TAX CASH-FLOW PROJECTIONS

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o   Current state of the art
    -- "Future Tax Return" techniques
    -- Simple marginal rate approaches
o   Regulatory climate
    -- Under NY Regulation 126
    -- Under NAIC recent developments
o   Integration of tax cash-flow projections with cash-flow surplus projections
o   Post-tax investment yields

MR. LESTER A. EDELSTEIN: Projecting cash flows is a standard actuarial technique. What we will cover obviously is the part that taxes play in this process. Arthur Anderson will go over the regulatory background to cash-flow testing. Mostly, this will be a general presentation but will include applications to tax cash flows. Then, Shane Chalke will talk about the current state of the art: what is done and what are some of the issues when people do cash-flow testing. Finally, Doug Hertz will give examples of the effect of using tax values versus statutory values for items such as reserves and investment income. The first speaker is Arthur V. Anderson. He is a consulting actuary with Milliman and Robertson. He joined his company's Hartford office in 1982, and at that time his practice consisted mainly of the development and pricing of life and annuity products, both traditional and nontraditional. He is now in the Boston office of Milliman and Robertson, and more recently his practice has focused on corporate projections and valuation models. He has used corporate models to address a wide range of questions including internal management reporting, surplus adequacy, merger and acquisition proposals, and demutualization studies. Arthur is a Fellow of the Society of Actuaries and a graduate of Brown University.

MR. ARTHUR V. ANDERSON: My comments will be introductory in nature. First I will discuss, in general terms, some of the developments in cash-flow testing during the past couple of years. Most importantly, I will focus on the issue of federal income taxes. If we have time, I'd like to make some closing remarks about the current regulatory environment and, in particular, focus on New York's Regulation 126 and the recent proposed regulation in Illinois.

During the last couple of years while working with corporate projections and cash-flow models, I've come to the realization that what we're doing is using familiar tools, but using them in a new way. What I mean is that most of the pricing studies, statutory and GAAP projections, and corporate models we've built in the past tie in very closely with what we do in cash-flow testing. At the broadest level, all of these tools, both the old

ones and the new cash-flow models, were built to provide management with information on which to make decisions.

I believe that two events have occurred in the past ten years which have enhanced and elevated what I call the "old tools," and perhaps earned them this new name of cash-flow testing. The first event is that our actuarial models have become more sophisticated. They have been evolving into more realistic and credible predictive tools. A good example (probably the best) is our current greater understanding and ability to model the asset side of the balance sheet. In the last couple of years, we have expanded our understanding of asset cash flows and how they tie into the liability side. Taking it one step further, we've also accumulated a lot of experience and knowledge about the linkages between the asset and liability cash flows. In short the models that we have been using have progressed: the old pricing and valuation tools have evolved and become better analytic and predictive tools.

The second event that has influenced the emergence of what we call cash-flow testing has been the advent of relatively inexpensive computing power. The PC revolution has made it possible to test multiple scenarios and run elaborate models on a routine basis. So, as our actuarial models have grown in sophistication, the necessary number-crunching power has grown apace.

My conclusion that today's cash-flow testing is an elaboration of existing models and pricing tools suggests that when a company begins to implement or expand cash-flow testing, the first step should be to review its existing tools and data -- to look at what is "in house." The first step should not be to dedicate a large amount of resources to develop a new system "in house" or to spend a lot of money to purchase software from outside vendors. The best thing to do is to look at what you already have. Chances are, if you look at the data you've already accumulated in a different way, you will find that you're a long way toward answering some of the questions that cash-flow testing is directed at.

Okay, it's time to get off my soap box. Let's switch gears a little bit and talk about corporate income taxes as they relate to cash-flow testing. When Les asked me to give some general comments on taxes, the first place that I turned to for background information was the standards of practice prepared by the Actuarial Standards Board (ASB). In October 1988 the ASB adopted "Actuarial Standards of Practice Concerning Cash-Flow Testing for Life and Health Insurance Companies." This standard of practice, known affectionately as the "How To" guideline, establishes standards for sound actuarial practice in:

1. projecting insurance and investment cash flows,
2. defining economic scenarios to be tested, and
3. setting assumptions.

In setting assumptions, the "How To" standard offers no explicit guidance regarding federal income taxes (FITs). However, the standard does state that:

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In performing cash flow testing, the actuary should consider all *other material items* affecting cash flow which may not be easily categorized as investment or insurance related (emphasis is mine).

Under "other material items," federal income taxes are included.

The position of the guideline is that the actuary performing cash-flow testing should be satisfied that all *material* items have been considered. If taxes might have a significant impact on the results, they should be included in the testing.

To illustrate this point and the impact of taxes, I ran a very simple set of cash-flow projections. The projections involve a block of in-force universal life (UL) policies and test various assumptions regarding taxes. The point was to illustrate the impact of federal income taxes. The results are shown in Table 1. The numbers shown are accumulated surplus after 10 years.

TABLE 1

Cash-Flow Testing -- Impact of Taxes
Universal Life Block

	Accumulated Surplus After 10 Years
Before F.I.T.	$5,696
F.I.T. (34%)	3,400
F.I.T. (34% Base Rate; 7% Equity Rate)	2,408

In the base case, "Before F.I.T.," the resulting tenth-year surplus was $5,696,000. In the second case federal income taxes are plugged in at 34%. The results are as expected: the cost of taxes reduced the accumulated tenth-year surplus to approximately 66% of the pretax level. The tenth-year surplus is down to $3.4 million. No big surprise there, but it illustrates the point that federal income taxes are material and should be considered in this type of testing.

As a third case, I ran a projection from a mutual company perspective. In this case the cost of the equity-base tax was modeled by assuming a 7% differential earnings rate. For anyone from a mutual company, the results are no surprise. The accumulated surplus after ten years is hit pretty hard -- it is down to $2.4 million. The results of these three examples are not surprising. Some of you may be thinking "So what!" The point is that taxes are material. The examples illustrate that quite well.

The question of the materiality of taxes in cash-flow testing goes beyond just the basic tax rates. It also involves the nuances and details of tax calculations. I think Doug and Shane will be talking about some of these details later on. For now, I'd like to illustrate one example involving the treatment of loss carryforwards (Table 2). The issue is how, in a cash-flow projection, should you handle negative taxable income? Is it an immediate tax credit or a potential carryforward used to offset future taxes? How you treat negative taxable income in your model will have a material impact on the results.

TABLE 2

Tax Credits & Carry Forwards

	Accumulated Surplus After 10 Years	
	Product 1	Product II
F.I.T. (Immediate Credit)	$3,400	$3,400
F.I.T. (Carry Forward)	3,396	3,293
F.I.T. ($500 Carry Forward)	3,687	3,511

Table 2 shows after-tax results for a block of new UL policies. It illustrates the impact on accumulated surplus of different treatments of tax losses. In the first case, marked "Immediate Credit," it is assumed that negative taxable income in any year is immediately used as a tax credit elsewhere in the company. In essence a tax credit is "sold" to another line of business that is able to use the tax loss to offset positive taxable income. Under this "Immediate Credit" scenario, a first-year negative taxable income of $500,000 generated an immediate credit of $170,000. The projection booked the credit as income by assuming that it was sold to another line of business elsewhere in the company. This "Immediate Credit" treatment resulted in a tenth-year accumulated surplus of $3.4 million.

An alternative approach is to treat the "negative" taxes not as immediate credits, but to hold them as loss carryforwards. These loss carryforwards won't be applied to other lines of business, but will be used to offset future taxes arising from the universal life block. Under this carryforward approach, the resulting tenth-year accumulated surplus is $3.396 million. For this particular product design there is not a dramatic difference in the accumulated surplus whether we treat the "negative" tax as an immediately recognized tax credit or as a loss carryforward used to offset future taxes. Either treatment produces close to the same result for this particular block of UL policies.

However, it would be dangerous to generalize from this result. Other product designs may produce different results. For example, Product II in Table B is a product with higher first-year tax losses. For this product design, the impact of treating negative taxable income as an immediate credit versus a carryforward is much greater. Thus, how you treat tax losses in a cash-flow projection can have a material impact on the final results.

A third issue relating to tax losses and cash-flow projections is how you treat an initial tax loss carryforward. What do you do if on the starting date of the cash-flow projection there is already an existing tax loss carryforward? If you are projecting a single line or only a part of the company, it needs to be decided what portion, if any, of the loss carryforward will be allocated to the line or segment.

In working with tax losses, carryforwards, and credits you need to project the tax situation and payments for the company as a whole. Only by doing this can you correctly identify when tax losses emerge, and how and when they are best utilized. If you are

dealing with a single line or just a part of the company, you need to make some implicit assumptions about the current and future tax situation for the company as a whole.

The bottom line of Table B, "F.I.T. ($500 carryforward)," shows the impact of allocating a $500,000 loss carryforward to both blocks of new UL policies. For both product designs the tenth-year accumulated surplus is significantly increased.

STATE REGULATIONS

Okay, I am going to switch gears one last time and speak briefly about state regulations. Specifically, how they impact cash-flow testing. Let's start with New York's Regulation 126. New York has been requiring and working with cash-flow testing longer and probably better than any other state. It is the leading edge of state mandated cash-flow testing. Regulation 126 has been evolving and changing each year.

In 1989, there were several significant changes to Regulation 126. The first change is the small company exemption. This is a misnomer. It is not an exemption for small companies, but for companies with small blocks of annuity business. If the total reserve for contracts covered by Regulation 126 is less than $25,000,000 or if they are less than $50,000,000 and less than 50% of the company's total reserves, you don't need to submit a Regulation 126 filing. That is, you don't need to do the Regulation 126 filing unless the New York Department specifically requests one. I think this is probably the most significant change in Regulation 126 enacted in 1989. For small blocks of business it allows a company to avoid going through a Regulation 126 filing.

The second change in 1989 was the addition of certain single premium whole life contracts to the scope of Regulation 126 filings. Single premium whole life contracts which are defacto single premium deferred annuities (SPDAs) must be included in the Regulation 126 reserve testing. A third, smaller change was an amendment regarding the calculation of reserves for substandard annuities. It describes the mortality to be used in setting the substandard annuity reserves.

As Regulation 126 has been evolving and changing, it has not always been possible to say where it is going next. There is no crystal ball for this. However, I think at some point down the road, probably sooner than later, universal life and other interest-sensitive products will be within the scope of Regulation 126. That seems like a natural extension of the existing regulation.

A second area of possible change is the treatment of stockholder dividends. This is probably an issue raised by mutual companies, and it seems like a fair one. The question is whether in the cash-flow testing you should include an outflow for anticipated stockholder dividends. In deciding this question, the important considerations are the companies' willingness to limit or curtail stockholder dividends and whether such dividends are material to the final results.

The other state I want to talk about is Illinois. There has recently been a proposal to implement a cash-flow testing regulation in Illinois which is similar to New York's Regulation 126. I think this proposal is going to change some things.

PANEL DISCUSSION

The proposed regulation has not been fully defined, but it looks like the main points are:

o   It will apply to all companies licensed in Illinois.
o   It will require Regulation 126 type testing for all annuity blocks of business.
o   It will be modeled on New York's Regulation 126. The intent is to keep the two regulations consistent, so that separate studies and filings do not have to be prepared for each state.

In terms of when the regulation will be in force, once again there is no crystal ball. My best guess and what I've heard people say is that 1991 is the target date for implementation. So at year-end 1991, cash-flow testing may be required in Illinois.

What is really intriguing about the Illinois proposal is that there are approximately 1,200 insurance companies licensed in Illinois. The proposed cash-flow testing regulation will apply to all of these companies. In contrast, in New York there are approximately 100 to 150 companies licensed. This means that approximately 1,000 Illinois companies are not licensed in New York and probably not currently performing Regulation 126-type testing. So, if the proposed regulation is implemented, a lot of companies not currently performing cash-flow testing will have to do so in the future. Because of this impact, this proposal is worth keeping on top of. Since the proposal is still being developed, this is the time to provide input and make sure that the regulation moves in the right direction.

MR. EDELSTEIN: The next speaker is Shane Chalke. Chalke is head of his own consulting firm, Chalke Incorporated. He does consulting in life product management and is an authority on the design and financial analysis of modern day insurance products as well as associated investment, and interest crediting strategies. He's a member of the Society of Actuaries Committee on Nonforfeiture Principles, Vice Chairman of the Committee on Continuing Education, and Past Chairman of the Individual Life and Annuity Product Development Section. He has written numerous articles for *Best's Review* -- a life insurance selling and financial planning magazine. He is also the author of a paper on universal life valuation and nonforfeiture values which won the Society's 1984 award for best paper and also an award for the best triennial paper.

MR. SHANE A. CHALKE: My perspective on this topic is part of the larger, projection process. This can encompass asset liability analysis, what we typically call cash-flow testing, which is a little bit of a misnomer. Insurance companies don't run out of cash until they run out of assets. Nevertheless, value testing, generalized forecasting, projecting simulated statements and so forth, encompass the subject. These items intertwine around our subject of taxes in cash-flow projection. I'm not going to deal with any details regarding the mechanics of taxation. I'd like to concentrate on how the whole exercise of simulating taxation fits into this somewhat bigger picture. Art has mentioned that taxes, can often be material in cash flow. For many companies they may be as highly ranked as your second most material cash flow, behind commissions. Taxes are very important in doing any kind of profit projection, cash-flow simulation, and so forth. It's not a particularly usual case where you can safely ignore taxation in order to accomplish some of this. With that in mind I'm going to begin with just a few of the basics. I'll itemize a list of considerations which I think are the standard practice of the day. Some of these items will be basic, some will be a little less basic.

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First is the principle that you can't project taxes without literally projecting everything else. Taxes are the formula application to just about everything else that takes place within your company, which makes it a rather sticky job to project taxes in a vacuum.

Modeling the company generally in order to model taxes out into the future can be an absolutely enormous task. What you're really doing is simulating tax accounting out into the future. Simulating tax books, which is slightly different than what our focus has been as actuaries for many years, has generally been geared toward simulating statutory books or statutory income. The first, and perhaps the most obvious, is tax reserves. Tax reserves are not too many years old, but generally they are considered absolutely necessary to make some adjustment for the difference between tax reserves calculated with the applicable federal interest rate (AFIR) and statutory reserves. The second item, perhaps of lesser importance, is dividend received deduction, tax exempt investment income, and depreciation schedules for different kinds of assets. Many of your assets have different depreciation schedules for your tax books, your staff books, and your GAAP books. It makes life fairly confusing. Another item would be the timing of tax payments themselves. In many models, actuaries historically, have assumed that taxes either occur as flows once per year or continuously. Taxes are generally paid quarterly, so it's important to model this cash flow on a quarterly basis with your more realistic true up at the end of the year.
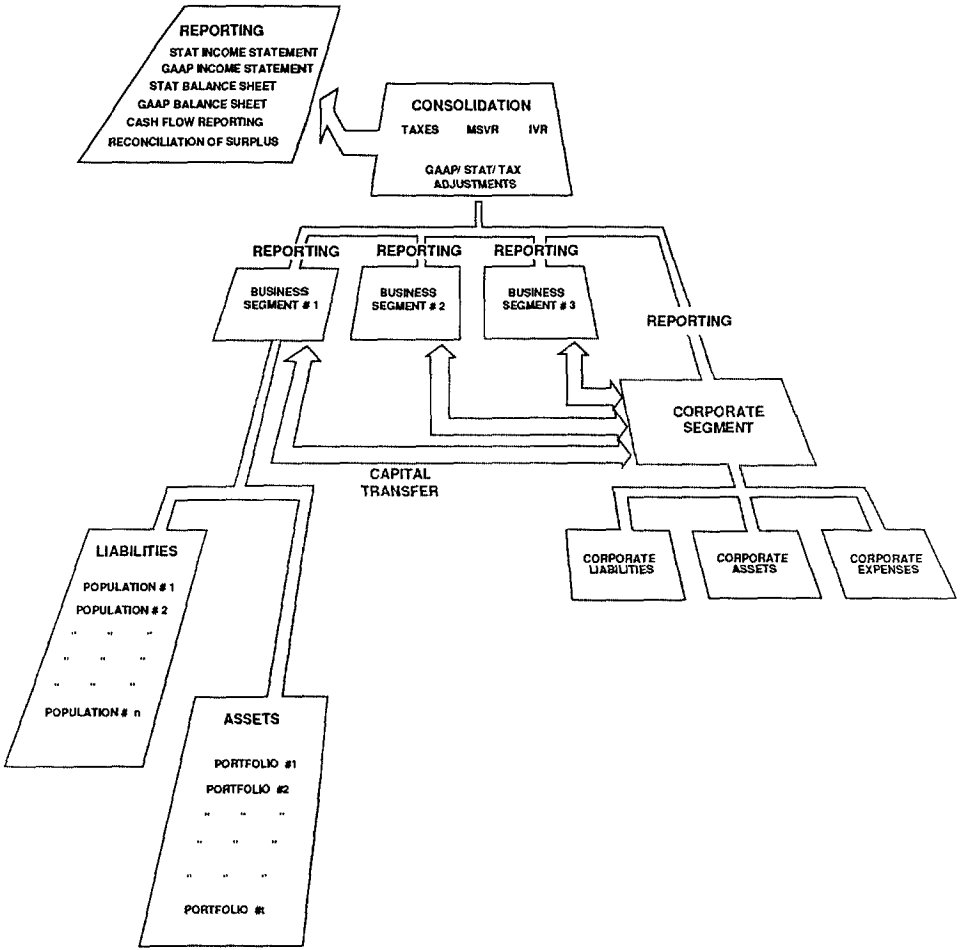
A lot of these things beg the question about modeling the asset side of the balance sheet as well as the liability side. It's difficult to take things into account very accurately, such as difference in depreciation schedules on real estate, dividends received deduction, tax exempt investment income, and so forth, without modeling assets directly. Actuaries have been doing tax projections without getting into that level of detail in the asset side for years, and there certainly are some old developed methods of doing that. Making adjustments for this and for that, the actuarial world is heading toward analysis based on low level assumptions dealing with the lowest micro-level.

Asset liability analysis together with tax projections is helpful in order to be able to calculate taxes in a significant way. This is a generalized map of a full company projection (Table 3). In a sense, a full company projection for taxes is a lot easier than dealing with a single product or single segment because, at the very least, if you're doing a projection of a full company, you know what the formulas and the rules are. When you project just a segment of a company there's a lot of information that's missing. You deal with lots of subtleties of things like allocation, marginal effects of this and that, and so forth. So, on one level a full company projection is easier.

On this particular project the company had segmented portfolios and segmented assets, so we dealt with each of the business segments independently. Each business segment had its own book of liabilities and its own book of assets that would be involved in projecting forward through time. Items that didn't fit in a business segment we called corporate. As we do the projection for each segment, everything left over such as extra cash, we'd send over to corporate, represented by the little capital transfer arrows. If there's any negative cash flow, we'd go and get some money from corporate. There are different ways of doing this. It can either involve active selling and repurchasing or just transfer of an asset within the projection.

PANEL DISCUSSION

TABLE 3

REPORTING

STAT INCOME STATEMENT
GAAP INCOME STATEMENT
STAT BALANCE SHEET
GAAP BALANCE SHEET
CASH FLOW REPORTING
RECONCILIATION OF SURPLUS

CONSOLIDATION

TAXES   MSVR   IVR

GAAP/ STAT/ TAX
ADJUSTMENTS

REPORTING   **REPORTING**   **REPORTING**

BUSINESS   BUSINESS   BUSINESS
SEGMENT # 1   SEGMENT # 2   SEGMENT # 3

REPORTING

**CORPORATE
SEGMENT**

CAPITAL
TRANSFER

LIABILITIES

POPULATION # 1
POPULATION # 2

..   ..   ..
..   ..   ..
..   ..   ..

POPULATION # n

ASSETS

PORTFOLIO #1
PORTFOLIO #2

..   ..   ..
..   ..   ..
..   ..   ..

PORTFOLIO #t

CORPORATE   CORPORATE   CORPORATE
LIABILITIES   ASSETS   EXPENSES

1200

Now, what about the taxes? There are several different ways that you can approach the full company situation, and most people who would be involved in a project of this scope would want to see reporting at the different segments as well as reporting for the entire company. It does become important how you manage each of the segments in terms of taxes. One possible approach would be to simply model taxes according to marginal rates within each segment, in other words, the marginal levels of taxation within each segment. Model each of the segments independently, then when you get over to projecting the corporate segment, you'd calculate your final taxes, and they would amount to just the residual over the actual taxes minus all the marginals for the segments. This is one possible approach.

This approach can be improved upon a little bit by assessing the tax base of the company. When you're looking at individual segments, you don't really know what the tax base is because we have things in the tax arena called alternative minimum tax, loss carryforward, and small company deduction, all these very complicated items that don't lend themselves well to piecemeal modeling. But once we're at the top level when we're modeling the taxes, we know whether alternative minimum tax kicks into play, if loss carryforwards are a factor, if the company's eligible for some portion of small company deduction, and so forth.

One thing that can be done, once we're at the top level, is determine what the actual tax base is and then reallocate taxes down to the segments based on the marginal tax rates applied to the appropriate tax base. That's a little bit of an improvement, and some companies may wish to actually allocate all of the tax back down to the segments. Once you make that jump, it's a leap of faith because those companies are talking about some sort of artificial allocation.

This is mostly the whole company picture and, as I mentioned, it's a lot of work, but its principles are relatively straightforward. It is more difficult when dealing with a single individual segment, and your most common projects are pieces of a company. Rarely do we embark on projects which are an entire company model. It's real fun when you get a challenge like that, but it's not often that companies tackle something that ambitious of scale. Most often you're dealing with a particular segment, a line of business, or even a product.

This brings into play a host of additional difficulties in ascertaining how to model taxes. Again, the largest primary difficulties are alternative minimum tax carryforwards, and small company deduction. Yet, if the company does not have a specifically allocated portfolio for a particular segment of the business or new product, then you have to deal with allocations of dividends received deduction, tax exempt investment income, and different assets that are taxed differently because of different depreciation schedules. There is a lot to consider.

There are several ways that this can be dealt with. The simplest method is to model the segment in a vacuum with modeling the taxes completely marginally. This is probably the most common historical approach. One of the things that amazes me is, although I have been talking about modeling with marginal expenses for years, people still reel in horror when I mention it. But everything is marginal taxes, which is really just another

kind of expense. Hardly anyone models with average tax rates, but you do model with average expenses. Typically the first approach would be to model an individual segment with marginal tax rates. The simplest approach is to model the segment as if it were an almost independent company. Do not take into account things like alternative minimum tax, except to the extent that a particular segment might kickup alternative minimum tax. Such a simple approach is perhaps not the best. An improvement upon this would be to make an assessment as to what the tax base of the entire company is. Is the entire company subject to alternative minimum tax? If so, model the segment marginally, assuming that it's taxed on an alternative minimum tax basis. Look at all the elements that go into alternative minimum tax, and tax those marginally, whether that particular segment actually falls into play in the alternative minimum tax (AMT) formula or not. It would be a truer marginal approach because you're capturing the individual elements in the business segment that actually have a marginal impact on the taxation of the company.

The third possibility is to simply model the segment with average tax rate. Generally, at most companies there is information available as to the total average rate of the company. These are some possibilities of dealing with individual pieces of the business, but it is a fairly difficult question.

Perhaps the most difficult, but maybe the most fascinating, question is: what do you do about tax law changes? I've had a very short career, but during it I have seen three entirely distinct tax mechanisms at play in the life insurance industry. These three had very little in common with each other, were over a ten-year period, and this doesn't include the little pieces of change that we've had with tax laws over the years. It's a fact of life that tax laws change and will continue to change. This is somewhat apropos since we're probably faced with another change this year.

How do you deal with this in your modeling? We're doing projections that are some-times one year, sometimes ten years, sometimes twenty years into the future. I've seen actuaries do sixty-year projections. Taxes are probably less certain than investment income, interest rates, death claims, and are probably one of the least certain flows. The only thing certain about it is that there will be a flow, and it will be negative. This is really a political risk. Is this any different than any other type of political risk? What are the other political risks that we face? There are obvious things like roll back of auto insurance rates in California, and that has a very dramatic effect of a political risk. Actuaries have spent a very large amount of time over the past few years and will continue to spend a lot of time into the next decade I believe, on dealing with interest rate risk that is nothing more than a manifestation of political risk. It is similar to interest rate risk. Maybe we can learn some lessons from interest rate risk and how to deal with tax risk and tax law change risk. I don't have the answer, but I have several suggestions. The first, and easiest thing to do is to assume that the tax code is static, and project that static basis based on the assumption that you really don't have better information than that. Maybe, there are exceptions to this: Let's be realistic, we don't know what the tax bill means until two years after, or even six years after passage. Generally, an absence of information can make a pretty good case for assuming that the tax laws are static.

The second approach would be to modify that position somewhat with whatever information you do have. If you're faced with some kind of pending tax law change and you have at least some inkling the direction of the change, whatever information you have you could take into account in your projection. And what's the third thing you can do? You could treat tax law change like interest rate risk. We could deal with scenario testing. We could look at different possibilities of the way a tax law might evolve and look at different scenarios and see where things lie. Now, that sounds, a little extreme, but I have trouble trying to think of what's different about tax law change risk and interest rate risk, both political phenomena. Both of them change, unpredictably, and there is a whole area of economics that deals with business decision-making under political risk which I'm not that familiar with, so I'll stop here.

MR. EDELSTEIN: Some of you may have noticed during this last talk some of the stock/mutual interplay, or the long-running Hatfield and McCoy feud that goes on in our industry. There were some insider jokes which some of you, I'm sure, recognized and others will probably be happy not to have to learn about.

Our next speaker is Doug Hertz. Doug is Vice President and Actuary at Massachusetts Mutual Life Insurance Company, where he's worked since 1974. Prior to joining Massachusetts Mutual as an actuarial student, he was an Assistant Professor of Mathematics at the University of Massachusetts. Doug received his Ph.D. in Mathematics from Brandeis University in 1967 and before that graduated from MIT. For the last seven or eight years, his job assignments have been primarily in the federal income tax area, both in the company and the product taxation areas. He is the Cochair of the American Council of Life Insurance Section 7702 Task Force. I've attended many meetings of both that task force and other industry tax groups that Doug has been at, and I've always found him to be an extremely knowledgeable speaker.

MR. DOUGLAS N. HERTZ: My assignment was to illustrate the effect of giving recognition to various tax possibilities, in particular, statutory versus tax accounting differences. I'll be starting off with a baseline case in which taxes are approximated using annual statement-type data. Generally speaking, that's the easy thing to do. In many cases it would be the appropriate thing to do, but certainly not in all cases as I hope we'll see in some of the examples that I have here. Variations can be introduced into the scheme of things by giving recognition to such items as tax reserves, mutual add-on tax, and some of the various investment tax preferences that litter the code. There are many other statutory versus tax accounting differences, and it's primarily a matter of judgment in any given situation, whether they can just be ignored.

For example, on a tax basis policyholder dividends are on an accrual basis, which for most of us as a practical matter, means you deduct them when you pay them. It's cash. Statutory accounting takes account of a liability for next year's dividends in full and can be very different. Another example would be investments purchased at a premium. Some years back, for instance, a lot of companies were using very high yield Government National Mortgage Association (GNMA) bonds purchased at a premium as a kind of a cash equivalent. You'd buy them, and the premium would be written off for statutory purposes immediately, but for tax purposes, the premium would have to be amortized over some kind of projected lifetime of the bundle of securities. Accelerated

depreciation is another example that was severely battered by the 1986 Act, but is still around. Tax exempts are another example. They were battered by the 1959 Act and further beaten up by the 1984 Act, so that as a practical matter, most life insurance companies do not wade around in the tax exempt market.

A further difficult call to make is the company's tax situation. Is it going to be an alternative minimum tax payer or a regular tax payer? If it's going to fall into the alternative minimum tax (AMT), is it going to come back out of it, and is it just then a timing difference because of the AMT credit, or is it going to be a permanent alternative minimum tax payer? Will there be net operating losses available for carrying forward? What are the possible or likely changes in the tax law? We have proposals around now, not only for our industry in particular, but also proposals on capital gains and other things, and how one handles that is a very difficult thing to cope with.

In my examples, my object was to choose a situation as simple as possible. Conceptually, I wanted just to run a bank account with a fixed interest rate, but have associated with it reserves, expenses, investment losses, and perhaps a little mortality gain (Chart 1).

CHART 1
Method for Examples

1. Start with $1,000,000 in group deferred annuity reserves, male age 44 with an age 65 starting date. We will project 20 years.

2. Assume a level pattern of interest rates -- 9% both on the initial $1,000,000 in assets and for all reinvestment.

3. Investment income may be wholly or partly of a tax-preferred character, so net investment income (NII) may differ from statutory Net Investment Income.

4. Assume each year expenses and investment losses are each 1/2% of the beginning fund.

5. $Tax_n = .34 [Tax\ NII_n - (Expenses\ and\ Losses)_n - (Inc.\ Tax\ Res.)_n]$

6. $Gain_n = NII_n - (Expenses\ and\ Losses)_n - (Inc.\ Stat.\ Res.)_n - Tax_n$

7. $Surplus_n = \sum_{i=1}^{n} Gain_i$

8. $NII_n = .09\ Fund_{n-1}$

9. $Fund_o = 1,000,000$
    $Fund_n = Fund_{n-1} + NII_n - (Expenses\ and\ Losses)_n - Tax_n$
    $\qquad = Fund_{n-1} + Gain_n + (Inc.\ Stat.\ Res.)_n$

I wanted to start off with $1 million of group deferred annuity reserves on males aged 44 with an age 65 annuity starting date, so I would never get into the complexities of actually annuitizing anything, and project forward twenty years. I'll assume a level

pattern of interest rates. New York, under Regulation 126, suggests seven different scenarios. In the interest of simplicity and my own sanity, I picked the one that I could cope with easiest and that was level, and I assigned, rather arbitrarily, a 9% interest rate, taking $1 million in assets. The people who do this sort of work in my company tell me that that's the way you do it. You take assets equal to the beginning statutory reserves, and so I did.

The investment income that I deal with in these examples is either wholly or partly of a tax preferred character. So, tax net investment income may indeed be very different than statutory net investment income. Each year I made an assumption that expenses and investment losses are each .5% of the beginning of year fund. This creates an odd looking pattern of things as you go from one example to the other and these things change, but that kind of assumption seems to be fairly common in doing this kind of projection. The specific formulas involved in coming up with these results are that taxes for the end of each year are 34% of tax investment income offset by the expenses and investment losses for the period and offset by whatever is the applicable increase in tax reserves. Gain is given by net investment income on a statutory basis minus the expenses and losses, minus increase in reserves on a statutory basis, and less any applicable tax. Surplus is the sum of gains to date. That seems reasonably clear. The investment income is just 9% of whatever the fund was at the beginning of the year, and the fund starts out with my $1 million of assets and just rolls forward bringing in investment income, expending the expenses and losses, and also the taxes. I'll note that the assumptions that I've made assume that the company is not in an alternative minimum tax situation, doesn't have any operating losses that it's going to take account of, and its expenses and investment losses are currently deductible.

Table 4 is the baseline case. In this case we have tax reserves equal to statutory reserves, and they're computed using 6%, which is, they tell me, the prevailing state assumed rate for this year with the 1983 Group Annuity Mortality Table. Tax net investment income is assumed to be equal to statutory. The investment income, that is to say, is all taxable. I've ignored any mutual company add-on tax. So, what we have here is a kind of naive tax. Your tax is imposed on pretax statutory gain, and you don't have to do a whole heck of a lot of thinking about it. I haven't shown increase in reserves here, but I did in fact take it into account in computing the gain. You wind up at the end with a relatively high surplus level. That occurs because we started with assets equal to reserves. You would have expected surplus strain on this type of business, but in surplus testing, the strain is already gone by. The question you're asking is, given the situation the company has now gotten in to with the strain already behind it, what does the future of the business look like? The ending surplus came out being somewhat in excess of $990,000. Its present value back at the start, which is another way people have of looking at this thing, would have been $176,700. The fund itself grows from $1,000,000 to $4,125,000, reflecting a 7.34% internal rate of return. So, that's our baseline block of business example.

I guess we can move to Table 5 now. In Table 5 the only change I'm going to make is now I'm going to use reserves using the so-called AFIR. This came to us in the 1987 Act when early in December the Senate caved in, in a House/Senate conference. The Senate was supposed to defend us to the death. The death consisted of exactly one

TABLE 4

ALL INVESTMENT INCOME TAXABLE - 9% RATE
TAX RESERVES USING P.S.R. = 6%
NO ADD-ON TAX

YEAR	NII	LOSSES + EXPENSES	FEDERAL TAX	GAIN	SURPLUS
1	90,000	5,000	9,552	18,541	18,541
2	96,790	5,377	10,772	20,909	39,450
3	104,048	5,780	11,864	23,031	62,481
4	111,824	6,212	13,044	25,321	87,802
5	120,155	6,675	14,310	27,780	115,582
6	129,081	7,171	15,673	30,425	146,007
7	138,642	7,702	17,139	33,269	179,276
8	148,884	8,271	18,712	36,323	215,599
9	159,855	8,881	20,401	39,603	255,202
10	171,607	9,534	22,234	43,160	298,362
11	184,192	10,233	24,206	49,988	345,350
12	197,670	10,982	26,328	51,108	396,458
13	212,103	11,783	28,612	55,541	451,999
14	227,556	12,642	31,065	60,304	512,303
15	244,103	13,561	33,646	65,314	577,617
16	261,823	14,545	36,392	70,645	648,262
17	280,803	15,600	39,237	76,165	724,427
18	301,122	16,729	42,376	82,260	806,687
19	322,903	17,939	45,607	88,534	895,221
20	346,246	19,235	48,985	95,138	990,359

TAX CASH-FLOW PROJECTIONS

TABLE 5

ALL INVESTMENT INCOME TAXABLE - 9% RATE
TAX RESERVES USING P.S.R. = 8.37%
NO ADD-ON TAX

YEAR	NII	INCREASE STAT. RES.	INCREASE TAX RES.	FEDERAL TAX	GAIN	SURPLUS
1	90,000	56,907	42,680	14,389	13,704	13,704
2	96,355	59,732	45,575	15,445	15,825	29,529
3	103,155	63,373	49,422	16,321	17,730	47,259
4	110,454	67,247	53,604	17,243	19,828	67,087
5	118,291	71,390	58,158	18,211	22,118	89,205
6	126,707	75,812	63,114	19,228	24,628	113,833
7	135,746	80,532	68,511	20,296	27,377	141,210
8	145,458	85,578	74,391	21,415	30,384	171,594
9	155,895	90,970	80,799	22,588	33,676	205,270
10	167,113	96,679	87,744	23,829	37,321	242,291
11	179,173	102,765	95,304	25,131	41,323	283,614
12	192,141	109,252	103,530	26,498	45,716	329,330
13	206,092	116,167	112,484	27,932	50,540	379,870
14	221,088	123,545	122,233	29,436	55,828	435,698
15	237,235	131,582	132,973	30,967	61,506	497,204
16	254,613	140,241	144,743	32,546	67,681	564,885
17	273,326	149,601	157,665	34,162	74,378	639,263
18	293,484	159,757	171,890	35,798	81,624	720,887
19	315,209	170,823	187,595	37,435	89,439	810,326
20	338,632	182,938	204,992	39,041	97,840	908,116

round in the conference, and we wound up with the AFIR. The way the AFIR works is that it is a 60-month (once it's fully incorporated), rolling average of federal midterm interest rates as computed under Section 1275d, but you do not take into account any rates that occurred before August 1986. The government publishes these rates monthly. They are derived by the Secretary of the Treasury from his study -- and, presumably, certain voodoo and incantations -- of market rates of interest on three- to nine-year Treasury bonds. The government tosses the rates out monthly.

We're building up a track record of them now. By the time we get to August 1991 we will have sixty rates in the qualifying period.

The reserve interest rate, the applicable federal interest rate for reserves, is set each December by taking the prior 60 months or back to August 1986, whichever is shorter, and averaging them. The first time sixty months will be applicable is for 1992. I will note that statutory reserves are, pretty much by definition, always greater than tax reserves in the aggregate. That's because Section 807 has a statutory cap. You aren't allowed to have as tax reserves within life insurance reserves anything more than you have as statutory reserves, but the increase in reserves in any given year does not necessarily follow that pattern. If we look at the numbers in Table 5, when you get down to durations fourteen and fifteen you get a crossover. At duration fifteen the increase in tax reserves is a $132,973 whereas statutory reserves have an increase of $131,582. That's the first time tax reserve increase is higher than statutory reserve increase, and it continues throughout the rest of the example. These reserves, incidentally, were computed for me by somebody in my group annuity department, so I assume that they're all correct. The effect seen here -- that the increase in reserves can be higher on a tax basis than the statutory basis -- is a relatively common one. The ending surplus that we wind up with, down at the bottom, is $908,116. It has a present value at the start, if you look at it that way, of $162,036. That's 8.3% lower than what we got in Table 4. So, taking tax reserves as opposed to statutory reserves into account makes a substantial difference to us. If we were to look at the reserve crossover point, duration 14, surplus there is $435,700 compared to $512,300 in Table 4, and we have a 15% drop before the extra increase in tax reserves that occurring late in the projection helps restore the balance of things.

Table 6 introduces the mutual add-on tax. With any luck we'll soon see the end of this, but, of course, if some proposals currently in our nation's capital are enacted, the entire industry is going to experience the thrill of adding a percentage of equity to its taxable income. I'll note that it's very hard to take the add-on tax into account, particularly in these long-term projections. The first question you run into is, how do you estimate future differential earning rates? For those of you who don't work at mutual companies, you compute something called the differential earnings rate, and you multiply that times your company's equity to get an addition to taxable income. The differential earnings rate is the difference between the imputed rate, which is effectively 16.5% indexed by stock earnings rates, and has moved around between about 13% and about 17% over its history, and the average mutual earnings rate for the year, which has moved around very considerably. Differential earnings rates, historically, have varied from 10.7% in 1984, to being negative in 1986, a history of some considerable volatility, although they seem to

TAX CASH-FLOW PROJECTIONS

TABLE 6

ALL INVESTMENT INCOME TAXABLE - 9% RATE
TAX RESERVES USING P.S.R. = 8.37%
ADD-ON TAX WITH D.E.R.= 5% ON P.Y. SURPLUS + RES. $\triangle$

YEAR	NII	INCREASE STAT. RES.	INCREASE TAX RES.	FEDERAL TAX	GAIN	SURPLUS
1	90,000	56,907	42,680	14,389	13,704	13,704
2	96,354	59,732	45,575	23,329	7,940	21,644
3	102,445	63,373	49,422	24,222	9,159	30,803
4	108,973	67,247	53,604	25,651	10,021	40,824
5	115,927	71,390	58,158	26,731	11,366	52,190
6	123,375	75,812	63,114	27,847	12,862	65,052
7	131,356	80,532	68,511	28,998	14,528	79,580
8	139,912	85,578	74,391	30,183	16,378	95,958
9	149,088	90,970	80,799	31,402	18,433	114,391
10	158,934	96,679	87,744	32,668	20,757	135,148
11	169,503	102,765	95,304	33,971	23,350	158,498
12	180,853	109,252	103,530	35,313	26,241	184,739
13	193,048	116,167	112,484	36,694	29,463	214,202
14	206,155	123,545	122,233	38,110	33,047	247,249
15	220,248	131,582	132,973	39,522	36,908	284,157
16	235,412	140,241	144,743	40,941	41,152	325,309
17	251,737	149,601	157,665	42,352	45,799	371,108
18	269,323	159,757	171,870	43,375	50,869	421,977
19	288,280	170,823	187,595	45,062	56,380	478,357
20	308,728	182,938	204,992	46,297	62,341	540,698

1209

be stabilizing at kind of low levels for right now. Equity in the tax law, the thing you multiply the differential earnings rate times, is surplus plus the Mandatory Securities Valuation Reserve (MSVR), plus the excess of statutory over tax reserves, plus a whole bunch of other things, including one half of the end-of-year dividend liability.

As Shane noted, it can be hard to identify tax characteristics for blocks of business, whereas for a total company, it can be fairly easy. The equity base for a total company is something that's fairly easy to add up. The equity base for a particular block of business can be much more judgmental in character. In Table 6, one question that would arise is if the block actually has surplus strain, do I ascribe negative equity to it, and hence, a negative equity tax? Would that make sense in a context in which I'm taking assets equal to reserves to start with? I assumed a level 5% differential earnings rate, a little higher than the average of what we've seen historically, and I applied that 5% rate to prior year surplus plus current year difference between statutory and tax reserves. I can't defend that choice of equity base to ascribe to this scenario any better than I could defend any other choice, but down at the bottom we see ending surplus is way down, $540,700 with a present value at the beginning of $96,500. This is down over 40% from what we saw in Table 5. The ending fund is $3,700,000 reflecting a 6.75% internal rate of return. So, at least allocating the add-on tax the way I've done it here, we see a very material change in what happens if you take tax characteristics of the block of business into account.

Okay, we can say goodby to the add-on tax now, and move on to Table 7. Because of the difficulties in projecting the add-on, I did not incorporate it into any of my other tables.

This example shows the effect of the original fund, the original million dollars, being invested in deep discount bonds. I did not assume discounts were available for reinvestments, so the reinvestment is all in par, taxable securities.

Tax on market discount is deferred until the maturity of the security, while statutory accounting allows for accrual of discount as you go along. This tax rule is found in Code Section 1276, which will also allow a taxpayer, if the taxpayer wants to, to accrue market discount as taxable income currently. It would require a remarkable taxpayer to want to do so. Since the capital gains rate now equals the ordinary income rate, and we're ignoring the use of losses, and not officially lapsed policies (NOLs) and so forth, it doesn't matter whether the discount is finally taxed as ordinary income or as capital gain. Should we ever get the capital gains tax rate adjustment again, it might make a difference to us, and it depends on whether the bond was issued before July 18, 1984 or not. If it was issued before, the gain is capital gain; if it was originally issued after, the gain at maturity is deemed to be ordinary income. In either event, all statutory investment income in this example is eventually taxed at 34%. So, the difference that you're seeing, that is, the tax benefit that you get in this example, is purely one of timing. We can see, compared to, say Table 5, tax starts lower, $ 10,729 versus $14,389, and it rises more slowly. It rises to $27,467, where back in Table 5, where we had similar reserves, everything was the same except for the character of the original investment, and tax rose to $39,041.

TAX CASH-FLOW PROJECTIONS

TABLE 7

$1,000,000 INVESTED IN 5% COUPON 20 YEAR BONDS
PURCHASED TO YIELD AN ANNUAL 9% RATE
TAX RESERVES - A.F.R. = 8.37%; NO ADD-ON TAX
REINVESTMENT AT 9%--TAXABLE

YEAR	NII	TAX NII	INCREASE STAT. RES.	INCREASE TAX RES.	FEDERAL TAX	GAIN
1	90,000	79,237	56,907	42,680	10,729	17,364
2	96,684	84,953	59,732	45,575	11,562	20,019
3	103,862	91,654	63,373	49,422	12,200	22,519
4	111,592	97,075	67,247	53,604	12,869	25,276
5	119,919	104,727	71,390	58,158	13,568	28,299
6	128,891	112,332	75,812	63,114	14,299	31,619
7	136,560	120,510	80,532	68,511	15,062	35,268
8	148,982	129,307	85,578	74,391	15,857	39,270
9	160,218	138,773	90,970	80,799	16,685	43,662
10	172,335	148,960	96,679	87,744	17,558	48,524
11	185,404	159,925	102,765	95,304	18,469	53,870
12	199,501	171,729	109,252	103,530	19,412	59,747
13	214,711	184,439	116,167	112,484	20,409	66,207
14	231,124	198,129	123,545	122,233	21,439	73,300
15	248,840	212,875	131,582	132,973	22,467	80,967
16	267,970	228,767	140,241	144,743	23,506	89,336
17	288,632	245,901	149,601	157,665	24,548	98,448
18	310,956	264,380	159,757	171,890	25,573	108,351
19	335,086	284,318	170,823	187,595	26,556	119,091
20	361,178	305,841	182,938	204,992	27,467	-56,500
		+550,612			+187,208	

TOTAL   1,004,637

The fact that taxes rise more slowly in this example reflects the fact that the accrual of unrecognized income accelerates as the asset base accrues. There's just more unrecognized income in later years, and that slows the pattern of tax increases in the forecast. At maturity, and I assumed that the bonds all matured at duration 20, there's $550,612 of discount because, when we bought these discount bonds, we bought a par value of $1,550,000 for our initial million dollars. That was what gave us a yield of 9%, where you had bonds with 5% coupons. That discount is taxed at the maturity, and I've shown that separately. We have the $550,000 in the third column and that gives rise to a $187,208 in tax over in the tax column. So, the final gain at duration 20 is then actually a loss of $56,500. Final surplus is $1,004,637 which is a little bit above Table 4, and probably best compared to Table 5 where we're 10.6% better that we were in Table 5. I'll note that a reduced capital gains rate would improve matters here even more. The 1986 Act is the one that made the rate for capital gains equal to 34% where previously it had been 28%. It did grandfather market discount bonds at, I think, 15 specifically named companies. Later that grandfather was made generic at a rate of 31.6% to make the change revenue neutral. We may yet see legislation at some point on capital gains changing the rate, but most of the proposal that I've seen would apply only to individuals, so I'm not getting my hopes up a lot. I think one of the morals of taxes in the 1980s is that corporations can be hit pretty much with impunity. This is why you see, now, a corporate tax rate that's higher than the individual rate.

Table 8 is one that has tax exemption as opposed to simply a deferral benefit. It could have been done using tax exempts, but most insurance companies these days have a company share somewhere down around between 20 and 40%, and they don't mess around with exempts. So, I chose instead ESOP (Employee Stock Ownership Plan) securities. ESOP securities provide interest which is 50% excludable from income, and it is not subject to the proration that you find for tax exempts and the dividends received deduction. This is all found in Code Section 133. I don't know how much longer this is going to last, since Russell Long of the Senate is now long gone. He was the big defender of ESOPs, and so we may see continuing efforts to change this particular benefit. What I've done, is to have the original million dollars invested in the preferred security. Since the term of most ESOPS, pursuant to a provision in Section 133 must be less than or equal to seven years, I've illustrated maturity of those securities at year six, and you'll see a jump at year seven in both tax net investment income and tax because I've assumed reinvestment occurs in fully taxable securities. Looking at the results here, it's a wonderful thing to be able to recognize for tax purposes all of the reserves and benefits you pay, recognize only half of your net investment income. Presumably this is why we have proration as regards tax exempts. The end surplus is $1,140,000, and that's approximately 25% above the ending surplus that we had in Table 5. I suppose the moral of the story is that correct reflection of tax effects can make a substantial difference in cash-flow projections. We need to be aware of this so, if for no other reason, we can make sensible judgments about what to ignore and what to recognize.

MR. THOMAS G. KABELE: You have used a constant 9% interest rate in your examples, even where illustrating tax preferred investments. In fact, of course, in the real market they would be less than 9% because everyone else also receives the tax exempt benefit, and most of the benefit is passed to the issuer. Do you try to take into account the actual market effect of lower rates?

TAX CASH-FLOW PROJECTIONS

TABLE 8

$1,000,000 INVESTED IN 9% SIX YEAR ESOPs
REINVESTMENT ALL AT 9% FULLY TAXABLE
TAX RESERVES - A.F.R. = 8.37%
NO ADD-ON TAX

YEAR	NII	TAX NII	TAX	GAIN	SURPLUS
1	90,000	45,000	-2,680	30,773	30,773
2	97,891	52,891	639	32,082	62,855
3	106,154	61,154	1,984	34,900	97,755
4	114,999	69,999	3,402	37,961	135,716
5	124,468	79,468	4,894	41,690	176,985
6	134,607	89,607	6,465	44,852	221,837
7	145,467	145,467	23,417	33,437	255,274
8	155,724	155,724	24,712	36,783	292,057
9	166,737	166,737	26,070	40,434	332,491
10	178,563	178,563	27,505	44,459	376,950
11	191,263	191,263	29,013	48,859	425,809
12	204,911	204,911	30,599	53,676	479,485
13	219,575	219,575	32,263	58,946	538,431
14	235,335	235,335	34,010	64,706	603,137
15	252,278	252,278	35,799	70,882	674,019
16	270,500	270,500	37,648	77,583	751,602
17	290,104	290,104	39,550	84,836	836,438
18	311,203	311,203	41,488	92,669	929,107
19	333,921	333,921	43,444	101,103	1,030,210
20	358,395	358,395	45,388	110,159	1,140,369

MR. HERTZ: I did not because I was trying to illustrate the difference between a rather naive approach where you simply take into account what's in your annual statement and a more accurate approach where you trouble yourself to go in and find out what securities actually underlie the particular block of business that you're modeling. You're certainly right that you would normally expect tax preferred instruments to carry lower rates than tax favored instruments. That is the general situation, although I can recall a period about a year ago when, in fact, ESOPS were out chasing lenders in the market, and it wasn't all that unusual to see a very narrow spread in the interest rates available on ESOPS and taxable bonds.

MR. EDELSTEIN: Quite often in cash-flow testing, you're testing a number of different economic scenarios. The add-on rate, at least in current law, is the proxy for differences in rates of return on investment. Have you seen companies use differential earnings rates that depend on economic scenarios or rates that would tend to be constant?

MR. CHALKE: I'll provide the short answer. It's not that uncommon to use earnings rates that are indexed to the scenario in some sense, although, depending on how far you look, it is really not much more than a real gamble as to what is likely to exist and in what form. But it certainly makes sense to the extent that you're modeling it as if it's static tax environment that you would index the earning rates generally to either interest rates or inflation, or something like that.