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CURRENT AND FUTURE INSTRUMENTS AVAILABLE TO INSURERS

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Investment options have expanded markedly over the past 20 years and property and casualty insurance companies have investment capabilities that were not available many years ago. Panelists will discuss a number of these options including an overview of traditional assets, an asset-allocation framework, specific markets' risk characteristics and some implications for risk-based capital for asset management.

MR. ROBERT STRICKER: *I'm head of fixed income at Continental Asset Management. There will be three panelists in this session. We all know that assets play a very important role in the solvency of an insurance company. There have been many changes that have impacted asset management at insurance companies. We hope to describe these changes and provide you with the framework for evaluating them.*

We're going to divide the session into four parts. I'm going to start off by describing past, present and future trends in asset allocation. I'm going to try to establish the context for our three speakers, first of which is Fred Weinberger. I've known Fred for many years. He's a director in the bond portfolio analysis group at Salomon Brothers where he developed an asset allocation model that incorporates liabilities as well as assets into a surplus framework. *In fact, we liked Fred's model so much that he's going to be joining Continental in a few weeks to become the head of our policy, strategy and quantitative group.*

I will follow Fred and talk about derivatives and alternatives with a fixed-income flavor that are available to insurance companies.

Finally, we'll have Mike Siegel who's a vice-president in Goldman Sachs' Insurance Resources Group. He's a former colleague of mine who I also have known for many years. He's going to talk about Goldman's annual chief investment officer survey and then talk about equity alternatives for insurance companies.

Before I start, I'd like to just share a little story with you. It's about a bond portfolio manager who's walking along the beach. As he's walking along, he spots this beaten up old brass lamp in the sand. He pulls it out, starts to clean it off, and

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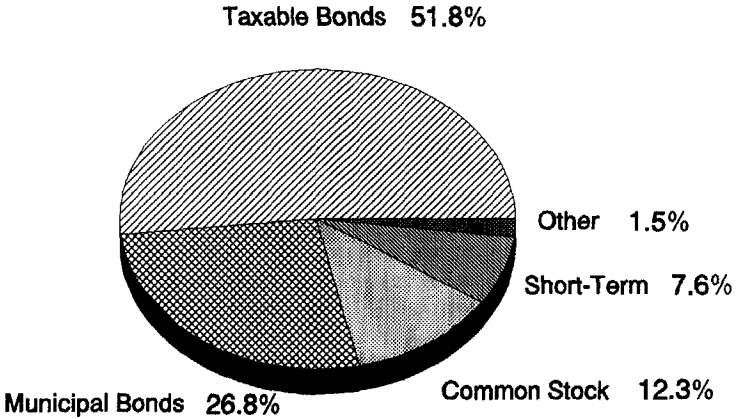
out pops a genie. The genie tells him he has three wishes. But there's a twist this time. "Everything I give you I'm going to give double to your mother-in-law." The portfolio manager says, "Fine." The genie says, "Well, what's your first wish?" Portfolio manager says, "I'd like a beautiful five bedroom house right on the beach over there." And the genie says, "Puff, there's your five bedroom house, and next door is your mother-in-law's ten bedroom house. What's your next wish?"

The portfolio manager thinks and says, "I'd like a million dollars deposited into my Swiss bank account please." Genie says, "No problem. A million dollars for you, two million dollars for your mother-in-law."

"You have one wish left. So think carefully." Portfolio manager thinks for awhile and then he says, "I've decided. I'd like you to beat me half to death." Well, what's the moral of that story? No pain, no gain!

If you want higher expected returns, you have to be able to live with higher risk. Property and casualty (P&C) companies invest heavily in bonds (Chart 1). Taxable bonds accounted for almost 52% of assets, and municipal bonds for almost 37%. So altogether, bonds account for 79% of assets. Common stock accounts for about 12%, followed by short-term assets at 8%. This represents the total investment pool of almost \$500 billion dollars.

CHART 1
P&C COMPANIES INVEST HEAVILY IN BONDS



Total Investments: \$498 Billion

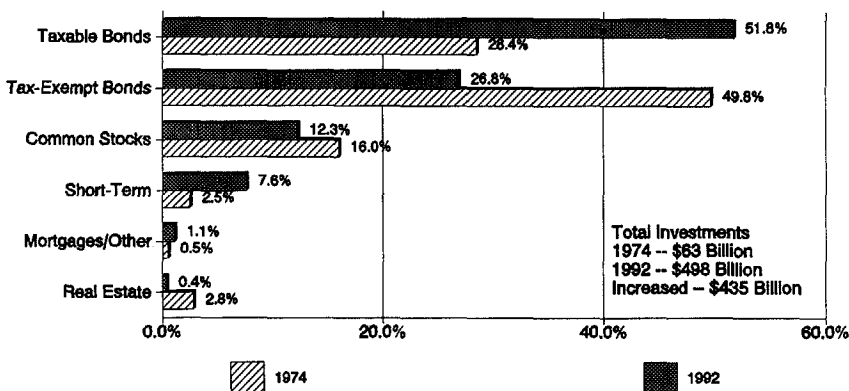
Source: Best's Aggretrate and Average, 1993 Edition

This current asset allocation differs quite significantly from prior years. Chart 2 shows the asset allocation at year-end 1992 and 1974. You can see how insurance

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companies have increased their allocation to taxable bonds and decreased investments in municipals as well as stocks. And they've also shortened their duration along the way. One of the things that I think is interesting to note is how much total investments have increased. They have increased by \$435 billion dollars, from \$63 billion in 1974 to almost \$500 billion at the end of 1992. Over this period, taxable bonds have almost doubled from 28% to 52%, while tax-exempt bonds have almost declined by half from 50% to 27%. Common stocks have also declined from 16% to 12%, and short-term bonds have increased from 2% to 8%.

CHART 2
SINCE 1974, P&C COMPANIES INCREASED TAXABLES
AND DECREASED DURATION AND STOCKS

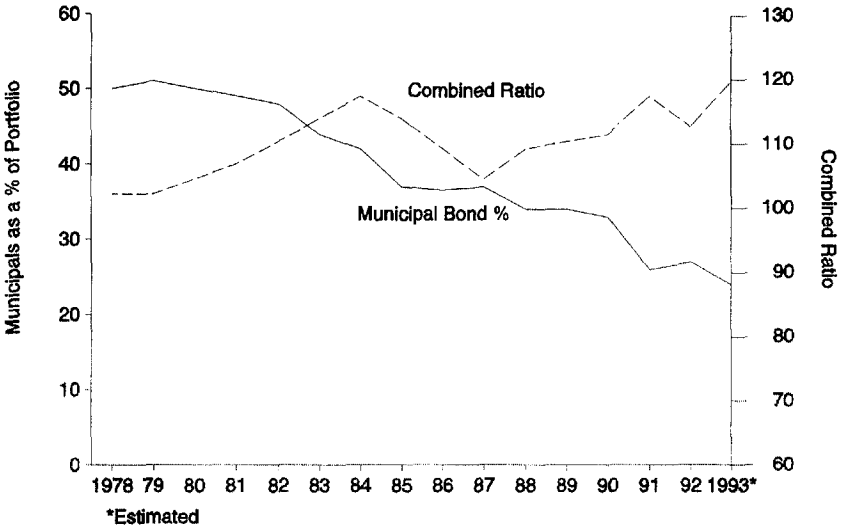


Source: Data from A.M. Best

I'd like to spend a couple of minutes talking about the change in the municipal allocation. Chart 3 illustrates how property and casualty municipal bond holdings swing with the underwriting cycle. There is an inverse relationship between the combined ratio and the allocation to municipal bonds. Municipals have gone from 50% in 1978 to an estimated 25% at the end of 1993. The combined ratio has gone from 98 to a little over 108.

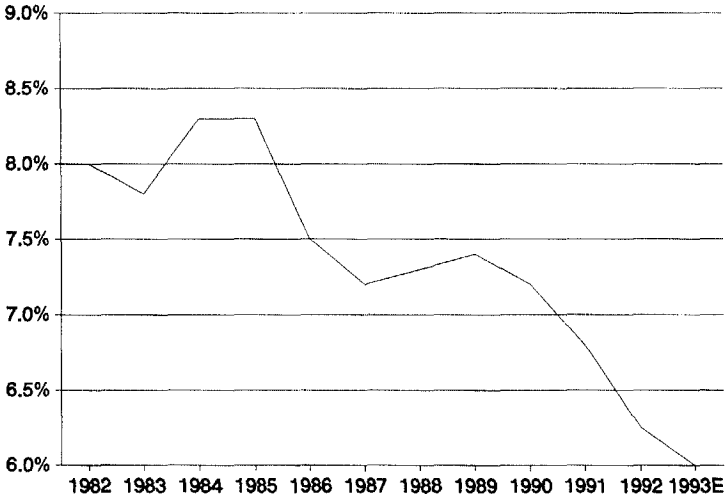
Lets look at what's been happening to the yield on P&C portfolios over this period. Basically, the yield has been sinking pretty fast. Chart 4 shows the portfolio yield over the last 12 years. Yields peaked at around 8.5% in 1984 and 1985 and hit a 13-year low at 6% in 1993. This drop in investment income has important implications for the P&C industry's profitability.

CHART 3
PROPERTY AND CASUALTY MUNICIPAL BOND HOLDINGS
SWING WITH UNDERWRITING CYCLE



Source: Data from Best's Aggregate and Averages, 1993 Edition; Federal Reserve Board, Flow of Funds Accounts, Financial Assets and Liabilities, Third Quarter 1992.

CHART 4
THE YIELD ON P&C PORTFOLIOS IS SINKING FAST



Source: Data from A.M. Best, The Institutional Investor

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At today's rates, it would take a 10-point drop in the combined ratio for the industry to reach the return on equity of the Standard and Poor's (S&P) 500. Table 1 shows the portfolio yield and combined ratio combination needed to attain a 13% return on equity (ROE). At today's yield of about 6%, we would need a combined ratio of approximately 98.5 to achieve a 13% ROE. This is just about ten points below last year's combined ratio of about 108.5.

The rule of thumb that we use is, a half-percentage-point drop in yield requires a one-point drop in the combined ratio to maintain a constant return on equity. And a one-point drop in combined ratio is roughly equivalent to a 1% increase in ROE.

Insurers face an investment paradox these days. How do you meet your investment income objectives while, at the same time, satisfy regulators, rating agencies, and analysts? Market pressures, be they soft markets, keep premiums low, low interest rates, drive us to enhance returns, which implies higher risk.

Regulatory pressures, on the other hand, whether they are solvency crisis, risk-based capital (which has just taken effect), or the proposed model investment law, result in a flight to quality, which implies lower expected returns, thus, creating a dilemma for the chief investment officer. The question we will attempt to address is, are derivatives and alternative assets a solution?

TABLE 1
A 10-POINT DROP IN THE COMBINED RATIO TO REACH S&P ROE!

Portfolio Yield	Combined Ratio
5.00%	96.50
5.50	97.50
6.00¹	98.50¹
6.50	99.50
7.00	100.50
7.50	101.50
8.00	102.50
8.50	103.50
9.00	104.50
9.50	105.50
10.00	106.50

¹Portfolio Yield/Combined Ratio combinations needed to attain 13% ROE.

Property and casualty companies are considering alternative asset classes in addition to the conventional assets of cash, fixed income, and equities. On the conventional side, they can do some things to enhance return without creating problems with the new regulatory initiatives. For example, they can increase their equity holdings, which have a higher expected return over the long run. Or they can increase the duration of their bond portfolios and pick up some yield that way. But in each case, they will be taking on more risk.

They're also considering certain alternative assets. Some include private-label mortgage-backed securities, high-yield bonds, emerging markets, international fixed income, and equity real estate, commodities, and derivatives. While we like equities as a long-term asset class, we are concerned that there is risk at current market levels, although admittedly that risk is much less than it was a couple of months ago. The problem is that 3% dividend yields imply low-equity returns. In the past, when dividend yields were 3%, the return over the following 12 months was a -3%; over the following 3 years, it was 5%; and over 10 years, it was just 5.1%. This compares to the long-term average of over 12%. So clearly, based at least on dividend yields, equities are fully-valued this days.

To limit the downside risk at these levels, you may want to consider certain alternative equity approaches. One idea could be a long-short strategy, which is designed to be market neutral by going long a basket of stocks that you like, and going short a basket that you don't like. Or, another alternative is to use to certain equity derivatives that Mike will be talking about shortly.

There has been tremendous pressure on insurance companies to improve their profitability. As a result of poor pricing and declining investment earnings, I expect that there will be changes in asset allocation for property and casualty portfolios.

MR. ALFRED WEINBERGER: I'd like to talk about a framework for thinking about the question of asset allocation. I'll then point to how we can think about the inclusion of alternative assets, which is really the topic of the day.

I'd like to begin by describing the asset allocation process as an interplay between an objective and constraints. The objective is the maximization of the economic risk/return trade-off for the company. I'm focusing on the economic position of the company which includes a mark-to-market framework. So underlying the process is a mark to market accounting framework, as opposed to statutory or GAAP frameworks. And we'll see in turn that this leads to certain problems, and we'll have to concern ourselves ultimately with GAAP and statutory as well.

There are a variety of ways of modeling a company and trying to locate its risk return position. Obvious ones include simulation techniques and scenario analysis. I'm going to discuss the efficient frontier approach. And what we would like to do in this framework is find those asset allocations, or portfolios if you will, that maximize the company's expected return at every level of risk. And we will map out a series of these portfolios that for each level of risk will provide the highest expected return to the company.

So the objective is to get the company optimal risk/return space in a mark-to-market framework. But we do have to worry about the other frameworks. For insurance companies, solvency is measured in statutory accounting terms and management needs are measured in GAAP accounting terms. So, we can't exclusively rely on a mark-to-market approach or economic focus to guide us to where we can go. We're going to hit some road blocks, and we're going to have some constraints on the process. So we'll talk about including those. Some of the constraints that we'll talk about in the regulatory environment have always been around. Currently, of course,

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there are also the new initiatives of risk-based capital and the model investment law that add additional concerns.

Now I'd like to look at the objective and set the framework of what this optimization of risk/return looks like. Then I'll suggest how alternative assets might impact that framework. I also want to talk about some of the constraints and how alternative assets might assist in the constraint side.

I've been vague to this point as to what I mean by risk and return, so I want to clarify that. When I talk about finding the efficient frontier and maximizing return relative to risk, I'm using the efficient frontier framework. I'm really talking about a surplus framework that I will contrast with some of the original work that was done in efficient frontier analysis.

Harry Markowitz developed the efficient frontier idea. But when he worked on this it was an asset-only perspective. He would consider a universe of potential assets (I think his original work was relevant to stocks) and ask, how do I form a portfolio out of these stocks? He developed a price-efficient frontier paradigm, he would model the risk characteristics and the expected returns of the securities, and then combine them in a fashion that gave him an efficient solution, *efficient* being defined as highest return for the level of risk.

However, the asset-only framework really won't do for our needs. When we look at a financial institution such as a property/casualty company, we can't look at only the asset side. Our real concern is the surplus, and how the two sides of the balance sheet interact to give us the risk and the return on surplus. So we'll be talking about a surplus framework (as compared to some of the earlier work on efficient frontiers that was done) or an asset-only framework. The analogous surplus framework has been developed in the risk-based capital regulation, where there is the idea of the risks in assets and liabilities, and determining how much capital is needed to guarantee a certain level of surplus safety. So it's really the same idea but with some differences.

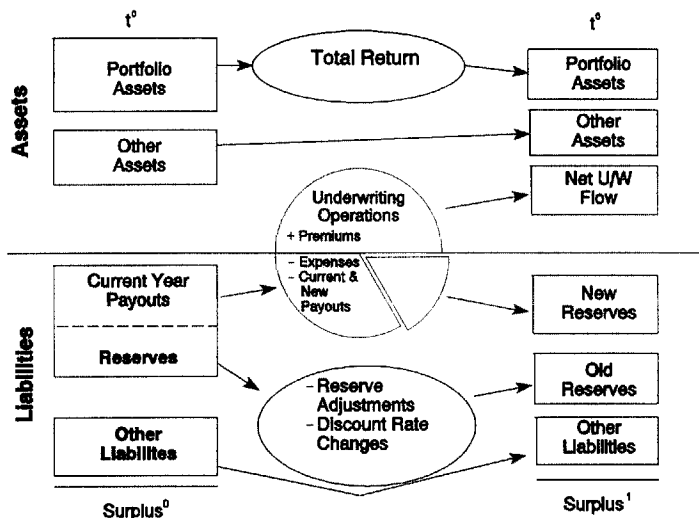
The second point about the framework that I'd like to establish is what I call the going concern. The original work in this kind of efficient frontier world was to look at just a set of existing assets. The next step might be to look at existing assets and existing liabilities and focus on surplus. But companies are not static that way. They are going concerns, and over any relevant time frame for the asset allocation decision, the company will be different. It is not static. There are continuous flows going on. Business is being written and losses are being paid. I'd like to be able to bring into the analysis some elements of the going concern. In fact, they ought to influence the decisions we make.

Finally, another feature of the model we're going to set up is the need to model risk and to develop the covariance structure between assets and liabilities. The idea of covariance and its relevance to measuring risk is also embodied in the risk-based capital formula. I think probably this was done in a relatively ad hoc fashion. We would try to find a better measurement in our framework if we can.

I'm sure at first Chart 5 is a bit confusing, but let me try to explain it to you. From left to right we have the time. So on the left side, we're talking about time zero, or

today, when we're making the decision. And by the time we get to the right side, we're talking about the horizon of the decision. On the top we have assets and on the bottom are liabilities. We have the balance sheet on the left-hand side at time zero, and the terminal balance sheet at the horizon point, on the right side. It's a market-value framework, so think about all of these variables being measured in market-value terms.

CHART 5
THE DYNAMICS OF A PROPERTY/CASUALTY COMPANY



The objective of the model is to make decisions at time zero for the portfolio asset weights. How much weight should we put into each asset class that we're considering? So we're trying to find the weights of the portfolio in the top left-hand corner. And the way we solve for those is by looking at our objective, which is in the bottom right-hand corner, of maximizing the risk-return character of the surplus of the company one year hence, assuming a one-year model. So we want to decide on portfolio weights at time zero to give us the best characteristics of the surplus at time one, which in fact is a random variable. It has distributional characteristics, and we want to maximize the expected return on surplus subject to the variance of returns on surplus.

We're defining risk in this framework as the variance of return on surplus. Alternative models do specify other measures. In fact, you have a skewed distribution, and not a normal distribution, you might want to consider a one-sided risk measure of some kind, i.e., just look at the real risk, the left-hand side of the distribution. For our purposes, we're going to talk about variance as the measure of risk.

The portfolio asset decisions that we make will flow through a total return kind of transformation, which then results in a value of the portfolio assets of time one. But those are all random variables. We don't know exactly what their values will be. We

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know the expected return on each asset class. And we know the variances and the covariances. So we wind up with the value of the portfolio on the right-hand side at time one. For our purposes, we're going to assume other assets, such as some of the accounting items, are unchanged without worrying too much about the random character.

The reserves on the current balance sheet are split into two pieces. I call one piece current-year payouts. They flow up into the circle in the middle which is a cash pool. The other reserves that are not paid out this year will carry through to the end of the year with a random transformation; both are related to adjustments that will occur to the reserve, as well as the changes in the discount rate. In a market-value framework, the discount rate impacts the value of those reserves in a market sense. I'm treating other liabilities as other assets, and I'm not concerning myself with those.

Now in the middle is the circle which captures the going-concern element. Again, assets are on the top and liabilities on the bottom. This really is cash. It's a model of the underwriting operations with premiums coming in as a positive, and expenses and the current year payout are going out along with the new payouts from the business just written in the course of the current year.

All of this underwriting activity in the current year turns into two pieces. One is the net underwriting cash flow for the year, and the other is that slice that I've taken out, which represents a new balance sheet item that is the reserves on the new business written that is not yet paid out in the course of the first year.

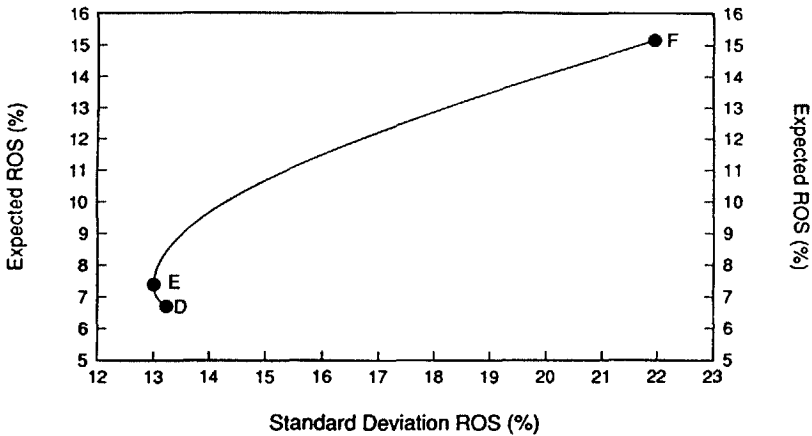
The task is to model the covariance structure. Each of the items on the right-hand side is a random variable and they add in a probabilistic way to give the surplus at the bottom, which is what we're trying to control. We have the decision variables (the portfolio weights) included in the box at the top right-hand side. And so we can manipulate those weights to contour the distribution of the surplus down below and to find those solutions that are most efficient.

Now we need to model the probabilistic character of each of these random variables on the right-hand side of the balance sheet—to develop the covariance matrix of all of these pieces of the balance sheet one year hence. There are a couple of approaches for doing this. One is to develop a factor model where we would relate each of these random variables to a set of common factors that drive them, and find the sensitivities to those common factors of each of the components on the balance sheet. And then once we have that factor model set up, we can crunch the numbers and come up with covariances. Alternatively, we can go back to historical data and try to measure the actual historical experience for each of these variables, if we have them saved, and see how they covaried over time, and what their individual volatilities are. Using the factor model approach, some common factors might drive both assets and liabilities, as well as some of the business variables. For example, there are the premiums that you might write in any given year. The pricing of business in the course of the year could reflect unexpected changes in interest rates, inflation, and GNP or business activity in general. These macro variables would tend to drive several of the items on the balance sheet, both on the asset and liability side, as well as do operating variables.

Microeconomic factors would tend to drive the specific risks or individual random errors on each of those elements. An example of specific micro factors would be the actuarial risk of the liabilities or the uncertainty in liabilities of an actuarial nature that are not driven by any common consistent systematic factor. The insurance pricing cycle is another micro factor not related to the assets but very relevant to the pricing of new business. Specific asset risks would be another example.

Once all of these risk parameters are computed and put into a mathematical optimization program, the output is the efficient frontier. Chart 6 may look familiar to you if you've been exposed to efficient frontiers before. On the Y-axis is the expected return on surplus. Along the X-axis is the standard deviation of these returns. So we have return and risk. The frontier represents a set of opportunities. A company can choose to position itself anywhere on the frontier that they like. The asset weights will determine the position on the frontier. Of course, there are other decisions, but we're taking those other decisions as fixed, e.g., expected premiums by line of business. We vary the asset weights, and by varying the asset weights we map out a contour of risk/return possibilities for the surplus of the company.

CHART 6
 SAMPLE PROPERTY/CASUALTY COMPANY
 UNCONSTRAINED EFFICIENT FRONTIER



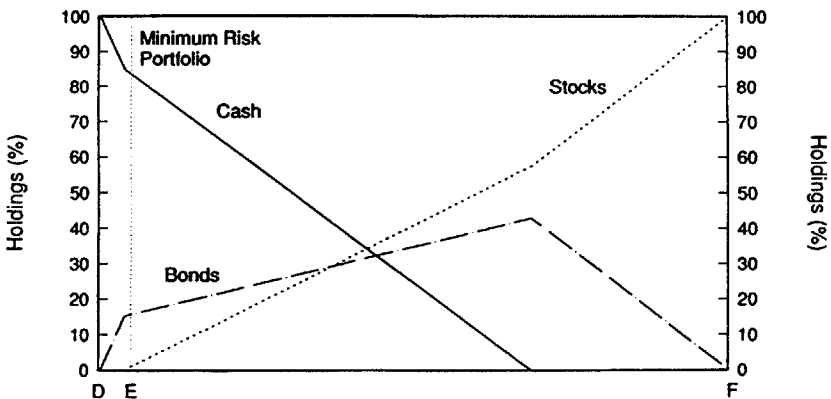
The chart shows points D, E and F. I want to show you the assets weights that underlie these points. We are choosing among cash, bonds and stocks, where bonds are represented with a duration of six years, and cash is represented with a duration of one year. For each point, D, E and F, what are the underlying asset decisions in terms of the percentile asset allocation?

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Point D is clearly inefficient, meaning that no one would position themselves at point D, when they could move straight up and find a higher return at the same risk. Point D is an all-cash portfolio. Bonds and stocks are increasing as we move out along the X-axis of risk. So as we move to the right, we're decreasing cash, increasing stocks, and increasing bonds. Eventually, we start decreasing bonds and go entirely into stocks, as we go to our highest risk positions and highest return as well.

The minimum risk position is at Point E, which is about 85% cash and 15% bonds, and a small amount of stocks. The portfolio duration is close to about 1.75, which is less than the liability duration that I've modeled, but which provides for a surplus duration of one, the horizon that makes surplus least risky. The interesting thing to note is that most often, and we'll see why this is the case in a moment when we introduce the constraints, companies take on risk by going with a long duration, meaning they buy more bonds than stocks. But in fact, the results of this model (shown in Chart 7) suggest that a better way to move out the risk/return spectrum is to add more stocks. You can see that stocks rise more rapidly, bonds rise less rapidly, and cash comes down.

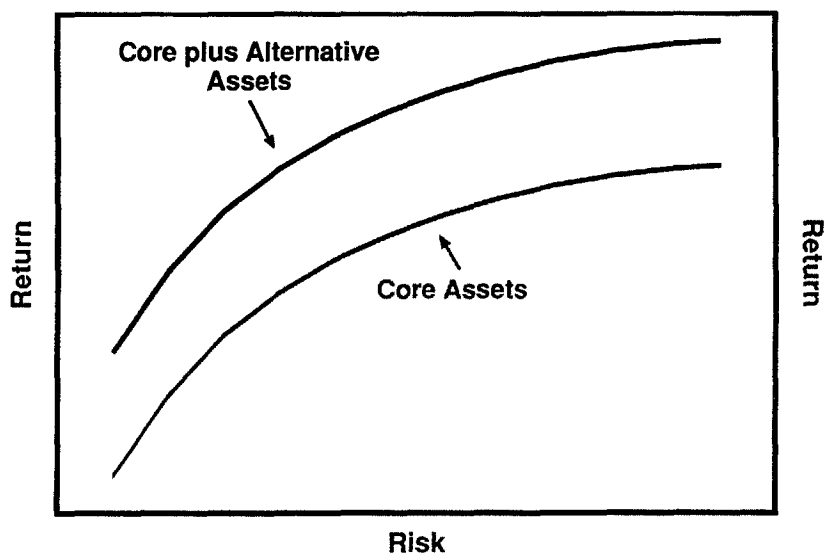
CHART 7
SAMPLE PROPERTY/CASUALTY COMPANY
ASSET ALLOCATION ALONG THE EFFICIENT FRONTIER



The objective is maximizing risk/return. Alternative assets enrich the opportunity set from which we're selecting in forming efficient portfolios, and the model would select alternative assets that had "good" characteristics, either offering a good expected return at the level of risk or some very good covariance benefits, such that they serve to reduce the risk to surplus. This results in an expanded efficient frontier (Chart 8). When we use just cash, stocks, bonds, or other core assets, we can achieve the frontier labeled core assets. When we allow the inclusion of alternatives, we can

expand that frontier, so we can get more efficient solutions. We're able to get a higher return at any level of risk.

CHART 8
EXPANDING THE EFFICIENT FRONTIER



Now let's turn to the constraint side of the equation. We talked about some of the constraints on this market-value optimization process that can impact the actual degree to which we can move in the direction of mark-to-market efficiency. The regulatory constraints that I'd like to talk about are risk-based capital and the model investment law. There are also accounting constraints. The company, in a statutory solvency regulatory sense, lives by statutory accounting. And management lives by GAAP accounting. I lump these considerations together as book earnings, and book earnings are not equal to economic return. If we just focus on economic return, we may get solutions that are unpalatable either to a regulator or to senior management.

Also, statutory surplus risk is of critical importance. The risk to statutory surplus, given the decisions that we make, are not measured the same way that economic risk is measured. Even though we would like to focus on the economics of the situation, we know we have to live with statutory and GAAP constraints.

Let's take a quick look at risk-based capital. I count four components (others count a different set of four components, by lumping reserve and premium risk into underwriting, and adding off balance sheet): asset, credit, reserve and premium. As I noted earlier, there is also a covariance adjustment, which simply means that rather than using a straight addition of the individual risks to come up with the total risk-based capital (RBC), you put the risks through a square root of the sum of the squares formula. This has the impact of reducing the raw addition amount by about 40% or

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so for the typical company. Therefore, the final RBC calculated is much less than the sum of the individual parts.

The risk-based capital contribution of assets is computed by taking the balance sheet statement value for each asset and multiplying it by a specified factor. For common stock it's 15%, which contrasts with the 30% factor used on the life side. For bonds, the factors are mainly under 5%, especially for investment-grade securities. Mortgages are 5% and real estate is 10%. As far as risk-based capital is concerned, it is silent on derivatives. There's just no calculation of capital set aside for derivatives.

What constraints might risk-based capital put on the asset allocation process? The constraints would arise from concern about how the company stacks up against its competitors in the risk-based capital world. I should note here that even though RBC is being developed by the regulators, it will, for the most part, not be a regulatory issue. By the time companies adjust their strategies, in view of the rules, you'll find, as we have found on the life side, that ratios are very high relative to the regulatory thresholds. Thus regulation is almost a nonissue in the vast majority of situations. Nonetheless, companies are concerned with risk-based capital. What this says is that there's not so much concern about the regulators taking over, but rather how companies stack up against their competitors. It has become kind of a beauty contest.

It turns out however, that, given the covariance adjustment, and given the fact that the raw score for asset risk for the average company is about 20% of the total, the contribution of assets-to-finance risk-based capital is, in most cases, very minimal. Risk-based capital is not much of a constraint for any kind of reasonable asset allocation. In fact RBC for the average company with a reasonable allocation of assets, counts for as little as 2% of the final RBC after covariance. This means that if you invested entirely in government bonds, all you would do is move your risk-based capital by 2%.

For common stocks, the nominal contribution to raw RBC is 15% of the common stock position. When you're all done crunching the final RBC after covariance, the effective contribution for an average company's common stock position is only one-tenth of that or 1.5%. If you added another dollar of common stock, it would have about a 3% marginal impact on the average company.

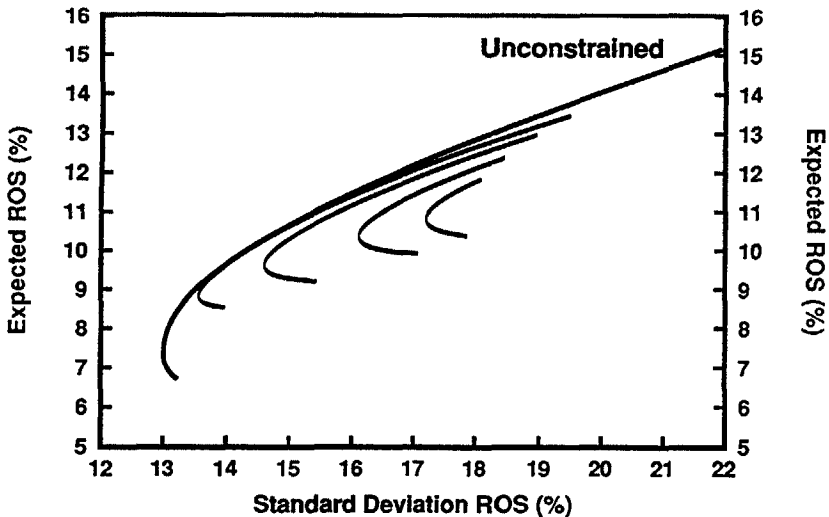
The model investment law is still an unsettled matter, and no one has a clear idea as to when it will be settled. There has been a great deal of tension between the industry and regulators concerning the model investment law. The original draft that was offered last fall had very strong specific quantitative limits on what could be done with investment categories, as opposed to a more general prudent man rule. There are also differences between life and property/casualty insurance.

One interesting, and probably one of the more constraining requirements that has survived to this point is the idea that a P&C company would have to maintain high-grade bonds equal to 100% of loss and unearned premium reserves. This would be a fairly severe limitation on the freedom of choosing the asset allocation for a P&C company. Some companies historically bumped up against this constraint.

The equity limit is 25%, which does not seem particularly limiting given where companies are. The issue of subsidiaries is being removed entirely from the model law. Foreign investments and foreign currencies are, for most companies, not a big issue.

So these are the kinds of constraints that have to be considered in our framework of optimizing risk and return. They would obviously limit the amounts that can be invested in different assets. This would drive us away from efficiency. Also, specific requirements on reported earnings or statutory surplus control would drive us away from the unconstrained efficient frontier and would move us to other frontiers, depending upon the specific tightness of the constraints being applied. These other frontiers are less efficient in the economic framework. As we place limits on how far we can go in certain asset classes, or limits on the minimum book income we need to show, or the maximum risk we're willing to take to statutory surplus, which is measured differently than economic risk, we move to less-efficient frontiers. For example, if we apply a constraint that says the statutory surplus risk of our company can be no different than it is currently, there would be very little room to maneuver as in the innermost frontier of Chart 9.

CHART 9
 SAMPLE PROPERTY/CASUALTY COMPANY
 CONSTRAINED EFFICIENT FRONTIERS



Alternative assets can play a role here too. Earlier we talked about using alternative assets in trying to find better unconstrained solutions. Mike and Rob will discuss how alternative assets also allow us to manage the constraints. Even if they offer nothing by way of market efficiency, they can assist in managing certain regulatory constraints. For example, some of the equity alternatives that Mike will talk about can fit in that category. They not only can enhance the unconstrained frontier with

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alternative assets, but they can help in maneuvering around the economic/statutory problem with some of the regulatory issues and perhaps also assist in tax issues.

MR. STRICKER: I'm going to talk about alternative investments. Let me start by asking the question, what are derivatives and alternative assets? A derivative is a security whose price is derived from another instrument, whether it's a bond, a stock, a commodity, or a currency. I divide derivatives into four categories. The first is, swaps, where you exchange one payment stream for another, i.e., fixed or floating. A second is futures, which is like a forward purchase agreement (which insurance companies have been doing for decades ever since they've been involved in private placements) where you agree to buy or sell a security in the future at a fixed price. The third class of derivatives is options; in return for a premium, you have the right, but not the obligation, to buy a security in the future at a fixed price. With both futures and swaps you can have both positive or negative returns. With options you have the upside, but your downside is limited to your premium. And finally, there's structured notes, where we embed both swaps and options into a note, either by linking the coupon payments or the final principal payment to some underlying index.

Alternative assets are really anything other than the traditional investment grade bonds, stocks, cash, or mortgage loans that insurance companies have invested in over the years. These can include nonagency residential mortgage-backed securities, commercial mortgage-backed securities, high-yield bonds, and emerging market debt, all of which I'll talk about in a few minutes. Other examples would include nondollar stocks and bonds and equity real estate.

Why invest in derivatives and alternative assets? There are really three reasons, but they're all related to improving investment performance. One reason might be to enhance yield. Another reason is to enhance expected return, which includes both yield and changes in price. And a third reason might be to manage interest rate risk.

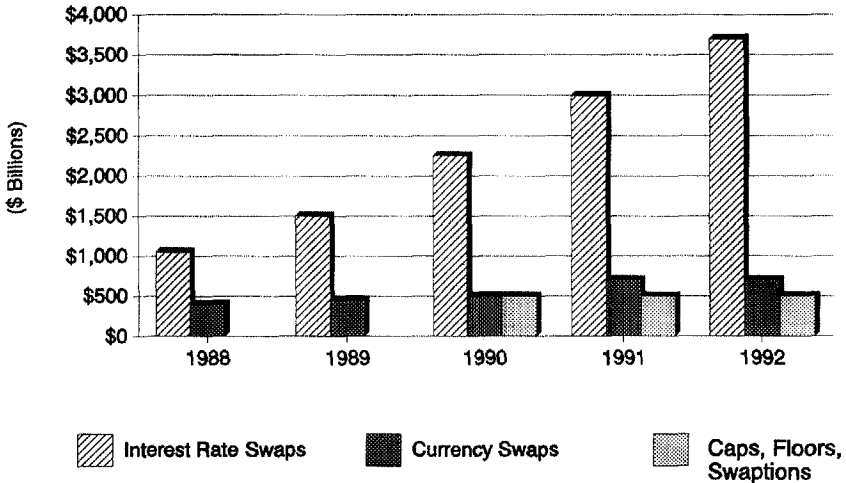
I will talk a little bit about derivatives, and at the same time I want to distinguish between form and substance. Futures can only be used by insurance companies for hedging purposes. Because of their liquidity and leverage, however, they're a wonderful tool for speculators, as we've all been reading about in the papers recently. Swaps are more flexible than futures and can replicate virtually any payoff pattern that you desire. They can be used for hedging, asset allocation, return management, and yield enhancement. Options offer the upside of futures and swaps with the downside limited to the upfront premium. Covered call option writing strategies can be used for income enhancement by insurance companies.

Economically these structures are all related to each other. Furthermore, swaps and options can be embedded in bonds to produce structured notes. So anything I can do in swap or option form, I can do with a structured note. They have minimal regulatory and accounting impact, however, because regulators tend to overlook the underlying economics and focus on the form instead.

Chart 10 shows the tremendous growth of the derivative markets in recent years. The swap market has grown from \$1.4 trillion in 1988 to an estimated \$6.8 trillion in 1993, a 38% compounded growth rate. Interestingly, when you read the papers they call it a \$14 trillion dollar market. I guess you can include almost anything you

want. To put it in perspective, remember that the entire U.S. government securities market is just about \$3 trillion. The papers have been focusing on the growth of derivatives as worrisome and possibly contributing to the recent market sell off. How many of you saw the recent *Time* cover story on derivatives? Or have you been concerned about recent events such as Proctor & Gamble's (P&G's) \$100 million hit to earnings?

CHART 10
DERIVATIVE MARKETS GROWING RAPIDLY



I'm concerned that the press is being overly alarmist. By themselves, derivatives are neither good, bad nor indifferent. They're merely tools to help a portfolio manager position his portfolio to express his views. Because they're inherently levered, they're very volatile. But this is what makes them efficient tools for portfolio management. A little bit can go a very long way. But you don't need derivatives to get into trouble. Long municipal bonds, of which most people consider reasonably conservative investments, lost about 10% of their value in the first quarter of this year.

Buying a Government National Mortgage Association (Ginnie Mae or GNMA) for normal settlement the following month, or a private placement which may not settle for two or three months, or even longer, is no different than buying a future. Buying a Ginnie Mae or a callable corporate bond is just like selling a call option. Derivatives do stand out, however, and they highlight the success or failure of that part of your strategy. But sometimes people overlook what's left over. What really counts is the whole, your overall portfolio return. When properly used, derivatives can help a portfolio manager accomplish his objectives. Because of their inherent leverage, though, they can be abused. Thus, controls have to be in place to ensure that they're being utilized properly.

Turning to alternative assets, one way to enhance yield is to take more credit risk. I'll talk about four alternatives to accomplish this. The first is private label residential mortgage-backed securities. These are pass-throughs collateralized with residential

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mortgages, but not guaranteed by U.S. agencies such as the Federal Home Loan Mortgage Corporation (Freddie Mac), Federal National Mortgage Association (Fannie Mae), or Ginnie Mae. The cash flows are tranching according to a senior-subordinated structure to create classes with different credit-quality ratings. The AAA senior tranche will currently offer a yield spread of about 90 basis points over treasuries or 60 basis points over AAA corporates. The BB subordinated tranche can offer a yield spread of about 430 basis points over treasuries, or 180 basis points over comparably rated BB corporates.

There's very low expected default risk on residential mortgage-backed securities. The last thing somebody is going to default on is their home mortgage. In fact, we would expect zero default risk on the senior AAA and AA tranches, and about a 1.25% default risk on the BB subordinated tranches. This is based on a study that Lehman Brothers did. This 1.25% expected default rate is really quite low when you look at the yield spread that you're getting. It's important to note that the subordinated tranches actually have better prepayment protection than most mortgage-backed securities. That's because early prepayments go to the senior tranches first.

A second alternative for enhancing yield is with commercial mortgage-backed securities. These are passthroughs that are collateralized with commercial mortgages rather than single-family residential mortgages. Commercial mortgages include offices, retail, hotels and multifamily residential. They're perceived as being more risky than the residential mortgage-backed securities, so they offer a higher yield. The AAA senior tranche would offer a yield spread of 90-120 basis points over treasuries, or 60 to 90 basis points over AAA corporates.

Floating-rate tranches offer spreads of 80 basis points over LIBOR, which is the highest yield that I'm aware of on investment quality paper. The BB subordinated tranches offer a yield spread of 450 basis points over treasuries, or 200 basis points over comparably rated BB corporates. These have a very low call risk, unlike residential mortgage-backed securities that experienced very high prepayment rates last year. Furthermore, there's negligible expected default risk on the senior AAA and AA tranches, because of the subordinated support tranches. However, to be honest, there's really not enough history yet to project default risk on the subordinated tranches.

A third alternative to enhance yield is with high-yield bonds. These have an average quality of B and a spread of 400 basis points over treasuries, which, after you allow for defaults, produces an expected spread of about 300 to 350 basis points over treasuries. There's some call protection with high yield, but it's not great. Typically, a ten-year bond would give you five years of call protection.

The critical issue in this sector is managing the default risk. This is done through superior credit analysis and by diversification, both in terms of issuer and industry. It's terribly important in this market not to put all your eggs in one basket.

The fourth alternative is emerging markets, or what some people have been calling submerging markets these days. The average quality in this sector is B or BB. Typically, you can expect a spread of 450 basis points over treasuries for a diversified

portfolio. Maturities can range from money markets, which you would get by investing in the local market, such as Mexican cetes (short-term bonds), to intermediates in the Euro market, to very long maturities in the Brady market. They offer extremely good call protection. And we think the credit risk is acceptable and improving as a result of economic reforms which have lowered the risk in many countries. The yields are high, basically because knowledge is at a premium when it comes to this market. It's not very easy to follow these markets, and it takes much time and effort. But we think you're rewarded for that.

Table 2 summarizes our recommendations for these various alternatives. For the AAA- and AA-rated commercial mortgage-backed securities, we would recommend a 10% portfolio allocation, which at a yield spread of 60 basis points over comparably rated corporates would add 6 basis points to your overall portfolio yield. A 2% allocation to BB-rated residential mortgage-backed securities, at a spread of 350 basis points, net of default, would add 7 basis points to the portfolio yield. A 2.5% allocation to high-yield bonds which, at a spread of 350, net of defaults, would add 9 basis points to the portfolio yield. And finally, a 2.5% allocation to emerging markets at a 450-basis-point spread, would add 11 basis points to the portfolio yield. So by allocating roughly 17% of your portfolio to these asset classes, 10% of which are rated AA or AAA, you can increase your overall portfolio yield by 33 basis points. Furthermore, the allocations to the low-quality asset classes are fairly low and very well diversified, so that no single asset class accounts for an extraordinary percentage of assets.

TABLE 2
CREDIT RISK ALTERNATIVE RECOMMENDATIONS

Alternative	Portfolio Allocation	Spread	Impact on Total Portfolio
AAA/AA CMBS	10.0%	60 bp	6 bp
BB RMBS	2.0%	350 bp	7 bp
High Yield	2.5%	350 bp	9 bp
Emerging Markets	2.5%	450 bp	11 bp
	17.0%		33 bp

There are other ways to enhance yield besides taking credit risk. One way is to take yield-curve risk. An example is something called a yield-curve accrual note. Basically, this structure pays a higher yield if the yield curve doesn't flatten by too much. For example, we can take a single-A-rated bank CD, with a two-year maturity. It would pay a coupon of LIBOR plus 1.75% every day that the slope in the treasury market is greater than 1.5%. Otherwise, it only pays you 1.25%. A conventional CD might yield LIBOR or nearly 4.07% today. The slope in this case is defined as the ten-year treasury yield minus LIBOR. The current slope is 2.9%. So as long as the yield curve doesn't flatten by more than 140 basis points, you get this extra yield of 175 basis points.

Derivatives can also be used to enhance expected return. An example is a rate of return swap where you swap the return on one sector for another. For example, you can do a one-year swap, where you pay the return on the corporate index, and in return you would receive LIBOR less five basis points. You would benefit in this case

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if corporate spreads widen, which is what we expect, because the corporate index would underperform in this case.

Another example is a Canadian forward rate swap. At maturity in one year, it pays par times 7.07% minus the six-month Canadian swap rate. The current swap rate is 6.21%, so rates would have to rise by over 100 basis points for you not to make money in this case.

Now, a third example, in structured note form, is an asset allocation note. This allows you to change your asset allocation every six months with just a telephone call. Say you had a five-year note. You could select your coupon every six months from one of the following choices. First, you could just take a normal 6.5% coupon, paid semiannually, which is just less than you would get if you bought a straight note. Or, if you were bullish on the stock market for the next six months, you could ask for the return on the S&P 500. Or, if you liked bonds, you could ask for the return on the 30-year treasury bond. If you worried about inflation, you could ask for the return on the Goldman Sachs Commodity Index. There will be corresponding caps and floors with each of these choices that basically eliminate the possibility of any negative coupons, but cap your upside.

Finally, derivatives can be used to hedge interest rate risk. Say you had a \$100 million portfolio with a six-year duration that you wanted to shorten by one year to five years. The obvious strategy would just be to sell your long bonds and reinvest into shorter bonds. But that might trigger some capital gains or losses that you didn't want to show. There might be other reasons you don't want to do that. Alternatively, you could sell 160 note contracts in the futures market, or you could enter into a \$13 million ten-year swap, paying 7.5%, and receiving LIBOR. Economically, all these strategies would leave you with the five-year portfolio duration.

Derivatives and alternative assets are playing a growing role in enhancing yield, enhancing expected return, and managing interest rate risk. There's no free lunch, however. Typically, they involve trading off one risk for another. Using these derivatives and alternative assets requires sophisticated analytics. You need to be able to understand forward curves, to make explicit volatility assumptions, and to understand option pricing.

If you use derivatives and alternative assets correctly, you can be like Tarzan coming to the rescue. But if they don't work out, you better be prepared to take some heat.

Now let me turn it over to Mike Siegel who will discuss what insurance companies are really doing. He'll also talk a little about equity alternatives.

MR. MICHAEL H. SIEGEL: I'm going to provide the wrap up for this session. I'm going to discuss equity alternatives, and I hope to leave a few minutes so that we can field any questions.

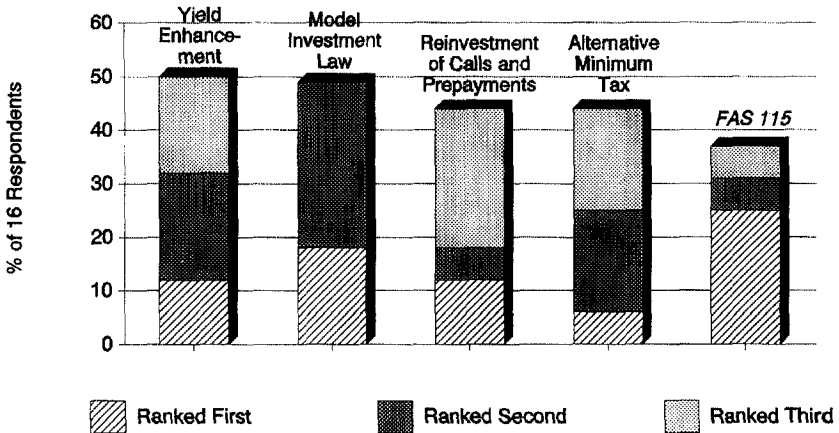
I divided my talk into three segments. First I'm going to discuss the results of a Chief Investment Officer (CIO) survey that we've conducted for the last two years. It provides some insight into what CIOs are thinking about in terms of their asset allocations and the issues that are concerning them.

Then I'm going to discuss equity alternatives both in substance and form. And finally, I want to provide just a brief menu of issues to be considered in evaluating different equity alternatives.

Last December we surveyed CIO preferences regarding various issues that affect asset allocation decisions. Chart 11 represents the results of the property/casualty CIO survey. The first question that we asked was, please rank the three most important issues facing you today that will affect your asset allocation decisions. One of the issues that was most frequently ranked first was yield enhancement. It ties into the discussions that we've been having. Ranked second was concerns about the model investment law. Third was reinvestment of calls and prepayments. Cash flow has been very strong due to the decline in the markets over the last few years.

CHART 11
PROPERTY/CASUALTY REGULATORY AND ACCOUNTING ISSUES

Survey Question:
What are your three most important issues for 1994?



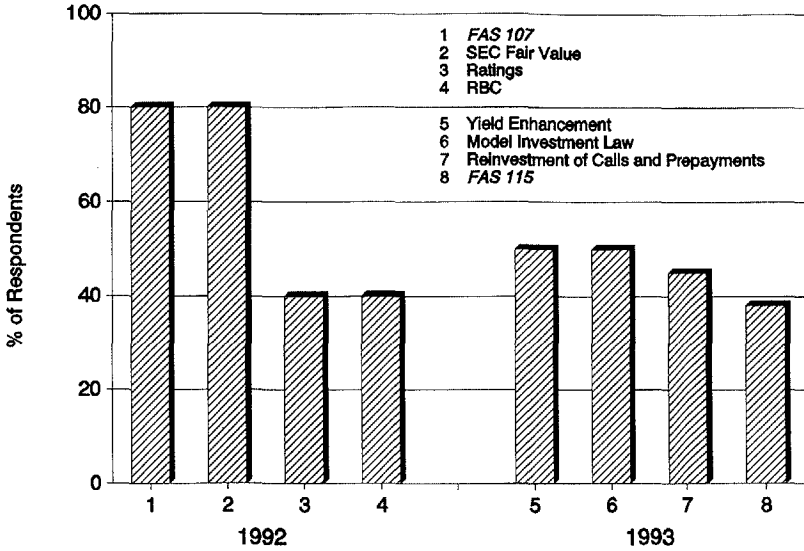
Source: 1993 Goldman Sachs Property/Casualty CIO Survey

The ranking of the alternative minimum tax as fourth, ties into Rob's point that casualty companies are fairly heavily invested in tax-exempt bonds or municipal securities, which aren't necessarily the best investment to be in if you're an alternative minimum tax payer. Finally, they ranked *FAS 115* fifth, which is market-value accounting.

This survey showed fairly significant changes from the survey results that we had last year (Chart 12). In December 1992, we conducted the same survey. The two most important issues at that time were *FAS 107* and the SEC fair-value accounting proposal. Those were both mark to market proposals, which ultimately became *FAS 115*. That was also followed by ratings and risk-based capital and concerns about the credit ratings of the institutions, and, of course, the upcoming risk-based capital proposals.

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CHART 12
CHANGES IN THE LEADING PROPERTY/CASUALTY
REGULATORY AND ACCOUNTING ISSUES

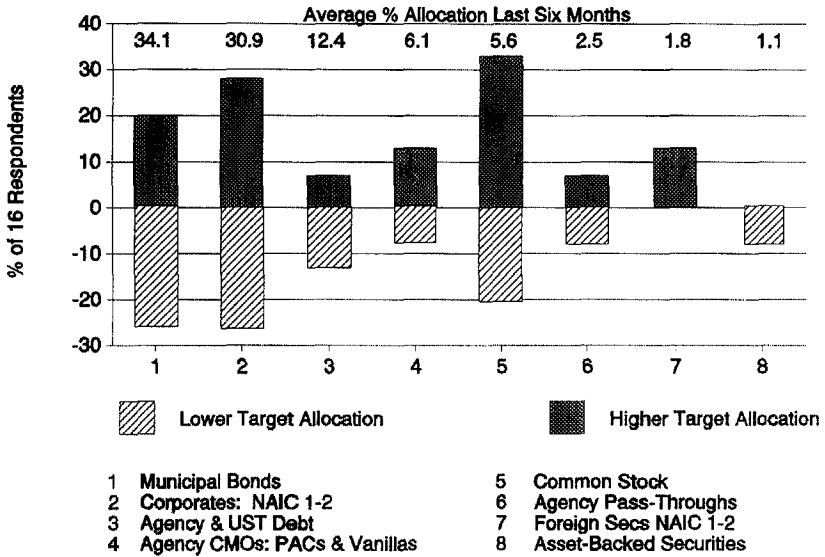


Source: 1992 and 1993 Goldman Sachs Insurer CIO Surveys

We then asked about asset allocations. We asked what the current allocation of new funds is. Chart 13 includes those numbers at the top. In the next six months, which will be the first six months of 1994, how are you planning on changing that allocation? What asset class are you going to increase? What asset class are you going to decrease? The two most significant asset classes are municipal bonds, and NAIC class one- and class two investment-grade corporates. They represent 34% and 30% of new cash flow. The part of the bars above "0" line indicate, for each asset class, what percentage of the CIOs indicated that they were going to be increasing their allocations. The part of the bars below "0" line indicate a decreased allocation. And you can see common stocks, which only represent roughly 6% of new cash flow being put to work, has the largest percentage increase of CIOs indicating that they would put more money to that asset class.

Finally, we asked a different question, which was an ideal world question. Starting with a blank piece of paper, and no regulatory accounting or tax constraints, what would your ideal asset allocation be? In Table 3 we find 41% of the general account would be invested in municipal securities and 16% is in common stock. Now what's interesting about this is, we see the ideal allocation at 16% common, but the current allocation used, looking at the stat blanks, is below that, particularly if you take out affiliated equity. And then you say on the margin, where are you putting your money? And you find an allocation that's even lower than that. So what does all this mean? Well, my interpretation is that, in the ideal world, companies would like to invest more of their funds in equities. On the other hand, they don't act on those preferences. So why is that the case?

CHART 13
PROPERTY/CASUALTY ASSET ALLOCATION



Source: 1993 Goldman Sachs Property/Casualty CIO Survey

Well, CIOs have a preference for equities for two reasons. First, over long periods of time, it has been demonstrated that the total rate of return on equities as an asset class outperforms fixed-income securities. Second, over long periods of time, equities provide a better hedge for inflation than fixed-income assets do. So many CIOs conceptionally will like this asset class. But again, we don't see it demonstrated in the numbers.

TABLE 3
CIO—IDEAL INVESTMENT STRATEGY

Sector	Average Allocation
Municipals	41%
Common stock	16
U.S. governments	13
Corporates	11
MBS/CMO	8
Cash	5
Foreign bonds	2
Real estate	1
Preferred stock	1
Commercial mortgages	1
Inflation-linked	1

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I'd like to talk about asset allocation strategies. I'll segment the general account into two different categories. First is an asset allocation strategy for reserves. And the second is an asset allocation strategy for surplus.

Let's first discuss reserves. Generally speaking, companies try to pursue a duration-matched, or duration-managed asset allocation. When I say managed, I mean you measure the duration of the assets and, the duration of the reserves, but it doesn't necessarily imply that you must be duration matched. But you are measuring the amount of duration mismatch you're taking. Equities play a very small role in that allocation against reserves unless a company is a writer of long-tailed lines such as workers' compensation or medical malpractice.

Let's put the reserve account aside, and let's look at the surplus account. Well, the surplus account hopefully has a very long duration. In other words, if the company operates successfully, the surplus will be there for a long period of time. Well, how should I invest that very long duration liability? Well, I think I would prefer to invest in an asset class that outperforms, for a long period of time; that would be equities.

So we've got the desire for equities. We have a logic for equities. But again, we don't find equities. Why is that the case? I think the accounting has not been historically favorable to equities. On a statutory basis, bonds are generally held at historical cost, equities are held at the lower of cost or market. If we have a downturn in the stock market, we have a hit to the surplus. If we have a downturn in the bond market, we don't have that same hit to surplus. This type of accounting is changing now that we have the adoption of *SFAS 115* for GAAP accounts and the eventual adoption of some kind of market-value accounting for statutory accounts. I think asset equities and fixed-income assets will be on a more equal accounting basis in the future.

Second, there's another and more immediate issue to be dealt with. On a current yield basis, stocks yield 2–5% below fixed-income securities. So on a quarterly basis you better be right about the direction of the stock market, because it's costing you earnings to hold stocks. So we have the preferences, we have some impediments. Are there any alternatives? I hope there are some alternatives.

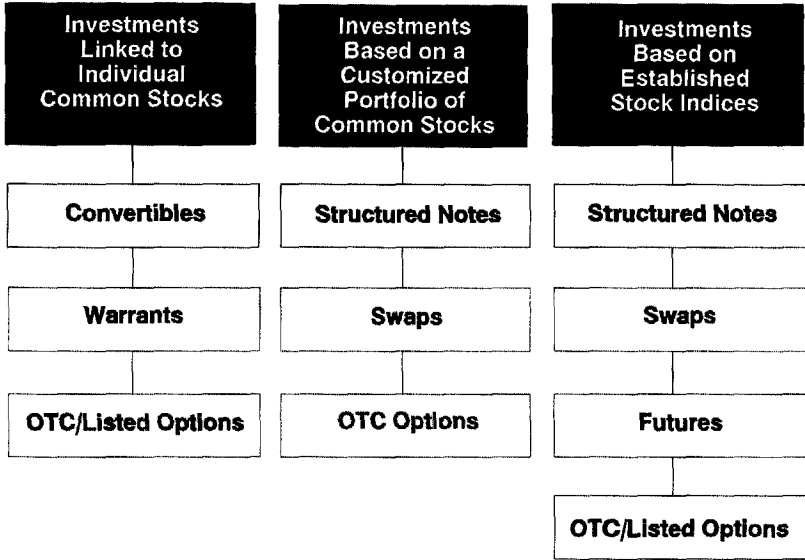
Chart 14 lays out alternative ways to gain equity exposure. Keep in mind two things. First, what am I trying to accomplish? And second, how will I accomplish that? What am I trying to accomplish addresses substance. How am I going to accomplish that is a form issue. I'm much less focused on form than substance.

The chart shows that you can get an equity return, which is tied to an individual stock, a portfolio of stocks, or a stock index. That's the substance. The boxes below represent different ways to get that return, such as through convertible securities, swaps, structured notes, futures or options. This is the form part of the argument.

I want to spend a little time talking about convertible securities. They demonstrate some different concepts. They've been around in the marketplace for many years. They give us a launching point to talk about structured securities. A convertible

security for the most part is the same thing as the ownership of a bond and a call option on shares of the underlying common stock.

CHART 14
ALTERNATIVE EQUITY INVESTMENTS



A convertible security can either be a preferred stock, which pays a dividend, or it could be a bond that pays coupon interest. It can then be converted under certain circumstances into underlying common stock. So if the common stock rallies, you would convert into the common stock. If the common stock doesn't rally or drops in value, you should stick with the fixed-income security. In essence what you really own is a bond or a preferred with a call option. You have a security that has the upside risk of the stock, but a limited downside risk.

Now, unfortunately we live in a no-free-lunch world. So if I've got something that has upside risk and limited downside risk, it has to cost something. The current yield of this instrument is below the current yield of other instruments in the market. So if this is a bond, the coupon on this bond is going to be below the coupon of the straight debt of the issuing entity. I'm giving up current income for that downside risk protection.

So the form can be a convertible bond, a convertible preferred, a bond plus call option, or a structured note. In the traditional convert, the bond is convertible into the issuer's own equity. Nowadays, we have structured notes where the issuer is one entity, and the stock can be converted into a third-party stock. For example, Goldman Sach's could issue a convert that is convertible into the stock of General Electric for example. Fannie Mae could be the issuer, if you're looking for an agency credit or if you don't want to bear credit risk on the bond. And that stock could be converted into the performance of a basket of pharmaceutical stocks.

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Let's take a brief look at traditional convertible securities. In the past, the traditional converts have been issued by corporations seeking to raise capital. They've usually been *smaller companies with medium-quality credits*. And that has been an impediment to investors that want to purchase an investment grade issue. The security could be senior debt, subordinated debt or preferred stock.

The maturity could typically be between five and fifteen years, and usually there's three to five years of call protection. A structured convertible security is in substance the same as the traditional convert. However, the investor has the latitude to set the features on this convert. Before we were stuck with whatever issuers were in the market. Now we can create a synthetic convertible instrument so we have a third-party corporation. I'll use the name Fannie Mae. And the bond would be convertible into the stock. You can name the stock, or you can name the basket of stocks. Usually these instruments are much shorter in duration (eighteen months to five years), and they still have call protection.

I went through an example of a convert and an example of a synthetic convert. Any type of equity return or equity sensitivity that a company is looking for can now be molded into a security. However, before we make an investment in any of these securities, there are a few things to think about. First and foremost is, what is the legal investment status? Part of that will depend on the state. Part of that will depend on the ultimate outcome of the model investment law.

Second, in structuring the security, do we want diversification? Do we want a specific stock? Or do we want a portfolio of stocks? Do we want a portfolio of pharmaceutical companies that gives me sensitivity to medical inflation? What are we really trying to accomplish in our equity returns?

Liquidity. The more odd it becomes the less liquid it becomes. It's almost a law of nature. This is another reason why these structured securities typically have shorter terms. A Ford Motor convert will have a 10-15-year term. A synthetic convert should have a shorter term. So the liquidity isn't as important. We also need to look at current yield. We need to look at risk-based capital. But as Fred said, risk-based capital for casualty companies is generally not an issue. We also should look at the statutory and GAAP accounting.

I talked about risk-based capital. Accounting issues, particularly with regard to *FAS 115*, are changing. Now I'm going to summarize.

I basically indicated that there's a stronger preference for equities on the balance sheet than we actually see on the balance sheet. Some of this has to do with issues about the availability and protection for downside movements in the stock market. Some of these issues have to do with regulation, tax and accounting. Some of these issues have to do with the unfavorable accounting treatment in the past of equities versus fixed income. These issues are changing. And I think for companies that either have a desire or a need for equity returns, this is a market that people ought to be thinking about and investigating.

Chart 15 is a diagram that shows how to look at a convertible security versus a common stock. It shows a change in market value, and the return on investments.

You see what the common stock that are delivered are, and that the performance of the stock goes down as does your investment return. With a convertible instrument, your bottom half underline coupon on a convertible. BUT the underlying common depreciates in value at a certain point when the stock price the conversion price you start to get.

CHART 15
CONVERTIBLE VERSUS COMMON STOCK PERFORMANCE

