like vehicle, and rabbi trusts are the most prevalent. You'll probably see a lot on that.

There are some benefit security considerations. The most popular vehicle for securing executive benefits is a funded rabbi trust. The ideal solutions include economic cost, change-in-control protection, plan design flexibility and ease of administration. You can't get all of those, but the callable funded rabbi trust will help you protect against most of those, but not against bankruptcy. In essence, there is a benefit security vehicle that is valuable. It's a rabbi trust. There are others. Executive benefit insurance is almost unavailable in the corporate marketplace. Lloyd's was the last one to offer it, and it pulled it.

Delta used a secular trust recently and took a big hit politically from the use of a secular trust. Split dollar is under attack, and there are split dollar notices out there. Retention trusts and secure trusts are others that we could talk about if you have questions about them, but it takes six hours to go through them. The more secure you are, the more risk there's going to be to the executive and the company. That's what you need to take away from this. A rabbi trust is not going to secure you from bankruptcy, but it's going to be the best vehicle to use.

Regarding nonqualified deferred compensation plans, about 60 percent of companies secure benefits and set assets aside, and here is some prevalence. Traditional life insurance (51 percent) and a separate account or variable life insurance (49 percent) are by far the most prevalent. Company stock is at 9 percent, and mutual funds are at 9 percent. The simple reason is that companies that are taxpayers are going to want to use a vehicle that's going to allow them to invest in a mutual fund-like investment but not pay tax on the growth, and that's why life insurance is as prevalent as it is.

SERPs, or nonqualified pension plans, are funded less because typically they are company monies. The company feels like it has more of a right to use that money for corporate purposes, but when corporate money is used, variable life insurance is the most widely used vehicle. Company stock is used more than in deferred

compensation. As I said before, only about 47 percent of SERPs are secured. This is defined contribution SERP funding. That covers it.

MR. RULOFF: While people are digesting that and considering questions they might have, I have one for Bill. For all the plans that I have this 8 percent assumption on, what should I be using instead?

MR. BADGER: Most of my clients had assumptions that were 8.5 percent or 9 percent, and they reduced them to 7.5 percent or 8 percent, which was a move in the right direction. Of course, when you reduce your assumptions, that means your contributions have to go up. It's a difficult decision.

MR. RULOFF: Do you know if those assumptions from Greenwich Associates were accounting assumptions or funding assumptions?

MR. BADGER: They were funding assumptions.

MR. RULOFF: David, I have a question for you. It seems counterintuitive to me to use life insurance to fund a pension liability that's an annuity. That seems to be like doubling my mortality risk in some way. Is that true? If so, how might that come into play in making your decisions?

MR. HAUPTMAN: You're not doubling the mortality risk because if someone dies 10 years after he's left the company, he's received 10 years of maybe a qualified pension annuity or maybe a nonqualified pension annuity. At that point he dies and his annuity may stop depending on whether he has survivor benefits, but if the company had insured that executive, it would receive the death benefit tax-free. That will be used to offset the cost of the liability.

MR. RULOFF: From thinking within the last few years of new asset classes that have been included in the analysis that you've done, the thing that I see a lot of recently is adding non-U.S. bonds. I historically thought of that as a diversification against cash and usually didn't think about adding it unless I had a lot of cash. I'd like to get your comments on that before I turn it over to you. I also see clients going to tips, and that might be because of the actuarial liability issue that I have, and that is if you're not changing your assumptions, you're using 8 percent year-in and year-out, so the duration is zero. Tips make a lot of sense for me. Do you have any comments on those two asset classes or any other new ones?

MR. BADGER: I think non-U.S. bonds are good, but you have to realize that non-U.S. bonds are volatile. So, if you want to go into that, you have to realize if you are going to hire a manager to do it, you have to do it for the long term. This is why we recommend you have your fixed income manager do it opportunistically. He's not going to be right all the time, but he knows a heck of a lot more about it than you do. As far as tips are concerned, we haven't had much interest in that.

MR. HAUPTMAN: We've seen tips-type investments or tips funds being put inside of the separate accounts of life insurance products. As far as non-U.S. bonds, I don't see a lot of that inside of life insurance products or for funding pension liabilities. I haven't seen a lot of it.

FROM THE FLOOR: I'm on the board of a large pension fund, and we've had a lot of managers coming in talking about using hedge funds, fund to funds. We have finally done it. Usually the fund-to-fund managers talk about having, like you mentioned, a good return without that much risk. I have two questions in that area. Do you believe in the good returns without that much risk? In other words, it's different from the old rules that we used to think of, that you only got better returns if you were willing to take risk, or is there survivorship bias in there that we should be concerned about? My second question is in the efficient frontiers that you developed, at least the asset ones. This would put them above the efficient frontier, and so a lot of your money should be in these fund to funds. I'm just wondering how you would ever do an efficient frontier with this fund to funds.

MR. BADGER: This is where I mentioned that when you're doing a mean variance optimization, like I showed on the screen up there, you can't include the hedge fund because, as Fidelity pointed out, you get 44 percent of your assets in hedge funds, which is no one's optimal solution. To the extent that you can get 5 percent or 10 percent, whatever the client feels comfortable with, you do your mean variance optimization layers. You take the portfolio without it and then add it back in to show what the return and the risk are.

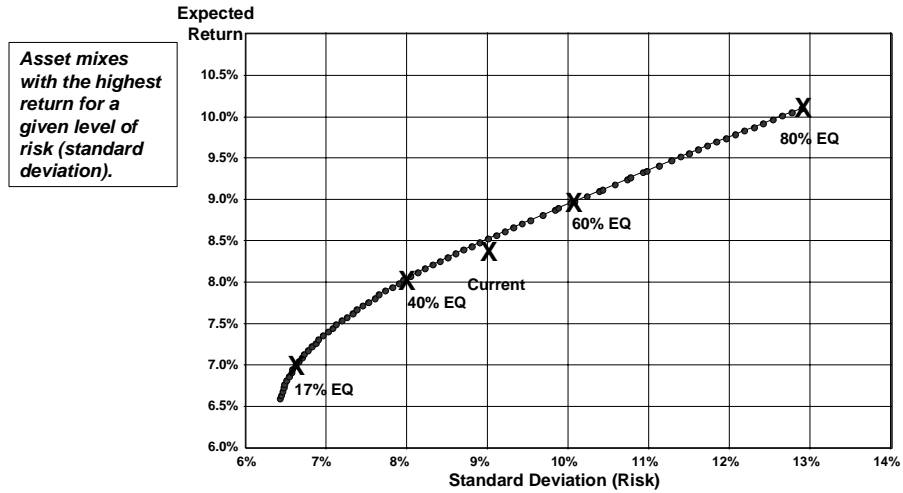
MR. RULOFF: I do work with definitely a lot of investment consultants, and it seems like all of them have that issue, that if I plug in the assumptions for the hedge funds into the model, it's not so much that I'm seeking 8 percent returns but that they're so great a return versus the risk that I get a large allocation to hedge funds, and we either throw it out and bring it in later or we cap it.

FROM THE FLOOR: I'm wondering how these risk and return parameters for the hedge funds are determined for the equities and bonds. I assume it's kind of based on historical information.

MR. BADGER: I'm not sure how they're exactly put into the model from a quantitative point of view, but they're difficult to generate to get good numbers because you can't mention any of these things.

Chart 1

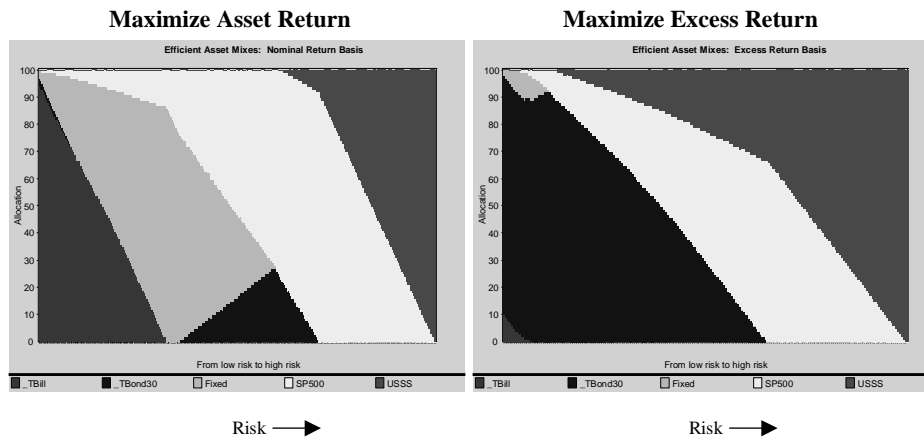
Classic Efficient Frontier



4

Chart 2

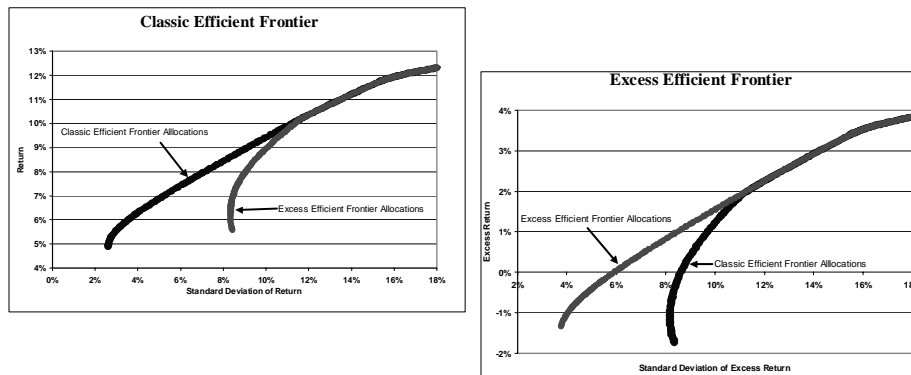
Comparison of Efficient Frontiers Asset Allocation



6

Chart 3

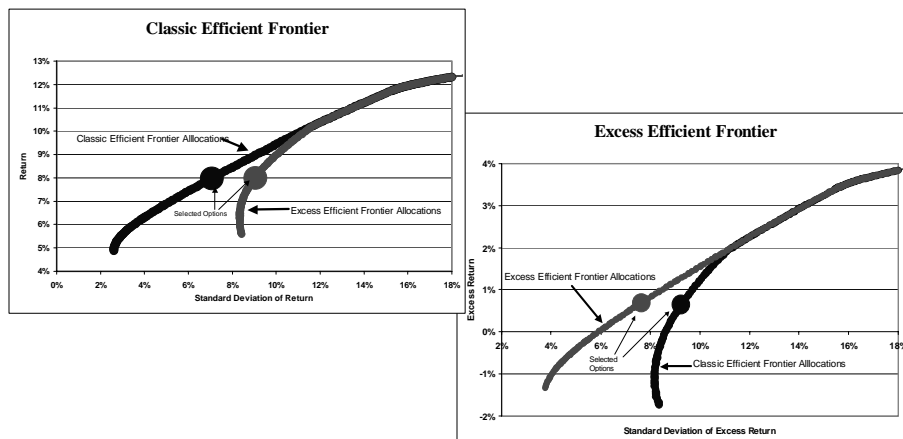
Comparison of Efficient Frontiers



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Chart 4

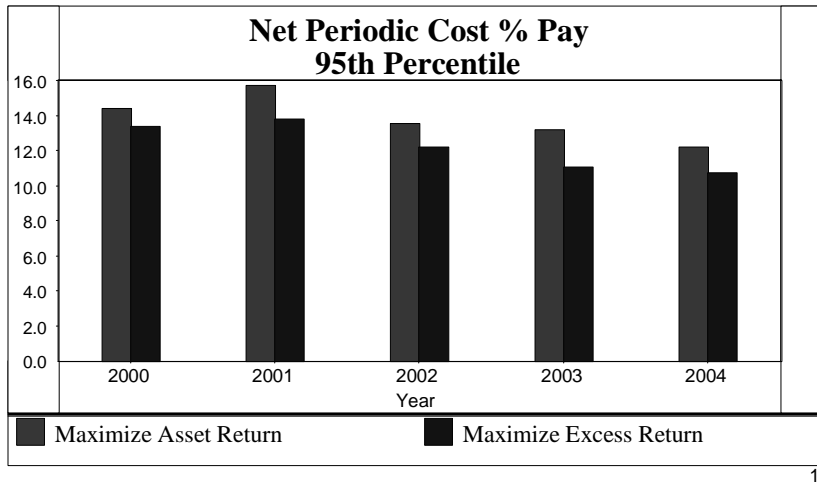
Points on Efficient Frontiers



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Chart 5

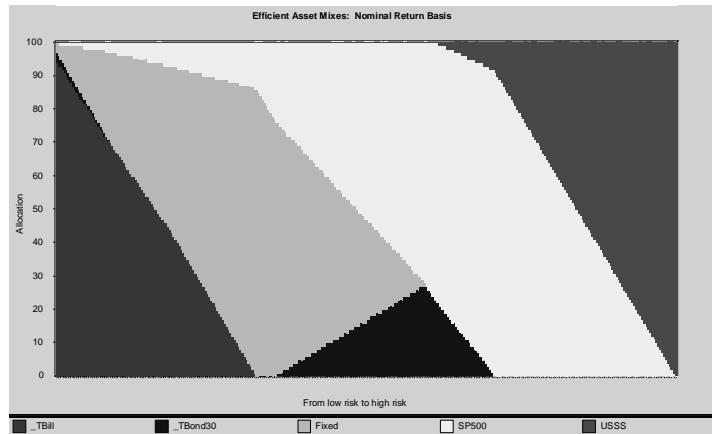
Comparison of "Worst" Case Scenarios



10

Chart 6

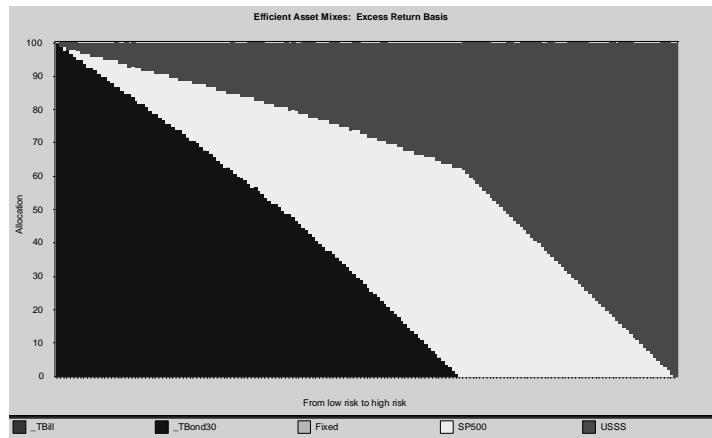
Asset Only-Nominal



15

Chart 7

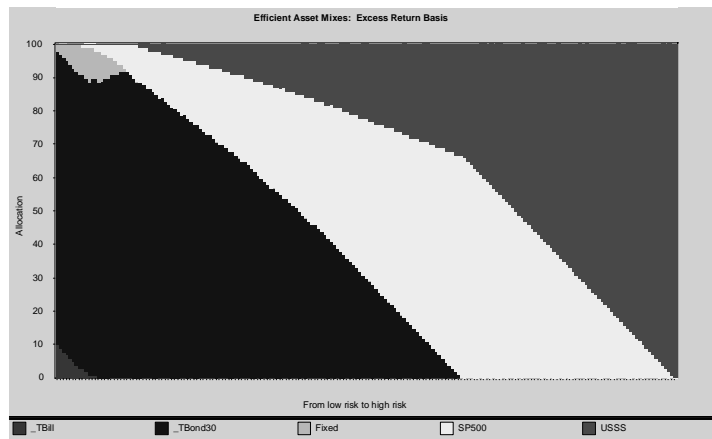
Excess Return - ABO



16

Chart 8

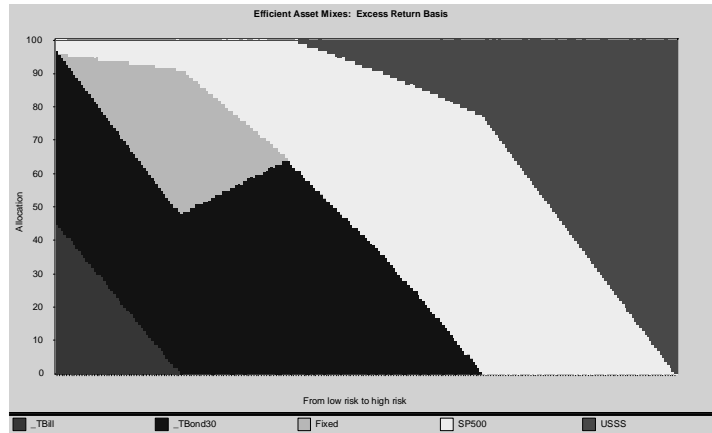
Excess Return - PBO



17

Chart 9

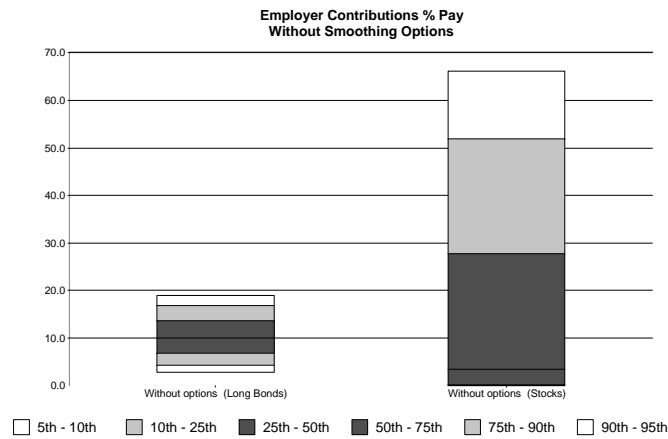
Excess Return - CL



18

Chart 10

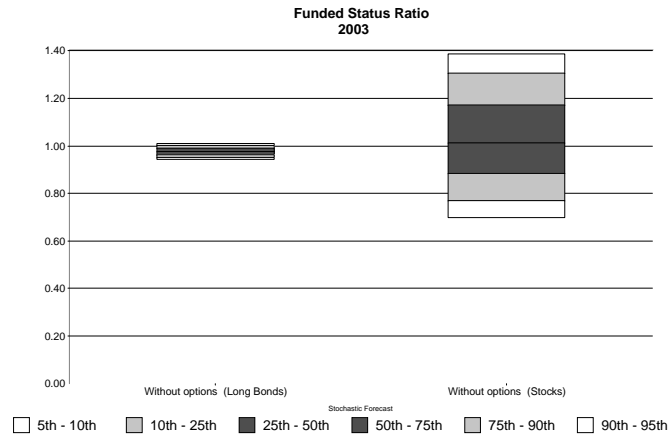
Volatile employer contributions without smoothing



32

Chart 11

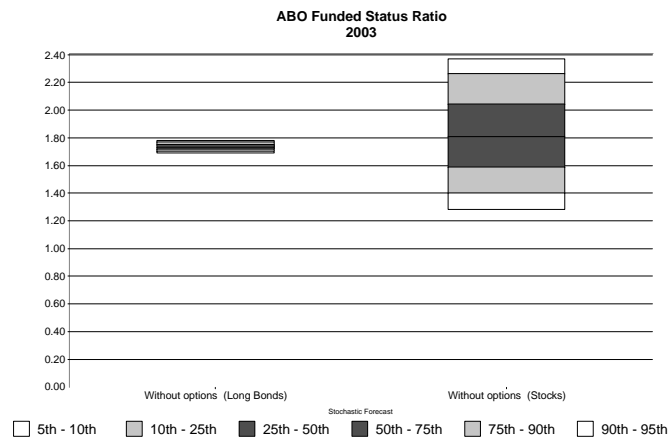
Smoothing can not remove volatility in PBO funded status



34

Chart 12

Smoothing can not remove volatility in ABO funded status



35

Chart 13

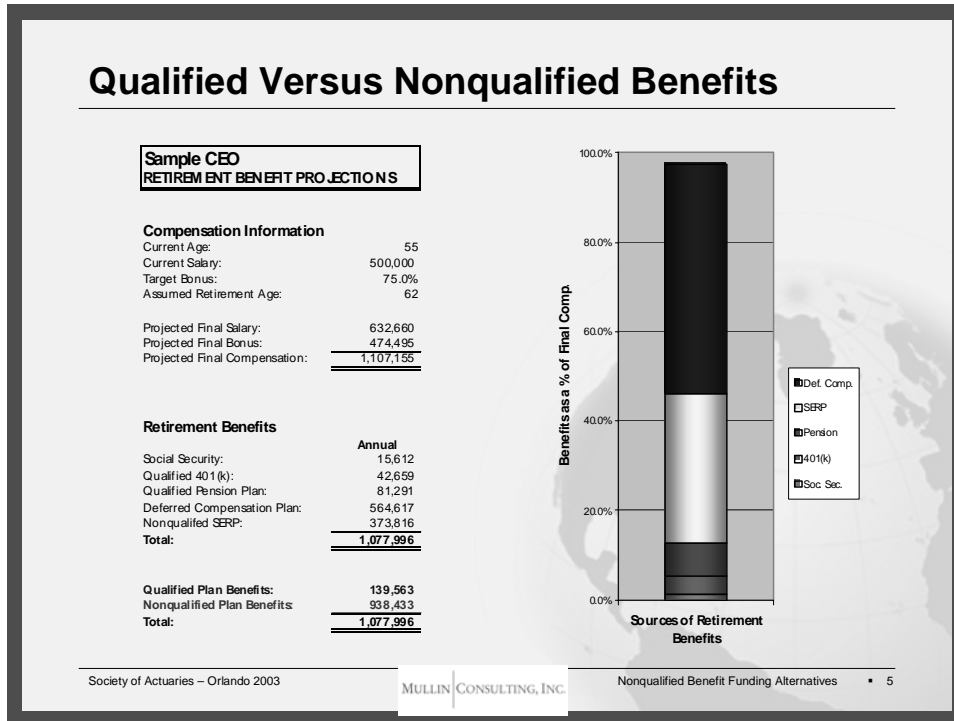


Chart 14

