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PENSION INVESTMENT -- ASSET ALLOCATION

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Recorder: THOMAS J. GRAF

- o Asset/liability matching
- o Risk tolerance versus yield determination
- o Role of insurance company products and investment services

MR. MARTIN J. THOMAS: I'll be speaking about asset allocation for pension plans from the perspective of the small to mid-size defined benefit plan, up to about $30 million of plan assets. What our market research showed originally and what has since been confirmed by our clients and prospects is that these plan sponsors are very different from the people who run very large plans. People who run the larger plans very often have a lot of expertise either through schooling, MBAs, or on-the-job experience. Very often the pension plan is their sole or very major responsibility.

In this small end of the market it's somewhat different. Very often the person does not have any sort of graduate degree in business. They have many job responsibilities in addition to the pension plan: payroll, personnel, hiring, firing, maybe even driving the truck if that guy is out sick on a given day! As a result, some of the things I'm going to say may seem pretty basic to some of you, especially if you work in the large end of the market. But I believe they are the fundamentals which any plan should be considering.

We try to get our clients to recognize the primary objective of pension plan management. It's the number one objective for all plans, and it's really the reason that the plan exists; that is, maximizing the likelihood that the pension plan can meet its funding obligations -- that it can pay the benefits. As a result, you can't concentrate just on assets or just on liabilities, but the appropriate focus of pension plan management is the surplus of the plan: the excess of the assets over the liabilities.

It's probably not very surprising that oftentimes people do concentrate only on the assets, especially plan sponsors who are not very quantitative. After all, it's a pretty tangible thing to own stocks and bonds, and to watch the investment income come back to the plan. But on the other side, the promise to pay pension benefits 10, 20, or 30 years in the future is a very intangible thing, especially for a nonquantitative pension manager in the small end of the market. After all, we actuaries have to make a half dozen assumptions just to come up with the value of the liabilities. If we vary the interest assumption by 1%, it might very well change the value of the liabilities by 10% to 20%! So it's not surprising that small plan sponsors concentrate only on assets.

We try to get them to concentrate on surplus. From a corporate perspective, the pension plan is evaluated according to its surplus; the pension contribution is determined from surplus; the pension expense is determined from surplus; and finally, any future plan improvements will be cheaper with surplus. Intuitively, this may have always been the case but there have been some recent developments which should really make it clearer to many people. The Omnibus Budget Reconciliation Act (OBRA), which primarily affects pension funding, and FASB 87, which affects pension expense, really highlight why the surplus and surplus ratios should be concentrated on in pension plan management.

1. To the extent that assets are less than the vested benefit obligation, you're going to be paying higher premiums to the Pension Benefit Guarantee Corporation (PBGC).

2. To the extent that assets are less than 100% of the accumulated benefit obligation (ABO), you'll have to show a balance sheet liability if you have to comply with FASB 87.

3. If assets are less than 100% of the current liability, there are going to be higher minimum contributions and more rapid amortization of plan amendments under OBRA.

4. If assets are less than 100% of the projected benefit obligation (PBO), you're going to show a higher pension expense on the corporate income statement if you are subject to FASB 87.

5. And finally, on the other edge, if assets are greater than 150% of what OBRA defines as the current liability, you hit the full funding limit and can no longer make a tax deductible contribution to the plan. If you still choose to make a contribution to the plan there will be a 10% excise tax on that.

Hopefully, you've started to realize why it's surplus, and not assets or liabilities alone, which should be the focus of pension plan management. With this in mind, what's the key to running the plan to determine a proper asset allocation? It's investment policy. Often there are some conflicting semantics here.

Investment policy is the asset mix that best meets the fund's objectives in the absence of active management. It results in the determination of which asset classes to invest in and what the long-term or normal allocation positions to those classes will be; for instance, 60% stocks, 30% bonds, 10% short-term securities. And finally, it's investment policy which is really the quantification of a plan sponsor's risk tolerance. The extent of how much risk-taking or how risk-averse they can be really does determine which asset classes are included and what the long-term positions that you are going to hold in those asset classes will be.

This is the second major area where I see many small plan sponsors misdirecting their attention. The first was concentrating on assets, not surplus. The second is getting caught up in investment strategy, rather than in investment policy, the long-term position of the plan.

Investment strategy is any deviation from investment policy intended to take advantage of any short-term investment opportunities. It can take place on one of two levels: either (1) at the plan sponsor level, e.g., plan sponsor choosing

to put more money into bonds by taking them out of stocks, moving from the stock manager to the bond manager, or (2) at the investment manager level, e.g., a normally diversified equity manager that is making some sector bets and is not running a diversified portfolio but is investing more heavily in certain sectors of the market. Some plan sponsors get caught up more with strategy than with policy. Strategy is far less important than investment policy.

A study from the First National Bank of Chicago looked at 91 large pension plans over the period 1974 to 1983. I feel that this is a very good study. Obviously, it covers a very large number of plans. These plans ranged from $100 million at the beginning of the period up to $3 billion at the end. It represents a very significant amount of market capitalization. And finally, it covers an 11-year period that included periods of recession, inflation, and economic good times where the markets performed well. Remember that 1974 started off with equity markets selling off 24%, so it's a very diverse period and I feel it's a very good base for a study.

The study results are summarized in the matrix in Exhibit 1. Across the top is security selection. "Actual" is what actually was selected. "Passive" is the security selection that would have been realized by investing in the broad markets. The benchmark for the broad market equity return was the S&P 500. The benchmark for bonds was the Shearson Lehman Government Corporate Index. The "passive" security selection would have been the returns from investing in those benchmarks rather than deviating from them in an attempt to beat them.

Timing is the vertical axis. "Actual" is what actually took place. "Passive" is what would have happened had they remained at the long-term allocation positions inherent in their investment policy.

So, the bottom right-hand corner is what they would have returned on their funds by remaining at their long-term positions and investing in those asset class benchmarks, the S&P and the Shearson Lehman. It would have returned 10.11%. Top left is what actually occurred when they deviated from the long-term positions and they deviated from the asset class benchmarks.

As you can see, not only did it not help them, but it hurt them! It hurt them to the extent of 110 basis points over this period by deviating from their policy allocations and deviating from the asset class benchmarks. It's also broken down to show the effects of timing and security selection and the small cross product return that resulted from the study.

Even though I feel this is a good study -- large number of plans, large capitalization, good period, etc. -- some people could argue that it's an aberration. Active management, either at the policy level or at the security level, should give you something, and maybe a different period and a different study might.

The second thing that came out of the study is shown in Exhibit 2: the percentage of return variation explained by investment activity, the r^2. As you can see, top left, obviously what actually happened explains 100% of what actually happened. But the bottom right, where they stuck to their normal allocations -- stuck to the asset class benchmarks -- explained almost 94% of the total return of those funds! This is what's really important in balancing strategy versus policy. Plan sponsors should spend the majority of their time worrying

EXHIBIT 1

MEAN ANNUALIZED RETURNS BY ACTIVITY,
91 LARGE PLANS, 1974-1983

Timing	Security Selection: Actual	Security Selection: Passive
Actual	9.01%	9.44%
Passive	9.75%	10.11%

Active Returns Due to:

Timing	-.67%
Security Selection	-.36%
Cross-product	.07%
	-1.10%

EXHIBIT 2

PERCENTAGE OF TOTAL RETURN VARIATION
EXPLAINED BY INVESTMENT ACTIVITY,
AVERAGE OF 91 PLANS, 1973-1985

Timing	Security Selection: Actual	Security Selection: Passive
Actual	100.0%	95.3%
Passive	97.8%	93.6%

Source: "Determinants of Portfolio Performance" by Gary P. Brinson, L. Randolph Hood and Gilbert L. Beebower, *Financial Analysts Journal*, Vol. 42, No. 4, July/August 1986.

about this 94% of their return, the part that's explained by investment policy, not investment strategy.

What goes into investment policy? Investment policy anticipates the risk to the pension plan objectives and concentrates on the long-term asset mix suitable for your specific needs. It must analyze the details of several things, some of which are very hard to quantify.

1. First of all, and probably on the most broad level, legislation and regulation to which you are subject: OBRA, FASB. This implies trying to balance what's more important to you -- funding versus expense -- to the extent you have to make a choice. On a FASB level, what do you want to guard more highly against: showing a liability on your balance sheet or minimizing either expense or the volatility of expense on your income statement?

2. Business risks. Your pension plan is really part of the corporation. It's not a distant cousin and it should be treated just as a subsidiary of equal value. This is really consistent with the concept of pension benefits being a form of deferred wages and you should run your plan with your corporation in mind. Weyerhauser, for example, should probably not invest in timber for their pension plan. To the extent that the business has problems, returns on their pension plan assets will also have problems. Also, the pension plan is being viewed now as part of the corporation by rating agencies and corporate raiders. One of the plums of any corporate takeover right now is terminating an overfunded defined benefit plan and reverting the excess assets.

3. Plan design and assumptions. What assumptions are you using to value your plan? Are they aggressive versus other plans? Are they conservative? What valuation methods are you using? Are you smoothing bond returns? Maybe you'd want to think twice about that. Bonds in a liability context are really the risk free asset. You invest in them so that they'll match the performance of your liabilities. If you smooth them, you detract from that.

4. Plan demographics. To the extent that your plan is younger, you have more time before you have to make benefit payments and you can probably afford to be a little more risk-taking. If you have an older plan with a lot of near-term benefit flows, you probably should be more conservative in nature.

5. Surplus ratios. How well funded is your plan? Generally, from moderate levels of underfunding to a moderate level of overfunding, you can take on more risk as you become better funded. There is more of a cushion there to absorb any of the interim volatility that you get by investing in higher returning asset classes.

   You find some interesting results at the extremes, however. An extremely underfunded plan, for example, might very well have a philosophy which I refer to as "go for it." You basically don't have much to lose. You're already paying the maximum PBGC premium, $50 per participant. You might as well invest in very high return risky assets. You might work your way out of the hole. If you don't, you have the inherent put option

to the PBGC. At 30% of net worth that might be the inexpensive way for you to go.

On the other end of the spectrum, a very overfunded plan is no longer making contributions. They probably do not anticipate making contributions in the near future and they might not want to do anything to jeopardize that. So at the very extreme of overfunding you might take on a very conservative investment policy, locking up the situation that you have.

6. Existing asset mix. Obviously it costs money to buy and sell securities so it is preferable not to change your existing asset mix to any great extent if you don't have to. You can accomplish a lot just by lengthening the duration of your bond portfolio to better match your liabilities, which might very well have a duration in the neighborhood of 12 years.

7. Finally, asset-liability modeling under some multiple economic scenarios. What drives investment performance? It's the economy. You don't have to go very far into the future before very qualified economists are picking some very different economic environments. In the short run, asset-liability modeling will show you the range of alternatives for such things as pension expense on your income statement. But you don't want to get hung up by going too far into the future, or absolutely hanging your hat on any one scenario, or coming up with a weighted composite of multiple scenarios which might not be very likely even though some of the alternatives that caused it are.

The first side of developing investment policy is asset analysis, choosing the asset classes you'd like to invest in. For each asset class, you need expected returns, expected standard deviations, expected correlation coefficients and any minimum and/or maximum allocations you'd like to see for the class. For determining the plan's long-term policy you should be using long-term forecasts for returns, standard deviations and correlations.

In the summer of 1987 there was probably a very small, if any, risk premium for stocks over bonds. The stock market ran up to extremely high levels. But that's not really what you're concentrating on for investment policy. Long-term policy should be based on long-term asset class relationships.

Pension plans liabilities are like fixed income, but fixed income going out of the plan, not coming in. In the very short term, liabilities are determined by the level of and the changes in interest rates used to value them. In the long term, liabilities grow as a result of inflation and productivity gains which first work their way into salaries and finally into the benefit payment stream.

One note about inflation. Inflation on the asset side on fixed income returns is not cumulative -- it's momentary. As inflation goes away, high yields on bonds will go away. However, on the liability side it is cumulative. If you have inflation one year, salaries will go up, but when inflation goes away the next year, salaries do not go down. The effect of inflation on the liability side of a pension plan is cumulative. On the asset side it is not.

Investment managers have a relatively easy job. Generally, they are investing in a single asset class -- stocks, bonds, real estate, etc. -- and their objective is relatively simple. Given a predetermined level of risk, their job is to maximize returns.

Plan sponsors do not have it so easy because they really have two portfolios to manage. On the asset side, they have multiple asset classes to worry about, and on the liability side, they really have multiple definitions of which liability to go after. Should they be concerned with only the vested benefits, with the ABO, or with the PBO?

As illustrated in Exhibit 3 you're going to have return, standard deviation, and correlation numbers for each of the asset classes as well as for the liabilities. The liability which is modeled here is an ABO-type of liability. You can see that it's very similar (in fact identical in this example) to a long bond portfolio. But if it were more of a PBO-type liability, those productivity gains and inflation factors would work their way into the liability so that in the very long run, the long bond portfolio would not keep up with the liabilities. You really have to have some investment in equities which will capture the effect of the productivity gains and inflation.

EXHIBIT 3

ASSET-LIABILITY MODELING TECHNIQUES

Long-term Economic & Capital Market Expectations

	Return	Standard Deviation
Cash	5.4%	3%
Long Bonds	8.5	18
Stocks	11.5	20
Liabilities	8.5	18

Correlation Coefficients

	Cash	Long Bonds	Stocks	Liabilities
Cash	1.00			
Long Bonds	.10	1.00		
Stocks	-.15	.20	1.00	
Liabilities	.10	1.00	.20	1.00

Many of you are probably familiar with the efficient frontier shown in Graph 1. Along the bottom is the volatility of an asset portfolio. Along the left is the asset return. The line is the range of optimal portfolios. On the left is the low risk/low return portfolio which is predominantly investment in cash. On the right is investment in the highest returning asset class, stocks in this example. The long bond portfolio is suboptimal in that it falls, like all suboptimal portfolios, under the curve.

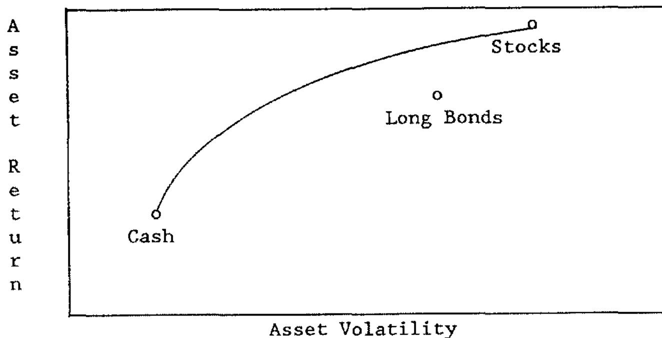
What if we were looking at surplus of the pension plan? Along the bottom of Graph 2 is surplus volatility. Along the left is surplus return. The long bond portfolio is now the risk-free asset and stocks are still going to be the highest returning asset class. Cash on a surplus level really doesn't offer you anything and is very suboptimal.

Given a series of optimal portfolios, which is best? The easy answer is to choose that surplus portfolio which has risk and/or return characteristics most similar to the plan's long-term investment policy. The more difficult answer is to fit in those many factors which I described earlier: business risk,

GRAPH 1

OPTIMAL PORTFOLIO ANALYSIS - ASSETS ONLY

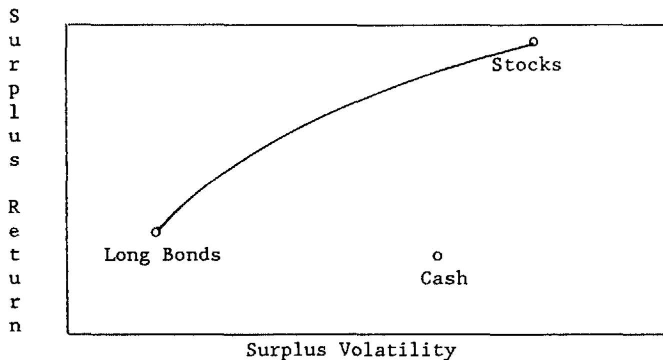
Efficient Frontier



GRAPH 2

OPTIMAL PORTFOLIO ANALYSIS - SURPLUS

Efficient Frontier



legislation, plan characteristics, etc.. And try to then take some combination of those very nonquantifiable factors which go into your investment policy and must be evaluated when you assess where you should be on the efficient frontier.

To summarize, the plan sponsor should keep the objectives of the plan in mind. The number one objective for all plans is making sure that the liabilities are paid. Maximizing the likelihood that the benefits will be paid is the purpose for your plan. Second, concentrate on the right things. Concentrate on plan surplus rather than plan assets. Concentrate on investment policy, not investment strategy. Finally, try to develop a rigorous approach to developing investment policy which assesses those many trade-offs that affect your pension plan.

MR. REGINALD C. YODER: My part of the program is to describe an extension of these asset management concepts to the defined contribution market. Obviously, not everything previously discussed will apply, since there are no defined plan liabilities to consider. However, many of the risk and return considerations are applicable and, certainly, insurance company products and services are involved.

BACKGROUND

Although The Principal Financial Group serves the entire pension market, our strength over the years has been in providing full-service products to small- and medium-sized plans. We have been particularly successful in marketing allocated GICs in the 401(k) market. To do this, we have developed highly sophisticated systems to provide recordkeeping services for participants in the plan.

For defined benefit plans, since the mid-1970s we have offered a fund selection service similar to that which Marty described. With our current concentration on full services in the 401(k) market, extension of that service to defined contribution plan participants seems logical, and builds on our established capabilities and strengths.

SERVICE DESCRIPTION

The Principal Financial Group is developing an asset allocation service for profit sharing, 401(k), and money purchase retirement plans that use our allocated GIC. This service, called the Fund Selection Service, is expected to be available in late 1988 in select states, and in all states the following year. The Fund Selection Service will be provided by our member company, Principal Financial Advisors, Inc., a registered investment advisor.

The Fund Selection Service for defined contribution plans is being designed to help plan sponsors and participants make important investment decisions. Participants are concerned both with earning high investment returns and with controlling risk. Investment earnings are important since even small differences in returns compound over the years to make big differences in account values at retirement time. Risk is also important. Historically, within the range of risk that is generally considered prudent for retirement plans, higher levels of risk have generally provided greater investment returns over long time periods.

However, greater risk has sometimes also resulted in greater losses, especially over short time periods. Participants should feel comfortable with the level of risk being assumed with their retirement plan dollars.

For optimum results, both risk and return should be evaluated. With the Fund Selection Service, participants or the plan sponsor will tell us what level of risk to take. We will then select a target mix of Principal Mutual's investment funds that matches that level of risk. The target mix we select will be weighted to reflect our current expectations of future investment returns and risk. After selecting the target, we will direct new deposits and existing assets to move the participant's accounts to the targeted mix. The participant's funds will be rebalanced periodically to keep close to target.

Investment funds which may be included in the target mix include guaranteed interest accounts, bond and mortgage accounts (interest rate sensitive loans), U.S. stock accounts, international stock accounts (non-U.S. common stocks), and real estate accounts (owned real estate).

Eligibility
Customers who meet the following requirements will be eligible for the Fund Selection Service: (1) they must have a defined contribution retirement plan using our record keeping GIC or investment-only GIC; (2) we manage all plan assets except participant loans; and (3) the plan is expected to remain in effect for at least several years. The Fund Selection Service will be available both where the plan sponsor has the right to direct investments and where the participant has the right to direct investments.

Key Features

1. Adoption of the Service transfers to us the plan sponsor's contractual right to direct new deposits, transfer existing assets among the investment funds, and select the funds from which withdrawals will be paid. For participants who elect to use the Service, adoption also transfers to us any rights they have under the plan to direct deposits, transfers, and withdrawals through the plan sponsor on their behalf.

2. The plan sponsor may cancel the Service at any time with no advance notice. Plan participants who have the right to direct assets and who have elected the Service may resume self-direction of their accounts upon written notice.

3. If participants have the right under the plan to direct assets, we will ask them to tell us what level of risk they wish us to take. We will provide materials and assistance to help them evaluate their risk tolerance.

4. Plan sponsors will be allowed to select the number of target mixes that will be made available to participants.

5. Participants who have the right under the plan to direct assets may elect either to use the Fund Selection Service or to direct their accounts according to their own judgement.

6. A moderate charge will be made for the Service.

Target Selection
Investment risk is a primary concern of defined contribution plan participants. By risk, we mean both short-term fluctuation in participant account values and the uncertainty of the long-term investment return. Logically, over long time periods, investors will expect to receive a greater reward -- a larger account

value -- for accepting greater investment risk. However, greater risk can also cause greater loss, especially over short time periods.

For money the plan sponsor directs, we will ask the plan sponsor to tell us on a scale of 1 to 5 what level of risk to take. Level 1 will indicate a very low level of risk and level 5 will indicate a fairly high level of risk. For money the participants direct, we will ask each participant who elects to use the Fund Selection Service to tell us on a scale of 1 to 5 what level of risk to take.

Factors the participant should consider in risk evaluation include the time frame for investing, other sources of retirement income, and personal feelings about account volatility. We will provide materials and assistance to help evaluate risk tolerance.

Where the plan sponsor directs investments for the participants, the plan sponsor will make a single risk level election that applies to all participants. Since the ability and desire of the group to take on risk is likely to vary considerably, we believe the lower risk levels are generally more appropriate in this situation.

We will select five target mixes of our investment funds that will match the five possible risk level elections of the plan sponsor or participant. There will be about equal degrees of risk from one target mix to the next. Risk will be increased primarily by decreasing the percentage of the target mix allocated to guaranteed interest accounts.

The target risk level mixes we select will be based on:

1. Our investment market analysis. We will weigh the target mixes toward the funds we expect to yield the best long-term rates of return. However, all target mixes will be diversified to include both loan (fixed income) and ownership (equity) funds, except for the least risk target mix, which will typically consist only of guaranteed interest accounts.

2. Our expectations of future risk. The target mixes will take into account our expectations of future fund volatility and the uncertainty of the long-term investment return.

3. Our expectations of fund return correlation. We will take into account our expectations of the way the investment funds included in the target mix will interact when combined in the targeted proportions.

Asset Direction

The Fund Selection Service will perform two functions. First, we will select the appropriate target mixes of our investment funds and match them to the plan sponsor's or the participant's indicated risk tolerance. Then we will direct assets to move the participant's fund mix to the targeted mix.

Each deposit will be directed to funds that are underweighted in relation to the target proportions. Large deposits may be gradually directed to the underweighted funds by temporarily holding them in the money market account. In addition to directing new deposits, we will also transfer existing assets from overweighted funds to underweighted funds.

How long it takes to reach the target mix will depend on (1) how different the participant's current fund mix is from the target mix; (2) how much money is held in guaranteed assets and when those assets will mature, as we will not transfer guaranteed assets before maturity; and (3) the size of future deposits, transfers, and withdrawals.

Generally, the closer the participant's fund mix is to target, the less time it will take to reach target. Also, the larger the deposits and other transactions in relation to the participant's current assets, the less time it will take. In general, unless significant assets are held in guaranteed accounts that will not mature for some time, most participants will probably move to target within about two years. Many participants should expect to reach target within the first year.

We will also determine the source of payment of hardship and voluntary withdrawals. We will pay such withdrawals proportionally from all investment funds. Regarding guaranteed interest accounts, payment will be made on a last-in first-out basis.

Rebalancing
Once the participant's fund mix reaches target, differing market performance of the individual funds will generally cause the fund mix to move somewhat away form the targeted mix. We will periodically rebalance the fund mix by directing new deposits and transfers to underweighted funds. This is a value-oriented strategy aimed at acquiring more of the kind of asset that has become less expensive and liquidating the kind of asset that has become more expensive. This may enhance long-term returns. Rebalancing also controls the risk level of the participant's fund mix.

Regular Monitoring
An important feature of the Fund Selection Service is our regular review of the investment markets. A change in our expectations of future returns or risk may result in a change to the participant's target mix. Although we do not expect to change the target mixes often, we will make revisions when conditions warrant.

DEVELOPMENT CONSIDERATIONS
We are developing this service in response to a significant demand from our market. As contracts available to 401(k) plans have offered more investment options, investment decisions by plan sponsors and participants have become more complicated. A barrage of questions from participants has caused plan sponsors to seek additional assistance from our home office and field representatives in putting the investment options of the contract to their best use. We hope that this service will allow us to begin to meet that need while reducing the time and involvement of our field and plan sponsors.

Some companies have chosen to address this problem by offering a single managed fund as one of the investment options. A failing of this approach, which we have tried to address with our service, is that each participant who uses the managed account must accept the same risk and return characteristics. Our objective is to allow differently-situated participants in the same plan to adjust the asset allocation service to their particular needs.

Obviously, our approach adds considerable complexity to the service. While an attempt has been made to present the service in simple terms, the "back-room" systems needed to support the effort are considerable.

Finally, in providing this fund selection service to individuals, we feel we are exposed to a liability risk much greater than that which we assumed by providing the service for defined benefit plans.

We are excited about the upcoming introduction of our new Fund Selection Service for defined contribution plans. We hope it will complement and enhance our package of full services for the defined contribution market.

MR. MICHAEL H. TRENK: At Morgan Stanley our clients are the large Fortune 500 companies. We like to show them the whole menu of pension investment categories and discuss how each category may be appropriate for companies with pension plans in different situations.

The broad categories are: money market instruments, short-term and long-term bonds, insurance company guaranteed interest contracts, equities of all sizes and shapes -- large capitalizations, S&Ps, small capitalizations, foreign equities -- and moving down on the scale -- venture capital, real estate and international. The general idea is to get the highest possible return, but it's not that simple because things like risk and diversification objectives must also be considered.

Looking at it from the corporate finance point of view, the pension plan has come to be realized as an insurance subsidiary of the corporation. Companies have discovered that they all have something in common -- an insurance subsidiary. Not too many companies have timber subsidiaries or oil subsidiaries, but every company in the United States has an insurance subsidiary, and very few companies are expert in it. So it's something they grapple with, something that's been increasing in size as pension assets continue to mount and as the population ages.

It's becoming a big issue. Companies are beginning to think of their pension plans as a significant financial entity. Often the surplus of a pension plan can rival the entire net worth of the company. A lot of chief financial officers are now waking up to the fact that they should be devoting more time and attention to their pension investment decisions.

The first thing that comes to mind when choosing an asset allocation is, "What is the planning horizon?" Common wisdom is that a pension plan can afford to be a long-term investor. "We're not paying these benefits for 25 or 30 years. Why should we care about the short term? Why don't we just dump everything into equities and get the highest rate of return?" The common answer is, "If I dump everything into equities and if the equity market crashes, I won't be around in my job to wait for the market to come back." People get scared. They temper their investment allocations and they think, "How many mistakes am I allowed to make before I get replaced in my job? Maybe I can fall behind a year or two in returns, but by the third year I better get my pension returns back to expectations." Most pension investment managers say they're long-term investors, but in reality their behavior says, "I have to do something reasonable, and I'm going to be checked."

If you're a money manager with an individual category, it might be worse. You might be checked every quarter. And if you get a fussy client, you might get fired if you have a couple of bad quarters. But on the strategic level, you probably have a few years to succeed or fail.

What will your asset allocation be -- money market instruments? They have the best liquidity and the lowest return. According to the pension investment efficient frontier described earlier, money market instruments have no place in the pension fund at all because the risk-free asset -- the asset that keeps surplus stable in the pension fund -- is long-term bonds (in the short term). That's a little confusing. In the short term, *risk-free* means long-term bonds, and in the long term *risk-free* means equities. But money market funds really have no place in it. We recommend use of money market funds only as a temporary place to put money for a week or two when you're trading between one asset class and another. In fact, because a money market fund returns so little, we recommend being short money market funds, somehow intrinsically borrowing as you invest, because you've got a two or three percent difference in long-term returns between money market funds and long-term bonds.

With long-term bonds, a year-to-year valuation of your pension fund assets would float up and down with your liabilities in tandem. However, over the long run you'll see that the liabilities are beginning to behave like equities due to inflation, productivity, etc., so in the long run, equities are the risk-free asset.

Bonds come in different rating classes -- AAA, AA, all the way down to junk. We think that pension funds tend to be more conservative than they have to be. If there's anyone who should be buying the junk bonds, it should be the pension funds manager. There is a long time to ride them out, they can diversify, and there is the ability to take the risk and get that extra 1% or 2% in expected returns.

Next we have equities. Equities have the highest long-term expected return: about six percent above money market funds. Pension funds have been taking advantage of equities, with the typical pension fund now about 60% in equities, although after the crash the allocation has been dropping. Equities also run the gamut. You have everything from passive index funds, which seek to do nothing but mimic the S&P 500, down to small capitalization equities, where it's very important to select your stocks and have a manager who actively monitors the portfolio.

Then you have real estate, which is a long-term investment and not very liquid. With real estate, we advise putting some money aside, because unless you're an expert you can't systematically make a meaningful mathematical model. Rely on real estate experts. Put some money in there and leave it alone.

It's the same thing with venture capital. It's a specialized thing. It has a much higher rate of return than even equities, but you should be an expert to get involved. We defer to the experts on that, too.

Next you've got the category of foreign securities, which is an interesting area that pension funds are beginning to discover. Foreign equities are an opportunity that we think more pension funds should take advantage of, too. Many pension funds still invest only domestically. We mention the familiar saying, "That's like restricting your universe to stocks that begin with the letters A through M and leaving out N through Z." There are a lot of prosperous countries that have equity markets that have done very well lately. The timing might not be great this year because the dollar is so weak, but in the long run we feel that U.S. pension funds should take advantage of foreign equities more than they have been.

With foreign bonds, again there's an opportunity. If you can see a bond available in a foreign country and it has a certain yield, you can arrange a foreign exchange swap to take advantage of the yield and swap your foreign currency exposure back into dollars. We've seen it possible to get an extra 100 or 150 basis points in many cases on foreign bonds. It's a little cumbersome but it can be very rewarding. We know that there are many bond managers who will scratch and claw for 10 or 15 basis points in the U.S. when there might be hundreds of basis points available overseas. I'm sure that as time goes on this practice will become more popular, and the spreads will narrow.

Finally with respect to foreign securities, there's some debate as to whether, if you invest foreign, you should automatically hedge your currency risk to get back into U.S. dollars. Or do you just leave it in foreign and take the currency risk? I believe that international companies particularly should consider buying foreign bonds and foreign equities, retaining the currency risk.

Let me give you an example. Suppose you want to establish an investment position in an automobile company that was competing against Japanese manufacturers. Should you buy yen bonds and leave it in yen, or should you convert the yen back to dollars? I would argue that if the Japanese yen appreciates, Japanese cars become more expensive in the U.S., which allows the automobile company breathing room to raise its prices or to cut its prices less on automobiles.

In an international company, or even in a domestic company competing against international competitors, the price of international currency is going to affect the prices at which the American company can do business. We're beginning to see an integrated world market in which companies are competing against each other in world currency. Therefore for full diversification, we recommend pension exposure in foreign currencies as well.

You have all these asset categories and you must make a compromise. You want to have something low risk. You want to have high returns. You have decided what your planning horizon is. How are you going to do it?

Assuming you've settled on an asset allocation, there are two approaches to rebalancing. Start with 60% equity and 40% fixed income. What happens if after a year the equity is doing very well, so that it now comprises 70% of your portfolio? Do you leave it there and say, "Equities have been doing well. I'm going to stay 70/30, and possibly put even more into equity?" Or do you say, "Thank you, equity manager, for succeeding. I'm now going to take away 10% of my total fund money and put it back into bonds to restore the 60/40 balance."

Some say, "If I succeed, I want to succeed more; and if I fail, I want to fail more." This is related to the concept of portfolio insurance, which was popular up until the crash last year. Portfolio insurance managers say, "As equities succeed, we are going to put more money into equity; and as equities fail, we are going to slowly take money out of equity." That produces a return pattern that is concave up.

The opposing philosophy is concave down. That is, "While the equity market is high, I'm going to take money out of equity; and when the equity market is low, I'm going to put money into equity." These two philosophies compete against each other as they meet in the marketplace. It used to be that the portfolio insurance buyers would purchase portfolio insurance from the value-oriented

people who would try to time whether the market is too high or too low. For every portfolio insurer who systematically raises his equity as equity goes up, there's somebody who says, "Now equity's too expensive. I'm going to sell it to this guy."

Another popular topic is asset orientation versus surplus orientation. Most of the top management of major industrial corporations are not surplus-oriented yet. They're still asset-oriented. We found that when we recommend being surplus-oriented the management says, "But, if the assets go down next year, we're going to look bad." They are afraid to be surplus-oriented.

There's a third theory, the corporate finance orientation. If you look at a company's balance sheet, on the asset side they're long factories, long people, and long materials. On the liability side they're short equities, short bonds and short fixed expenses. The pension plan is long equities and bonds and real estate, and short liabilities. You've got a huge corporation that's mismatched in many ways. Is it so important to concentrate on getting the pension fund exactly matched or roughly matched, and to be scalpel-like in the pension fund when the whole corporation is, by nature, mismatched to the tune of a few billion dollars?

The debate swings back and forth. One side argues, "The corporation should not be in the insurance business. Therefore match your pension fund and don't be an insurance company." The other theory says, "The whole corporation is so mismatched anyway. I don't want to waste my time concentrating so much on being exact with my pension fund. Let me just try to run the corporation most efficiently." Both arguments have validity.

We tend to think that highly leveraged corporations should keep their pension fund as risk-free as possible because the survival of the company is often in jeopardy. If you have a large, secure company that is in no particular financial danger, then it becomes less important to keep your pension fund exactly risk-matched or exactly targeted.

It is also important to realize that asset managers are paid to make decisions within classes. Though their function may be statistically less important than the overall asset allocation decisions, they fiercely compete, saying, "I'm better than you are. I've beaten the S&P by 500 basis points and you've only beaten it by 300 or you've fallen behind." Each asset manager knows that he or she has to succeed within his class. The difference between high and low performing managers within classes can make a significant difference in pension surplus levels over time.

The science of asset allocation is not as much a science as is mathematics. There's still some artistry in it. It's still important to look at each alternative, evaluate who the people are and what the company is, and make some human judgements.

Morgan Stanley has introduced a new type of security called a Real, which we hope is going to become a new asset class. A Real is a bond that pays interest at the rate of the Consumer Price Index (CPI) plus a spread, such as 3%. We've had two issues out, and it seems to be in good demand. Reals offer, for the first time, security that an investment will buy a fixed amount of automobiles or widgets, based upon the Consumer Price Index.

Other investments reflect inflation, but not as directly. If you wanted to match the Consumer Price Index using bonds, you'd have to wait a few years for the inflationary expectations to show up in interest rates. Now with these Reals, it's going to be possible, assuming that the concept succeeds, to earn a guaranteed real return, and for insurance companies to start denominating guaranteed interest contracts in real terms. Perhaps we can have an insurance company investing in these Real bonds at the Consumer Price Index plus 3%, and then offering a product for defined contribution plans at an appropriate spread, such as the Consumer Price Index plus 2 1/4%. We see a wide-ranging application for this in defined contribution plans and in defined benefit plans that have automatic cost-of-living increases (COLAs), or partial COLAs or ad hoc increases.

Summing up, I'd like to emphasize that there's a world of investments out there. Pension funds should consider more of the world. Pension funds should think about how much risk they can afford to take or want to take, and we encourage them to take as much of it as they can stand because it does pay off well. As these new types of investments become popular in the pension industry we are also looking for insurance companies to start passing them through into their individual products.

MR. DAVID R. GODOFSKY: Mr. Trenk, you raised a question, but I'm not sure whether you answered it. Let's say you decide that you want your investments 50% in stocks and 50% in bonds, and the stock market performs well relative to the bond market. So you end up your year 70% in stocks and 30% in bonds. What are you going to do at that point? Are you going to move money out of the stock market, or into the stock market, or leave it where it is?

You suggested that taking the money from the stock market and putting it into the bond market to make your asset allocation 50/50 again would be taking money away from the successes and putting it into the losers. I really question whether that's an accurate characterization. If the stock market has done well relative to the bond market, that doesn't mean that your stock managers are winners and that your bond managers are losers. They may have succeeded in just matching or perhaps slightly exceeding the market, and they may both be winners based on what you wanted them to do.

My personal preference would be to take money out of the stock market on the theory that you are buying low and selling high, but you seem to indicate that there are two strategies, and I would like to know which one you prefer.

MR. TRENK: It's a two-way street. The one theory says that when the stock market has gone up, that means it's high and likely to go down in the future. Therefore take money out of stocks and put it into bonds. That's fine. That's going to capture relatively small amounts of stock market increase. The other theory says that as the stock market has gone up, you now have more latitude to take risks, and if you take your money out, you might miss out on further increases in the stock market. One group of people tries to buy low and sell high. Another group cuts the losses when they lose, and lets profits rise when they win. There's a tug of war between the two groups of people.

The theory of portfolio insurance is that as long as the market is going up, if I buy more and more stock and stay in it until the stocks start going down, I'm going to capture more and more of the winnings.

MR. GODOFSKY: Does anybody still believe that theory?

MR. TRENK: Well, yes. Half the people believe it and half the people disbelieve it, because half are buyers and half are sellers.

MR. STEVEN R. STRAKE: Mr. Thomas, I believe you have taken the minority opinion with respect to a plan sponsor accepting risk with a low-funded ratio, and wanting to be more conservative with his asset allocation if he has a high-funded ratio. How have your clients reacted to that position?

MR. THOMAS: I obviously wasn't clear enough. Those are extreme cases of overfunding and extreme cases of underfunding. From moderate levels of underfunding to moderate levels of overfunding, say 50% to 150%, in general it would be the other way, as you described. As you become better funded you develop a cushion of surplus and you can take on the higher-yielding asset classes that are going to give you some interim volatility. It's only in the case of extreme underfunding where you might find the minority opinion, "If you're really in the hole, why not go for it?" The PBGC is standing there, and it costs only 30% of the net assets of the combined group. Maybe that's a cheap way to go. If things go well, you might work your way out of the hole.

On the other extreme, severely overfunded, maybe you want to run the pension plan without ever making a contribution in the foreseeable future. Maybe you don't want to do anything to jeopardize that, so you may want to lock up the gains. I guess I was not clear in saying those are the extreme cases. They're the exception -- certainly not the rule.

MR. TRENK: You can make an analogy to the lottery. People who buy the lottery tickets are often the poorest people, who have $1 to spend in the hope of making a million. If they lose a dollar, it doesn't hurt because they weren't too far from the bottom anyway. Sometimes you see a pension plan doing that. They're 55% funded and they ask us, "Can we buy some options and spend a small percentage of our funding? If we win, we go back up to 100%. If we lose we, go down to 50%, but 50% is not much worse than 55%."

MR. BRIAN C. TERNOEY: There's been some interesting work lately by Martin Leibowitz primarily on calculating equity durations in a new fashion. This produces very short equity durations and also some very volatile equity durations, but they seem to fit pretty nicely in the asset allocation techniques that are used now in modeling. Do any of the panelists have any practical experience with that and how to deal with the volatility issue?

MR. THOMAS: First of all, it's interesting how they did it. What they did in the Salomon Brothers' material was regress equity returns on changes in interest rates, going back through time. They came up with durations somewhere in the neighborhood of four years. The other school of thought is looking at the return on stocks and the perpetuity of dividend payments. Using that older school of thought we get durations up in the mid-teens.

If you're running a bond portfolio and you know the duration is five years, if interest rates go up, then the market value of the bond portfolio is going to go down by about 5%, assuming all the things like parallel shifts in the yield curve, etc. You cannot say the same thing about an equity portfolio.

The real question that I see is, "How can you use equity duration prospectively?" Interest rates are just one of many things -- others being inflation, productivity gain, change in real GNP -- that affect equity returns. The equity duration is not very usable. You can't tie equity performance just to a change in interest rates.

MR. TRENK: I should add that with bonds, the duration is an absolute concept, meaning that if interest rates go up 1%, you know with certainty the bond price is going to decrease by the duration. Equity duration is only a statistical concept; if interest rates go up 1%, the equity is likely to be going down. But that could vary from going down a lot to going up a little, or any place in between. You can't rely on it. You can just say it's a tendency.

MR. TERNOEY: But within the context of trying to keep the asset allocation theory out of the day-to-day buy-and-sell strategy, it would seem that there ought to be a way to make that wash out over time, or use that in terms of protecting the surplus or managing the surplus. I guess that my main point is that I think there is work to do there to improve upon that. I guess I'm trying to find more people who are working out the practical side of those problems, and whether or not it is succeeding.

MR. TRENK: The thing about equity durations is that when people ask for a dedicated or immunized bond portfolio, they're trying to match risk in the short term. Equity duration is only a valid concept in the long term because you can't count on it working in the short term. So if people come to us asking for a duration-matched portfolio, giving them a portfolio that's equity-duration-matched doesn't really help them too much because we have to tell them they've got to wait five or 10 years for this duration to average out. They're only trying to match for a year or two -- for a plan termination, for example -- so for that reason equity duration doesn't really come high on the list when we're designing a duration-matched portfolio.

MR. TERNOEY: I agree with that. It's the ongoing pension plan that I hope can take more advantage of it.

MR. TRENK: I think that's a valid point.

MR. DARYLE G. JOHNSON: I wanted to ask two quick questions of a practical type. One concerns the minimum allocation to a given asset plan. I've seen plans like a $100 million plan which puts $1 million in real estate -- in other words 1%. Or they allocate a small amount to venture capital. I really question whether they're accomplishing very much. I wonder if any of you feel that it really doesn't make sense to go through all this unless you're going to commit at least 5% or 10% to a given class. Is there any sort of general rule of thumb along those lines?

The second question concerns international equities. There are a lot of good foreign companies whose stock it probably makes sense to own, but the classic argument for owning foreign equities has been on a historical basis. It both improves yield and reduces overall risk of the portfolio. Looking ahead, I really wonder how true that is. I get the sense that the airports are full of people running around pushing international equity funds, and isn't that the next area that may go "bang"?

MR. YODER: Our company is just developing our fund. I think the feeling is that, in the long run and perhaps in the short run, because of the diversity that you get, and because the economies tend not all to go in the same direction at the same time, international equity is a valid option for any plan sponsor to consider.

MR. THOMAS: First of all, in the small end of the market, we haven't seen a whole lot of interest. It is probably not too surprising that smaller pension plan sponsors are generally pretty conservative. They are quite content, at least in our case, with the domestic stocks, domestic bonds, and short-term securities. Some of them are just making their first venture into a broadly diversified commercial real estate fund.

On the topic of international equities, I think it's pretty clear there are some economies out there that are growing faster than the United States economy. The United States economy is further along in its development so you should probably see some foreign companies growing faster. In the long run you can make an economic argument for foreign equity investment.

There are two components to investing foreign: (1) the return in local currency, and (2) the effect of foreign exchange. In the long term, with the balancing of currency, the foreign exchange component should probably be pretty small. But you mention the next five years, which almost implies that you should make some sort of determination of what the exchange rates are going to be. The dollar has fallen recently. You should invest abroad when the dollar is strong and you expect it to depreciate. It's already depreciated somewhat. So the important question is whether you expect it to depreciate further. If not, you're losing the benefit you get from the foreign exchange component.

As to your first question, I never saw much reason for putting only 1% of a fund in any new asset class. For it to have a significant effect, it would certainly have to be more. Although somewhat arbitrary, something like the 5% you mentioned would certainly seem reasonable.

MR. JEFFREY K. SMITH: Mr. Trenk, you mentioned this new investment that Morgan Stanley has developed called Reals. It sounded like you were saying that if I give you a million dollars at Morgan Stanley, then today, a year from today, and each year thereafter, you will give me back a return of the CPI plus 3%. I was wondering how you support that. Do you assume you can make a one-year investment that will earn CPI plus 3 1/2% over time, and then give me the 3% over the CPI? Or do you have something more exotic going on to underlie it?

MR. TRENK: Let me tell you how the magic works. We're just the broker. Companies are coming to us saying that they would like to borrow money, and they are willing to pay Consumer Price Index plus 3%. The first company that did this was Franklin Savings Association. Franklin Savings issued the bond, and we handled the administrative and market-making effort. We find investors who want to invest at CPI plus 3%.

Right now, because the CPI has been low in the last few years, there are companies who are willing to pay CPI plus 3% for 15 and 20 years. Because of that, this is an opportunity for investors who think that the CPI is going to go up to buy the "CPI plus" bonds now and hold on to them to get CPI plus 3%.