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NEW YORK REGULATION 126 REVISITED

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Recorder: STEVEN A. SMITH

- o Characteristics and results of opinions filed for 1986 and 1987
 - What has been learned?
 - Was it worth the effort for both the department and the companies?
- o How to handle the default issue
- o Value of the mandatory securities valuation reserve
- o Length of the projection periods
- o Combining lines of business
- o How to handle taxes
- o How many scenario results have to fail before extra reserves are required?
- o Changes in, additions to, and interpretations of Regulation 126 since 1987 year end
- o What assumed relationships between interest rates, credited rates and lapses have been viewed by the department as acceptable?
- o Appropriateness of assumptions and sensitivity analysis
- o Requirements for reliance by the actuary on other people
- o Single premium universal life
- o The excess benefit (lump) reserve for structured settlements
- o Handling reinsurance
- o The relationship between statutory formula reserves and actuarial opinion reserves
- o How or to what extent can the December 31st asset portfolio be "fixed" so that additional reserves are not required?
- o How to handle future annual or periodic excess interest guarantees

MR. STEVEN A. SMITH: I am Chief Actuary, First Colony Life, and I'll have some comments toward the end from the point of view of someone who has filed a few actuarial opinions and memorandums under Regulation 126. Also, I have been involved with the Industry Advisory Task Force that has been dealing with the New York Department on developing changes made in Regulation 126.

Pete Smith is the Supervising Actuary for the New York Department. I guess if there is one person who knows about what goes on with these regulations from the Department's point of view, besides Bob Callahan, of course, Pete would be that person. He is the first one who reads those actuarial opinions and memorandums that you file with the Department. Pete is going to give us the New York Department perspective.

Donna Claire will give us the perspective of someone who is responsible for asset allocation and cash flow monitoring at the Equitable. Since the inception of Regulation 126 and through its current revisions, Donna has been in charge of

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several industry advisory groups that have been working with the New York Department. She is also on the Product Development Section Counsel and chairperson of the Part 10 Examination Committee.

Peter Deakins will give us the perspective of a consultant. He is a Life Insurance Consultant with Milliman & Robertson. He has been involved with pricing and product development, asset segmentation, asset and liability management, and he has significant experience in financial projections and profitability analysis. Since 1983, Pete has worked extensively with the rehabilitators of the Baldwin United Corporation Life Company subsidiaries. He was a member of the Society C-3 Risk Sub-Committee and is now on the Committee on Valuation and Related Areas (COVARA).

MR. PETER L. SMITH, JR.: I should first give a caveat. The opinions expressed are primarily my own and may or may not reflect the views of other people in the New York Department. The first thing I am going to talk about are characteristics of the 1986 and the 1987 Actuarial Opinions and Memorandums (AOM).

CHARACTERISTICS OF 1986 AND 1987 AOM

1. **Choice of Interest Rate Assumptions Varied widely**
Most qualified actuaries chose some benchmark duration interest rate based on valuation date current rates and developed other duration interest rates based on an assumed yield curve. Some qualified actuaries chose benchmark interest rates lower than current rates, perhaps believing that deferred annuities would be conservatively valued. Very few chose benchmark interest rates higher than what would be justifiable by market interest rates as of the valuation date. The standard of actuarial practice required by the New York Insurance Department is that the benchmark interest rate should be justified by reference to some market interest rate as of the valuation date.
2. **Calls**
We made a survey of 1986 call assumptions which indicated very light provision typically was made for calls. We questioned various companies whose calls were light. Tentatively, a review of 1987 AOM indicates companies are more often properly reflecting calls. Regulation 126 was issued in December 1986. Some companies may not have been prepared to provide for calls even though Circular Letter 33 (1982) stated calls should be considered. We intended to be more lenient in review of 1986 submissions.
3. **Projection Periods**
1986 AOM frequently utilized long projection periods for deferred annuities. 1987 AOM typically use ten-year projection periods or show intermediate results for the tenth year for deferred annuities. GICs have typically been modeled over the guarantee duration of five to ten years. Annuities and structured settlements in course of payment have typically been modeled over very long projection periods of twenty to forty years.
4. **Federal Income Tax**
While we recognize that reflection of Federal Income Taxation is a technically difficult issue, most companies have incorporated some provision for Federal Income Taxes in the 1987 AOM.

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5. The 1986 Valuation Year

One hundred twenty-three companies submitted AOM. Sixty-one were reviewed. Of the 61 reviewed, 7 were initially rejected. Of the 7 rejected, 6 either established penalty reserves or resubmitted an acceptable AOM. For the remaining company, the Department issued a certificate of reserve valuation with penalty reserves established for the 1986 year end. While the primary reason for rejecting the AOM is indicated below, many of the rejected AOM had numerous additional deficiencies. For instance, in case of the rejection of the AOM for material blocks of business omitted, the initial opinions and memorandums were also rejected due to failure to provide for calls and defaults, to excessively high initial and ending interest rates, and to the fact that even with accepting all the insurer's assumptions, the results showed a deficiency on the downward scenario.

Although the insurer resubmitted the AOM and did include the block omitted, we rejected the revised opinion for a number of reasons (Exhibit 1).

EXHIBIT 1

REASON FOR REJECTION OF THE AOM

<u>Primary Reason</u>	<u>Count</u>
Assets not equal to liabilities at inception	4
Material blocks of business omitted	1
No asset modeling	1
Insufficient scenarios	$\frac{1}{7}$

Is Regulation 126 a success? This depends in part on what one hopes to accomplish by it. If one is seeking to replace an outdated archaic statutory formula legal reserve system with one letting the actuary determine what is a reasonable reserve, then the answer might be that much more work is needed to develop appropriate standards. Some believe that a statutory formula system must be retained as an objective measure of reserves, but that the statutory formula needs to be revised, updated and made more realistic, and that an AOM needs to be superimposed to ascertain that the statutory formula reserves are sufficient for a particular company.

Some believe that the insurance industry is a self-regulating industry and that the primary objective of Regulation 126 is to force an insurer to do the self-analysis of its assets and liabilities. Many insurers would not do this unless they were required to do so. Since many states have guaranty funds and assess the successful insurers for the failures of other insurers, it is in the interest of these successful insurers to see that all insurers perform this self-analysis. Hopefully this self-analysis will result in insurers structuring their contracts and their assets so as to lessen the risk.

While the Law and Regulation call for penalty reserves where there is no AOM or an unacceptable AOM, establishment of penalty reserves is not a test of the success or failure of the regulation. If anything, establishment of penalty reserves could indicate failure of the regulation. The purpose of the penalty reserves is to encourage the insurer to do the cash flow testing and in turn to take whatever action is necessary to restructure assets and/or liabilities.

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If one looks at the number of companies who, after doing cash flow testing, set up additional reserves (but not as great as in the absence of an opinion and memorandum), then to date, we are aware of only two such companies.

For 1986, a number of insurers chose to set up the penalty reserves rather than to do the cash flow testing. However, the penalty reserves were rather low for 1986. They will be much higher and cover more business for 1987 and later valuations. We expect that the penalty reserves will have the intended effect of causing more companies to do the cash flow testing. In fact, as of April 5, 1988, the number of insurers submitting AOMs increased from 123 for 1986 to 133 for 1987. We have sent out follow-up letters to some insurers who have annuity and guaranteed interest contract business and who have not submitted an opinion and memorandum.

As a result of the review of 1986 AOMs, the Department worked with an Industry Advisory Group to effect a number of changes. These revisions will be discussed at length in Donna Claire's presentation.

We anticipate further changes as both the companies and the Department gain more experience. Some of the key aspects to be considered are as follows:

1. How should the professional discipline process be structured?
 - a) Should it be provided through the Department?
 - b) Through the Academy?
 - c) Elsewhere?

Responsibility under the Law and Regulation lies with the Department. The Academy may be reluctant to handle discipline since the AAA does not yet have standards.

2. How should Mandatory Securities Valuation Reserve (MSVR) be handled with the AOM?
3. How may definite decision rules for action or non-action be promulgated? This is especially important with respect to establishment of additional reserves.
4. For long-term interest guarantee obligation and some intermediate term interest guarantee obligations, most companies select starting benchmark interest rates based on current yields such as Moody's Corporate Average. This Average may fluctuate extensively from one year to another. Current methodology may well require establishing additional reserves because of these interest rate fluctuations. If the AOM process only results in setting up additional reserves without restructuring assets, does Regulation 126 become a paper requirement without managerial consequences? If interest rates fluctuate within a short period, would the qualified actuary be required to establish additional reserves because the management does not have enough time to restructure the company's assets? Can asset restructuring criteria be adequately specified for regulatory purposes?
5. Should New York State Insurance Department rely upon the AAA Actuarial Standards Board (ASB) to specify certain aspects of actuarial methodology? What are the legal implications of such delegation? Issues which the ASB might be effective in dealing with are actuarial assumptions and treatment of non-guaranteed elements.

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However, the New York State Insurance Department could set its own requirements even though some may not be consistent with the ASB.

6. There are several problems in Regulation 126 methodology which have implications with respect to valuing all of a company's liabilities. Proposing various methodologies to deal with these problems depends in part on what one's goal or concept of the valuation actuary is. At least three perspectives can be identified:
 - a. Original Valuation Actuary
As proposed in the "Final Report of the Joint Committee on the Role of the Valuation Actuary, . . . the Valuation actuary should be responsible for the selection of assumptions and the establishment of reserves appropriate under the circumstances."
 - b. Status Quo
Maintain a statutory formula with the opinion and memorandum requirements.
 - c. Update Statutory Formula
The current statutory formula is inappropriate where liabilities are substantially longer than associated assets because high valuation interest rates would be inappropriate if market interest rates dropped by the time the original assets had expired. Traditionally, actuaries have dealt with this problem by strengthening reserves in an ad hoc manner.

Depending on one's perspective, varying "solutions" may be posed to the following concerns. However, a more valuable discussion might focus on the relative advantages and disadvantages of each of the above perspectives.

The entire company problems which I see with respect to Regulation 126 methodology are as follows:

- 1) Asset Selection
Companies' may selectively choose assets to be included in the AOM. Section 95.8 (c)(3) of Regulation 126 states "the qualified actuary should check to ensure that remaining assets supporting other obligation are adequate to mature such obligations." However, this section is only applicable when the aggregate test is utilized. Asset selection may become less of a problem as increasing amounts of business are subject to Regulation 126. However, many arguments are put forward suggesting that various blocks of business should be exempt from the cash flow demonstrations. If blocks of business are exempted, a statement similar to that from Section 95.8(c)(3) of Regulation 126 should be required.
- 2) Income Taxes
Provisions for Income Taxes have largely been left to the judgment of the qualified actuary. Perhaps this is an area in which the ASB could provide valuable standards.

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3) Stockholders Dividends

Section 95.7(a)(1) of Regulation 126 requires that the AOM conform with the AAA Financial Reporting Recommendation and Interpretations 7 and 9. Recommendation 9 refers to materiality. Several actuaries have indicated that stockholder dividends may be a material concern. Given that some scenarios will show initial sufficiencies and subsequent deficiencies, modeling stockholder dividends is an appropriate concern. However, such dividends would depend on the entire company financial results. Therefore, we have been asking companies to comply with this requirement on the basis of their best judgment in order to advance the development of the valuation actuary methodology.

DEPARTMENT CHECKLIST

The Department utilizes a checklist which is little more than an outline of Regulation 126. We have occasionally distributed this checklist. I will provide the checklist on request subject to the caveat that it could stand improvement and it will need to be updated to take account of the Regulation 126 revisions.

DEFAULTS AND MSVR

Theoretically, the reference in Section 4217(c)(4)(B)(vi) to the requirement that "reserves for all annuities, annuity benefits and guaranteed interest contracts in force at the end of the year covered by such report, and the assets held by the company in support of such reserves, make good and sufficient provisions for the liabilities of the company with respect thereto" can be interpreted to include all future risks and expenses as well as benefits. Thus the reserves for C-1, C-2, C-3 and all other risks could be combined.

However, current annual statement instructions call for separate MSVR built up out of charges against assets and out of capital gains decreased by any losses due to default and by any capital losses. The tendency of many raters and appraisers of insurance companies is to consider the MSVR as earmarked surplus and to add the MSVR to surplus in determining any ratio of surplus to either liabilities or to total assets.

Accordingly, until the accounting and/or reserving procedures are revised, as of March 1988, we have taken the position that the C-1 risk can be provided for either:

1. By making an annual expense charge based on 75% of the appropriate normal or basic accumulation factor for each bond based on the category under the Bond and Preferred Stock Reserve Component of the MSVR (assuming the MSVR is not at its maximum and exclusive of capital gains and losses) -- (interest and dividends earned on assets assigned to the MSVR are recognized approximately by the 25% reduction in the normal factor) and by making an appropriate expense charge for mortgage notes. Under this method the charges are accumulated to provide for current and future defaults in payment and no explicit testing for actual defaults need be done. If a company is at maximum MSVR, it may use this method using the normal accumulation factor as if it were not at maximum. In doing so, the default assumption loss should be not less than 100% of the appropriate normal or basic accumulation factor for the MSVR. Default risk for assets not covered by the MSVR (such as real estate and mortgages) should also be provided for; or

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2. By explicitly recognizing defaults in scenario testing. In determining the assets available to support liabilities under this method, the actuary may include assets supporting the Bond and Preferred Stock Reserve Component of the MSVR and other similar voluntary statement reserves. However, assets supporting the MSVR should not be used to support risks other than the C-1 risk and the actuary should demonstrate this. Default risks for assets not covered by the MSVR (such as real estate and mortgages) should also be provided for.
3. By using any other method approved by the Department for recognizing default risk.

LENGTH OF THE PROJECTION PERIOD

The results for deferred annuities with cash surrender values should be shown at the end of 5 and 10 years. Since the reserves should not be less than the cash surrender values, it is not unreasonable for us to require that assets equal to the cash surrender value show sufficiency by the end of 10 years. We do not want this. It is possible that the pricing actuary may use a longer period and assets less than cash values, but the valuation actuary should be more conservative.

The projection period for Group GICs would typically be the interest guarantee period. For annuities in course of payment and in particular structured settlements, lengthy projection periods such as twenty to forty years are often justifiable by the benefit payment pattern.

COMBINING LINE OF BUSINESS

We are opposed to combining single premium life and annuities lines for cash flow purposes. We would still be opposed to such combinations even if the law were changed to permit the excess reserves of one block to offset the other.

We believe that there should be different projection periods for some blocks of business and where the projections periods vary, the blocks should be tested separately. We believe the projection periods between immediate and deferred annuities should differ and there may be reason for the projection period for single premium life and annuities to differ. Also the assets supporting the various blocks should differ.

We are opposed to projection periods of longer than 10 years for individual deferred annuities with cash settlement options due to the subjectivity involved and the room for manipulation in choice of crediting rates and lapses rates. In any aggregate testing, only assets in excess of the greater of the cash values and of the minimum amount of assets required for sufficiency under deferred annuities with cash surrender values should be used to support other blocks of business. Therefore, separate testing of deferred and immediate business must be done. Then in the aggregate test, although the projection period may vary, the same interest scenario should be used. The excesses and deficiencies must be at a common reference point which should be the date of valuation.

FEDERAL INCOME TAXES

Federal Income Taxes are often a substantial expense item and, therefore, need to be reflected in the AOM. We are relying on the qualified actuary to properly evaluate this expense.

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FAILED SCENARIOS

There is no definitive guideline on how many failed scenarios require additional reserves. This is a major flaw in Regulation 126 methodology because the assessment of what are reasonable or plausible scenario deviations is subjective. Therefore it is quite difficult for a regulator to independently verify or justify the qualified actuary's conclusions. In my personal opinion, the most promising methodological improvement in this regard may be stochastic scenario rate generators. The Department is discussing this methodology with several actuaries and may suggest this as an appropriate topic for some future Life Insurance Council of New York (LICONY) Regulation 126 revision advisory group. We do not see stochastic methodology as a replacement for the current seven specified scenarios because running sufficient stochastic scenarios is expensive and time-consuming. However, if failed scenarios occurred, stochastic methodology may be an appropriate tool for deciding if additional reserves are needed.

MS. DONNA R. CLAIRE:

WERE ACTUARIAL OPINIONS WORTH THE EFFORT?

Pete Smith addressed the question on whether actuarial opinions were worth the effort from the Department point of view. I would like to address this issue from the company point of view.

As Steve mentioned, I am in an area called Asset/Liability Management. This is a brand new area in our company. Other large companies are setting up similar areas. A few years ago, there were very few people doing the asset/liability monitoring job. One thing Regulation 126 has done is to focus attention on the asset versus liabilities and in some cases has caused money, people and other resources to be freed up to monitor and manage the asset/liability process. This is an important job so I think that any help Regulation 126 has brought to this process has made it useful.

I will admit, however, that at three o'clock the morning of our third overnighiter trying to do the calculations needed for Regulation 126, I was willing to murder anyone who had anything to do with the Regulation; unfortunately it would include myself. It is a lot of work, and for those who were already involved in trying to get our financial statements, it puts another burden on an already busy schedule at the beginning of the year. But looking back on it, the information we obtained from the testing is definitely worthwhile.

Another thing that the testing does is to add credibility with the investment department when you want them to restructure the asset portfolio. To show in black and white as a result of the Regulation 126 testing that if an investment portfolio is not restructured, additional reserve liabilities would have to be set up, can have an influence on the investment process. For example, in my case, I examined the Structured Settlement assets before the end of the year and discovered that there were a lot of callable bonds backing that portfolio. I showed the investment department that in the preliminary tests we would need substantial additional reserves unless we sold off callable bonds and bought assets that would more properly match that portfolio. This kind of discussion would have occurred without the Regulation 126 requirements, but because of them, we were able to act more quickly and restructure that portfolio before the end of the year.

CHANGES IN REGULATION 126

When Regulation 126 was first written back in 1985, it was recognized that a lot of things we were covering really had not been addressed by a number of

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companies, and as experience emerged, additional changes would be needed to Regulation 126. The first major revisions to Regulation 126 have already occurred. As with the original drafting of Regulation 126, industry advisory groups were set up to draft revisions for Regulation 126. These were passed on to the Department which made some changes. The new version of Regulation 126 will be released soon for public comment. So any of you who have anything to say about it, write to the Department while the hearing period is open. I will cover some highlights of the changes.

One of the changes is that pre-1982 Pensions and Individual Annuity business must be covered by the opinions by 1989. Roughly translated, this means that all annuity type business will have to be included in the testing by year-end 1989. This includes supplementary contracts either with life contingencies or which have interest guarantees. In many cases, bringing in the pre-1982 business, if anything, helps reserve sufficiency since the old business probably has additional reserve margins. However, it does create additional work, since many companies who currently segment assets did not have any type of segmentation then. These companies would therefore have to, in effect, partition the entire current general account in order to come up with the underlying assets for the business. The next change is that interest-sensitive Single Premium Life (SPL) issued during or after 1982 (or after the Dynamic Valuation Law) must be covered in the opinion by 1989. It can optionally be covered before then.

The rewrite of Regulation 126 revises wording so that the projection period for deferred annuities and for SPL Insurance is ten years or less, unless the actuary can justify a longer period, and then intermediate results must be shown. This was changed because the Insurance Department was concerned when companies ran out the business for a long period of time and were left with very little of the beginning assets or the liabilities at the end of the test. Therefore they would like to see that the business is self-sufficient within at least a 10-year period.

The next item that was changed was the lapse assumption requirements. The rewrite is more specific that a dynamic lapse formula should be used where applicable; for example, with deferred annuities. There was a major concern that people are not relating the lapse formulas with the interest rate environment.

When testing for defaulting assets, the relationship between the assets and the MSVR is specifically mentioned in the rewrite of Regulation 126. One approved method, as Pete mentioned, is to take out 75% of the MSVR charges. The reason it is 75% is because in effect it is allowing you to take the interest credited on the MSVR assets. Other methods may be used if they have the prior approval of the Department. In addition, a charge equivalent to the MSVR must be taken out for mortgages and real estate.

The law passed in 1987 eliminated the Macaulay duration as a requirement for determining the level of penalty reserves. The penalty reserve is the lesser of the two in the original Regulation, which means the greater of 115% of the otherwise minimum reserves or 100% of reserves using lower interest rates and no surrender charges.

Another thing added to Regulation 126 was that sensitivity analysis should be done with any critical assumptions and the results of this testing should be disclosed to the Department.

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Reinsurance was a difficult topic to handle. The rewrite of Regulation 126 does not change it that much but clarifies that cash flow analysis should be done based on the terms of the reinsurance contract. It also requires that it should be specifically stated in the Opinion if letters of credit are used.

Another topic that has been clarified in the rewrite is reliance. The actuary should have a letter from anyone he or she relied on.

An issue has come up as to what should be done if someone is holding the penalty reserves. Therefore, under the rewrite of Regulation 126, it is stated that if additional reserves are being held because there is not an acceptable AOM, reserve calculations backing these additional reserves should be sent to the Superintendent.

RELATIONSHIPS BETWEEN INTEREST RATES, CREDITED RATES AND LAPSES

Lapses for deferred annuities is a major issue. Lapses should definitely be dynamic. However, the industry advisory group could not come up with a single formula that would work in all cases. Therefore, we gave an example in the rewrite of Regulation 126 as to what a formula could look like for deferred annuities.

It is a base rate, such as 5%, plus a constant times (the market rate minus the credited rate) raised to a power. In addition, if you would like, you could take some credit for surrender charges. An example would be as follows: if you are crediting 2% less than your competitors or new business, and had a base rate of 5%, the formula would be $5 + 2 (\text{constant}) \times (10-8)^2 - .5 \times 4$ (surrender charge percent), which would mean 11% lapse in this case. Other things you might want to take into account with your lapse assumptions are the market you are in, whether your product is being sold by agents or brokers, and how your surrender charges wear off after a period of years.

For an interest-credited strategy, the most logical one to do is the one that you're currently using: the one that is in force at December 31st. This means that if you start with the December 31st assets and use your credited strategy, you come up with the rate that you are crediting on December 31st. This is one area in which you may want to do some sensitivity analysis if there are several potential crediting strategies that your company may use.

There is a question as to what interest rates should be used. The answer is that you should use the ones which the credited rates and the lapse rates work off of. The easiest process is to follow New York scenarios that are in the Regulation. I know that a number of people believe that these are too simplistic and prefer stochastic analysis. I have nothing against the stochastic analysis as long as you do enough trials to make the results representative. There is no magic to the seven New York scenarios. You can test more scenarios. In fact, some companies have tested over 40 scenarios and showed the results to the Department.

THE FUTURE ANNUAL INTEREST RATE GUARANTEES AND FUTURE PREMIUMS

The interest rate guarantees that you have in your contract should certainly be considered in testing. For example, some SPL designs have a minimum rate of 6%. This is the minimum that can be used for crediting, even if "market" interest rates are at 4% under certain interest scenarios. This may become an

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important concern when testing SPL policies if your company has chosen a guaranteed rate of 6% in order to show compliance with the IRS definition of insurance.

Future premiums should certainly be considered for such products such as open window GIC contracts. In addition, you may want to consider future considerations for contracts which do not provide any interest guarantees for future considerations, such as flexible premium annuities.

In determining the treatment of future annual interest guarantees and future premiums, you must take into account the market as it relates to the interest-crediting strategies that you are testing.

APPROPRIATENESS OF TESTING AND SENSITIVITY ANALYSIS

The primary judge as to what is necessary or appropriate in testing is the qualified actuary. It is inappropriate to assume major changes in assets or interest crediting strategies unless these are already being worked on.

Sensitivity analysis, as I said before, should be done on any critical assumptions. For example, for open window GICs, you may want to test sensitivity of reserve adequacy to the level of any additional considerations that can come in and which can be affected by your interest guarantees versus the market rates.

The second area for sensitivity analysis would be lapses for deferred annuities; how much would a change in lapses affect reserve adequacy. It may be that your surrender charges may limit the effect on reserves even if you predict lapses at more than double current assumptions.

The third area for sensitivity testing would be the return expected for certain type of assets such as real estate. These assets can have quite volatile returns, depending on the market. If sensitivity analysis shows that reserves may be inadequate if the market assumption on this were changed slightly, it may be prudent to increase the reserves held.

RELIANCES

When you are relying on someone else, such as a Chief Investment Officer, you should get a written statement from those persons and file it with your opinion. In addition to the Chief Investment Officer, you may be relying on an administrative person for your inforce listing. You should also have a letter from that person to include with your filing.

Even if you do have written statements from other people, it is the actuary's responsibility to ask about assumptions that may look weird. If, for example, the inforce business dropped by one-third, you may want to question the inforce listing. If you are told assets earn 20% in all environments, you should look further into the asset assumptions.

SINGLE PREMIUM LIFE

As stated before, SPL insurance must be covered by 1989. The minimum reserves with opinions will be somewhat more liberal than they are currently. It will allow a split interest rate with an annuity Type C interest rate used for a number of years, then long term life insurance interest rates used after that.

If a company chooses not to file an Opinion, the minimum reserve standards will increase to 110% of the greater of the death benefit reserve and greatest present

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value of the guaranteed accumulation funds at the long term life insurance interest rates.

The definition of an SPL product is not overly precise. What it states is that if you declare rates higher than the long term life insurance rates at some period it is an SPL product. However for those contracts which allow (but do not require) additional premiums to be made, the additional premiums will not disallow the contract from being considered an SPL product.

As said before, the projection period used for SPL as suggested in Regulation 126 is ten years. This is because many of these contracts are issued to older people and backed by short-term assets and the Department would like adequacy of reserves to be shown by the time the majority of assets or liabilities have matured.

Single Premium Life can be tested quite similarly to a Deferred Annuity product. However, there are additional twists which must be considered. Among them are the effect of mortality charges on lapses, how the underwriting was done, its resultant effect on the actual mortality that can be expected, and the effect of policy loans, especially wash loans, where a policyholder can take out his money without suffering any loss.

CONCLUSION

All the changes to Regulation 126 mentioned above are in the draft which is about to be released. I would recommend that everyone read this before it is effective in order to determine the effect on their own company. My guess is that in the future Universal Life may also be covered by the law as Regulation 126 and the Valuation Actuary's role expands.

MR. STEVEN SMITH: Both you and Pete indicated that SPL had to be included by 1989. But somehow I have in my mind it is really 1988 because if you don't do it this year, then you can't use the higher interest rate. There would be a "penalty reserve" of some sort and if that is something that the company couldn't stand, it would really mean that we would have to do it in 1988. By Law you have to do it by 1989, but practically you may well consider it has to be done this year. Do you agree with that?

MR. PETER SMITH: Technically, but not completely. There are two sets of interest rates that are in Circular Letter 14, 1987. One set is with an acceptable opinion and memorandum and the other is without. Therefore, single premium business which was not voluntarily included in the AOM would be based on those interest rates without an acceptable opinion and memorandum.

MR. STEVEN SMITH: The point is that there are significantly higher reserves of some sort, in any event, if you don't do it this year, which is the only point I was really trying to make.

MR. PETER B. DEAKINS: As Steve said, I am the token consultant on the panel. I want to make a general comment that I think that outside of the fact that it is virtually unreadable, it is an excellent regulation. The authors of Regulation 126 have done a really good job of including the things that needed to be included, particularly considering that nobody has ever written a regulation like this before. There are a few areas where inevitably you don't necessarily agree 100% with what was done, but basically I think it is an excellent regulation.

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What did companies learn from Regulation 126? I think that varies a lot. I worked with about 7 or 8 clients helping them to do their Regulation 126 filings, and I have also seen a number of Regulation 126 filings from different companies as part of my consulting assignments. So I have some idea of what companies have done. Different companies have derived widely differing amounts of value from Regulation 126. It's really dependent on what the companies try to get out of the work they did. Unfortunately, a lot of companies just viewed Regulation 126 as a regulatory headache. Basically, what they did was the least amount that they could do to satisfy the regulation and get their reserves accepted. Those companies got nothing out of the regulation. They either spent a lot of internal resources or else a lot of money on a consultant to do an analysis that they didn't want and they ignored. That is unfortunate, because I think that the analysis that you have to do for Regulation 126 can be extremely valuable information for management.

Other companies, on the other hand, used the information they got out of Regulation 126 as a comfort factor to reassure management that they weren't going under in the near future or things like that. Then there were a few companies, and I think these are the companies that really got value from dealing with Regulation 126, that used Regulation 126 as a starting point for comprehensive asset and liability management analysis. If you are really doing what I think you need to do to be well managed and to really have a good handle on what your business looks like, you will find Regulation 126 is almost a trivial afterthought.

One of the current issues is whether you should use deterministic or stochastic scenarios. I don't think there is a yes or no answer to that. There are advantages and disadvantages with each. One of the interesting implications I have been finding as I have been doing my work is that stochastic scenarios and deterministic scenarios have a tendency to produce different kinds of results for different products. I have a pretty good idea of what the scenarios are that are dangerous for structured settlement annuities. I really don't feel like you need to test more than two or three scenarios to have an idea of whether or not the structured settlements can survive a certain level of interest rates. One of things that I have found when you do stochastic scenarios, is that the chance of the rates dropping down to whatever the lowest you think rates can go, and staying there forever and ever and ever, is fairly slim. On the other hand, when looking at deterministic scenarios, being human, people tend to look at a scenario where rates go to the bottom of whatever they think is possible. In the New York scenarios, I think that scenario is Scenario 5 or 3 depending on how you number them. So what I have found is that typically the structured settlements look a lot worse under deterministic scenarios than they do under stochastic scenarios.

The reverse is true for deferred annuities. With deferred annuities, how high or how low rates are, really doesn't matter too much. The critical issue for deferred annuities is how volatile rates are. What you find is that as rates jump around all over the place, the options that you sold to policyholders become really valuable. Again, given the typical deterministic scenarios, you tend not to capture that volatility. So you find that the stochastic scenarios tend to be much more severe for deferred annuities or Universal Life than for products like structured settlements where the only risk is a long-term down-trend to rates. One of the problems I have with deterministic scenarios is that 7 scenarios really can't cover the universe of what is possible in any meaningful way. Another problem is that the New York scenarios as a class tend to be very steady, stable

PANEL DISCUSSION

scenarios. You have rates gradually going down and hitting the floor and staying level, or you have rates gradually going up and hitting the ceiling and staying level, or you have rates shoot up in one year, but thereafter they are level. As a class, you have scenarios where rates are tending to be very stable.

I'll concede that the last thing I am is the interest rate guru, but almost any stochastic process you use is going to have rates that go all over the place. If you believe that rates follow a random process, then they don't tend to stay in one place. So one of the areas where the Regulation 126 comes up a little short is that as a class the scenarios you are looking at are very unlikely. Obviously, any *individual scenario* has a zero probability of occurring, but these types of scenario have virtually zero probability occurring as a class as well.

Now we are going to go through a little case study here to illustrate the different ways that stochastic and deterministic scenarios affect the two different products: deferred annuities and structured settlements. The investment assumptions that we used in this particular study are as follows. Assets are equal to statutory reserves. We assumed bonds would be callable at 108% of par and all of the other kinds of assumptions that we typically make in this type of analysis. For example, bonds are assumed to be callable 5 years from the date of acquisition and bonds are assumed to be called when the rate on new bonds falls 2% below the coupon. New investments are assumed to earn 105% of the Treasury rate plus 75 basis points. If you have done Regulation 126 filings or you have been following the developments in the law, you probably are pretty familiar with this type of set of assumptions for investments.

We are going to look at both stochastic and deterministic scenarios. When we looked at the stochastically generated scenarios, we used a Yield Curve Universe (Exhibit 2) in which rates could move over a range of 50 different possible curves.

EXHIBIT 2 YIELD CURVE UNIVERSE

<u>Curve Number</u>	<u>Short- Term Rate</u>	<u>5-Year Rate</u>	<u>10-Year Rate</u>	<u>30-Year Rate</u>
1	2.46	3.13	3.35	3.47
5*	6.46	7.13	7.35	7.47
9	10.46	11.13	11.35	11.47
15	18.13	17.13	16.78	15.78

* Current Curve

Volatility: Standard Deviation Equals 2%.

Treasury Rates could be as low as 2.5% short-term and as high as 18% short-term and as low as 3.5% long-term and as high as 16% long-term. One of the things you will notice about this set of assumptions is that it is a broad universe. The rate movements are much wider than are typically possible under the New York scenarios. And yet, what you will find, is that even those these movements allow for rates to go much further down than the deterministic New York scenarios do, because rates aren't very likely to stay at that bottom curve; this isn't as severe for the structured settlements as the New York scenarios. As I said, we looked at the New York scenarios as well, which are as follows:

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1. Level
2. Gradually rising (5% in 10 years)
3. Gradually falling (5% in 10 years)
4. Pop-up (3%)
5. Pop-down (3%)
6. Rising (5% in 5 years) then falling (5% in 10 years)
7. Falling (5% in 5 years) then rising (5% in 10 years)

We looked at an \$800 million block of structured settlements. The company projected both expected cash flows and reserves for us. We were not looking at any new issues. The investment strategy included 30-year bonds. Because of the fact that this is a fairly mature block issued over the last 5 years and rates have gone down steadily since that business was issued, under the New York scenarios, the structured settlements did not perform very well (Graphs 1 and 2). Remember that we said that rates could go down further under stochastically generated scenarios (Graphs 3 and 4) than they could go down in the New York scenarios, and yet of the 50 scenarios only one had a negative result and that was just barely negative as opposed to four of seven negatives for the New York scenarios. This illustrates the point I was making about the conservativeness of the typical deterministic scenarios for structured settlements. Incidentally, that could be overcome. You could arrive at 50 deterministic scenarios that match the 50 stochastic scenarios that were used here. It is just that, given human nature, the deterministic scenarios tend to be deterministic and follow some simple pattern. That is the biggest problem I have in using deterministic scenarios; it is just natural to different types of possible patterns.

We also looked at a deferred annuity block which had \$1.1 billion of reserves (Exhibit 3). We assumed that the market, in other words, what the policyholders could get on new money if they went elsewhere, was a 20-year Treasury rate. We further assumed that the company will credit the earned rate less 150 basis points. The lapse assumption was very similar to the one that Donna discussed. Also, this block included some flexible premium deferred annuities, so we had interest-sensitive premium suspensions as well. Exhibit 3 shows that we have some more of your classic actuarial assumptions, and we assume the company will buy 10-year bonds.

EXHIBIT 3

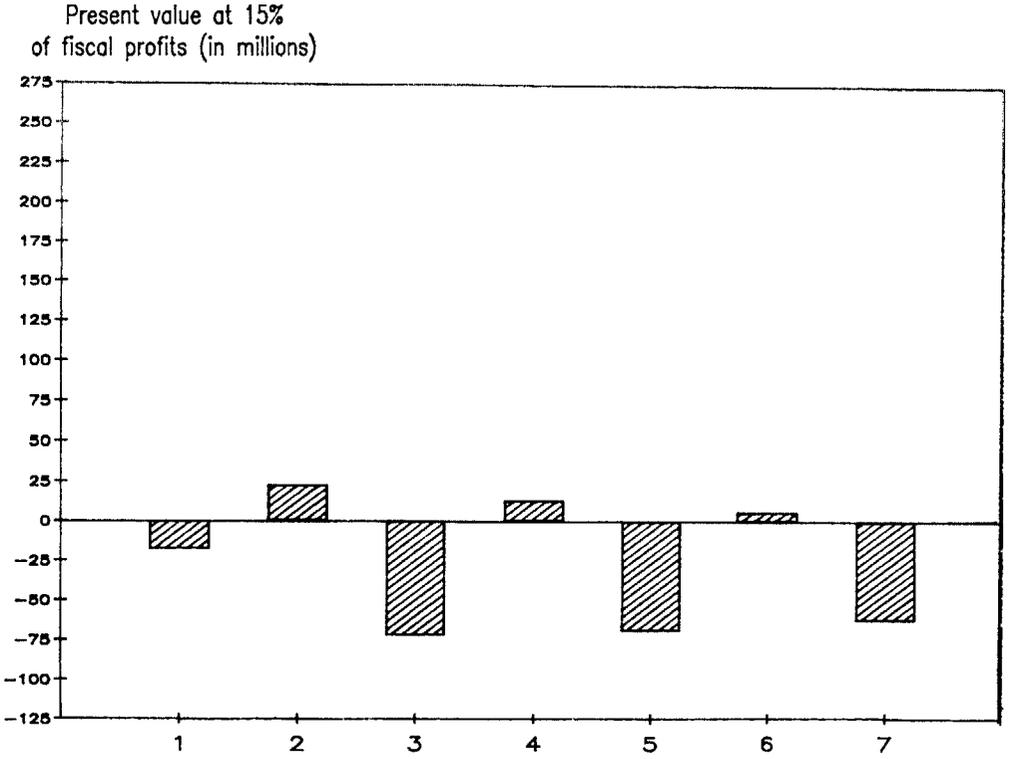
DEFERRED ANNUITY ASSUMPTIONS

Beginning Reserve	\$1.1 Billion
Market Credited Rate	20-Year Treasury Rate
Credit Rate	Earned Rate Less 150 Basis Points
Lapses	$8\% + 2 \cdot (\text{MR} - \text{CR})^2 - .5 \cdot \text{SC}$; Minimum of 8%
Premium Suspension	$10\% + 2 \cdot (\text{MR} - \text{CR})^2$; Minimum of 10%
Mortality	75% of 65-70 Male Ultimate; Age 35
Expenses	\$17 Per Policy Maintenance Expense; .15% Investment Expense
New Issues	None
Investment Strategy	10-Year Bonds

PANEL DISCUSSION

GRAPH 1

Product: Structured Settlements
Strategy: Fixed



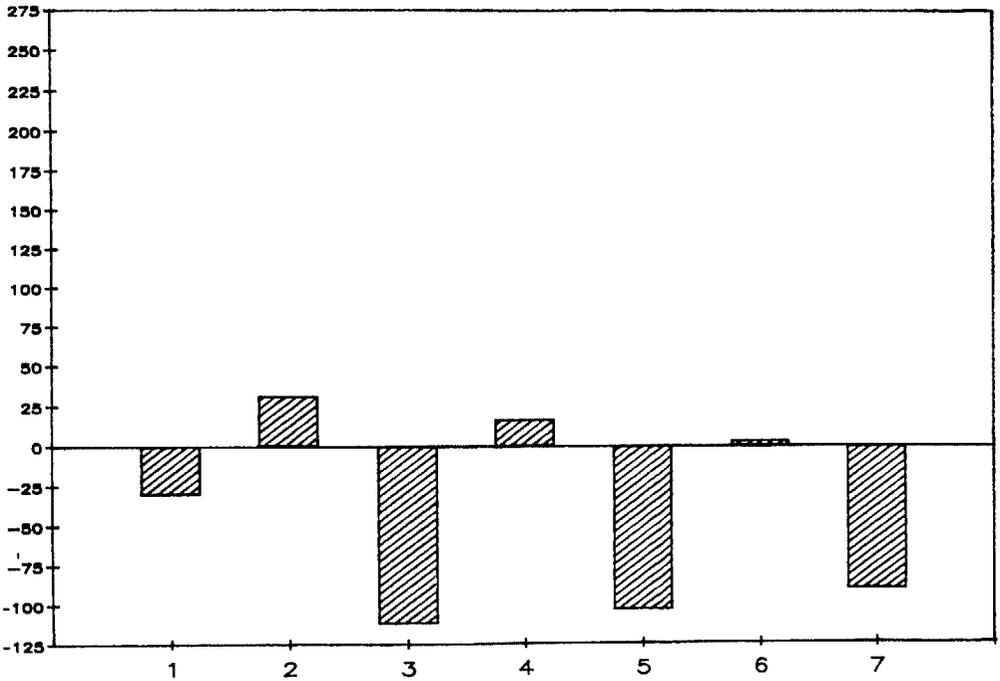
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GRAPH 2

Product: Structured Settlements
Strategy: Fixed

Present value at earned rate
of fiscal profits (in millions)



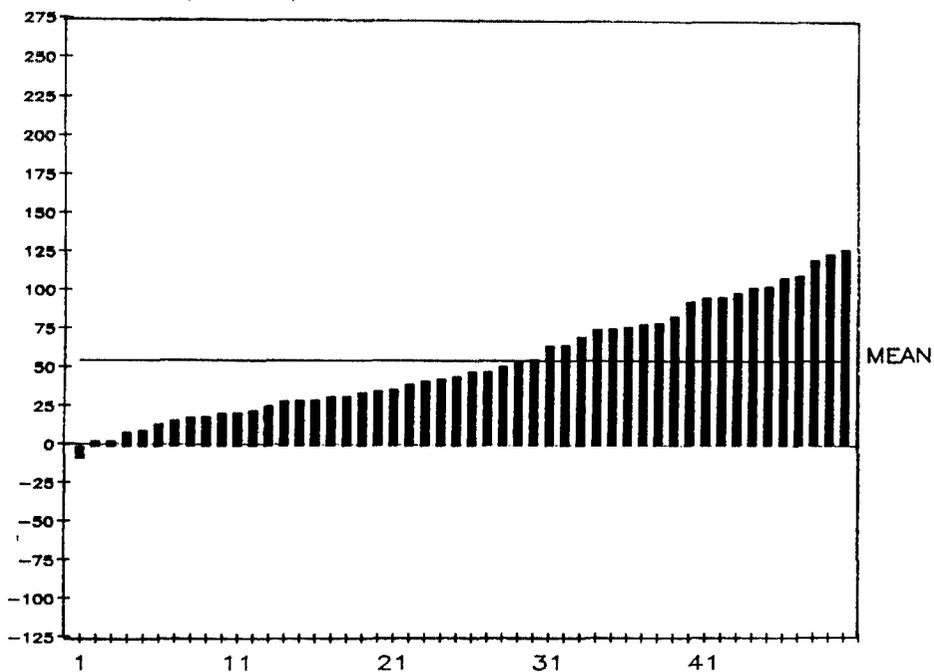
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PANEL DISCUSSION

GRAPH 3

Product: Structured Settlements
Strategy: Fixed

Present value at 15%
of fiscal profits (in millions)

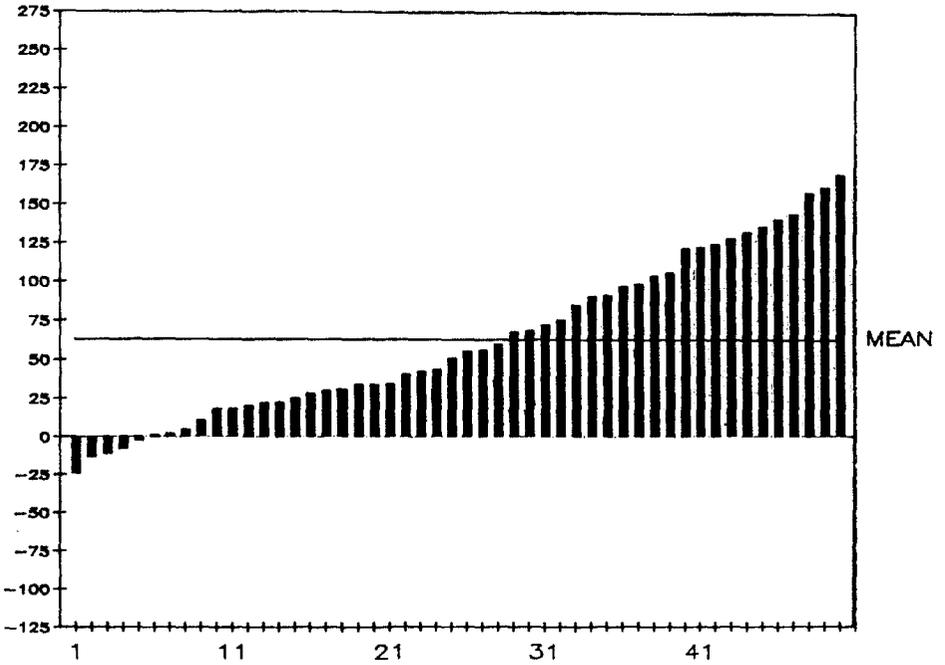


Trials ordered by present value

GRAPH 4

**Product: Structured Settlements
Strategy: Fixed**

Present value at earned rate
of fiscal profits (in millions)



Trials ordered by present value

PANEL DISCUSSION

The reverse of what happens in the New York scenarios for the structured settlements is true for the deferred annuities. Since they were issued over the last 5 years and rates have steadily gone down, moderate changes in interest rates from today's rates aren't that harmful for the company. Even a 3% spike just takes you about up to where most of their business was issued. So under all seven New York Scenarios the results are very positive (Graph 5 and 6). Under the stochastic scenarios (Graph 7 and 8) for the deferred annuities, the results were uniformly positive, although they weren't as attractive as the results under the New York scenarios. Again this illustrates my point that the New York scenarios tend to be unduly favorable in my opinion.

Another issue, and I think Pete Smith referred to this, is combining lines of business. This is an area where I have some disagreement with the Department, and I think I have mentioned this to Pete and to Bob Callahan in the past. I strongly believe that when we do these types of tests, if we are going to be giving an accurate representation of the risks that different companies are taking, it is essential that we allow companies to combine different lines of business and take advantage of the different risks in the liabilities that offset each other. Otherwise what we are doing is saying, "Look, you can go ahead and do all you want to be well managed and limit your risks, but that is not going to have any impact on the way we evaluate the level of risk that is in your company. We are going to look at everything as compartmentalized boxes."

The Department has some concerns and they are legitimate concerns. One that I think you have heard before is the projection period. I understand from Pete that in the early opinions and memorandums they received they would have 30- or 40-year projection periods for Single Premium Deferred Annuities (SPDAs) with what the Department felt were not very realistic assumptions. The projections built up tremendous surpluses in the SPDA line which would then offset any risk that you had in the structured settlement or immediate annuity line.

In addition, if you lump all of the liabilities together into one cash flow projection, you could be hiding big problems with the structured settlement line that the Department would like to know about. Similarly, there could be a big problem with the deferred annuity line that the Department would like to know about. It is easier to use unrealistic assumptions for the deferred annuities than for the structured settlements, I think. So I think the Department would like to keep the structured settlements pure and pristine, if you will.

The solution that the Department has hit on is to say that with some minor exceptions, you can't offset excesses in one line against deficiencies in another line. I don't think that is a very good solution. It fails to reward companies for doing what I think is the appropriate thing, to limit their risks. I think a better solution would be to clamp down on unrealistic assumptions, and I think the Department is already moving on that. The second thing which the Department has done is simply to require that SPDAs not be projected beyond 10 years. That eliminates the problem or at least substantially reduces the problem of unrealistic assumptions because you don't have 40 years to build up enormous surpluses.

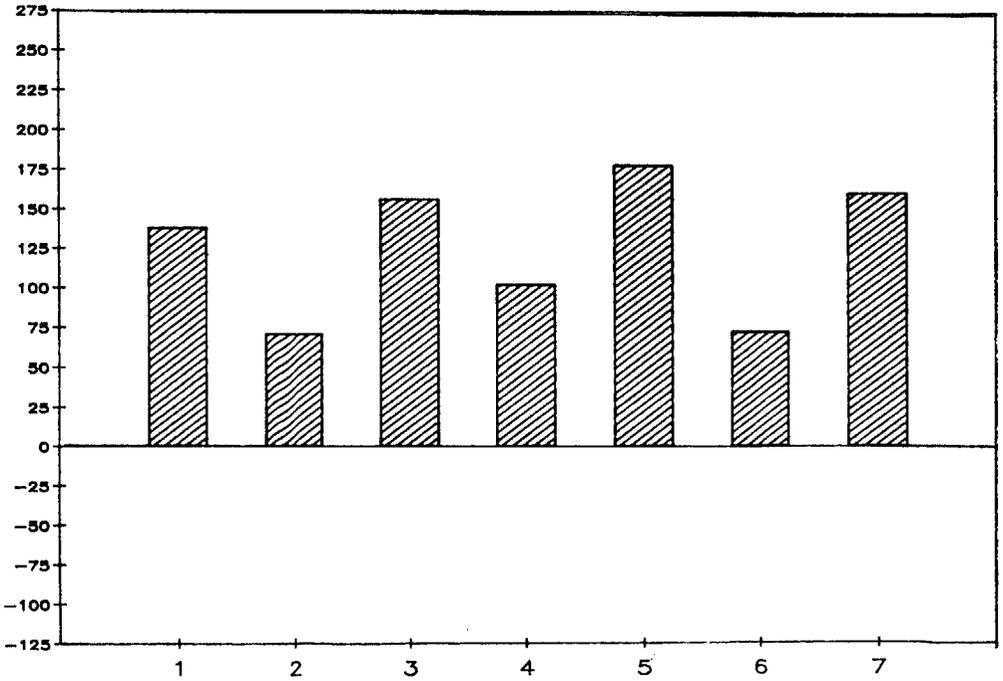
I have alluded to mixing structured settlements with SPDAs, as an obvious example of two lines which have different risks, and hopefully those risks will be offsetting. You can also mix structured settlements with GICs. Conceivably, you could mix SPDAs with traditional life insurance products, or the Single Premium Whole Life line with structured settlements.

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GRAPH 5

Product: Deferred Annuities
Strategy: Fixed

Present value at 15%
of fiscal profits (in millions)



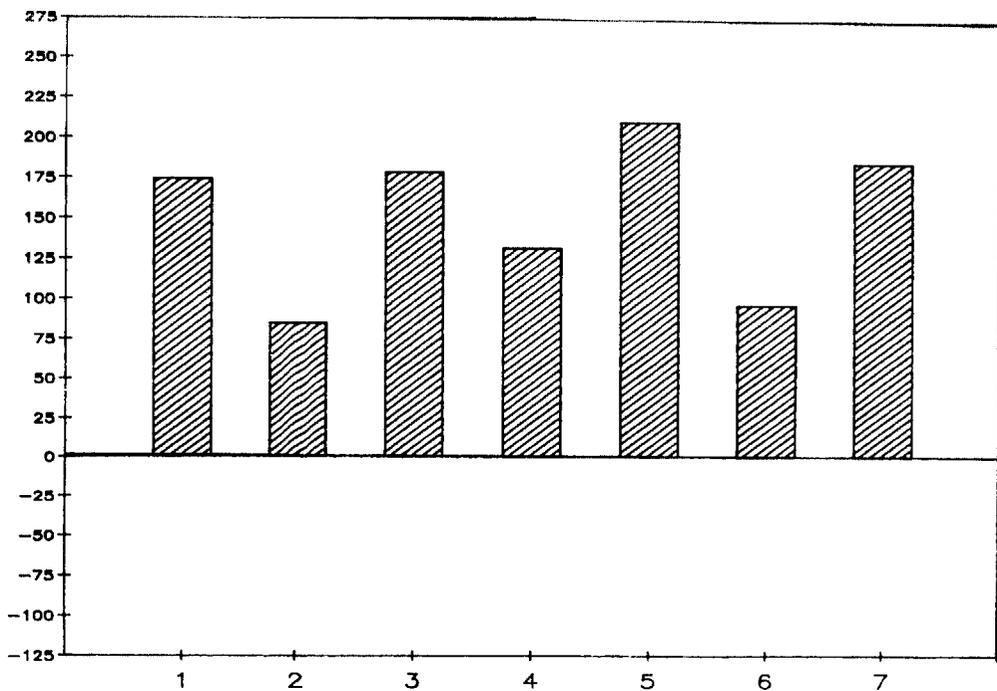
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PANEL DISCUSSION

GRAPH 6

Product: Deferred Annuities
Strategy: Fixed

Present value at earned rate
of fiscal profits (in millions)

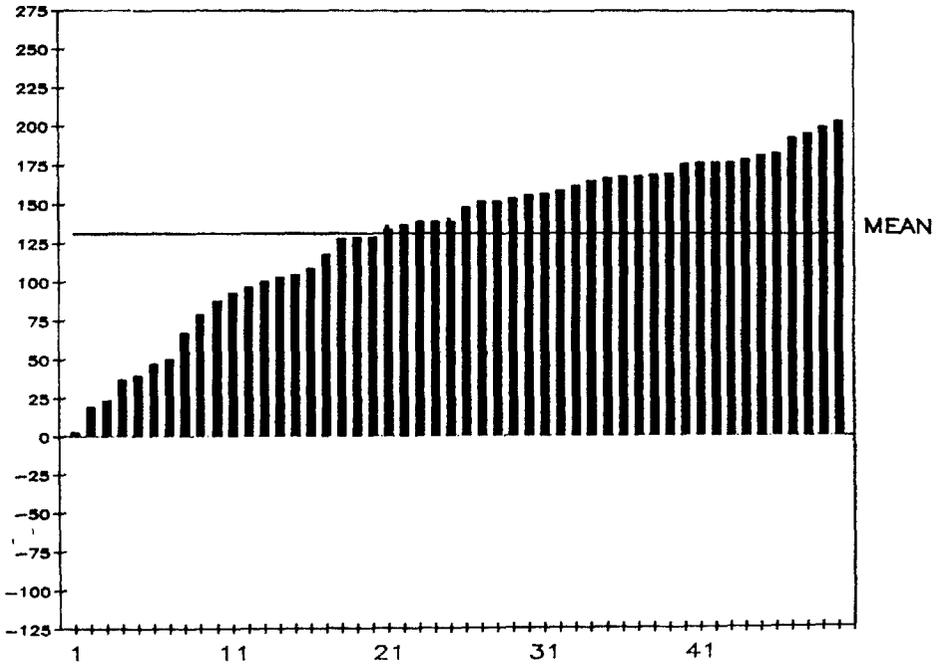


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GRAPH 7

Product: Deferred Annuities
Strategy: Fixed

Present Value at 15%
of fiscal profits (in millions)



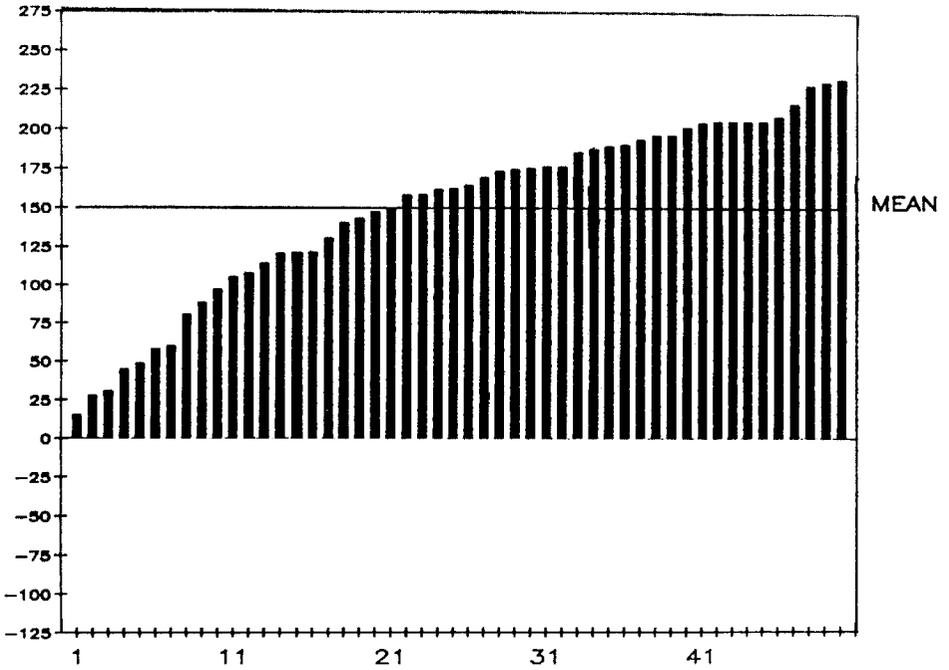
Trials ordered by present value

PANEL DISCUSSION

GRAPH 8

**Product Deferred Annuities
Strategy: Fixed**

Present value at earned rate
of fiscal profits (in millions)



Trials ordered by present value

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There are a lot of different possible combinations of lines in which the risks are very different between the two lines so that you get some advantage from mixing the two.

I will now take the results from the previous case study, and combine the two lines of business. If we had looked at the two separately, we would have said, "OK, the deferred annuities are fine, but the structured settlements are failing four out of seven scenarios. You have to hold a penalty reserve." When we look at the two lines combined, they are fine. In all seven scenarios, the company has sufficient assets (Graph 9 and 10). In fact, this particular company had issued both SPDAs and other deferred annuities along with structured settlements with the very idea that the two risks were offsetting. Thus, if interest rates fell, the deferred annuities would perform well, as we have seen that they have here, and the structured settlements would not perform as well, but the two risks would offset each other. They were pleased in this case to find that their policy was working fairly well.

Similarly, when we had the deferred annuities and the structured settlements by themselves in the stochastic scenarios, (Graph 11 and 12), there were a couple of scenarios that were negative for the structured settlements and there were one or two scenarios for the deferred annuities that were right around zero. You can see that when you combine the two line of business, the effect on the results under the stochastically generated scenarios is even more dramatic than under the deterministic scenarios. You can see that the results are close to that mean line in every case, even though each line by itself has a lot of interest rate risk. This illustrates why I think it is important to be encouraging companies to be doing this. This is a way as an industry that we can start bringing our risk down from what were really, when you issued just SPDAs or just structured settlements, very big risks. These are bet-your-company type of risks. Combining liability risks is one way that companies can substantially contain their risks. I think it is most unfortunate that the Department is discouraging this type of risk reduction, or at least not encouraging it. When the two lines are combined, the worst case is almost as good as the mean of the deferred annuities and it is far better than the mean of the structured settlements. What you are looking at is a situation in which a company has virtually locked in a gain by mixing two lines where before there was a distinct possibility, when you look at either line by itself, of either losses or virtually no gains.

Another issue is the MSVR and what should be done with the MSVR. One question that has been evolving with the MSVR is: "Is the MSVR available to offset C-1 Risks, C-3 Risks, both, or neither?" I think the department has taken the position that the MSVR is available at most to offset C-1 Risks. I don't know that there is really a right and a wrong answer to this. However, you can't pay dividends as long as your assets are in the MSVR. The MSVR reduces the company's ability to pay dividends either to policyholders or to stockholders. In essence, for statutory purposes, the MSVR works like a reserve. I think the MSVR is an asset fluctuation reserve. I think that the MSVR ought to be available for both asset risks: the C-1 and the C-3, not for just one or the other, but I can understand why people would take a different opinion.

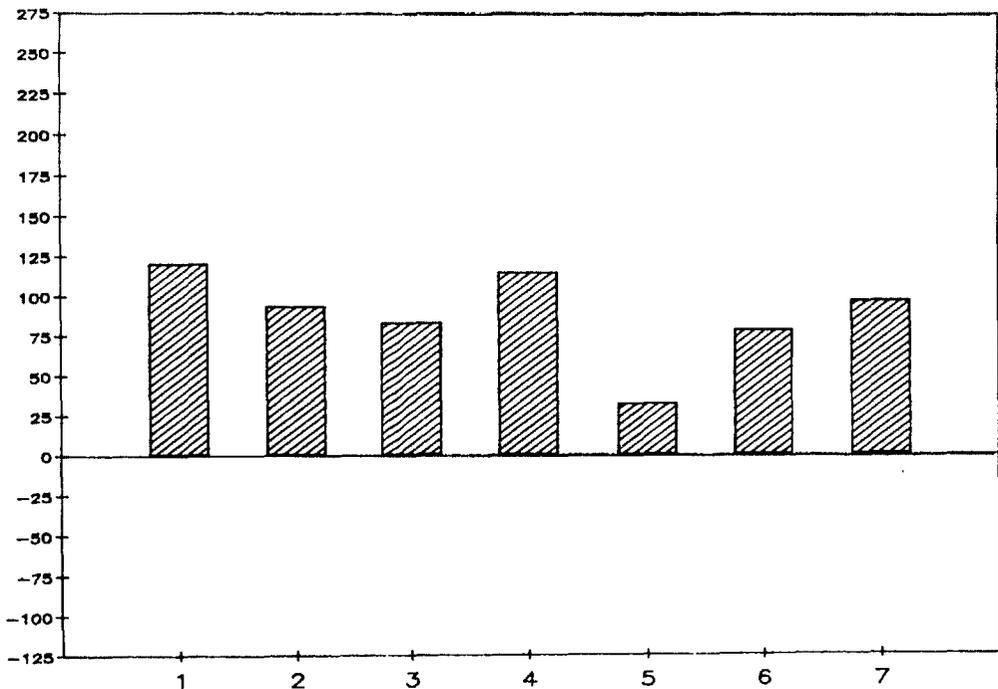
Another issue that has been emerging is that if you take capital gains, that causes your MSVR to rise. Then you can't bring the MSVR into play in testing your reserves. You may find that because you now have less assets available to back the reserves, you have to set up a penalty reserve.

PANEL DISCUSSION

GRAPH 9

**Product: Combined Structured Settlements and Deferred Annuities
Strategy: Fixed**

Present value at 15%
of fiscal profits (in millions)

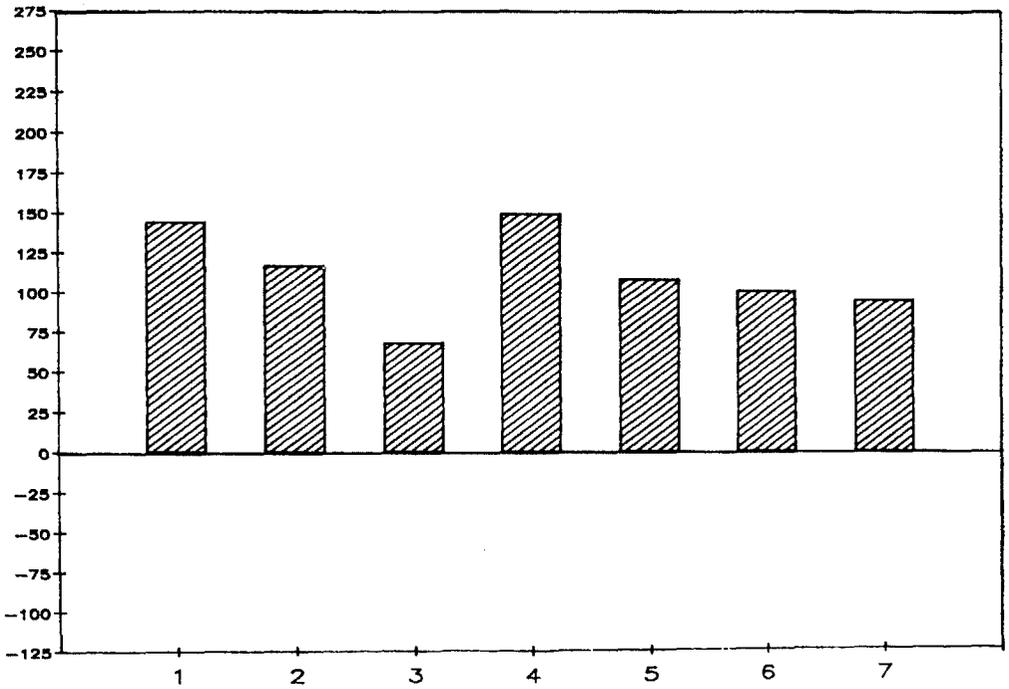


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GRAPH 10

Product: Combined Structured Settlements and Deferred Annuities
Strategy: Fixed

Present value at earned rate
of fiscal profits (in millions)



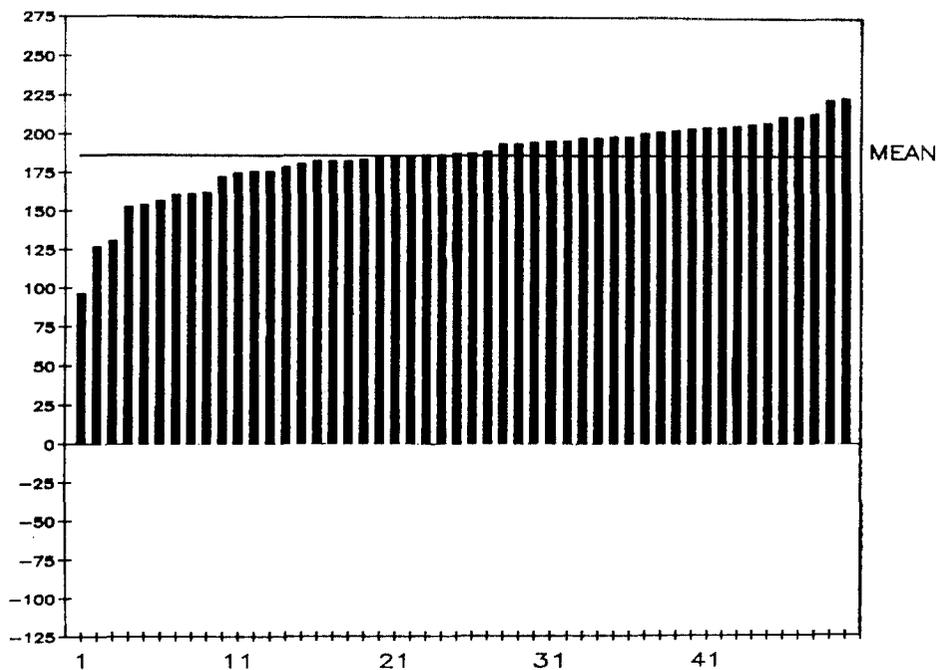
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PANEL DISCUSSION

GRAPH 11

Product: Combined Structured Settlements and Deferred Annuities
Strategy: Fixed

Present Value at 15%
of fiscal profits (in millions)

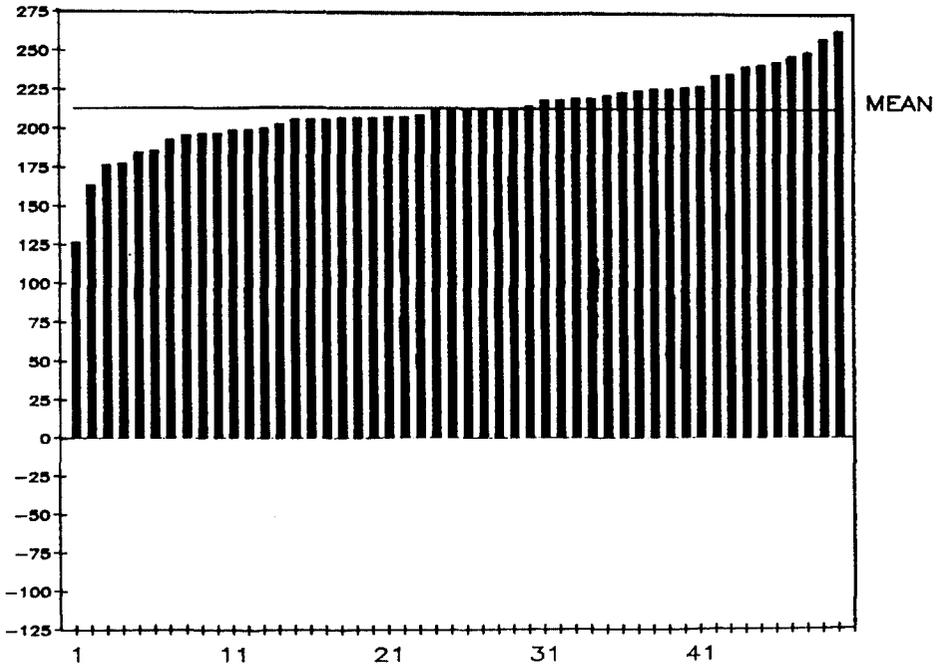


Trials ordered by present value

GRAPH 12

**Product: Combined Structured Settlements and Deferred Annuities
Strategy: Fixed**

Present Value at earned rate
of fiscal profits (in millions)



Trials ordered by present value

PANEL DISCUSSION

So in effect you have actually reduced your surplus by taking the capital gain. Not only did the capital gain go into the MSVR, it also caused you to hold an extra reserve, so it is being counted twice. That is something that I think the Department needs to deal with if they are not going to let the MSVR be used as a reserve for the purpose of these analyses.

Another issue is how do you set default rates? I have thought about this a lot and have done some research. It is a tough question. You can do all kinds of analysis with historical data, and you will come to the conclusion that default rates are low compared to what New York would like and what I think makes sense. For instance, Altman and Irwin Vanderhoof and several other people have studied the junk bond question and looked at historical data. The conclusion that they have reached is "Why doesn't everybody have junk bonds?" You never know what the future is going to hold, so certainly from a reserve point of view, just because defaults were low in the past doesn't mean they are going to be low in the future. In addition, the period in which junk bonds have been issued has been an excellent economic period. So you have to wonder about the experience and whether or not it is suspect. There are a lot of issues that are open in the valuation actuary field. I think defaults are the most open issue -- the area in which actuaries have the least confidence. At least, this is the area in which I have the least confidence.

Another issue is taxes and whether you should include taxes in your analysis. One of the issues is who knows what the tax environment is going to be two years from now let alone in 10 or 20 years. In the last seven or eight years, we have had three major tax revisions. In my judgment it would be a mistake to require you to pre-fund surplus taxes, for instance. Another problem is how do you allocate the surplus tax between lines for mutual companies. You run into a series of issues like that when you are evaluating taxes. You make some assumptions but you just really have to wonder about assumptions. Another critical thing with taxes is how close to statutory reserves are the tax reserves. The closer the two are to each other the less important taxes become because they will tend to reduce the size of any surplus or deficit, but they typically are not going to change a surplus into a deficit. Of course, they won't change the deficit into a surplus.

My next topic is the setting of appropriate assumptions. I think this has been covered in quite a bit of detail already. Obviously, you need to think about crediting rates and what the company's strategy is going to be. Another issue you need to deal with is how realistic is the stated strategy. We get a lot of companies that come in with a strategy that they are going to credit the earned rate less 250. If you look at their experience, they have been at or above the earned rate less 250 basis points, seven out of the last eight years. You really have to evaluate how a company is likely to follow the strategy that it has stated. Similarly if a company says they are going to credit the earned rate less 150, and it is an agency-driven company, you will have a lot of pressure as interest rates rise to follow the market. The valuation actuary needs to evaluate how realistic the stated strategy is. Of course, in the classic situation, let's say over 50% of the cases I get involved in, there is no stated strategy. Then the actuary actually has to turn the heat up on someone to come up with this strategy. You can suggest things, but really it can get to be a tricky issue if the company has never thought about it. Actually, it can be a useful exercise for the company; they may realize some things about the way they run the business that they never knew before.

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Some of the different strategies you see are credit the market rate or credit the earned rate less 200 basis points. A lot of times you see strategies in which you are going to credit the earned rate less 200, but you will be never more than 300 basis points below the market and you will never be above the market because there is no incentive for a company to be above the market. A lot of times you will see strategies in which you will lag the market; as interest rates go up, you will be halfway between where you are today and where you were last year. What I have found is that the strategies that work the best in terms of producing the best profitability, in terms of being reasonable and producing the least amount of risk for the company are strategies in which you lag the market as it goes up and try to stay with the market as it goes down. To some extent, if you do that, you alleviate the impact of the policyholder's option to withdraw with a fixed surrender charge.

Setting appropriate lapse assumptions has been covered a lot of times. One of the interesting things that I find is that you talk to people and they say, "Well, we have never had more than 4% lapses on this SPDA." The thing to remember is that since most companies have been issuing SPDAs or Universal Life, rates have been almost steadily declining. Thus, companies almost always have been crediting a higher rate on their existing business than the market rate. When that is the case, you might argue that whatever the lapse experience has been should be the minimum rate you use in your lapse formula. Also, some people believe there is a maximum lapse rate. I think there is one too. I am just not sure it's below 100%. But anyhow, that is an issue you have to deal with. I think that any maximum lapse rate assumption below 50% is very hard to defend. I like to tell the story of the company that came to us and said, "We have a problem; our lapses are running over 100%." We said, "You do have a problem!" It turned out they were just calculating lapses wrong. They took a monthly lapse rate of 9% and multiplied it by 12 and came up with 108%. If you think about what a 9% monthly lapse rate implies for your annual lapse rates, that comes out to a 68% analyzed lapse rate. Thus you know it is possible to be well over 50%. You do need to think about maximums or at least think about not including them.

MR. STEVEN SMITH: There are a couple of topics left on the program that haven't yet been covered, one of which is reinsurance. The primary thing is that all cash flows of reinsurance must be included: the risk and expense charges, if you have surplus relief; premiums or death benefits; expense allowances, etc.

I have a personal feeling that I have with regard to one aspect of surplus relief reinsurance. I don't have any indication as to whether or not the Department would agree with it.

Suppose you have some surplus relief that has \$1,000,000 of reserve credits. Further suppose that you know from the way that the surplus relief is running off that it is going to be gone in one year. Next year, therefore, after deducting your reinsurance reserves, which will then be zero, your net reserves are going to be a million dollars higher than they are this year.

For some reason, whatever reason, you come to the conclusion that your valuation reserves this year are \$500,000 short (forgetting that they are going to be a million higher next year because you are going to get a million of profit from the surplus relief, thereby reducing it to zero). It is my personal feeling that you ought to get some sort of credit for that. I am not exactly sure how, but

PANEL DISCUSSION

you ought to get some sort of credit. My one year may seem to be an extreme example, but it is not. You may have a situation in which you are forced to recapture the reserves under Regulation 102 in three years -- by the end of 1989, I think.

Another subject that I want to touch on briefly is what I call the "excess lump reserve" under structured settlement annuities. Structured settlements typically have excess benefit payments. My company's experience is that they tend to occur every 5 years. The current position, and the way Regulation 126 is written at the moment, is that you can look at the excess benefits on an individual policy basis or you can look at them in the aggregate on a calendar year of issue basis. However, you are not allowed to combine issue years.

Let's think about that for a minute. If you have quinquennial lumps on each policy and you sell roughly the same amount of business for 5 or more years, then all of the "valleys" get "filled in" because each year of issue is offset by one year. After 5 years, you wind up with a pretty level benefit portfolio. I, therefore, strongly feel that combination of issue years (for the purpose of determining whether or not there are any "excess benefits") should be allowed on some basis. This is my personal opinion, with which the Department does not agree. I just basically feel that the excess current lump reserve requirement of the Regulation is excessive.

On the other hand, what is not required by the Regulation, which I personally think is needed for structured settlement annuities, is that you need graded reserves of some sort. A lower ultimate interest rate is needed because settlement annuities typically will remain in force far beyond the period for which investments can be made.

This leads me to my final topic which is the interrelationship between statutory formula reserves and valuation actuary type reserves.

I have chosen structured settlements as the focal point for this discussion for a couple of reasons. First, structured settlement annuities are very long-term liabilities: the average expected length of benefit period is typically 40 years or more. The problem is that you can't invest that long. You can buy maybe an average of 20- to 25-year bonds if you want to buy long bonds. But you can't invest all of your money for 40 years or more. A significant amount of your cash flow is therefore going to occur beyond the time of your bond maturities (or calls).

The other reason for choosing structured settlements is that there are no cash values. The amount of disintermediation risk is therefore very small for this kind of benefit.

Take the example shown in Exhibit 4 (Case 1). I picked 1982 because that is kind of a worst case year. The right-hand column indicates that we have a 13.25% valuation interest rate. Yet we are earning 15% on the bonds that we bought. The first two columns indicate that there is a 25-year difference between the year of purchase (1982) and the year of maturity (2007). In this case we bought 25-year bonds. Everything seems in order since the investment yield rate exceeds the valuation interest rate.

EXHIBIT 4

STRUCTURED SETTLEMENT ANNUITIES

CASE 1

<u>Year of Purchase</u>	<u>Maturity Year</u>	<u>Book Value of Assets Purchased in Year at Par</u>	<u>Average Yield at Purchase</u>	<u>Book Value of Assets Owned at Year End 1987</u>	<u>Statutory Reserve at Year End 1987</u>	<u>Valuation Interest Rate</u>
1982	2007	100,000	15.00%	100,000	100,000	13.25%

PANEL DISCUSSION

But let's go one step further and look at Exhibit 5 (Case 2). The main difference between this exhibit and the previous one is that there is only \$40,000 worth of book value of supporting assets at the end 1987. You originally bought \$100,000 but you only have \$40,000 left. You still have your 15% yield rate on the assets that are left versus the 13.25% valuation interest rate. However, it looks like there might be some sort of a problem because you just don't have enough assets to back \$100,000 worth of 13.25% reserves. You may have sold the bonds. You may have traded them. The bonds may have been called.

In Exhibit 6 we see that we bought \$100,000 of 25-year bonds in every year from 1982-87. The average yield on purchase has dropped, as it has over the last 5 or 6 years. The right-hand column shows the immediate annuity valuation interest rates for the last 6 years. Just for the sake of argument, suppose that you have \$100,000 of statutory reserves on each block at the end of 1987 for a total of \$600,000. The average valuation interest rate is 10.67% as shown in column 7. You've got \$660,000 of total bonds that are earning 10.57% which is 10 basis points below the average valuation interest rate.

You may think at first that the column entitled Book Value of Assets Owned at Year End 1987, is "pie in the sky." I suggest that it is not. If you have never gone to your investment department and asked them to take their Schedule D (the bond assets) and have that listing sorted by purchase year, you are in for a shock!

At my company, we primarily have a buy and hold strategy. We have been buying discount bonds to support structured settlement annuities. Our situation is not as bad as the one shown in the exhibit. However, I was really surprised that even in 5 years how many of the assets that were purchased at a deep discount (with 8%, 9% or 10% coupon bonds when interest rates were 15% or 16%) were no longer in our portfolio at last year end. Some of them have been called despite their low coupon rates. The investment department has sold some because they wanted to lengthen maturity, to increase the quality rating or to increase the total par value in the portfolio. These kinds of transactions, when viewed by themselves, are very good reasons for having traded the bonds away.

The important thing that I want to get across to you is that in the normal form of Schedule D, you cannot tell what the distribution of assets is by purchase year. So I strongly recommend to you, if you have not already done so, to have your Schedule D rerun by purchase year. I can almost guarantee that you will be in for a major shock.

What we see is that we have an insufficient "spread" in the aggregate. However, we have \$60,000 more assets than liabilities (\$660,000 versus \$600,000). What actually happened is that in 1986 and 1987 many of the older bonds with the higher coupon rates got called or traded. The higher the original interest rate was, the more of them got called. The proceeds of those calls or sales were reinvested after perhaps paying some capital gains taxes in 1986 and 1987.

But let's get back to thinking about those 13.25% interest rate reserves for 1982 issues. The statutory formula says that the reserves of 1982 with a level interest rate of 13.25% forever is OK. The question is, "When is it not OK?"

I think the valuation actuary has an obligation to think about this sort of thing separate and apart from calculating "valuation actuary reserves." Common sense needs to be used when you are calculating your statutory formula reserves.

EXHIBIT 5

STRUCTURED SETTLEMENT ANNUITIES

CASE 2

<u>Year of Purchase</u>	<u>Maturity Year</u>	<u>Book Value of Assets Purchased in Year at Par</u>	<u>Average Yield at Purchase</u>	<u>Book Value of Assets Owned at Year End 1987</u>	<u>Statutory Reserve at Year End 1987</u>	<u>Valuation Interest Rate</u>
1982	2007	100,000	15.00%	40,000	100,000	13.25%

STRUCTURED SETTLEMENT ANNUITIES

CASE 3

<u>Year of Purchase</u>	<u>Maturity Year</u>	<u>Book Value of Assets Purchased in Year at Par</u>	<u>Average Yield at Purchase</u>	<u>Book Value of Assets Owned at Year End 1987</u>	<u>Statutory Reserve at Year End 1987</u>	<u>Valuation Interest Rate</u>
1982	2007	100,000	15.00%	40,000	100,000	13.25%
1983	2008	100,000	13.00	50,000	100,000	11.25
1984	2009	100,000	12.75	60,000	100,000	11.25
1985	2010	100,000	11.75	70,000	100,000	11.00
1986	2011	100,000	9.75	240,000	100,000	9.25
1987	2012	<u>100,000</u>	9.00	<u>200,000</u>	<u>100,000</u>	<u>8.00</u>
		600,000		660,000	600,000	10.67%
			11.88%	10.57%		

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What my company has done for its settlement annuity liabilities is to use valuation interest rates that grade to a lower interest rate after 20 years. The reason we picked 20 years for the grading period is that we were buying 20-year assets to support the block of liabilities. Even if the assets aren't sold, they are going to mature in 20 years and you don't know where interest rates will be when the call or maturity occurs.

The question is, "Should you strengthen reserves and when? Or should you do something in advance with graded reserves?" The suggestion for graded reserves is now in Regulation 126. It is not yet a requirement, but rather an optional methodology.

As another example of when level interest rate reserves may be insufficient, consider the 1982 block of \$100,000 13.25% reserves. Suppose you knew that all those assets were going to mature next year and that they were not going to be here. Interest rates are now at 8% or 9%. Maybe you have to think about doing something. You may have significant cash flow or yield mismatches that are going to occur in the future, possibly the near future.

Exhibit 7 (Case 4) is another way of looking at the previous exhibit except that I have taken \$60,000 out of the 1987 reserves shown in the previous exhibit, reducing the 1987 total from \$200,000 down to \$140,000. Now we have \$600,000 of both reserves and assets. The average yield rate on your assets is 10.73% versus a 10.67% average valuation interest rate, which gives us a 6 basis point spread. But will it last?

In Case 4, we took all of the assets out of 1987 because that gave the best answer. On the other hand, maybe you shouldn't do that. Maybe you should take a pro rata share of all of the assets, which is shown in Exhibit 8 (Case 5). Here, the \$600,000 of assets are just a pro out of share of the original \$660,000. Now we see that we are back to the 10.57% earned rate versus the 10.67% valuation interest rate. If you put your regulator's hat on for a moment, you would know that there is a potential problem -- even if the AOM seems acceptable. I think that the valuation actuary has a moral obligation to take a look at this type of situation. If you don't have asset segmentation, real asset segmentation, where and how are you going to pick the assets to "support" the reserves?

In Exhibit 9 (Case 6), instead of buying 25-year bonds every year, the company bought 10-year "high yield" (junk) bonds. The average maturity of high yield bonds is about 10 years. There aren't very many 15-year maturities out there. And essentially no 20 or 25-year maturities. In Exhibit 9 you have a 13.88% average yield rate versus the 10.67% average valuation interest rate. We have over 300 basis points of interest margin. But is that enough to cover the default risk? Maybe it is. Maybe it isn't. But that is a separate question. Let's put our regulator hat on again for a moment and move down to the year 1990 or 1991. Same set of reserves. Only now it happens that the interest rates are way down. You know that those assets which had an original 10-year maturity are going to start maturing a year or two from now. I think there is a problem.

Suppose you are the New York Department actuary at the year end 1987. You know that those assets are going to start maturing in 5 years. The liabilities are going to last an average of 40 more years.

STRUCTURED SETTLEMENT ANNUITIES

CASE 4

<u>Year of Purchase</u>	<u>Maturity Year</u>	<u>Book Value of Assets Purchased in Year at Par</u>	<u>Average Yield at Purchase</u>	<u>Book Value of Assets Owned at Year End 1987</u>	<u>Statutory Reserve at Year End 1987</u>	<u>Valuation Interest Rate</u>
1982	2007	100,000	15.00%	40,000	100,000	13.25%
1983	2008	100,000	13.00	50,000	100,000	11.25
1984	2009	100,000	12.75	60,000	100,000	11.25
1985	2010	100,000	11.75	70,000	100,000	11.00
1986	2011	100,000	9.75	240,000	100,000	9.25
1987	2012	<u>100,000</u>	9.00	<u>140,000</u>	<u>100,000</u>	<u>8.00</u>
		600,000		600,000	600,000	10.67%
			11.88%	10.73%		

STRUCTURED SETTLEMENT ANNUITIES

CASE 5

<u>Year of Purchase</u>	<u>Maturity Year</u>	<u>Book Value of Assets Purchased in Year at Par</u>	<u>Average Yield at Purchase</u>	<u>Book Value of Assets Owned at Year End 1987</u>	<u>Statutory Reserve at Year End 1987</u>	<u>Valuation Interest Rate</u>
1982	2007	100,000	15.00%	36,364	100,000	13.25%
1983	2008	100,000	13.00	45,455	100,000	11.25
1984	2009	100,000	12.75	54,545	100,000	11.25
1985	2010	100,000	11.75	63,636	100,000	11.00
1986	2011	100,000	9.75	218,182	100,000	9.25
1987	2012	<u>100,000</u>	9.00	<u>181,818</u>	<u>100,000</u>	<u>8.00</u>
		600,000		600,000	600,000	10.67%
			11.88%	10.57%		

STRUCTURED SETTLEMENT ANNUITIES

CASE 6 -- HIGH YIELD BONDS

<u>Year of Purchase</u>	<u>Maturity Year</u>	<u>Book Value of Assets Purchased in Year at Par</u>	<u>Average Yield at Purchase</u>	<u>Book Value of Assets Owned at Year End 1987</u>	<u>Statutory Reserve at Year End 1987</u>	<u>Valuation Interest Rate</u>
1982	1992	100,000	18.00%	40,000	100,000	13.25%
1983	1993	100,000	16.00	50,000	100,000	11.25
1984	1994	100,000	15.50	60,000	100,000	11.25
1985	1995	100,000	14.50	70,000	100,000	11.00
1986	1996	100,000	13.00	220,000	100,000	9.25
1987	1997	<u>100,000</u>	12.50	<u>160,000</u>	<u>100,000</u>	<u>8.00</u>
		600,000		600,000	600,000	10.67%
			14.92%	13.88%		

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I don't know if the dynamic valuation law contemplated structured settlements. I personally don't think that it did. I believe that retirement annuities with an average age of 65 were the primary focus and not an average annuitant whose age at issue is in the range of 30 or 35 with a 40-year-life expectancy. So there are some other issues.

In conclusion, I think that the kind of issues that I have discussed with respect to settlement annuities are true of many other kinds of blocks of business. It was just easier to characterize some of the issues using the settlement annuities. The situation is less complicated. Since assets cannot be taken out of the company because someone takes their cash surrender value, you may need to think about graded or other kinds of advanced provision reserves if you have just a few years left to the maturity of the supporting assets or if you have very long liabilities. If you have an active trading strategy as opposed to a buy and hold strategy, you may also have a problem. And it is a gray area as to which assets support which liabilities. The last thing that we talked about was how much excess yield over the valuation rate is "enough" before you have to start thinking about potential reserve insufficiencies.

MR. THOMAS A. BICKERSTAFF: I have had personal experience working with clients in the filing of Regulation 126. I have a question which I would like to direct to anyone on the panel, but I suppose Peter Smith would be the appropriate person to answer it. Regulation 126 suggests that it is improper to input surplus at the projection start date in terms of having assets equal to anything other than the liabilities being projected. I question why it is improper to input surplus either positive or negative. These would be the actual assets you have relative to the liabilities you are starting with.

MS. CLAIRE: This has come up at meetings of the Regulation 126 Industry Advisory Group to the New York Department, with Academy groups and Society of Actuaries groups. The thing is, the valuation actuary is just certifying as to the reserves. Surplus has this terrible tendency of being spent on such things as stockholder dividends or incentive compensation for the president, etc., which the actuary has no control over. The only thing the actuary can certify to us is the reserve number, which is why reserves are the starting point.

MR. DEAKINS: If I could just add something. A lot of the industry has really resisted any kind of regulation that deals with surplus. For years, Don Cody has said that the valuation actuary has to be looking at both reserves and surplus. The industry has said that reserves are the regulator's bank account and surplus is our bank account. As far as the industry has been concerned, the regulator can regulate reserves, but the industry wants to have freedom with the surplus. The very name "surplus" implies excess assets that are available for the company to invest as it sees fit rather than being locked in to a given set of liabilities for fulfilling regulatory needs.

MR. BICKERSTAFF: I can appreciate the responses that I have heard and yet you can have a situation, a hypothetical situation, for example, of SPDAs fairly loaded. You might very well be in a position like the example that we saw in connection with the structured settlement annuities, where you have a portfolio of assets that is earning maybe 13.5% and you are crediting 12.5%, and everything looks cushy. The only problem is you might have an asset base that is considerably below the liabilities that you are starting with. By imposing an unrealistic assumption that the assets are there to support your starting balance liabilities, I think you are presenting an unrealistic picture.

PANEL DISCUSSION

MR. PETER SMITH: Tom, the requirement is that you have to use assets equal to liabilities. That assets cannot be greater than liabilities. You can show sufficiency with assets less than liabilities. That is acceptable. Is your point that the cash flow from the high yielding assets is such that you can use assets whose value is less than the liabilities?

MR. BICKERSTAFF: Look at it from the other side of the coin. Take a company that has a front end loaded contract. If it has assets that exceed liabilities because it is taking a chunk right off the front end, if it has a surplus position, if the assets are then in the position of earning a lower rate of interest than the reserve interest rate that is being credited, then they are being penalized if they have to chop off a chunk of that block of supporting assets at the start.

MR. PETER SMITH: I think the answer, Tom, is that if you need assets greater than the reserves to support the line, then what the valuation actuary is really saying is that the reserve is inadequate. So the reserves should be increased to the level of the reserves plus the surplus needed to support the liabilities.

MS. CATHY H. WALDHAUSER: I would just like to add a comment to that last discussion. You raised a good point, Steve, when you were mentioning that the asset earnings rate could actually drop if you took capital gains out of your portfolio. If you did some restructuring that generated capital gain, your asset earnings rate on your book assets would drop. You may be required to set up additional reserves because of that. But you already had to put that capital gain into your MSVR. And it doesn't make any sense.

MR. STEVEN SMITH: I agree, and I think maybe Bob Callahan agrees, that there is a double hit. You have one law that affects the calculation of the MSVR and another that affects the calculation of the statutory reserves. The point is that if you can't find assets that at least earn the valuation interest rate, then the reserves themselves are in fact insufficient. I think there are a number of committees that are working on looking at the MSVR. A lot of people, myself included, agree that there are some problems with the MSVR.

MS. WALDHAUSER: I guess my point is that it shouldn't matter what the assets are yielding as long as you have enough of them.

MR. STEVEN SMITH: But the point of statutory is that if they are in surplus, then they are designated surplus. What you do when you strengthen reserves is you take assets out of surplus and put them in liabilities. The MSVR panel will probably be discussing that issue in greater detail.

MR. STEPHEN J. STROMMEN: I have a comment and couple of questions on using randomly generated interest rate scenarios. There was a suggestion that the seven scenarios suggested by New York were very inadequate and that it is very useful to run a large number of randomly generated scenarios. I think it is very interesting and fun to do that. But I would hate to see that put into a regulation for a couple of reasons. First of all, I think there is a limited amount of information that a valuation actuary can comprehend. If the valuation actuary can comprehend everything that is going on year by year in the seven scenarios, then perhaps a few other deterministic scenarios are needed. I think he has learned enough to make an opinion on the reserves of the company. I also have a problem because I don't think that the techniques for generating random stochastic scenarios are very well developed. As a result, I have a hard

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time basing decisions that could involve millions of dollars in reserves on something that we really do not have a good handle on. I guess my question for Peter Deakins is: "Do you think that doing a large number of randomly generated scenarios is ever really going to change the opinion of a valuation actuary beyond what he would have opined using just the seven New York scenarios?"

MR. DEAKINS: Let me restate the question to make sure I am following you. What you are saying is that you have a problem with stochastically generated scenarios because (1) it is a lot of work and effort to both do and comprehend, and (2) you don't feel that stochastic scenario methodologies are well enough developed. The question you asked is, "Would someone change their opinion if they ran random scenarios or stochastically generated scenarios instead of deterministic scenarios?"

I agree with basically all of your comments that it is a lot more work and a lot more effort. At this point, I don't think it appropriate to require stochastically generated scenarios by regulation. I would hope at some point in the not too distant future that actuaries will be a lot more comfortable with the whole valuation actuary concept and will be better able to deal with it. Basically, my view is that the concept of the valuation actuary is evolving, and as it evolves, the complexity will increase as people become more comfortable with it. My basic belief on the stochastic scenarios is that while we haven't really developed fantastic methods for generating them or haven't developed a lot of comfort with the methods for generating them, I am a lot more comfortable with them than I am with the deterministic scenarios. If you look at the New York scenarios, they are not really very representative of what I believe is a reasonable set of scenarios.

As to the last question of whether you would get a different answer using stochastically generated scenarios instead of deterministic, I think yes you would. If you look at the graphs and exhibits I presented, you would see the structured settlements and say there is a block that is way under water. If you look at the New York scenarios, you would see the deferred annuities, you would say there is a block that has not a chance of failure. I mean in each of the New York scenarios for the deferred annuities there was a present value of profits of over \$100 million. And in 4 of 7 on the structured settlements you got a negative result. Then when you look at stochastically generated scenarios, what you basically see is that for both lines the reserves were probably sufficient. But each of them was close to being insufficient. So I think you draw a much different conclusion. At least I would draw a much different conclusion from the stochastically generated scenarios than I would from the deterministic scenarios. It is a conclusion in terms of my own intuition and beliefs. It is a conclusion that I think makes more sense.

MR. STEVEN SMITH: I have a related comment on sensitivity testing. We did our opinion this year on the settlement annuities. Since lapses are not possible, we took the worst case scenario which was gradual down 500 basis points and then we tested different call percentages. When you got to a call trigger, what percent of the time would they call?

If instead I had a block of SPDAs, I think the interest assumption, or the formula for the interest assumption, the difference between market and credit rate strategy would be something you would want to test with different formulas. In response to your specific questions, I think that when you start talking about 50 different randomly generated stochastic scenarios, you do have another

PANEL DISCUSSION

variable that you have to do sensitivity testing on. And that is the transition matrices or the formula that produces those different interest rates. So it is another variable and you just test different transition matrix formulas. If you get the same or very similar results with 5 different formulas, then I think you can have confidence in the results.

MR. PETER SMITH: I agree with your last comment. I think it is quite critical. The comparison between the opinion you might get from the New York scenarios and doing random scenarios depends an awful lot on how you generate your random scenarios.

MR. DEAKINS: I agree 100%. Whenever we look at stochastically generated scenarios, we do sensitivity testing because it is so critical. If you find that you get the same results that Steve said with a couple of different sets of assumptions about interest rates, that starts to give you more confidence.

MR. RICHARD M. WENNER: I have some confusion over the issue of the combined lines of business. I don't know whether it is because I don't understand it or because I do understand it and don't like the answer. It seems to me that there ought to be a distinction made between combining lines for projecting cash flow versus combining lines for an opinion. I can see where for cash flow purposes you may have to separate out the lines because either you have a different investment strategy or you have a different period of time over which you are going to make the projections. But combining for opinion purposes is quite different. You ought to be able to combine different lines for opinion process.

MS. CLAIRE: That is true. You can combine basically at the end. What the department wants to see is a projection of the cash flows with the various lines of business separately to sort of make sure that nothing is going weird or unexpected within the line.

MR. WENNER: Does that mean if one of the projections fails, that that line would not have to be strengthened if the total of two or more were adequate?

MR. STEVEN SMITH: As long as they are both currently within "annuities" which includes GICs. Both the Regulation and the underlying law do not permit combining life and annuities. But you can combine SPDAs and structured settlements which Pete's exhibits showed really had opposite type risks. They logically should be combined. In the past, the Department was getting one set of projections that had the combined cash flows and everything looked acceptable. However, you couldn't tell that one block potentially had a serious problem that was significantly offset by another. So the Department really wants you to test your settlement annuities and to separately test your SPDAs so you can see how each block reacts to each scenario. Then you can combine -- but not in a single projection, as I think Pete Smith indicated. Some companies have tried to combine settlement annuities and SPDAs by taking the SPDAs out 30 or 40 years or something like that. The assumptions on the SPDAs were highly suspect in the last 20 to 30 years. Combining the cash flows covered up potentially a lot of sins. The Department wants to look at each block, and then you can put them together on a common valuation date, which I think the Department would suggest ought to be today's valuation date.

MR. DEAKINS: The one restriction I think, and Pete you correct me if I am wrong, and this is where I've had disagreement with the Department, is that

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they have a fairly strict limit about how much of an offset you can make between the SPDA risks and the structured settlement risks.

MR. PETER SMITH: That's correct. It is clearer in the revised Regulation 126 that the limitation on the amount that can be offset for SPDAs is you have to keep assets at least equal to aggregate cash values for the SPDAs.

MR. DEAKINS: In other words, if you holding reserves equal to cash values on the SPDAs, there is no risk offset available to you from the SPDAs.

MS. ELLEN M. TORRANCE: As I understand it, the advantages of stochastic over deterministic is that the stochastic model introduces a sort of a brownie in motion that makes the interest rates jump up and down which shows up problems with, for example, the SPDAs. Could that be solved by adding, for example, deterministic scenarios 8 and 9: saw tooth or cyclical or more rapidly cyclical fluctuations?

MR. DEAKINS: I think that would be one possible solution unless it is a situation in which really wild fluctuation needs to occur. Many times, when we look at saw tooth, we also look at "very regular saw tooth."

MR. PETER SMITH: The problem that we have seen in terms of failed scenarios and when additional reserves need to be established is that many companies will look at the particular failed scenario, and they will say that for this particular line of business or for other reasons it is extremely remote. We usually have not argued enormously with companies on that point. Sometimes we have. The real problem is that the definitions of reasonable and plausible aren't well defined. Now, we had looked favorably with respect to stochastic methodology as perhaps answering more precisely what reasonable and plausible would mean. But the valuation actuary concept really isn't going to be a solid methodology until we can really precisely define what those terms mean.

MR. JONATHAN E. MILLER: This year, one of the scenarios that we turned into New York was a strange scenario. We looked at the past 20 years and got something that would come fairly close to modeling that for the next 20 years and just saw what that would do. We were really surprised when we looked at the graph how different that was from everything else that we would have picked. The other advantage to stochastic is that you do not know going in what is going to come out. Regardless of whether it reflects reality, it is an input that you don't control. I think that when you pick your scenarios, you are looking at what you expect to happen. I don't care how honest you are. You've got hidden biases, subconscious biases, that you just don't know about. You have to have some way to get around those if you really want to understand the business.

MR. RICHARD C. DIELENSNYDER: I have a question on the projection periods. I want to know to what extent the Department's suggested projection periods were determined by looking at the New York 7 Interest rate scenarios. For instance, for SPDAs the suggestion was 10 years. Now if you look at one of the New York 7 scenarios, after 10 years there are no more interest rate movements. So the options embedded in the liabilities and the assets are now basically worthless. I could see many times where a company could be in a hole at the end of 10 years. Then if they went out to 30 years, everything would look fine. So I just was curious if you looked at it from a stochastic interest rate scenario approach, you may come out with a different projection period.

PANEL DISCUSSION

MR. PETER SMITH: The driving consideration wasn't the scenario paths themselves, but the period of turnover of assets and the fact that reinvestment assumptions would be very speculative on those lines of business after 10 years.