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## LIFE COMPANY VALUATION IN AN ENVIRONMENT OF CHANGE

*Moderator: CARL R. OHMAN. Panelists: ALLAN D. AFFLECK, GARY CORBETT,  
ROBERT A. MILLER, III. Recorder: JAMES P. GREATON*

1. Future trends in the regulation of life insurance company valuation
2. Responsibility of the valuation actuary - present and future
3. Needs of the valuation actuary - present and future
4. What the Society of Actuaries and American Academy of Actuaries are doing to serve the valuation actuary's needs

Two Discussion Notes follow this digest of the panel discussion:

"Thoughts on Future Trends in Life Insurance Company Valuation", by Robert A. Miller III.

Comments on above paper, by Robert J. Callahan

MR. CARL OHMAN: In 1980, the National Association of Insurance Commissioners adopted amendments to the Model Standard Valuation Law that are now enacted in essentially all jurisdictions. These included the dynamic interest feature that permits valuation interest rates applicable to new business to move upward or downward with interest rates available on new investments. The resulting change went a long way toward addressing the need of insurance companies for more flexible valuation standards, while still recognizing the need for companies to maintain reserves sufficiently high to minimize the risk that the company will not be able to fulfill its obligations to policyholders as they fall due.

While the 1980 amendments were an important improvement in the law governing minimum valuation requirements, they did not address the basic flaw in a valuation structure that measures the liabilities of a life company independently of the assets held by the company in support of its liabilities. Because the valuation law looks only at liabilities, we recognized in developing the 1980 amendments that compliance with the statutory minimum reserve requirements, with or without the dynamic interest feature, cannot be relied upon to assure that a company's reserves make a good and sufficient provision for the obligations of the company, and that the actuary signing the statement of actuarial opinion accompanying a company's annual statement will have to take into account the company's asset structure and other circumstances of the company in forming that opinion. We also recognized that we had not produced the ultimate valuation structure, one that values assets and liabilities on a consistent basis, and that our work would not be completed until we had produced such a structure.

Following adoption of the 1980 amendments, therefore, efforts to improve the valuation of life insurance companies moved in two major directions. First, if the Standard Valuation Law, as amended, is not the ultimate valuation law, then what should be the ultimate valuation structure, when do we get there, and how do we go about it? Second, if the actuary signing the statement of actuarial opinion accompanying a company's annual statement is expected to consider the company's asset structure, what does this entail and how does the actuary go about it? These two questions have been the major concern of the NAIC Standing Technical Advisory Committee on Dynamic Interest and Related Matters, the so-called Greeley Committee, and have been pursued by a variety of committees and task forces of the Society of Actuaries and American Academy of Actuaries since 1980. The aim of this panel is to give a current reading on these efforts and what they mean for the actuary signing the statement of actuarial opinion accompanying a company's annual statement, the company's valuation actuary.

A very important contribution toward developing a better understanding of both questions was a paper prepared for the Greeley Committee's Subcommittee on Surplus and Solvency last year by Robert A. Miller III, entitled "Thoughts on Future Trends in Life Insurance Company Valuation". That paper will be included as a Discussion Note in the Record for this panel discussion. Also included as a Discussion Note in the Record are comments on the Miller paper included in a February 21, 1984 letter from Robert J. Callahan, Chief of the New York Insurance Department's Valuation Bureau.

Bob Miller is the first speaker on our panel this morning and will share with us his thoughts on the future trends in life company valuations. Bob is Vice President and Corporate Actuary at Aetna Life and Casualty in Hartford. He is a member of the Society of Actuaries' Committee on Valuation and its C-3 Risk Task Force; also the Society's Committee on the Theory of Dividends and Other Non-Guaranteed Elements. He is a member of the Greeley Committee and its Sub-committee on Surplus and Solvency. He also chairs the American Academy of Actuaries' Committee on Qualifications.

With the increased reliance on valuation actuaries, both under current law and under any ultimate valuation structure, serious concerns were expressed among leaders of both the Society of Actuaries and the American Academy of Actuaries as to whether these organizations were doing all they could be doing for the valuation actuary. As a result, in late 1983, the Society and Academy formed a Joint Committee on the Role of the Valuation Actuary in the United States. That committee has been active over the past several months and is making a valuable contribution toward identifying the problems and needs of valuation actuaries and the directions the Society and Academy ought to be moving to address these problems and needs. An interim report of the Joint Committee has already appeared; its final report will be completed in the near future.

Our second speaker this morning is the chairman of the Joint Committee, Gary Corbett, who will share with us his thoughts on the work of the Joint Committee. Gary is Vice President and Corporate Actuary of Manufacturers Life Insurance Company in Toronto. He is a member of the Society's Board of Governors and the Society's Committee on Planning, in addition to serving as chairman of the Joint Committee on the Role of the Valuation Actuary.

An important part of this over-all effort has been the need for standards for determining who is qualified to act as valuation actuary for a life insurance company, the need to define more clearly the role of valuation actuary in relation to company management, directors, stockholders, regulators, and the public, and the need for professional standards of actuarial practice to be observed by valuation actuaries. These are concerns of the whole actuarial profession, and the American Academy of Actuaries has traditionally taken the lead in addressing them.

Our third speaker this morning, Allan D. Affleck, has played an important role in these various Academy efforts and will share with us his thoughts on what is being done. Allan is a Consulting Actuary, serving as Principal and National Director for Life Insurance Consulting at Milliman & Robertson, Inc. in Seattle. He is a member of the Society's Board of Governors, its Education Policy Committee, and its Committee on Valuation. Allan is chairman of the Academy's Insurance Subcommittee on Actuary/Auditor Relationships, a member of the Academy's Committee on Life Insurance Financial Reporting Principles, and chairman of its Task Force on Recommendation 7 having to do with standards of practice governing statements of actuarial opinion accompanying statutory life insurance company annual statements.

MR. ROBERT A MILLER, III: Carl has already told you a little of the background that led up to the writing of the Discussion Note that I want to talk about this morning. The name of the committee for which this Note was written is the Technical Advisory Committee on Dynamic Interest and Related Matters. As you know "Dynamic Interest" was embodied in the 1980 amendments to the Model Standard Valuation Law. The committee has had some time since its adoption of the 1980 amendments to turn its attention to the "Related Matters".

A couple of things that were going on about the time of the 1980 amendments became "Related Matters" for the committee to consider. One was that in October 1979 the Federal Reserve Board ended its direct regulation on the interest rate in the United States. I think that you are familiar with what happened after that. Also, about the same time, single premium preferred annuities became a hot product and Universal Life started to show up on the scene. So the related matters that we had to think about, in effect were, how these changes in the economic environment and these changes in life insurance products would affect valuation regulation. This task was assigned to the Committee's Subcommittee on Surplus and Solvency that Carl's already referred to. What we did was write that discussion note. It was a cooperative effort of that subcommittee.

I'm going to concentrate this morning on just two sections of the Discussion Note. The first deals with the basic requirements of valuation regulation as I see them. The second says a little about how cash flow analysis can be used in forming an opinion as to whether a company's reserves actually do make good and sufficient provision for paying the company's obligations as they mature.

Of course the primary purpose of any valuation regulation is to help assure the solvency of insurance companies. The best way of doing that is to assure that there is conservatism involved in the valuation of companies.

However, regulation is not feasible if it puts impractical administrative and technical burdens on companies' abilities to collect and analyze data.

Also, regulation is not enforceable if regulators cannot, in fact, tell objectively whether the company is complying with the regulation.

Regulation should create and maintain an environment in which companies can underwrite needed coverages at affordable prices and develop profits that will enable the companies to attract capital. I'm talking here a little from the point of view of a stock company, but you have to have profits no matter who you are, and so this consideration applies to all companies.

Regulation has got to be theoretically sound; that is, regulation must be consistent with the theories of actuarial science as they apply to the forms and scope of coverage involved in the markets in which they are offered.

Regulation takes place in a specified accounting context. Today, valuation regulation takes place in the context of statutory accounting, but other accounting systems are possible.

Finally valuation regulation should be consistent across lines of business. If it isn't, some lines will have built in advantages over other lines in the areas of affordability and profitability.

I now want to go to the second part of this discussion and talk about cash flow analysis. At the outset, I will need to define a few terms.

Contractual cash flows for the purpose of this discussion, include benefit payments, expense payments and premium payments. Investment cash flows, of course, include payments of investment income, repayments of principal, proceeds from the sale of assets, proceeds from borrowing and some other items.

The traditional concept of present value uses a single interest rate. In cash flow analysis the interest rate is going to vary over time, so the concept of present value has to be expanded. Here, present values are calculated under the assumption that net cash flow is invested each year in suitable vehicles at currently prevailing rates.

This leads to what I call the concept of economic strength which is defined along a given experience path. This implies that there are several "economic strengths" for any given company and that economic strength is a function of several stochastic variables. These variables reflect the influence of differences between actual and expected benefit

payments, distortions to cash flows resulting from asset default, and the effect of changes in the level of interest rates. This last variable has a direct effect in that changes in the level of interest rates influence the actual calculation of present values, and consequently economic strength, and it has an interactive effect, which is very important, in that changes in the level of interest rates influence the actual cash flows themselves. Specifically, rises in the level of interest rates will increase the rate of cash out flow; declines in the level of interest rates will increase the rate of repayment of principal.

I look upon these variables as the actuarial risks that are faced by an insurance company. There is also a non-actuarial environment affecting measures of economic strength. A couple of examples will give you an idea of what I mean by that. The potential for change in the Federal income tax law is a form of regulatory risk. The potential for the entry of banks into the sale and underwriting of insurance is a form of competitive risk.

Having set up a few definitions, I now want to talk about cash flow analysis and how to actually determine a company's economic strength.

The first step, of course, is to make year by year projections of receipts and disbursements on several different experience paths -- note I use the term experience paths, not just interest paths. You can make direct comparisons of these cash flows along the various experience paths and get some key information out of just a simple look at the summary. It is apparent that if there is negative cashflow in any year there may be a problem in covering the negative flow. It's also true that if cash flow in a given year is positive and unusually large, there may be a substantial reinvestment risk.

Another helpful step in analyzing cash flows is the calculation of "duration" of the net cash flow, which is related to the calculation of the first derivative of the present value relative to the interest rate. This "duration" in effect measures the sensitivity of the present values, or economic strengths, to changes in the interest rate. In other words "duration" is a pretty direct measure of the degree of exposure of the company to loss from changes in the level of interest rates.

As I've already said, in making your cash flow projections you have to take into account the interactive effect between interest rates and withdrawal rates, and between interest rates and repayments of principal. It is useful to assume some kind of formal functional relationship even though you don't have any real good idea as to precisely what that might be. Eventually experience will tell you what may be useful.

One possible help in the analysis of cash flows is to classify contracts into three broad categories each with distinct cash flow characteristics -- term insurance, installment payments, and accumulation accounts. Conventional forms of ordinary life insurance, as well as the newer forms of universal life and single premium deferred annuities could each be analyzed into their basic elements of term insurance and accumulation amounts.

Cash flow analyses of universal life, single premium deferred annuities and similar forms of contracts involve a new question and that is how interest crediting strategies can affect the persistency rate. Once again, it would be desirable to set out some kind of formal relationship there.

Of course it's all right to use an aggregate approach to cash flow analysis, taking into account all the company's contractual cash flows and all of its investment cash flows. If you do use a classification process, analyzing cash flow separately by type of contract, you are going to have to find some way to allocate the company's investment cash flows to types of contracts. A percentage of overall investment cash flows should be allocated to each contract or to each class of contract. When you do that, you have to make sure that the percentages don't add up to more than a 100%. Alternatively, there is the segmentation process in which specific sets of contracts are identified as being supported by specific sets of investments. The segmentation process offers a very good way to better control the match of investment cash flows with contractual cash flows, and consequently, better control the degree of exposure to loss from changes in the level of interest rates.

Completing such analyses of cash flow will indirectly define the amount and character of assets needed to provide for reasonably likely adverse deviations in the company's contractual and investment cash flows, or what I like to call the routine risk that results from exposure to the combination of the actuarial risks - the risk of loss from asset default, inadequate pricing, and changes in the level of the interest rates. This enables the actuary to form an opinion as to whether the reserves for his company make good and sufficient provision for paying its obligations as they mature.

This definition of routine risk suggests that there is also non-routine risk to be considered, which I like to call disaster risk. A large part of the company's surplus must be devoted to the management of this non-routine, or disaster, risk. Examples of such disasters are the depression of the early 1930's, the influenza epidemic of 1918 and 1919, and, to borrow from the casualty insurance industry, the asbestosis losses faced by the property/liability business. Of course there's no general formula for determining the amount of surplus needed to manage disaster risks. That amount has to be determined on the basis of judgment.

As I have already said, the valuation actuary tries to assess what is needed to manage routine risk for those having the responsibility for the success or failure of the company.

Regulators are going to have to satisfy themselves as to whether the valuation actuary has adequately measured routine risk and they are going to have to satisfy themselves as to whether the level of surplus which management has decided will be held is enough to make the company solid. Solidity implies an ability to withstand adverse deviation of a substantial amount.

Investors have a role in this process too because they are the ones who decide whether the company's profitability is enough to attract capital.

You can tell from what I've said that I think that it is no longer appropriate to set life insurance company reserves by some simple mechanical process and that I also think that a lot of work still needs to be done in the development of suitable valuation techniques in terms that are understandable to actuaries and management and regulators. Society, Academy, industry and NAIC committees are doing a lot of work in this area. All of us need a lot of help from all of you. A good example of the kind of help that is needed is the letter from Bob Callahan of the New York Insurance Department commenting on my Discussion Note which I understand will appear in the Record for this session too. If you have some thoughts that you would like to contribute, we would certainly like to hear from you.

MR. GARY CORBETT: My assignment this morning is to talk about the work of the Joint Academy-Society Committee on the Role of the Valuation Actuary in the United States. I'm going to start with some of the background for this committee, although I want to spend most of the time describing the probable contents of our final report. The final report, due on June 30, now in first draft form, will be acted upon by the Boards of the Academy and Society at their Fall meetings in October.

I would emphasize, as Bob did, that we're still interested in comments. We need a lot of help in this area and comments we hear today, or any communications you might want to send me within the next few weeks, could possibly effect in some way the recommendations that are contained in our final report. As I talk about our recommendations, keep in mind they are only tentative and there is still a chance within the next month that they might change.

The Joint Committee is not the first committee to look at and investigate the general problem of valuation and the role of the valuation actuary in the United States. We've had the Society's committee on Valuation and Related Problems which got started back in about 1977 under Charles Towbridge and is now chaired by Don Cody. It is best known of course for the task forces, and the best known task force is the C3 task force which has been chaired by Carl Ohman for a number of years.

The second group working on the valuation problem has been the NAIC Technical Advisory Committee, chaired by Charles Greeley. This Committee was originally established to deal with issues arising out of the 1980 amendments to the Standard Valuation and Nonforfeitive law. It has since realized that we really have to start addressing the valuation system of the future and I think probably it was under this committee that we first started to hear about the valuation law for 1990. Probably the most important subcommittee of this committee for addressing the valuation system of the future has been the Surplus Insolvency Subcommittee under Walt Rugland.

We also have the Academy's Committee on Life Insurance Financial Reporting Principals which has had their feet much closer to the fire. These other groups can talk theory to a greater extent but the Academy committee has had to deal with issues that have come up. For instance the latest NAIC proposal for the actuarial opinion for interest indexed Universal Life policies has had to have been dealt with. I won't go further into the Academy area because Allan will be discussing that.

It's fair to ask with all these other organizations looking at the subject, why the need for another organization, such as the Joint Committee? I would like to suggest two or three reasons. First, although there seems to be a lot of discussion, some of the people in these groups were concerned that they were having very little impact on the practicing valuation actuary. How could we move all this research into the domain of the practicing actuary so he could use that information? And secondly, specific proposals had to be generated for changing the basis of valuing life insurance companies. And I think over and above that there was some feeling that the profession was not really organizing itself to deal with this problem in any comprehensive way.

This is where I came into this picture. I'd been a member of the original Society Committee on Valuation and Related Problems way back in the mid 70s, but had been away from the subject and returned to the problem through the Society's Committee on Planning. That Planning Committee, in 1983, identified a number of issues that should be of long range concern to the Society. Two of ten issues identified were the profession's lack of support for the valuation actuary and the overriding question of what was the Society's role, primarily vis a vis the Academy, in the development of actuarial principals. It had been accepted for some time that the Society was not going to get involved in the development of standards of actuarial practice, but it was not at all clear what the Society's appropriate role should be in the development of basic principals. Fortunately these two issues have received a great deal of attention this year because Dwight Bartlett, our present President, who as President Elect had been chairman of the planning committee, also considered these two items to be the most serious of the ten. Therefore it was very easy to persuade this year's planning committee to permit me to set up a task force to decide how the Society should go about addressing the valuation actuary issue. I contacted a number of people who I knew had been working on the subject, Walt Rugland, Don Cody and so on, and we agreed that what was needed was a joint Academy-Society Committee which would have the charge of recommending to the sponsoring bodies the appropriate role for the valuation actuary in the United States, the general principals that should underlie the valuation of life insurance companies for solvency and solidity purposes and how the profession should organize to support that new valuation system and the valuation actuary.

The joint committee was established in December 1983 with John Fibiger, Walt Rugland and Virgil Wagner representing the Academy, and Don Cody, Burt Jay and myself, as chairman, representing the Society. I had attempted to disqualify myself as chairman by moving to Canada in the



interim but this ploy was not successful. I would say it's made absolutely no difference as we've carried on our discussions which group actually appointed us; we're all members of both the Academy and the Society and I have to look this up every time to find out who is appointed by which body.

It has been a very active committee. We've been meeting monthly since we've been formed. We've concentrated on developing recommendations in the two major areas, the new valuation system and the role of the valuation actuary, but we've also addressed the question of how to support today's valuation actuary. For the former subjects our main recommendations are probably more in the 1990 area but meanwhile as you all know we have problems today.

In all our work we have been addressing only the statutory valuation of life insurance companies. That is a fairly broad subject, it has to encompass all the products being written by a life insurance company which includes health insurance. We have not addressed valuations made for other purposes such as GAAP or acquisitions.

One of the things we did early on in our tenure was to solicit comments from Society members through an article in the Actuary. I guess our experience was typical of most committees that try to get general input from Society members. We had two responses, one dealt with the relationship between pricing and valuation actuaries, and the second with whether there should be a requirement for continuing education.

I'll now describe the two major tentative recommendations of the joint committee. I believe that our final report will be prepared in time to appear as part of the record of this panel discussion. Our first recommendation deals with the role or position of the valuation actuary. We are recommending that the Board of Directors of each life insurance company be required to appoint a Valuation Actuary. Such appointment would be reported to the state regulatory authorities as well as any changes in that appointment. Qualification standards to practice as a Valuation Actuary would be established by the Academy and accountability would be insured through standards of professional conduct and disciplinary measures. Such standards must address the problem of assuring that the Valuation Actuary remain knowledgeable concerning current valuation principles and standards of practice. On the basis of the standards established by the Academy the individual states would determine whether an actuary does indeed qualify as a valuation actuary for that state.

We regard this recommendation as a middle road between the status quo where the actuary responsible for valuation is part of the management structure, and a requirement for complete independence of the Valuation Actuary from the company and its owners. This recommendation, which you'll recognize as closely paralleling the set up in Canada, will, we believe, provide the regulators with sufficient assurance as to the Valuation Actuary's objectivity while not exposing the companies to substantial additional cost nor to the vagaries of an unreasonable Valuation Actuary.

This was the easiest of the recommendations to deal with. A much more difficult recommendation was to come up with a basic set of principles that we believe should underlie the valuation of life insurance companies for solvency and solidity purposes. I'm using those terms the same way as Bob Miller did. And I'm going to emphasize here we're only dealing with basic principles, we have not attempted to detail these principles in any way. I'll mention later how we expect those basic principles to be fleshed out. We believe that ultimately the valuation actuary must be responsible for the selection of assumptions and the establishment of reserves appropriate under the circumstances. Guidelines for selecting the assumptions and making the calculations would be provided in the form of principles contained in actuarial literature and standards of practice promulgated by the actuarial profession. We believe that the availability of such principles and standards along with the qualifications standards for the valuation actuary and his relationship to the management and regulators which I described earlier should provide regulators with the confidence needed to accept the valuation actuary's determination of the appropriate reserves.

However until such time as comprehensive valuation principles and standards have been developed we believe that legal minimum solvency requirements must continue to be defined. After all the determination that a company is statutorily insolvent carries rather severe implications.

We are proposing that, in addition to the legal solvency standard a statement of actuarial opinion would be required from a qualified designated Valuation Actuary that would deal with both reserves and surplus in the following manner:

First: The opinion with respect to reserves would essentially say that the reserves established and the related anticipated insurance and investment cashflows make a good and sufficient provision for all future policy obligations on a reasonably expected basis. (We've not defined yet what we mean by reasonably expected, but I think it's probably a confidence level in the area of 90-95%.)

Unusual contingencies would not be covered by this basic reserve opinion. Those type of contingencies are covered by the second element of the opinion which is the opinion with respect to surplus.

And, second: This part of the opinion would say that such reserves and additional available surplus together with related anticipated insurance and investment cashflows make a good and sufficient provision for all future policy obligations on a basis to cover future plausible fluctuations from expected assumptions. (Perhaps a 98-99% confidence level.)

The first opinion, the reserve part, would initially be superimposed over the statutory solvency requirement and could require that additional reserves be established on the balance sheet. There is some debate today within the profession whether that's indeed the requirement today or

whether an actuary signing the statement today can say that the reserves make good and sufficient provisions if the reserves meet the statutory minimums. We would make it clear in this opinion that if the actuary believes that additional reserves must be established they must be set up. But to satisfy the second part of the opinion, the opinion on surplus, the necessary amount of surplus would simply have to be recognized by management and this amount, along with the basis of its determination, would be available for review by regulators, but would not be required to be published in financial statements. In other words this amount would have to be recognized as restricted by management, but the amount of such internally appropriated surplus would not be available to anybody outside of life insurance company management and the regulators. Documentation of the basis for the opinion, both the reserve and the surplus portion, would be provided in the Valuation Actuary's report to management and to the Board.

We regard the need for statutorily prescribed minimum solvency standards to be temporary. In time when confidence in the protection afforded by the actuarial opinion becomes firmly established, the Valuation Actuary would be fully responsible for selecting assumptions for both the reserves, without reference to statute or regulations and for the additional surplus. At this stage of evolution, the Valuation Actuary's report, which would be submitted to Life company management and to the Board, would also be submitted to regulators on a confidential basis.

That's the essence of the recommendations. Let me now provide you with some of the reasoning behind those two recommendations. We don't believe that valuation requirements appropriate for all products under all circumstances cannot be prescribed by statute or regulation. This might have been possible in the days of traditional products and more stable economic environments, but not today. Judgment by an actuary knowledgeable about the specific product, the situation of the company and possible future economic environments is absolutely necessary in order to calculate reserves.

The calculation of reserves, of course, must be based on sound actuarial principles. And today we would admit that the actuarial profession has generally not identified or promulgated these principles. We really can't expect regulators to accept a new valuation system when one of its major building blocks is not yet in place. But until we require actuaries to go beyond the statutes in valuing life insurance companies it's unlikely the necessary energies will be devoted to the tasks of developing these valuation principles. So we have something of a "chicken and egg" problem here. We're hoping to break into this cycle by superimposing the requirement for a Valuation Actuary's statement of opinion on top of statutory solvency standards, and we expect that this will give rise to the development to the valuation principles. Our hope and expectation is that within a few years sufficient principles, and the associated standards, will have been developed and promulgated that it will be generally agreed that reserves based on such principles and standards should replace those based on outmoded and inflexible statutory standards. We do believe that so long as statutory standards exist, it

will be more difficult for the valuation actuary to insist that a company set up reserves in excess of those standards. Therefore, somewhat paradoxically, statutory standards may well lead to lower reserves than would be the case if there were no statutory standards.

Before I leave the subject of solvency valuation I want to point out that a statement of actuarial opinion by a valuation actuary, even assuming appropriate confidence and independence and regardless whether statutory valuation standards exist, will not necessarily prevent a company from becoming insolvent as a result of current, let alone future, unsound business practices. We must be careful not to overpromise what an actuary can do. Audits, both internal and external are necessary to assure the accuracy of asset and liability information. One of the more difficult problems that the Academy Committee charged with establishing standards of practice for the valuation actuary must address is the question of the appropriate scope of the actuarial opinion. For example, to what extent should it cover the accuracy of in-force policy records or the quality of specific investments?

The remaining charge to our committee was to make recommendations concerning what is necessary to effect and support the role of the valuation actuary in the context of the recommended new valuation system. In particular, we would recommend the relative responsibilities of the Academy and Society in effecting and supporting this role. Our recommendations, according to our charge were to cover laws and regulations, research, education and training, and principles or standards of practice.

So far as laws and regulations are concerned we certainly appreciate that our recommendations would call for extensive revision to the laws and regulations of all the states. We recognize that such revisions can occur only with the support of the NAIC and of the life insurance industry. We would look to the Academy, probably through its Committee on Life Insurance Financial Reporting Principles, to draft the necessary changes to establish the position of valuation actuary and the requirement for a statement of actuarial opinion. Actually, as Allan will tell you, the Academy has already started on the task. But very close coordination with the NAIC technical groups and the appropriate ACLI committees will be required.

Research necessary to support the Valuation Actuary will be the responsibility of the Society. We're recommending that such research be coordinated by the new Society Committee on Life Insurance Company Valuation Principles. This is a new committee that our joint committee recommended to the Society Board be established. The Society Board has given authorization to the President to appoint such a committee.

Education and training is clearly the responsibility of the Society and must address the needs of both students and practicing actuaries. The E and E committee must provide appropriate education in the principles and standards governing the valuation of life insurance companies to all prospective FSAs who will be called upon to provide actuarial opinions on such valuations.

A greater need for some years will be to educate valuation actuaries, who were not exposed to the new valuation system in their formal education, in both the principles and standards of the new system. That probably applies to all of us here in this room. The basic responsibility for such education lies with the Society's Services to Members Policy Committee, working closely with the Committee on Life Insurance Valuation Principles and with the appropriate Academy committees.

We believe that principles, or tenants of actuarial science can be distinguished from standards of actuarial practice. The learned bodies, such as the Society and CAS are responsible for the principles or tenants, and it is the Academy, or the CIA in Canada, which is responsible for the standards of actuarial practice. One of the concerns of the Society's Planning Committee was the determination of actuarial principles generally. One of the results of our committee was that we recommended to the Society that they appoint what is now a Task Force on Actuarial Principles. That task force is looking into the Society's general role in defining what is a principle, and how the Society should generally go about determining principles in wide areas quite beyond valuation. Returning to valuation, the development of principles will be the responsibility of the new Society Committee on Life Insurance Company Valuation Principles. Our Joint Committee's recommendations, when adopted by the Academy and Society Boards, will form the basis for the work of this new committee. The resulting principles that come out of this committee should be applicable to both Canada and United States, but the standards necessary to implement the principle might well vary by country.

Looking at the United States the organization responsible for standards of actuarial practice in this country is the Academy. It undertakes to codify, publish and manage, generally observed and acceptable practice through the promulgation of Recommendations and Interpretations. The Academy's Committee on Life Insurance Reporting Principles is a body currently responsible for codification in the area of life insurance company valuation but this role could eventually be assumed by the proposed Actuarial Standards Board. We have reviewed the activities under way within the Academy relating to standards of practice, qualification of standards, and relations with accounts, and we have determined that these activities are consistent with our recommendations.

Those are the specific Academy and Society committees we see dealing with this problem. We do think there is probably a need for a continuing or standing joint Academy-Society committee to coordinate the work of these designated Academy and Society committees and also to communicate and coordinate with other organizations such as the ACLI and NAIC. I think our only hesitancy in recommending such a group is that likely the membership is going to be drawn from the same group as the existing joint committee and we'd like to bring some other people into this process.

This concludes my summary of the actuarial recommendations that will probably be contained in our final report. I did mention that we felt one of the things the Joint Committee should deal with was to provide assistance to today's valuation actuary. Most of the things I mentioned

today you will recognize as having a strong future orientation. There's not likely to be much specific coming out within the next year or so. We have undertaken a number of activities which I will list briefly and if you're interested in the specifics of any of them you could certainly ask about them later.

First of all we've distributed, under the auspices of the Society's Services to Members Policy Committee, a 7-page memo, written by Don Cody, which summarizes the literature developed by the Society's Committee on Valuation and Related Problems and materials available from other sources. This material was sent to one actuary in each company or other organization. We've worked with the Financial Reporting Section and they are going to be sponsoring a one-day open forum for Valuation Actuaries in Chicago on October 3. The response to the preliminary mailing for this mail form was very encouraging. And finally we've recommended to the program committee and to the Financial Reporting Section that this section be responsible for the entire program at next May's Society's meeting in St. Louis, with one track of the program will be devoted to valuation.

This completes my report on the activities on the Joint Committee on the Role of the Valuation Actuary in the United States and I'd be certainly very interested in hearing your questions or comments, either at the conclusion of this meeting, or you can send them to me at my year book address.

MR. ALLAN D. AFFLECK: When we began to plan this session back in January it seemed fairly easy to divide the program topics among us. Bob would cover the future trends in valuation. Gary's Joint Committee was really just getting started and we didn't know what ground it was going to cover in the next 3 or 4 months. I would review what the Academy is doing today. Somehow all three of these activities have come together. The future doesn't seem so far away now and it really is meshing with what we are trying to accomplish today. Gary's committee has brought a lot of the work that is going on in different areas together and it is a very positive feeling to see this reinforcement.

Carl and Gary have mentioned several areas of activity of the Academy and what I would like to do is pick out two or three of these and cover them in a little more depth. The first issue I plan to talk about a little more is the Valuation Actuary, in the sense of its formal structure as Gary described it.

The Academy has a Committee on Relationships with Accountants and I am chairman of the Insurance Subcommittee on Actuary and Auditor Relationships. Our subcommittee recommended, and the Academy executive committee endorsed, just on May 10, a series of steps to improve the formal position of the Valuation Actuary. I will briefly review these and describe what is going to be involved in implementing these steps. Generally there are three broad recommendations.

The first is that we recommend to the NAIC a series of three steps. Step one is that the Board of Directors of each life insurance company be required to designate a Valuation Actuary. The second is that the statement of the Valuation Actuary's opinion be printed in the statutory convention blank and become a fixed part in that blank. And thirdly, that the statement of actuarial opinion be required to be included in any published financial statement reporting statutory results. In any case where a summary of the statutory financial statement is distributed, the summary would state that a statement of actuarial opinion has been prepared and would identify the appointed Valuation Actuary. This first broad recommendation with its three steps is being taken to the NAIC meeting this weekend and we hope it will be received in a positive way.

The second recommendation is for the Academy to initiate a cooperative effort among the NAIC, the accounting profession and the Academy to define the respective roles of the Valuation Actuary and the auditor in those states which require a CPA audit of statutory financial statements. I believe there are 8 or 9 states that require such a CPA audit. The roles of the actuary and the auditor should be defined to involve as little overlap as possible. The actuary would be responsible for the actuarial items as defined and the auditor would be responsible for the traditional auditing functions including verification of the inforce records. The opinion statements of each party would be made without express reliance on the work of the other. A paragraph disclosing the respective role of the auditor and the actuary would be provided by management as part of its report or as a note to the financial statements. The qualifications of each professional would be verified by the other and standard procedures for each function would be developed, accepted by both professions, and codified.

The third general recommendation would be to request the Academy's Committee on Life Insurance Financial Reporting Principles and its Committee on Qualification Standards to review and revise the current standards to develop appropriate standards for the work product necessary to support the Valuation Actuary.

Just a few observations, maybe even concerns, about these recommendations. The climate within the industry and among regulators seems receptive to the concept of the Valuation Actuary because of the regulators' increasing concern over asset/liability matching in particular. The regulators are certainly looking for something more in this area and we believe the actuarial profession can respond to their needs.

As Gary has pointed out, the concept of a formal Valuation Actuary requires model regulation or legislation itself, and that is a step the Academy would lead. It is important to obtain support for the Valuation Actuary concept before we move ahead. If there is a positive reaction to the idea at the NAIC this weekend, then the next step will be to obtain broad support within the profession, the industry and the NAIC. It seems to us that in order to achieve passage of any model legislation or regulation it is likely that the Academy would need to re-establish grass

root support at the local state level of the type we had when the current statement of actuarial opinion was adopted in 1975. At that time there was an Academy liaison representative in many individual states working with the local insurance department to obtain passage of the legislation. We think an effort like that will be required if the Valuation Actuary concept is to be implemented.

With respect to the suggestion that the opinion be printed in the blank itself, this would need to be implemented by the NAIC Blanks Committee and again the Academy would take a lead role in trying to achieve that. In the matter of reference to the Valuation Actuary in statutory financial statements to be published, again model legislation or regulation is required. In Canada, there is a paragraph in the insurance law which states: "in all financial statements published by the company showing the financial position of the company, such financial statement shall include a statement of the opinion of the Valuation Actuary that the reserve makes good and sufficient provision for all the obligations." That is the type of wording that we think would need to be introduced through model legislation in the U.S.

So much for the formal structure of the Valuation Actuary concept. That is important but in the long run the most important impact will be the quality of our work and the quality of the opinions that are expressed by actuaries. At the Interest Sensitive Seminar on Wednesday I gave a review of the history leading up to the development of the model regulation on universal life, particularly the actuarial statement of opinion required for interest indexed universal life. I will not review that again - those of you interested may read my comments in The Record. The fact is that the NAIC has adopted the model regulation, including the statement of actuarial opinion, and in response the Academy Committee on Financial Reporting has developed a draft Recommendation 11, which was sent to all Academy members along with supporting Interpretations. We really do seek your comments on this draft. If your company does not write interest indexed universal life, please do not put the draft to one side - please read it and think about it in the broader context of how you would feel about that Recommendation if it applied to your entire company. Give us your comments on that basis. The Academy Committee on Financial Reporting was able to work with the Industry Advisory Committee to have the statement of actuarial opinion worded in a manner that we feel the actuarial profession can live with, and we need feedback from you on these proposed Recommendations and Interpretations.

Our experience suggests it is very important to work with the NAIC, or its advisory committees, at a very early stage in their process. If the NAIC feel they want to have a broader statement of actuarial opinion about cashflows for an entire company, we would like to provide a first draft, rather than being in a position of just reacting with comments, suggestions, etc. to a first draft developed by somebody else. The approach we are taking is to formally go on record with the NAIC to let them know that if they decide to expand the current statement of opinion we, the Academy, would like to work with them in developing the new opinion.



What I would like to do in the balance of my time is pursue in some depth the Recommendations and Interpretations that might emerge in the future, if the current statement of actuarial opinion is extended to include cashflow comparisons of liabilities and assets. These are not final, we have been working on drafts for our next meeting in July, but I hope that with one or two more meetings we will have a version ready to expose to the membership. A lot of the timetable will depend on the kinds of comments we receive on Recommendation 11 and the discussion that takes place at meetings like this.

Let me begin by talking a little about the scope. In the statement of opinion of the future there will be some traditional comments such as the provisions of the policies, the reinsurance agreements that might be in effect, etc. But much more importantly, future opinions will include a statement on the characteristics of the assets and the company's investment policy. I would just like to read a portion of what might be in a new opinion. "I have considered the characteristics of the company's assets and the investment policy adopted by the company as they effect future insurance and investment cashflows under the policies and assets. My examination included such tests and calculations as I considered necessary to form an opinion concerning the insurance and investment cashflows." Then there is another statement that, "the tests were conducted under various assumptions and paths of future interest rates and particular attention was given to those provisions, and characteristics, that might cause future insurance and investment cashflows to vary with changes in the level of prevailing interest rates."

In addition to the option that the actuary now has to say that he relied upon someone else in the company for listings and summaries of policies in force, the new opinion allows the actuary to rely on the value of the company's assets as determined by the chief financial officer and shown in the annual statement, and on the investment policy of the company as provided by the chief investment officer of the company. That is an optional reliance statement that can be included if the actuary wishes to do so.

The heart of the opinion is the following wording. This is what the actuary would be signing in the future. "In my opinion the anticipated insurance and investment cashflows arising from the company's policies and assets make good and sufficient provision for the contractual obligations of the insurer." That says a lot when we are referring to the entire company. This is a requirement that would be superimposed on top of the current requirement to state that reserves meet statutory provisions.

To arrive at this opinion, the actuary would consider the nominal asset values that support the statutory reserves, use best estimate assumptions to do his cashflow testing and, if the reserves are adequate, he would express his opinion. The other part of the test would be to determine whether the company has enough surplus to handle plausible variations in future experience. The degree to which the company's surplus would be needed to provide for these plausible variations would be

disclosed in the actuary's report to management. We talked a long time about the disclosure that should be required and this is where we ended up, but this is one of the items on which we would appreciate your comments.

To put this issue in perspective, let's consider a company that has \$100M of assets, \$90M of statutory reserves determined on a simple formula (reserve factors as currently used) basis, and \$10M of surplus. In one case the actuary does his testing and finds that the \$90M of assets is adequate. In other words the cashflow from that \$90M and future premiums is adequate to meet the cashflow out under best estimate circumstances. Then the published financial statement would contain the actuary's statement of opinion. If his testing showed that under plausible deviations in experience that perhaps \$3M of the \$10M would be required in addition to the \$90M, that would be included in the report to management but not in the published financial statements. If in a second company \$9M of the \$10M of surplus would be needed in order to satisfy the actuary that there was adequate provision for plausible deviations in experience, the published financial statement would again contain the actuary's opinion that the cash flows are adequate and make good and sufficient provisions for future contractual obligations. The actuary's report to management would show that \$9M of the \$10M is required to meet plausible variations in future experience. In a third case, if the \$90M itself is not adequate on best estimate assumptions, the actuary would have to increase the reserves, for example, to \$92M. Then there would be some additional portion of the surplus that might be required for plausible deviations in experience.

I would like to move on and review some of the draft Interpretations that accompany this new actuarial opinion. The Academy's year book contains the Recommendations and Interpretations that apply to various areas of actuarial practice. The ones that we are dealing with are the current Recommendation 7 and the Interpretations that support it. I believe Interpretations developed in the future will be more extensive and provide more guidance to the practicing actuary. I will review some of the guidance we anticipate would be available if the current opinion is expanded to include cashflows. The Interpretations themselves are intended to amplify the Recommendations. The Recommendations deal in areas of principle, while the Interpretations get into the details of practice and our intent is to provide as much guidance as we can. Particularly as we move into new area like this, we want to provide as much direction as possible. Again we would be interested in your comments and whether you think the Interpretations provided for the new Recommendation 11 go far enough in that direction, whether you think they have gone too far in terms of restricting the actuary's professional judgment or whether we should go even further. So again, I encourage you to look at Recommendation 11 and the Interpretations not just with a view to interest-indexed universal life but with regard to your entire company.

In projecting the insurance cashflows we identify a number of parameters that should be considered on the liability side, but I think since we are all used to doing liability projections I will not dwell on

those. In projecting investment cashflows the actuary should pay particular attention to the following characteristics of the assets that can affect cashflows.

1. The types of investments and whether future investment cashflows are fixed or variable. Examples: equity features that might exist in the investments.
2. He should pay particular attention to the amounts and incidence of scheduled or expected investment earnings and expenses.
3. The amounts and incidence of scheduled repayments of principal.
4. Early repayment provisions, due to call provisions for example.
5. The expected marketability of the investments, for example, private bonds and mortgages versus public issues.
6. Expenses, premium tax, and other income taxes applicable to investment operations.

Each of these factors should be examined to determine the extent to which future investment cashflows may vary due to changes in the prevailing level of interest rates. For example, as interest rates fall non-scheduled repayments of principal may be expected to rise, and the opposite may happen in a different interest environment. So again the actuary, along with the chief investment officer, will have to make assumptions about all these areas, and for many of us that will be taking a step beyond the types of assumptions we have had to make in the past. The projections of investment cashflows should include investment earnings and repayments of principal, not only from the invested assets, but also from assets to be acquired after the valuation date. The opinion is with respect to existing business and does not deal with assets from new policies. It does, however, include assets arising from future premium deposits on existing policies. This requires an explicit assumption in the projections as how net positive cashflows will be invested in the future, with particular emphasis on the durations of such investments and the extent to which the durations of future investments may vary with the level of interest rates at that time. That is why we have to consider the insurer's investment policy and why that is an important part of the filing requirements that we recommend accompany the new actuarial opinion. Similar assumptions are also required for investment rates and durations of borrowed money if the cashflow becomes negative at some point in the future. We would point out that the cost of borrowed money is generally (although not always if borrowed within the company) greater than the prevailing interest rates that can be earned. To the extent assets are assumed to be sold, either to cover future negative cashflows or for other reasons, an explicit assumption about the capital gains or losses and taxes thereon needs to be made.

Another area of guidance is in talking about the levels of investment earnings and again I will read from a part of the Interpretations. "It is not expected the actuary will be called upon to express an opinion with regard to the underlying quality of the assets and with regard to the risk of asset

default as to interest and/or principal." We do not want to place the actuary in the position of making a judgment about the quality of the assets, however, we do say "it is expected the actuary can rely on the company's valuation of assets but he should consider whether it is appropriate to include provision for the risk of default on interest or principal repayment". This is another area for the actuary to review and perhaps include a specific provision for risk of default.

Among the most important assumptions in the projections are the various paths of future interest rates to be tested. Testing on a single path of future interest rates, even if that is deemed the most likely path, is not enough. Similarly a simple extrapolation of recent interest rates is not enough. Several different paths need to be tested in the actuary's projections. The paths of interest rates should extend far enough into the future to provide for the major portion of the runout of cashflows as of the valuation date. Paths to be tested should include at least one with future interest rates significantly higher than those on the valuation date, and one with rates significantly lower. A useful test is to assume paths with rates increasing during the period immediately following the valuation date followed by decreasing rates and then to repeat this cycle. Also the opposite is useful, with rates decreasing initially and then coming back up. Tests should cover as many alternative interest rates paths as the actuary deems necessary to generate an understanding of the dynamics relating the insurance and investment cashflows.

There are other aspects of the Interpretations that I could touch on but I think it would be more helpful to us if we could close our formal presentation at this point and invite questions and comments from those in the audience.

MR. MICHAEL J. KINZER: I have a couple of questions for the panelists:

1. What is the earliest time frame that some of this could come about?
2. Eventually it would be up to the Valuation Actuaries to set up the minimum valuation standards. However the Federal government is passing a new tax law which is going to mandate minimum reserves based upon the 1980 amendments. So is anybody dealing with the Federal government in making the tax law consistent with these valuation standards?

MR. CORBETT: Those are couple of zingers. I don't know how long it will take for these changes to come about. It's not going to be a short term process. It really isn't dependent just on the actuarial profession but also on the support we get, both from company management and the NAIC. There is some, perhaps surprisingly strong support within the NAIC. The problem is that I don't know how much this support is concentrated amongst the technical people in the NAIC. Then again it's one thing to get what I call the knowledge people in the NAIC in support and it's another problem sometimes to actually get the legislation passed in the individual states.

As to your second question, the fact is that the current tax law relates to specific minimum valuation standards that are laid out in that law. As professional actuaries, perhaps as opposed to company management, if we believe specific statutory or regulatory standards are fatally flawed and cannot protect the solvency and solidity of companies, they must be done away with. Now something will have to take its place from a Federal tax point of view. It's been suggested that the IRS certainly does not mind writing regulations and this might be another area where we might find some regulations. They might prescribe some minimum valuation standards and the concern is that they might be very minimum.

MR. AFFLECK: Just a comment on the timing. I think I might break it down into two pieces. The first step, the Valuation Actuary, the formal position and some of the things that we said would go along with that, will take more time because it is a relatively new concept and we will need to gain broad support among many groups. The timing of the second aspect, the extending of the current statement of actuarial opinion to include cashflows, is difficult. I don't know that I could project the timing but I think it would be practical if the NAIC, practical from their side that is, to adopt something as early as December of this year to apply the financial statements as of December 31, 1985. One of the concerns I had in working on the universal life regulation was when we took our ideas to the Technical Advisory Committee and they followed up with the NAIC Technical Staff Actuarial Group the question that emerged was, why restrict it to interest-indexed universal life? Why not just make the opinion apply to the whole company right now? Our response was, we need to walk before we run, the profession really doesn't have the tools yet, we have not talked enough about what's involved to apply this to the whole company. But there was a lot of interest on the part of regulators in seeing this move along to the entire company level. So I think that could be implemented fairly easily, as was the model regulation for universal life. It was passed in December of last year and we did not have our final draft of the actuarial opinion until October.

MR. OFMAN: Two observations on timing: First, the time needewd to get legislation passed in the various states. The 1972 amendment to the Standard Valuation Law, involving only an increase in the valuation interest rate for annuities, took seven years to enact in all states. The 1976 amendments, also mostly changes in interest rates, took four or five years. By contrast, the 1980 amendments, which constituted by far the most sweeping and complex package of changes in valuation requirements since the Standard Valuation Law was originally written more than thirty years earlier, were enacted by most large states within two years, by essentially all states within three years. Legislators and regulators had gained a better understanding of the changing interest rate environment by this time; therefore the time frame for effective action by the states had become much shorter than we might have expected.

As to the time frame for more effective reliance on actuarial opinions, we must recognize that it is not the legislators and regulators that are holding things up, but rather the need to develop a consensus within the actuarial profession itself. When the profession pulls itself together and is ready to

adopt and enforce effective standards of actuarial practice in this area, I suspect that we will have all the support we need from the regulatory community.

HENRY B. RAMSEY, JR.: Let me do a little role playing as the new actuary of the Speculative Life of Buffalo. I just heard Allan say that as of December 1985 I may have the pleasure of certifying that I have used these magnificent new analytical techniques and found my company to be in great shape. I know that there is all this literature to help me in this task but I'm dammed if I know whether I can put it all together between now and then. You then talk about how we need standards but we haven't got enough experience to establish them yet so let's require you to do it first and then we'll figure out how you ought to do it later. I'm worried, what am I gonna do?

MR. CORBETT: Well, one thing you might do is attend the forum for valuation actuaries that Hank Ramsey has graciously consented to put together. I think it's a chicken and egg problem here, and until there's a requirement out there, the profession just will not devote the necessary energies to it. And yet if we wait until such principles are firmly developed before we require anything, they aren't going to be developed. This is one way of cutting into it, and it's not going to be perfect initially at all. We are going to have to evolve.

MR. FORREST A. RICHEN: The current opinion permits different actuaries to vouch for different portions of the reserve liabilities. As I understand the process that's been sketched out today it would be much more difficult to do this. Yet I can foresee circumstances where a company may want to have different actuaries vouch for the various portions of its liabilities. I wonder if the any of the committees involved in this are addressing that problem. If there is no need to have a single Valuation Actuary, it doesn't seem right that the regulation should force a company to reorganize, with all the added expenses attended thereto.

MR. AFFLECK: We did talk about that, and one of the Interpretations has a paragraph dealing with that particular issue. I will read a couple of sentences from it. "The actuary stating the opinion will ordinarily make use of other personnel to carry out assignments relative to matters on which the opinion is expressed. Even in this case, however, the actuary stating the opinion is responsible for the opinion and cannot rely on the actuary who undertakes the calculations." By rely we mean in any formal sense in the opinion itself. Obviously, you would rely on the person to do the work. We spent quite a bit of time talking about that because of the problems that you identified and basically came to the conclusion, that we really need to have a single Valuation Actuary expressing a single opinion.

MR. JAMES A. GEYER: I have two points I'd like to make.

First, I am skeptical of relying solely on the Valuation Actuary's judgment for reserve levels. The Valuation Actuary will likely be under pressure from management to keep reserves low. Also, this approach leads to a lack of consistency in reserves for different companies. Companies with identical products, identical assets, and operating in identical markets could have quite different reserves. The key of course is the assumptions that the actuary chooses. Once actuary could set reserves to provide adequacy only if interest rates remain level, or increase only slightly. Another actuary might worry about interest rates rising substantially, and therefore set much higher reserves.

At the very least, it seems to me that some sort of standards or perhaps guidelines have to be established for the Valuation Actuary in setting his assumptions.

Second, I am surprised and skeptical of your basic approach. You have said that in the short term we would have minimum standards and it would be up to the actuary to establish more conservative reserves. I cannot imagine that this would work. It would be difficult for actuaries to convince management that they ought to establish reserves at a fairly arbitrary level higher than the so-called standards, especially if other companies are essentially using the standards. For to do so would both hurt profitability and lead to less competitive products.

I have more faith in the New York valuation system for GIC's. There, we have very conservative reserve standards unless the actuary can demonstrate to the department's satisfaction that lower reserves are appropriate, given the nature of the assets and liabilities. This puts the burden of proof on the actuary and forces management to match assets and liabilities if it, in fact, wants lower reserves than the conservative standard. If the company's management chooses to mismatch, then it must accept the higher reserve levels.

MR. CORBETT: Your approach assumes that you can set conservative reserves prospectively by statute or regulation. We do not believe that is the case for all products. You can probably do that retrospectively. A competent group of regulatory actuaries could sit down at the end of one year, look at all the new products that had been developed during that year, and write sufficiently conservative standards for them. Then you could use something like the New York approach. We're just saying that in this day and age you cannot write such statutes or regulations prospectively to apply to products that have not yet been developed.

MR. GEYER: I'm not sure that I agree with you. Certainly for GIC's, New York has shown that it is possible to set conservative reserve standards. I admit that these won't be conservative in all cases, but they should be sufficient to discourage people from mismatching and having to use those conservative standards. For to use such conservative standards will generally cause the company to be uncompetitive. The New York experience suggests that this approach can be effective.

Furthermore, I believe this can work in other lines. For example, with universal life or deferred annuities, the conservative reserves could be set somewhat arbitrarily, e.g., at 105 or 110 percent of the account value. Again, these would not be sufficient for all mismatches, but they should be sufficiently distasteful to cause a company to try to match in order to justify lower reserve levels. Again, the surplus strains and the adverse impact on profitability of having to set up the more conservative reserve standards should create pressure for the companies to try to do a better job of matching.

How about the first question of standardized assumptions. Do you see those as ever becoming a part of this?

MR. CORBETT: Not standardized assumptions but guideline approaches. This probably would be in the area of standards and practices as opposed to principles. Principles being that may be you have to test the number of different scenarios, single point estimates being no longer appropriate. I would not be all surprised to see the Academy come out and say that interest rates up to 18% should be tested for. An actuary who refuses to accept the possibility that interest rates might rise to over 15%, and signs a financial statement and was not able to show that he'd even taken these high interest rate assumptions into consideration, might be subject to some disciplinary procedure. I'd like to hear Allan's comments on that.

MR. AFFLECK: I agree with you. I don't know if the assumptions will be formally promulgated, since I don't see the Academy each year publishing a set of interest rates and saying that these should be tested. But I do see summaries of assumptions that people are using being published in papers from time to time, and perhaps this body of knowledge will become standard actuarial practice, or a guideline, or whatever we want to call it. The New York department published the submissions made to it. This sort of data is then available to actuaries to use as a basis of what other actuaries are doing. That kind of approach is more likely than an annual set of specifically acceptable interest rates.

MR. MILLER: I think there's a lot of things that have to be taken into account. You have to think about what the duration of what your investments are. You have to think about what the quality of the investments are. With these kinds of things you cannot be talking just about one interest rate in a very general context. Context has to be specified quite precisely if you're going to handle these situations. I think this is a company by company matter. I think this is going to take a hell of lot of time and a lot of hard work.



Discussion Note

Thoughts on Future Trends  
in  
Life Insurance Company Valuation

Prepared by Robert A. Miller, III - December 13, 1983

The 1980 amendments to the Standard Valuation Law applicable to life insurance companies reflect the idea that interest and mortality rates used in valuation should be "dynamic". That is to say interest and mortality rates used to define minimum policy reserve requirements for business issued within a given period of time should be sensitive to the interest and mortality experience of that period.

Before the model for the 1980 amendments was adopted by the NAIC, it appointed a Technical Advisory Committee on Dynamic Valuation and Related Matters. The immediate charge to the Committee was to determine whether the dynamic valuation proposals were conservative enough to make it prudent for the NAIC to adopt them. After some important modifications by the Committee, the proposals were adopted.

With this part of its charge completed, the Committee was ready to study other subjects connected with valuation that were of great interest to the NAIC. Part of this work was passed along to the Subcommittee on Surplus and Solvency. The Subcommittee has spent most of its effort in thinking about how changes in the economic environment and in the nature of life insurance company products were likely to affect the regulation of valuation.

By means of interlocking memberships with the Society of Actuaries Committee on Valuation and Related Problems and the Society Task Force on the Risk of Loss Arising out of Changes in the Interest Rate Environment (usually referred to as the Task Force on the C-3 Risk), the subcommittee has had considerable interaction with a broad group of persons who have been thinking about matters closely related to those that the subcommittee has been considering.

The purpose of this paper is to articulate a set of thoughts that seems to be consistent with the general trend of the views of the subcommittee and the related groups. Hopefully, critical analysis and comment on the paper will help the subcommittee as a whole to bring our ideas into sharp focus to enable us to produce a useful recommendation to our parent committee as to how legitimate concerns of insurance company management and regulators about valuation should be reflected in future regulations.

Basic Requirements

Any valuation regulation has to satisfy several basic requirements.

- . Compliance with the regulation must help to assure insurance company solvency. An insurance company is

- solvent if it is able to meet its contractual obligations out of its own resources.
- . Regulators must be able to determine whether insurers are complying with the regulation.
  - . Compliance with the regulation must be within the operating capability of the insurance industry.
  - . The regulation must create and sustain an environment in which insurance companies can underwrite needed coverage at affordable prices for as broad a range of the total potential market as possible and still develop earnings that make investment in the insurance business economically attractive.
  - . The requirements of the regulation must be actuarially sound; that is to say they must be consistent with the mathematical theories of probability and interest applied within the context of the forms and scope of coverage to which the regulation applies and the markets within which that coverage is offered.
  - . The regulation must be designed to operate within a defineable accounting context.
  - . The requirements of the regulation must be reasonably consistent across all lines of business. This implies that, although today's Standard Valuation Law applies only to the life insurance business, future valuation regulation may well apply to a much broader range of the insurance business. (Nevertheless this discussion will deal mainly with policy reserves connected with individual permanent life insurance business and individual annuity business.)

#### Conventional Accounting

Today's Standard Valuation Law operates within the context of statutory accounting which is usually described as "conservative". The primary purpose of the statutory Annual Statement is to give regulators a reliable means for assessing whether an insurance company is solvent.

The Standard Valuation Law specifies the mortality and interest rate assumptions to be used in calculating the minimum policy reserves to be reflected in the statutory statement. These assumptions presumably or in fact include built-in margins for adverse deviations from the norm.

There is no conceptual reason why a Standard Valuation Law could not operate within the context of generally accepted accounting principles. However, GAAP is in total less conservative than statutory accounting. This is because the primary purpose of a GAAP statement is to give investors a suitable means for assessing an insurance company's earning

power. Mortality and interest rate assumptions used in calculating GAAP reserves are usually less conservative than those used in calculating statutory reserves, but the GAAP assumptions still provide margins for adverse deviations. There is a question as to whether the margins are adequate for regulatory valuation purposes. However, this is a question of degree rather than basic principle. GAAP does have a conceptual advantage because it requires the use of assumptions as to persistency and expense rates in calculating reserves which allow it to better reflect the specific situation.

Statutory and GAAP statements are most useful for evaluating a company's financial strength and capacity to produce income when economic conditions are relatively stable. However, over the last several years economic conditions have not been stable. There have been periods of high inflation. Interest rates have been high by historical standards and extremely volatile by any standard. Under these circumstances conventional accounting reports are much less useful for evaluating an insurance company's earning power or its ability to meet its contractual obligations.

This fact has been reflected in concern expressed by insurance regulators about the extent to which valuing bonds at amortized cost overstates insurance company assets. Analysis of cash flow has become much more important to them. Accountants have explicitly recognized one of the problems with GAAP statements by requiring that financial statements be accompanied by an analysis of the effects of changing prices and inflation. All of these steps, even when taken together, represent only partial responses to the questions that have been identified.

#### Cash Flow Accounting

It is possible to develop a more nearly complete response by preparing a cash flow analysis of streams of income and disbursements. The excess of the present value of the stream of income over the present value of the stream of disbursements could be a good measure of a company's economic strength at any given time. However, it is very hard to define the "present value" of a real world stream of cash. Some of the reasons for this will be touched upon a little later. In the interest of simplicity and practicality it could be assumed that the present values used in assessing economic strength are determined on the basis of a single reference interest rate representative of current levels.

Changes in a company's economic strength from time to time reflect how its ability to meet its contractual obligations has been affected by insurance operating results, asset impairment and rehabilitation, changes in insurance and investment portfolios, changes in the levels of interest rates and changes in the social, regulatory and competitive environments in which the company operates. Having such a measure of economic strength also enables a company to estimate how that strength is likely to be affected by changes initiated by the company or by forces outside the company.

Although cash flow accounting apparently produces a direct measure of an

insurance company's ability to meet its contractual obligations and so might have considerable attraction for regulators, it has several significant disadvantages.

- . It lacks the apparent stability and continuity of statutory and GAAP statements.
- . The accounting concepts are not easily transferable to statements for non-financial institutions.
- . The selection of levels of interest rates to be used in determining present values of cash flows can have a significant effect on the resulting level of economic strength. The process of selecting reference interest rates is highly judgmental.
- . An even larger element of judgment is involved in selection of factors reflecting how cash flows will be affected by loss experience and contract persistency.
- . Cash flows for existing investments and insurance contracts will be affected by future changes in the levels of interest rates and inflation and this makes it desirable to supplement the measurement of economic strength with some assessment of what the extent of these effects will be.
- . Relatively modest movements in the interest rate can produce a highly leveraged change in the measure of economic strength if there is a substantial mismatch between the duration of cash flows of income and disbursements.

The first two points are quite important from the point of view of investors. The last four points are quite important from the regulatory point of view.

This list of disadvantages suggests strongly that future valuation regulations are most likely to be designed to operate in an accounting context close to today's statutory accounting and not much, if any, further away from that than today's GAAP accounting is already.

However, the disadvantages of statutory and GAAP accounting cited earlier will make it highly desirable from management's point of view to supplement statements developed on those bases with an extended analysis of contractual and investment cash flows.

#### Cash Flow Analysis

An extended analysis of contractual and investment cash flows would involve developing a year-by-year summary of cash flows from assets held as of the valuation date and a corresponding summary of cash flows connected with insurance contracts in force on that date. Subtracting the contract cash flow would give the amount and direction of net cash flow for that year.

A good deal of information about a company's ability to meet its obligations could be obtained from a simple review of the summary.

Further information could be developed by calculating the "duration" of the net cash flow. The "duration" of a stream of cash is equal to:

- . the weighted sum of the present values of the individual items in the stream

divided by:

- . the result of multiplying (the unweighted sum of the present values) by (the sum of one and the interest rate used in calculating the present values).

The weight assigned to the present value of each item is equal to the length of the period between the date as of which the analysis is made and the date when the item of flow occurs.

"Duration" provides a measure of the match between the asset and contract cash flows and the extent of the company's exposure to loss as a result of change in the level of interest rates. The interest rate used in the calculation of "duration" could be set equal to the current reference rate specified in the valuation regulation.

Still further useful insights could be gained by estimating how much asset cash flow would be accelerated by a drop in the level of interest rates and how much contract cash flow would be accelerated by a rise in the level of interest rates.

The interaction between interest rates and the values and levels of cash flows is the essence of the risk of loss because of changes in the interest rate environment (the C-3 risk). Direct measurement of this risk should help to assure that reserves are maintained at suitably conservative levels.

In thinking about how far it may be practical to go in the direction of cash flow analysis, it may be useful to consider the nature of the contracts underwritten by life insurance companies. They may be analyzed into three broad categories - term insurance, installment payouts and accumulation accounts. If the division into these three categories is appropriate, using this method of analysis could be helpful in projecting contract cash flows. The clear division between the insurance element and the accumulation element of a universal life plan is suggestive of how any conventional form of permanent life insurance might be analyzed into corresponding elements.

Presumably the only cash outflows under one year term insurance would be paid losses and dividends or experience credits. In the case of group insurance this point of view may be too simplistic and overconservative but, if so, there is at least one way to develop a more realistic result. This point is discussed further below.

Contracts providing for installment payouts involving life contingencies seldom, if ever, permit withdrawals so that in general the only cash outflows under contracts of this type would be those required for scheduled payments.

In the light of these considerations, it appears that contract cash flows for one year term insurance and installment payouts involving life contingencies can be projected on the basis of mortality or morbidity tables or on the basis of loss ratios without introducing any sensitivity to persistency or the level of the reference interest rate.

Although the above implies the analysis of permanent life insurance contracts into insurance elements and accumulation elements and the further analysis of the insurance elements into sequences of one year term insurances, cash outflows for these sequences are dependent not only upon mortality or morbidity but also upon persistency, which in turn is dependent upon the level of the reference interest rate. Therefore the projection of cash flows, which include premiums as well as benefits and dividends, for the insurance elements of permanent life insurance contracts, may well require the development of suitable scales of persistency rates that reflect the level of the reference interest rate as well as contract duration.

Contracts providing for installment payouts not involving life contingencies belong to the class of accumulation accounts. Cash outflows from this class of accounts are highly sensitive to the level of the reference interest rate. In the case of the accumulation elements of permanent life insurance contracts, cash flows are also dependent upon persistency which operates in lockstep with the persistency affecting cash flows for the insurance elements.

This superficial outline of how contract cash flow summaries might be produced makes it plain that it will take a lot of work to do so even with simplifying assumptions and that the process will be closely related to the valuation of contractual liabilities.

With regard to asset cash flows, it is plain that they can be affected by default and by the level of the reference interest rate.

Valuation regulation should not make any requirements as to how a company should provide for managing catastrophic defaults such as might occur in connection with a second coming of the Great Depression. This is because making requirements as to provision for catastrophe is tantamount to regulating surplus and usurpation of a function of management. However, the regulation probably should set up requirements as to how a company's asset cash flow projections should take into account amounts of default falling within the range of routine experience. Aggregate asset cash flows from a given class of assets may be uniformly reduced to reflect routine default experience for that class of asset. This point will be discussed further a little later.

The level of interest rates will affect asset cash flows in ways that depend

upon the nature of the assets involved, the contractual rates of interest connected with the assets and the conditions under which repayments of principal may be accelerated. Taking the acceleration of repayments into account would be the most difficult part of asset cash flow projection.

The cash flow projection procedure outlined above assumes that it will not be necessary to identify particular sets of asset values with particular sets of contracts and that it will not be necessary to allocate investment income among contracts or among investment years. In other words the projection procedure produces an aggregate result which is consistent with an aggregate valuation procedure.

#### Good and Sufficient Provision

Reserves required by future valuation regulations should be "conservative" just as reserves today are required to be "conservative" insofar as specified assumptions are concerned. However, even today the mere fact that the book value of a portfolio of assets is greater than the statutory value of the "conservative" reserves supported by those assets is not enough to assure that the insurer has made "good and sufficient provision" for its contractual liabilities. Cash flow analysis would address this problem by providing measures that would make it possible to measure the degree of mismatch between aggregate asset cash flows and aggregate contract cash flows and to decide when a company should take corrective action. On the other hand, measures of this type are not suitable for use in determining whether a company is technically solvent.

All of what has been said so far has been aimed at helping toward assuring that reserves make good and sufficient provision for contractual obligations. The cash flow projection procedure is aimed at helping to assess and control the degree of exposure to the C-3 risk. Reduction of asset cash flows to reflect routine default experience makes some provision for C-1 risk. Conservative statutory mortality, morbidity, interest and persistency assumptions make some provision for the routine portion of the C-2 risk of underpricing. However, neither the present valuation procedure nor cash flow analysis makes any provision for catastrophic losses - that is losses greater than those contemplated in making the "good and sufficient" test. This is appropriate because catastrophic losses must be provided for out of surplus and it is not feasible to construct a practical general formula for determining the amount of surplus needed to manage the insurance, investment and other risks being borne by a given insurer in a given situation.

The result is that the question of surplus and capital adequacy is left to be answered on the basis of the judgment of management, regulators, and investors - as it should be. Putting a general formula for determining surplus adequacy into a valuation regulation could be the cause of a number of very unfortunate situations.

Another important step toward assuring that reserves make good and sufficient provision for contractual obligations is to require that the

insurer provide the regulator with the opinion of a qualified actuary on that point. The New York guidelines as to how such an opinion should be developed relative to a company's annuity business are suggestive of how such an opinion might be developed relative to a company's aggregate reserves.

However, there are a number of questions that have to be considered in deciding on the scope of the actuary's opinion and how it should be supported. Some of the questions are:

- . In essence, the New York guidelines address only the C-3 risk. How should the C-1 and C-2 risks be addressed?
- . Should the guidelines be more specific as to the range of scenarios to be tested than the 1982 New York guidelines?
- . Should the risks be addressed separately only or in combination only or both ways?
- . Should the opinion apply to loss reserves as well as policy reserves?
- . Should all assets be reflected in the cash flow projection or only those identified as supporting policy reserves or only those identified as supporting policy reserves and loss reserves?
- . If some such sub-class of assets must be identified what assurances need to be given as to the sufficiency of the remaining assets to provide for the remaining liabilities?

No doubt there are many other questions.

There are two points about all of the foregoing thoughts that should be specially noted.

- . No rules of thumb are suggested or implied.
- . The aim is to provide for routine C-1, C-2 and C-3 risks within the scope of the reserves; non-routine risks should be provided for by surplus.

#### Other Considerations

There are a number of drawbacks to requiring the use of cash flow analysis in developing the valuation actuary's opinion. The most significant is the amount and cost of the work it would take to do the job. This implies that in deciding whether to make such an analysis, general economic conditions and the nature of the company's portfolios of investment and insurance contracts should be taken into account.



There are a number of factors that have been left out of or only barely touched on in this discussion. Federal income taxes and policyholder and shareholder dividends are examples. These items imply a need to be able to project taxable income and statutory earnings by year consistent with projections of other cash flows. If these are brought into the projections explicitly, how will it be done? Does bringing them in imply a need to use gross premiums rather than valuation net premiums in the projection? If gross premiums are used will they be assumed to be "adequate" for valuation purposes? If they are not "adequate" how should deficiency reserves be defined and reflected in the projection of divisible surplus? And so on.

Another question is whether closed or open blocks of business should be considered in valuation.

The cash flow projection procedure outlined above assumes the use of closed blocks of business. In outlining that procedure it was assumed that the only cash outflows under one year term insurance would be paid losses and dividends or experience credits. In the case of group insurance this point of view might be too simplistic and conservative. In fact, it may be too simplistic and conservative for individual term life insurance. However, the following comments will be limited to the case of group health insurance.

Premiums for group health insurance are usually payable monthly. All but a small percentage of the losses incurred in a given exposure month are paid within six months after the close of the exposure month. This implies that an insurer's group health insurance loss reserves are not large in comparison with the insurer's normal yearly premium flow from group health insurance. This means that the amount of interest earned on group health insurance reserves is quite a small percentage of premiums and specially so after federal income taxes are taken into account. Even so the amount of this interest is an important competitive factor in the pricing of group health insurance. This implies competitive pressure to invest loss reserve funds in long term assets.

In a going business under normal conditions group health insurance loss reserves grow or shrink as the business grows or shrinks and changes in size are typically not large in relation to the total volume of business. However, when interest rates rise rapidly there is a strong tendency for group health insurance contractholders to want to provide health benefits for employees through "administrative services only" arrangements. When a contractholder elects to switch to this type of arrangement the loss reserves for its group health insurance contract are rapidly paid out in cash. Substantial fractions of the total volume of business may be converted in this way given the right conditions. This creates pressure to invest loss reserve funds in short term assets.

However, not all contractholders convert. Some "persist". Strictly speaking a cash flow projection that assumed closed blocks of business would require the further assumption that all group health insurance

reserves should be paid out in cash within six months after the date from which the projection was made. Under these circumstances an investment strategy that was well-balanced between short and long assets in the light of an insurer's on-going experience with conversions to "administrative services only" would produce an over-long duration on the asset side if cash flow analysis assumed closed blocks of business.

This could be corrected for by assuming that the loss reserves were not paid out in full over a period of six months and that instead they were paid out over some substantially longer period. This would be more consistent with a sensible investment strategy. Even so no "statutory" payout assumption is going to represent a given insurer's actual situation except by accident. (Note that this is more or less true of all statutory "experience" assumptions.)

An interesting aspect of using a longer payout assumption is that it implies a "phantom" open block of business. The business is "phantom" under the assumed conditions because the conditions involve only a longer payout of reserves held as of the date from which the projection was made; and they do not involve a continuing flow of paid premiums from the business which the longer payout period implies has remained in force.

The situation for conventional individual permanent life insurance is quite different as has been shown by the C-3 risk analyses reported in the Record of the Society of Actuaries. Profits that roll over into investment in new business for a going concern begin to appear as favorable cash flow in a projection that assumes closed blocks of business. This implies that for a poorly managed insurer insolvency might be avoided by shutting it down at some propitious moment which might be better identified by conventional statutory accounting statements than by some cash flow analysis.

The suggested conclusion is that the answer to the question as to whether to use closed or open blocks depends upon the use to which the analysis is to be put. Right now for purposes of valuation regulation it seems better to use closed blocks. However, in any case cash flow projections should not be used as the basis for testing legal solvency.

Finally, it should be kept in mind that the purpose of this paper is to stimulate critical analysis of the thoughts expressed and perhaps help to focus the views of the Subcommittee on what - if anything - needs to be done to strengthen valuation procedures and help assure the solvency of life insurance companies.

Discussion Note

Comments on the Preceding Paper

Prepared by Robert J. Callahan - February 21, 1984

Having worked for many years in a regulatory agency overseeing statutory valuations, I have been acutely aware of the inadequacies and arbitrariness of statutory valuation and have heard much criticism of the system and suggestions for letting the actuary choose his own assumptions and bases appropriate to the business being valued. I have found it very difficult to defend a system which does not take into account actual gross premiums, expenses, lapses and which has redundant rates of mortality and unrealistically low rates of interest. While the 1980 amendment to the NAIC Standard Valuation Law corrected many of the deficiencies, more is needed for an ideal system.

After further research, Bob Miller's Paper presents a single point of view reflecting the current thinking of most on the Greeley Committee. I would have to concur with the majority. If there is any significant minority opinion, perhaps it would be worthwhile to have it published as well.

I agree with the basic requirements stated on pages 1 and 2 and the comments in the two paragraphs immediately preceding "Cash Flow Analysis" on page 4.

I do not feel that that ability of regulators to determine whether insurers are complying or the operating capability of the insurance industry are the deciding factors as to whether statutory valuation should remain substantially as at present or should be replaced by a gross premium valuation or by a cash flow accounting system. Such considerations are obviously necessary, but with today's computers, industry expertise and the appropriate consolidation of current and potential regulatory actuarial expertise assisted by Industry Advisory Groups, the problems could be overcome in any system.

I also have heard many actuaries state that a gross premium valuation or a cash flow accounting system is too subjective and that too much pressure is placed on the actuary to produce the results that management wants. The subjectiveness and the disparity of the results under different assumptions was brought out in the actuarial memorandums as to the matching of assets and liabilities for the use of the higher valuation interest rates under Section 205 of the New York Insurance Law.

Another important consideration is the basis of the life insurance income tax. It is likely that reserves will be a major ingredient and that such reserves should be determined by objective criteria, produce results on a consistent basis from year to year, and be related to statutory reserves.

Statutory valuation, no matter how conservative, cannot guarantee solvency. The asset side must be considered and the matching of assets and liabilities under different environments, in particular investment income, must be analyzed and an actuarial opinion based on such analysis should supplement

the statutory reserves.

The annual statement requirement for an actuarial opinion including a statement that the amounts carried in the balance sheet on account of the actuarial items... "make a good and sufficient provision for all unmatured obligations of the company guaranteed under the terms of its policies" should be sufficient requirement to demand a cash flow accounting or a gross premium valuation. However, in the early years of the requirement for an actuarial opinion, a gross premium valuation was not considered necessary unless there was some reason to suspect the adequacy of the statutory reserves. Frequently such reasons pertained more to the asset side than to the liability side. In recent years with the volatility of interest rates, it is difficult to justify not doing a cash flow analysis

The New York requirements for the special actuarial memorandum as to the matching of assets and liabilities for use of certain higher valuation interest rates pertains to group and individual guaranteed interest contracts and annuities. The special opinion is considered by some as a part of the more general actuarial opinion required by the annual statement for all lines. However, if an insurer structures its guarantees to lessen the impact of reserves, or it has sufficient surplus, it may use the lower set of interest rates and avoid the requirement for a cash flow analysis.

In case of Universal Life policies crediting interest according to an index, the NAIC Model Universal Life Regulation requires an actuarial opinion as to the matching of assets and liabilities.

Perhaps either the law or the annual statement requirements should be expanded to include the requirement for an actuarial opinion based on cash flow accounting for all lines of insurance regardless of whether the higher or lower set of valuation rates were used.

On page 8 of the paper, there are comments on the New York guidelines. After reviewing the 1982 actuarial opinions and memorandums, under date of June 24, 1983 we circulated comments and questions and then in August, 1983, we circulated a summary of responses to those who responded. Copies of the June and August material are attached.

In my opinion the cash flow accounting should take into account gross premiums and therefore should highlight any pricing inadequacy. In fact, I consider cash flow accounting to be a particular method of a gross premium valuation.

There is a great deal of judgment as to the assumptions and the affects of increasing and decreasing interest rates on surrenders and on repayments. Considering the variance of the amount and length of interest guarantees, of the penalty and call provisions, we felt that at this time we were not in a position to prescribe specific tests. For example, if the maximum guarantees were for only 5 years under guaranteed interest contracts, it would be futile to prescribe tests using an interest scenario starting at 15% reaching 25% at the end of 10 years and further declining to 5% at the end of 15 years. In such an interest scenario, what assumptions as to

surrenders should be made when the surrender charges vary from insurer to insurer?

There is a great variety as to the detail presented in the supporting memorandum. Some insurers have been very brief but are prepared to submit more information upon request. Most insurers did not request confidentiality of the memorandums. I would suggest that insurers provide copies of any nonconfidential material directly to an industry advisory committee for study as to format, content, and specific scenarios, and other assumptions.

A natural but obviously controversial question is whether an insurer should be required to structure its assets for consistency with the liabilities. However, the requirement for an actuarial opinion based on cash flow accounting should influence prudent management to coordinate assets and liabilities.

It would be helpful if some statement could be made as to the degree of conservatism incorporated into a statutory reserve system in view of the obvious impact on surplus, the ability of an insurer to write new business if there is surplus strain due to reserves, and the impact on both prospective policyholders to buy and prospective stockholders to invest. If solvency were the only consideration, it would not matter whether some contingencies were provided by reserve or by required surplus as long as assets were sufficient to meet unmatured obligations.

Reserve requirements with conservative margins are at times designed to restrain overly aggressive management from making excessive guarantees without sufficient surplus to cover the possibility of a short fall. At times, insurers then seek loopholes in the statutory reserve requirements. I do not know how this can be prevented.

Circular Letter 33 (1982) in connection with a qualified actuary for the actuarial opinion and memorandum as to the matching of assets and liabilities refers to the knowledge of the material cited in the American Academy of Actuaries qualification standards for actuaries signing life insurance company annual statements. Included in such material listed on page 438 of the Academy's 1983 Yearbook is "investment and valuation of insurance company assets and the relationship between cash flows from such assets and the related liabilities". However Recommendation 7 and the interpretations thereof on pages 508-513 appear to stop short of placing the responsibility on the actuary to look at the existing block of assets and the danger of asset liquidation losses and cash flow problems. The gross premium valuation described on page 510 does not appear to consider any market value losses for existing assets or problems of disintermediation. Item 1 on page 512 states "...the statement requirement does not call upon the actuary to express an opinion with regard to the general assets of the company...". In my opinion, if the actuary has reason to suspect inadequacies of reserves due to problems of asset liquidation losses, then

the actuary should do a cash flow analysis before making a statement as to the "good and sufficient" provision. Perhaps the present guidelines should be expanded for "interest sensitive products" to include an analysis of cash flows.

Not all actuaries want the responsibility of reviewing the asset side of the ledger and such actuaries may be expected to resist any requirements for cash flow accounting.

I would be very interested in any further expansion of the requirements for an actuarial opinion based on cash flow accounting, whether through the Academy guidelines on the annual statement actuarial opinion or through legislation and regulation, whether for all products or only for some products within certain lines of business.