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### PROPOSED—A "DYNAMIC" VALUATION INTEREST RATE

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MR. YUAN CHANG: I am serving as Chairman of an ACLI (American Council of Life Insurance) subcommittee that has been working on a proposal to modify the Standard Valuation Law. The purpose of this Concurrent Session is for the panel to explain what the proposal is all about and to solicit questions and comments on this proposal from those who will have to deal with it in the near future. The proposed modifications involve a revolutionary change in the approach to the prescription of the statutory maximum valuation interest rates. To that extent, the entire panel here are advocates since all have had a hand in fashioning this proposal.

The Subcommittee is composed of actuaries from 16 different companies. While consistency in concept and approach requires a single working group, there are also enough differences that make the problems for different products unique. The Subcommittee, therefore, is divided into two separate working parties: one dealing primarily with individual products and the other with group products.

This, then, may be an appropriate time to introduce the panel. The first is Carl Ohman, Vice President and Actuary, Equitable Life Assurance Society. Carl supervised the efforts of the group working party. Next is Hodge Jones, Senior Vice President, Guarantee Mutual Life Insurance Company. Hodge headed the work concerning individual products. Finally, there is James Bridgeman, Assistant Actuary, Aetna Life and Casualty. Jim is not a member of the subcommittee, but contributed greatly in construction of the model used to test the results.

Before I get started on the substance, there is just another matter to take care of. It has come to our attention that the advertising for this session might have been overdone. I have been asked to make the announcement: that the inclusion of this session on the program in no way implies the endorsement of the proposal by the Society. Indeed, the proposal has not yet had final approval by the Actuarial Committee of ACLI - the parent committee of the Valuation Subcommittee. In short, you are completely free to decide for yourself without undue influence.

Having said that, I will then say this: the Subcommittee does solicit your support for the proposed concept or we wouldn't be here. But concerning the specifics, they are still very much open for discussion.

A brief word on history: since the inception of the Standard Valuation Law, specific interest rates have always been prescribed on which minimum statutory reserves are based. In 1976, because of the persistent and significant rise in long term interest rates, the ACLI, representing the industry, successfully persuaded NAIC (National Association of Insurance Commissioners) to adopt a set of amendments raising specific valuation interest rates. Most of the states have adopted these amendments.

In the meantime, new product development in the pension field created certain unique problems. Large fund deposits with interest guarantees at 8% were being valued at 3-1/2%. The drain on surplus threatened an early demise of these products. This problem was particularly acute in New York. An ad hoc group was formed to discuss this problem with the New York Insurance Department and certain temporary solutions were adopted. As it stands, that temporary regulation is still in effect.

There was a certain amount of urgency to do something about this chaotic state of affairs. The Subcommittee came into being at the end of 1977 for the purpose of formulating a proposal for NAIC adoption by the end of 1980.

In the very first few meetings of the Subcommittee, we quickly reached certain agreements:

1. In order to comply with the 1980 schedule, our proposal must be completed by mid-year 1979, which we did.
2. To complete the substantive part of our work in a year and a half, we do not have the luxury to indulge in theoretical pursuits. This conclusion is also consistent with the fact that the Society had a committee looking into the theoretical foundation for a much more sophisticated set of valuation procedures.
3. Our proposal must be practical, but at the same time not inconsistent with known theory.
4. We must keep changes to a minimum while accomplishing the basic purpose.

Following these guidelines, we developed a simple but perhaps revolutionary concept - that of automating the future prescription of statutory maximum valuation interest rates by making such rates a function of the trends in the financial market. The idea is to avoid having to go through the cumbersome legislative processes in 50 different states every time a change is warranted as interest rate trends develop in the market place.

To do this, we propose that the Moody's Average of Yields on Seasoned Aa Utility Bonds be adopted as our basic reference. The reference interest rate is defined as the average of such monthly indices for a period ending on June 30 of any year. The period is 12 months, but for certain product groups, such as ordinary life, 36 months if the resulting rate is lower. This reference interest rate is basically a conservative measure of the investment yield of what may be appropriately invested for the particular product groups.

The valuation interest rate automatically prescribed is somewhere between this reference rate and what might be considered a basic cost of capital under ideal economic conditions, which we assume to be 3%. The formula is simply the weighted average of the two. For each product group, a different weight is applicable.

For example, a weight of .35 may be proposed for ordinary life insurance. Let's say that the reference rate on June 30, 1979 was 9% (probably not very far from the realistic number); then, 35% of 9% plus 65% of 3% is 5.1%. Prescribed rounding rules would take it to 5%. If the proposal were law, the maximum valuation interest rate for ordinary life issued in 1980 would be 5%.

ACLI SUBCOMMITTEE PROPOSAL

<u>Product Groups</u>	<u>Sub Division</u>	<u>Reference Rate as of June 30, Year t</u>	<u>Year in which Rate is Applied to Issues (or receipt)</u>	<u>Weights</u>	<u>Rounding Rule</u>	<u>Valuation Rate (Assuming 9% Ref. Rate)</u>
LIFE INS.	For Valuation	Lower of 36 mos. Avg. and 12 mos. Avg.	t+1	.35*	Nearest 1/4% (but no change if within 1/2% of existing rate)	5.00%
	For Non Forfeiture	"	Optional: t+1 or t+2	*	"	"
DEFERRED ANNUITIES	Issue age less than 45	"	t	*	Nearer 1/4%	Not determined at this time
	45 - 54	"	"	*	"	"
	55 and over	12 mos. Avg. only	"	*	"	"
IMMEDIATE ANNUITIES		"	"	*	"	"
GUARANTEED INTEREST CONTRACTS	10 or less years	"	"	[Book Payout and Market Payout Differentiated*]	"	"
	11 to 20	"	"		"	"
	More than 20	"	"		"	"

\* Omitted since they are still under discussion. .35 for 0L is sample only.

Another way of looking at the .35 weight is that it really represents the degree of credibility placed on future inflationary expectations. Assuming that the 6% of the 9% reference rate represents an inflation premium, then .35% of 6% plus the 3% basic cost of capital will get you back to the same 5.1%. Given a specific outlook on interest rates and a specific pattern of expected cash flow for a particular product, we can determine the appropriate level of valuation interest rates. Conservatism for valuation purposes can be introduced in the interest rate outlook or in any other assumptions. The result is a credibility factor for the particular product group. You will hear more about the methodology of testing these various weights a little later on in the program.

Now the product groups: Basically, we propose to divide the full spectrum of insurance and pension products into four major categories: Life Insurance, Deferred Annuities, Immediate Annuities, and Guaranteed Interest Contracts - without specific reference to the distinction between Group and Individual. (Refer to chart.) For life insurance, special rules are necessary for non-forfeiture interest rates, maintaining a tie between them and maximum valuation interest rates. Deferred annuities are to be split into three or four age groups. This is to recognize that different issue ages groups may be predominant in different markets for which different contract features are specifically designed, in addition to the recognition that the length of the contract terms is obviously an important parameter in determining the pattern of future cash flows. Guaranteed Interest contracts have even more subdivisions. First, distinction is made between contracts promising book payouts and those promising market payouts. In addition, the period of interest guarantees is of course relevant.

That's a very sketchy description of our proposal. The proposal is obviously more complicated than what some of you may like. Yet it is the considered opinion of many that equity is still lacking. Realizing that there can be no perfect justice and irreducible simplicity at the same time, we believe that we have arrived at a good balance. Some think that company earnings rates would be a better starting point than a single reference index - others prefer the objectivity of the latter. Most of you may not yet have seen the set of weights currently under consideration. Those who have are divided on what they think. Some think these weights are too high, others think they are too low. But I think there are people who think it's just right; and I don't mean just the members of the subcommittee.

We know we are not going to please everybody. But we do want you to reflect on the problems we have now and therefore agree with us that the dynamic interest rate concept is worthwhile pursuing.

MR. JAMES G. BRIDGEMAN: The purpose of these remarks is to describe the model built to test the dynamic valuation interest rates and to discuss the investment assumptions used in the testing.

To put this testing process in perspective, you should understand that it was introduced rather late in the development of the dynamic valuation proposal. It did not form a quantitative base for dynamic valuation in the way that, say, raw mortality data forms a base for valuation mortality rates. Indeed, a complete dynamic valuation proposal had been developed and advanced before the model I am about to describe was built.

The role of this testing process, then, was to validate and fine-tune an

original proposal that had been developed by other means. It was used to adjust the originally proposed level of weighting factors in light of a specific downside scenario for interest rates; to assure that weighting factors were fairly consistent from product to product based on that scenario; to investigate which of the many intuitively appealing distinctions among products actually affect the supportability of valuation interest rates materially enough to warrant creation of distinct valuation interest rate classes; and, in general, to improve understanding of how various product characteristics and/or investment phenomena might seriously affect the supportability of valuation interest rates.

The testing process was not used to provide the overall justification for the dynamic proposal. That justification lies in more general reasoning based on the historical pattern of valuation law changes and the dynamic proposal should be judged as a whole on that basis, not on the basis of these tests.

The second thing you need to understand about this testing is that the model was built to operate entirely within the very limited goal established for the dynamic valuation proposal: namely, to preserve the conceptual framework of the current valuation system essentially unchanged except for automatic updating of interest rate levels rather than legislative updating.

Now the current valuation system is abstracted a fair distance from financial reality when considered from the point of view of a single policy or a single year's issues. It assumes that insurance company cash flow follows a pro forma net premium/tabular benefit pattern. It takes no direct account of non-forfeiture benefits. It assumes that the reserve generated by this simplified cash flow and an assumed interest rate exactly equals the asset available at any point in time. In general, it might not be considered a very close representation of reality.

Nevertheless, consistent with the idea of preserving the conceptual framework of the current valuation system, it is this "net premium reserve" representation of reality that the model follows. The only really new concept is that the simple net premium/tabular benefit cash flow pattern is run against a model of the actual insurance company investment process, where positive cash flow results in the purchase of long-term investments at their current yield rates and those investments continue to yield at that same level until they mature. The yields on those investments, plus maturing principal, constitute an increment to future cash flow which is reinvested at then-current yield rates, and so on. The model also recognizes that certain expense and tax items should be conceived of as being paid on a current basis out of investment income rather than out of the margin of gross over net premium. Furthermore, in order to keep reserve assets equal to reserve liabilities at each point in time, the model treats profit (loss) as a cash disbursement (receipt) from the reserve account to the surplus account.

That said, let's look at some of the details of the model.

The input consisted of product assumptions and investment assumptions.

Product assumptions, which vary from product type to product type, specify (at annual intervals for simplicity):

(1) projected benefit payments (on a tabular basis),

- (2) projected net valuation premium receipts,
- (3) projected administrative expenses and FIT expenses (but only to the extent that gross investment income, rather than gross premium, is assumed to be the source of cash to pay these expenses on a current basis),
- (4) assumed valuation interest rates, and
- (5) projected valuation reserve liabilities.

Investment assumptions, which are fixed across product types, specify (at annual intervals):

- (1) projected reference rates,
- (2) increments to convert reference rates to annual effective rates of interest earned,
- (3) projected credit risk losses (actually, an assumed level cost thereof), and
- (4) projected investment expenses.

In addition, the investment assumptions specify a basic investment survival schedule. This schedule projects, at annual intervals measured from the time an investment is made, what proportion of the original principal will still be outstanding and still earning the original yield rate secured at the time the investment was made. They also specify a survival table for unscheduled prepayment (or refunding) of invested assets. This table projects, on the basis of how far yield rates have declined since the time an investment was made, what proportion of the principal otherwise surviving according to the basic schedule will have also survived the risk of unscheduled prepayment. A penalty receivable from the borrower at the time of prepayment is also assumed.

The output from the model consisted of a year-by-year projection of:

- (A) interest available on reserve assets, and
- (B) interest required on reserve liabilities.

Note that we did not make an asset-share type test of reserve adequacy as such, since that would depend on many factors other than interest rates. Rather, our focus is on interest rates alone. We compare the interest the assets (assumed to be equal to the reserve, remember) can generate with the interest the liabilities (the reserves) require.

The very concept of a level valuation rate higher than the ultimate rate to which interest rates may fall involves a recognition that, on a year-by-year basis, reserve interest requirements may sometimes have to be funded from sources other than just current investment income on reserve assets. Granted this point, which seems unavoidable if level valuation rates dynamic by year-of-issue are to be maintained, the crucial question is how to assure that any insufficiency in current interest available on reserve assets will not become

unreasonable in relation to the "other sources" to fund reserve interest requirements.

In practice, there could be many "other sources" to fund any current interest deficiencies. From a theoretical point of view, however, it seems logical to require at a minimum that funding for current interest deficiencies be conceived of as coming strictly from excess interest earned in prior years and withheld in surplus. Then, at a minimum, we can argue that the total contribution made over time by interest on reserve assets is commensurate with the total demand made over time by the reserve interest requirements.

For this reason, we decided to summarize the results of our tests by computing and comparing:

- (A) interest available on reserve assets on average over time, and
- (B) interest required on reserve liabilities on average over time.

Thus, we did not test the overall adequacy of reserves as such, but only the adequacy of the reserve interest rate assumption considered alone. Our test results (unlike the results of an asset share test) were completely insulated from any source of gain and loss other than discrepancies between interest available and interest required on the reserves and our test results (unlike the results of an asset share test) did not include any interest earnings on emerging surplus assets.

A comparison of average interest available and average interest required over a long projection period gives no information about the further question of whether the current interest deficiencies that develop in the late years of our projections are reasonable in relation to the presumed source to fund them—the prior years excess interest withheld in surplus. Certainly, the surplus associated in practice with a given block of business does not represent in any simple way an accumulation of all profits (from interest or any other source) generated by the block of business. More likely, the surplus associated with a given block of business is managed in practice so as to bear something like a constant ratio to the reserves on that block of business, independently of its profit experience. Early on this is accomplished by relying on retained profits from other blocks of business, later on by disbursing excess profits as dividends to policyholders and/or shareholders and by devoting part of any retained profits to support surplus requirements on new or unprofitable blocks of business.

In short, it is far from clear what a reasonable assumption might be about the fate of the excess interest earned in the early years of our projections, whether it would in fact be withheld in surplus (perhaps accumulated at interest) or whether it would be "spent" to other purposes before the current interest insufficiencies develop later on in the projections. So, we made no assumption on this score.

What we did do was to generate output that summarized for each model projection just how material the current interest deficiencies that developed later in the projections were in relation to the whole pattern of reserve development. This output was in the form of "average interest deficiency" statistics which were essentially a ratio of total interest deficiencies from later durations to the total of reserves exposed at all durations. In effect, we were measuring how big the later duration interest deficiencies looked if

the cost of them was spread uniformly over the projection period.

A computer model was built to implement the methodology described here. The model has the capacity to vary the assumed valuation interest rate until it achieves a specified target value for any one of several summary items from the projection. Typically for a given set of assumptions (including a pessimistic interest rate assumption), we target the model to produce an average interest required on reserve liabilities equal to the average interest available on reserve assets. The model gives back to us the level valuation interest rate that must be assumed in order to produce that equality. The valuation rate thus produced can be translated into an weighting factor.

Tests with this model, averaging over a 30-year projection period and using assumptions that will be described in a moment, have been used to validate the level of weighting factors currently being recommended for the various product groups.

The last thing I will discuss is the investment assumptions made in validating the level of weighting factors. Then my colleagues will discuss the various product assumptions that were made. Remember, the following investment assumptions were uniform from product to product.

- (1) Reference rate: initially 9%, declining  $\frac{1}{4}\%$  per year to 4% in the 21st and subsequent years.
- (2) Adjustments to convert reference rate to annual effective yield rate:
  - (a) First year's investments only: +.45% to reflect average margin between company investments and Moody's AA utilities; for conservatism, this margin is eliminated for all investments made after the first year. The effect is to relate short term products more closely to current yields while introducing a layer of conservatism for longer term products.
  - (b) Conversion from nominal to effective yield: +.20%.
  - (c) Investment expenses: -.20%.
  - (d) Credit risk: -.10% (to provide for expected defaults on interest and/or principal).
- (3) Repayment of invested assets (condensation of actual assumptions)
  - (a) Scheduled repayments: (based on industry experience)

<u>Year</u>	<u>Percent of Original Investment Remaining at Beginning of Year</u>
1	100.0%
6	85.0
11	53.0
16	25.5
21	9.0
26	0.0



(b) Unscheduled prepayments: (arbitrary assumption)

<u>Decline in Yield Rate</u>	<u>Percent Surviving Prepayment</u>
1.00%	95%
2.00	70
3.00	15
4.00	0

(c) Prepayment penalty: one semi-annual coupon (assumed to be taken into investment income at the time prepayment occurs)

MR. HODGE L. JONES, JR.: May I have a show of hands -- How many of you represent mutual companies? Fine, now another show of hands -- How many of you, representing mutual companies, enjoyed an asset growth in 1978 of 20% or more? How many enjoyed a growth of at least 15%? Without this kind of growth I suggest you are failing to grow in a real sense. As for stock companies, I think your plight may be even worse than mutuals. Maybe another way to view this is that a smaller share of the saving dollar is being put into life insurance. We have practically stopped trying to sell endowment insurance.

This is the problem our group tried to address. Several years ago our industry went through the pain of changing valuation interest maximums from 3½% to 4¼%. By the time a reasonable number of states had passed this legislation, we were after 4½% for reserves and 5½% for cash values. We need more today.

The effort of our subcommittee has been to come up with a system that would give us -- automatic changes in valuation and nonforfeiture interest rates -- with changes of interest in the market place -- and with what we believe is very reasonable conservatism.

By reasonable conservatism I certainly don't mean 6% reserves are as conservative as 3% reserves unless you aren't able to get your share of the market. Then maybe you are better off with a more competitive product that is not quite as conservative. The aim is balance between a product that competes in the market place and is still solid. We believe our system is reasonably conservative and very hopefully will help get back our share of the saving dollar.

That is the essence of our proposal -- a balance between giving us a product we can compete with on the money market and still maintain sufficient conservatism.

MR. CARL R. OHMAN: I'd like to start off reemphasizing why we are taking the route that we are taking. You will observe that we are introducing a revolutionary concept here, that is, a dynamic interest provision in the laws, but other than that, we are staying within the general framework of the present standard valuation laws. The first question that comes up when you are going to change the valuation law is that you ought to do it right. We ought to recognize that, if the question is what is the proper valuation basis for insurance company liabilities, in answering this you have to look at annual statement solvency requirements for an insurance company, and look at both liabilities and assets, and maybe even look at surplus requirements for insurance companies. I think all of us recognize that this is the current approach and the direction we

want to move in, and indeed that is the direction that the Society of Actuaries committee on valuation is looking.

They are looking at all aspects of solvency requirements for an insurance company of which the liabilities are, of course, a very important part. So, I think we all agree that there is the need for taking a long look at the statement requirements for insurance companies and nothing that our subcommittee has done is in disagreement with that. We are recognizing that while the industry should be looking at the long term statement needs, several immediate problems have to be addressed. With interest rates moving as significantly as they have been over recent years, and with the potential for future movement either up (as they are going right now) or down, we do have to address the problem of keeping the valuation standards up with the interest rates without having to go back to the legislatures.

Also, the guaranteed interest contracts which are such an important part of many companies' portfolios are not covered in the current valuation law. New York has issued a circular letter covering valuation requirements for guaranteed interest contracts. California, I believe, has also, and the NAIC technical task force has issued valuation guidelines that would cover them. I think many insurance company people as well as many regulators feel that this needs to be part of the valuation law, so our purpose is addressing these specific questions. We have to make adjustments to the law now which will take care of recognizing that it is still appropriate to be taking a long term look at what direction we ought to be moving, in terms of regulation of minimum valuation requirements. Now my job this morning is to just speak very briefly on some of the problems the Group Working Party encountered in developing our proposals. Specifically, I am going to talk about guaranteed interest contracts and the annuity product. Although this came out of the Group Working Party, any comment that I have to make will apply to all guaranteed interest contracts and to all annuity products whether they are group or individual.

We concluded very early in our work that one thing we ought to do is eliminate any reference in the valuation laws to group vs. individual contracts. Such distinctions that exist in present valuation laws are not particularly meaningful and could encourage use of one type of contract in situations where another is more appropriate. We have attempted to focus on differences in degree and duration of risk among the various guaranteed interest and annuity products and not on whether guarantees are packaged as group or individual contracts.

The design, pricing and profitability of guaranteed interest contracts and immediate annuities depend in very large measure on yield rates currently available on new investments, to a much greater degree than for most life insurance and for some deferred annuities. Accordingly, while the reference interest rate used for guaranteed interest contracts and immediate annuities was derived from the same index used for life insurance, Moody's Average of Yields on Seasoned Aa Public Utility Bonds, we used 12-month averages of the index for guaranteed interest contracts and immediate annuities, instead of the lesser of 12-month and 36-month averages used for life insurance. We believe that this gives proper recognition to the greater "new money" emphasis in these products.

For guaranteed interest contracts, we have concluded that minimum valuation

requirements should be based on year of receipt of funds under the guarantee rather than on year of issue of the guarantee. That is, the minimum standard valuation interest rate derived from the 12-month average reference interest rate index for a year applies to all considerations received or interest reinvested in that year under interest guarantees regardless of when the guarantees were issued. If new money rates decline in years after a guaranteed interest contract is issued, this requires the insurance company to set up higher reserves than originally expected for additional considerations or interest reinvested in those later years, and conversely, if new money rates rise in future years. This approach provides a reasonable recognition of the difference in risk patterns between single consideration and annual consideration guaranteed interest contracts and permits use of a single minimum standard valuation interest rate for both types of guarantees.

Mode of payment under guaranteed interest contracts is another factor that has to be recognized in developing a minimum standard for valuation interest rates. Some interest guarantees provide for payment in a single sum equal to book-value at maturity. Others provide only for payment of market-value or the equivalent. Still others provide for something between single sum book-value and market-value -- e.g., payment in installments at book-value. For market-value guarantees, the risk is essentially whether actual investment yields will be sufficient to cover guaranteed interest. For book-value guarantees, especially for short durations, there is the added risk that guarantees will mature more rapidly than the investment supporting the guarantees, which could result in capital losses in a rising interest rate environment, with of course an opportunity for capital gains if interest rates fall.

For short duration market-value guarantees, there is almost no interest risk. Therefore, we propose a minimum standard valuation interest rate at or near the reference interest rate for such guarantees. For longer duration market-value guarantees, there is some interest risk, increasing by duration; hence the valuation interest rate should decrease relative to the reference interest rate for longer durations. For a 9% reference interest rate, we are proposing a minimum standard valuation interest rate for longer duration guarantees in the range of  $8\frac{1}{4}\%$  -  $8\frac{1}{2}\%$ .

For short duration book-value guarantees, the added risk of capital loss at maturity calls for a valuation interest rate lower than would be appropriate for market-value guarantees. For longer durations, this added risk disappears and minimum standard valuation interest rates may be expected to approach those for market-value guarantees of similar durations. For a 9% reference interest rate, we are proposing a minimum standard valuation interest rate in the range of  $8\frac{1}{4}\%$  -  $8\frac{1}{2}\%$  for shorter term book-value guarantees,  $8\frac{1}{2}\%$  -  $8\frac{3}{4}\%$  for intermediate term guarantees,  $8\frac{1}{4}\%$  -  $8\frac{1}{2}\%$  for longer term guarantees.

For immediate annuities, consistency with minimum reserve requirements for guaranteed interest contracts is an important objective. Both are new money products and are very sensitive to changes in the interest rate environment. Immediate annuities do entail some mortality risk and perhaps a higher rate of administrative expense than guaranteed interest contracts. However, cash flow under an immediate annuity may be more predictable and there may be less reinvestment risk from turnover than under a guaranteed interest contract. On balance, we believe that minimum standard valuation interest rates for immediate annuities should be close to, but slightly less than, minimum standard valuation interest rates for guaranteed interest contracts. For a 9% reference interest rate, we would propose a minimum standard valuation in-

terest rate for immediate annuities in the range of 8%.

It is worth noting that, in testing the adequacy of various valuation interest rate proposals for immediate annuities, we examined both qualified and non-qualified annuities and concluded that the same minimum valuation requirement can be used for both. This results from our methodology which tests the adequacy of reserves against the more conservative of (1) a declining interest rate scenario or (2) a rising interest rate scenario. For immediate annuities, declining rates are the more conservative and, under a declining interest rate assumption, the Menge Formula produces at least as favorable a federal income tax result for non-qualified annuities as pension plan reserve treatment produces for qualified annuities.

For deferred annuities, we found it necessary to distinguish between those products which are intended primarily to provide long term income guarantees, and are somewhat similar to life insurance in nature and degree of risk, and those products which are intended primarily to provide short term interest guarantees and only nominal income guarantees, these being somewhat similar in terms of risk to guaranteed interest contracts. After lengthy deliberation, we concluded that the simplest approach, providing a reasonable reflection of differences in risk, is to distinguish by age at purchase. For purchase ages under 45, we propose the same minimum standard valuation interest rate as for life insurance products, using the lesser of the 36-month and 12-month index averages for the reference interest rates. For purchase ages 55 and over, we propose the same minimum standard valuation interest rate as for immediate annuities using a 12-month average reference interest rate. For the remaining ages, we propose an intermediate basis.

One rather thorny problem in developing a simple valuation interest rate proposal that covers all products has been to define a precise line between guaranteed interest contracts and deferred annuities, given the proposed differences in minimum standard valuation interest rates. We propose for this purpose to treat active life funds under group annuity or individual annuity contracts as guaranteed interest contracts if there are no permanent purchase rate guarantees, otherwise we would treat such funds as deferred annuities. This definition will not satisfy everyone, but it may be the best of the possible alternatives.

Although our effort has been directed almost exclusively to valuation interest rates, I would like to close with a word about minimum standard valuation mortality tables. We propose to continue to define minimum standard for annuities in terms of the 1971 GAM table and 1971 IAM table because these are the most up-to-date annuity valuation mortality tables both available and widely accepted as such. As conditions change and more appropriate tables become available, the minimum valuation standards will need to be updated, preferably without the need for new legislation in each of the states. Accordingly, we are proposing that the model valuation law specifically authorize the state insurance commissioner to adopt alternative tables if approved by the NAIC for this purpose.

MR. JOHN O. MONTGOMERY: The proposal for a "dynamic" valuation interest rate results from discussions by the National Association of Insurance Commissioners Technical Task Force To Review Valuation and Nonforfeiture Value Regulation For Life and Health Insurance Companies. Frequent updating of the interest standards in the model legislation presents a problem in asking the various state legislatures every two or three years to revise such laws. Many of

the legislatures are under pressure to reduce the volume of legislation whenever possible.

One solution proposed in the NAIC Task Force discussions was some form of "indexed" interest standards. The problems associated with developing an "indexed" interest rate are really the same as those associated with the selection of appropriate interest rate assumptions in past revisions of the model legislation except that an "indexed" interest rate system intensifies such problems and adds another problem, that of defining the reference interest rate from which the "indexed" interest rates for various insurance and annuity products are to be determined.

The proposal by the American Council of Life Insurance task force appears to be examining with a fair degree of credibility the relative interest rates for various life insurance and annuity product minimum reserve and nonforfeiture value assumptions, just as they have in determining assumptions for past revisions of the model legislation. However there are some considerations which possibly may need further study before formulas for interest assumptions indexed to some reference system can be developed:

1. Should the expected life of the policy be considered assuming only withdrawals on account of death, or should lapses and surrenders also be assumed? Use of mortality only would appear to be more conservative for valuation purposes but might not be so for nonforfeiture values.
2. Should the nature of asset requirements for each particular product be considered separately for that product, or should only the relation of the aggregate reserves for all products combined to the aggregate asset structure be considered? Use of aggregate relationships could be misleading if a new and rapidly developing product needs an asset structure to support its reserves and values which is radically different from the aggregate reserve/asset relationship of the company when the product was first introduced.
3. Companies writing health insurance must consider the reserve/asset relationship of such products as well as those companies writing life insurance and annuity products.
4. Because of the valuation of the reserve/surrender value/asset relationship among the various insurance and annuity products it may not be possible to devise a single "reference" interest rate.
5. How are those companies who are unable to earn the "indexed" minimum reserve valuation interest rate to value their policies? Are they to be denied the competitive advantage available under the higher interest rate assumptions? What will this do for competition and, in certain situations, the availability of certain insurance and annuity products?
6. Should each company be required to set its own minimum reserve and nonforfeiture value assumptions based on its own yield experience on new investments if it has a "sufficient" portfolio of investments to justify such treatment? What is "sufficient"?
7. To what extent should income tax consequences be considered?

Reference Interest Rates

In setting reference interest rates, the use of reference rates unrelated to the actual distribution of yields on new investments by insurance companies may result in the trend of the index going one way while the actual trend in new investment experience of companies may point in another direction. Certainly, before a particular method of determining reference interest rates is adopted, conclusive evidence must be furnished as to the appropriateness of such interest rates.

Conclusion

The work of the special task force of the American Council of Life Insurance is to be commended as a significant start in the undertaking of a most difficult task. It appears that much more consideration needs to be given and that because of time constraints on the presentation of model legislation concerning the new mortality table to the NAIC it may not be possible to include indexed valuation interest assumptions in such legislation at this time. However, the rapid changes in mortality currently in progress will probably necessitate the construction of new tables again within the next five or ten years. For this reason work should proceed as fast as possible for the drafting of new legislation with respect to some form of indexing valuation and nonforfeiture value interest assumptions and which will completely overhaul the present valuation and nonforfeiture value regulatory system to prepare it for the advent of the twenty-first century.

MR. CHANG: In regard to the use of a single index of some kind independent of company earnings, we have certainly paid a lot of attention to that and debated on whether or not we should go to a company earnings basis. I think one of the problems in terms of company earnings is that it is very difficult to define what that earning is. What do you exclude? What do you include? Large companies? Small companies? Those companies which venture out a little bit more than others, do they get into the averages? There is a series of problems in that area. In addition, there is a time lag in terms of getting that number, probably by a whole year as compared to the use of a single independent index.

MR. MONTGOMERY: I think we are going to have to look at that whole matter of the reference rate a lot more carefully and I think before the NAIC will consider the proposal, that it's going to have to be related more to actual industry average.

MR. PETER CHAPMAN: In the test for adequacy I didn't hear anything other than the implicit assumption that a company was fully invested. Now I recognize that policy loans are a problem that varies from company to company, but it has the effect of depressing the rate as well as causing a cash flow problem. In addition to that, I wasn't sure that I heard anything about the effect on the marginal income tax rate of the interest assumptions, although obviously I gather income tax was considered. Would you care to comment on the effects of adequacy of permissible ranges of policy loans which would keep it within the adequate limits and the effect of taxes?

MR. CHANG: Policy loan was considered but we decided not to specifically recognize it, except through the conservatism as introduced in ordinary life assumptions. Jim would you like to comment more fully on this?

MR. BRIDGEMAN: Yes. It is true that policy loans were not reflected directly. It is worth noting that the actual rates of supportable interest that were produced from the model for ordinary life insurance were materially reduced by time we got to a recommendation, and I am sure one aspect of that reduction was peoples' concern about policy loans. Among the assumptions used were some withdrawal assumptions. Withdrawal has a similar effect to a policy loan.

MR. JOHN MAYNARD: I happen to be a member of the Society Valuation Committee, but I'm not going to speak at all for that committee today. But, I will speak as one individual who has the advantage of the perspective of being on the committee, and I speak as the chief actuary of a company doing an international business who must sign certificates of actuarial adequacy in the United Kingdom, Canada and the United States this year. I find myself in natural sympathy with your objectives of getting a sound basis that can keep the companies going and innovating and keeping pace with growth of the business that we all want to participate in, but I have some concern that the ultimate solution will be found within the present regulatory system. I do hope that dialogue on this point can continue as we all search for a sound method of valuation that we can feel very confident about. The principles that the Society Committee has been working on are again picking up the idea of dynamism. There's nothing new under the sun with regard to valuation but there are differences in techniques to be thought about. I think what they have been trying to do is look at a fund and say that it should continue to be adequate. You develop some assets and, from time to time, as you look at what the value of those assets is and the value of the liability, you determine whether or not they stay on a good relationship. This tends to focus on the dynamism of the continuing relationship between accurately determined value of assets and accurately determined value of liabilities.

So from these perspectives, I think you would expect me to have some concern about your proposal, and in fact I have had three main concerns. You have tried valiantly to develop a formula which, when these principles are applied, will show that there is conservatism in them, and which would then justify the proposal. But I still have three strong concerns. You have not specifically related to the method of asset valuation that goes with the method of liability valuation to which the interest rates you have referred to would be applied. The second point is you have not been able to allow for the type of assets that the company itself would have to rely on to offset against the liabilities. The third concern is that the proposal, which is really an independent method of getting the liabilities and the assets, may not have allowed for variation of interest rates which can affect both in a particular company from day to day. We have to think from day to day in the application of the principles that we need to use.

MR. BRIDGEMAN: Mr. Maynard's point is well-taken that the dynamic valuation proposal is theoretically deficient in ignoring each particular company's unique asset structure when it values the company's liabilities. This theoretical deficiency stems, of course, from the Subcommittee's practical decision to leave the basic structure of the current valuation system intact, save only the introduction of valuation interest rates dynamic by year of issue.

However, I don't believe it's accurate to say that the proposal fails to relate the method of liability valuation to the method of asset valuation.

Indeed, the concept of weighting factors and the whole methodology to test them was developed in order to bridge the gap between and relate, on an apples-to-apples basis:

- (A) a liability valuation method based on discounting future cash flows, with
- (B) an asset valuation method based on interpolation between current cash flows at purchase and at maturity.

That is, for better or worse, the current method used to value life company assets eschews the hypothetical process of treating assets as present values of future earnings. Rather, it looks to the hard values that matter to a going-concern from a cash point of view: the real cash cost to acquire an investment and the real cash received on maturity. Amortized cost asset valuation is the most straightforward way to string a continuous asset value between these two real cash anchors and has little fundamentally to do with present value concepts.

Assets valued on such a method cannot be directly compared with liabilities valued on a "present value of future cash flows" basis. It was thought to be most important that assets compare favorably with liabilities in a pessimistic scenario and that this comparison be on a basis consistent with the "real cash flow" approach to asset valuation.

Weighting factors were therefore introduced and tested to assure that in a pessimistic interest rate scenario (which for some products is a declining one, for others a rising one) the growth values required by the liability valuation method would be matched on average over time by real cash interest generated from the assets. In testing these weighting factors, interest rate variations get reflected on a spread basis over time as they work their way through an asset valuation method anchored on current cash flows rather than on volatile present values.

Thus, the liability valuation proposal described this morning is intimately related to considerations of asset valuation methodology. That it related to what is becoming a theoretically unfashionable asset valuation methodology and that it relates directly to asset valuation methodology only in pessimistic interest rate scenarios should not be confused with an outright failure to consider asset valuation methodology.

MS. ANNA M. RAPPAPORT: The ACLI has developed a proposal that the model valuation statutes be amended so that the maximum valuation interest rate for new business sold is automatically adjusted on an annual basis. The maximum rate is to vary by line of business and be based on a weighted average of 3% and an average of Moody's public utility bond yields.

The term "dynamic interest rate" implies a floating rate of some sort. The proposal calls for periodic adjustment of the maximum rate which can be used for purposes of valuation. In my opinion, the term "dynamic interest rate" is misleading and I request that the ACLI change the label used to describe the proposal.

I understand that the basis selected represents an approximation to a conservative valuation rate appropriate in light of the investment experience which individual companies may expect to realize, and that for purposes of



insurance law, a common standard is desirable. In pension plan valuations, the experience of each plan should be considered in setting the assumptions for that plan, and the assumptions are changed from time to time as experience warrants such change. The purpose of the proposal as I understand it is to make it easier for the insurance company actuary to adjust the valuation basis when the individual company's experience justifies such a change. On occasion, it has been suggested that pension plans should be valued on the basis of some market index. I reject that concept and I feel that it is essential that interest assumptions for pension plans be selected on a basis which reflects the actuarial experience of each plan. I therefore request that the ACLI make it clear that the suggested use of a rate based on an index is an approximation to a rate based on anticipated experience for the insurance companies to which the standard will apply.

This proposal has no direct applicability to the valuation of trustee pension plans. The assumptions for such plans must represent the best estimate of the actuary in accordance with the requirements of ERISA. In contrast, life insurance company valuation assumptions are limited to certain maximums by law, should be conservative and should protect the solvency of the life insurance company. In the pension fund, no guarantee of future contribution levels have been made, and the actuary in valuing the plan is suggesting best estimate contribution levels which may rise or fall in the future depending on experience. The insurance company on the other hand is guaranteeing benefits based on certain premium rates, and must be sure that its reserves are adequate. Another major difference is that insurance contracts are based on net premium valuation concepts, whereas pension plans are valued using assumptions as to all future factors which may affect the plan's operation. The attached exhibit summarizes the differences in the nature of assumptions for pension plans and insurance companies. We request that the two changes described above be made so that the proposal does not have unintended spillover effects on pension plans.

MR. CHARLES F.B. RICHARDSON: The ACLI proposal of a "dynamic" valuation interest rate is so incomplete at this stage that detailed discussion at this time is not possible. However, it is perhaps worth commenting that some sort of reform which would result in more realistic and flexible interest rates for valuation of various types of liabilities, and for non-forfeiture values, is long overdue. Indeed the life insurance industry has for many years been severely handicapped in the sale of permanent forms of life insurance contracts by hopelessly out-of-date insurance laws.

I was distressed to note that this proposal seems to abandon the principle of a higher interest rate for minimum non-forfeiture values than for valuation. This margin should certainly be retained and should perhaps vary with the level of the maximum interest rate for valuation. Possibly an interest rate 20% higher than the valuation rate might be reasonable, e.g. 5% for valuation, 6% for non-forfeiture values. This would provide a reasonable margin for asset losses at a time of high cash surrenders or policy loans.

Since one of the developments which really triggered these proposals is the recently developed practice of high interest guarantees under group annuities, now governed in a rather loose legal fashion by a regulation in New York, not duplicated in almost any other state, it is high time that a solid legislative basis be established for the regulation of these guarantees, which now apply to vast amounts of funds under group annuities, individual deferred annuities and other types of deposits such as premium deposit funds, involving interest

guarantees at rates higher than deferred annuities. I cannot refrain from expressing my deep concern at the very high interest rates now being guaranteed under both group and individual contracts, for considerable periods of time, coupled in some contracts with guarantees involving the price at which assets may be liquidated or transferred. At a time such as this, with interest rates at unprecedented high levels, the high risks of adverse future developments are so obvious that one must be aware of the dangers of the extravagant guarantees now being offered.

The program mentioned the preliminary report of the Society Committee on Valuation, which I have studied with some degree of alarm. The theory sounds good, but in practice I simply do not believe it will work, especially the proposals on valuation of assets, which would clearly be riddled with dangerous and highly speculative assumptions on such things as rate of repayment of various types of mortgages, call options on bonds, rates of interest for reinvestment of such funds and many other items far too numerous to mention. My views on these matters are published in the Records of April 1975 on page 397 (BUOL Report) and October 1975 (Solvency) on page 911, and have not changed since, but rather have been reinforced by events, or lack of legislative action.

The great amount of work that has obviously been done by this ACLI Committee clearly deserves the gratitude of the profession and the industry and a much more adequate presentation of all its work than was possible at this meeting. Indeed, the issues are so vital that some future meeting of the Society could well be largely devoted to the subjects being studied by both these ACLI and Society Committees.

MR. THOMAS A BICKERSTAFF: I have two comments which I would like to make. First, it is my opinion that the use of any financial or economic index which is not directly tied to the interest earnings within the life insurance industry itself will be deemed unacceptable to the NAIC and the respective legislatures. Moreover, similar to the objective of incorporating margins in the CSO Tables, the valuation interest rate, however adjusted, should be such that the interest actually earned by the majority of companies equals or exceeds it. This indicates to me that any industry composite rate cannot be weighted by investment volume alone or we could, as has already been suggested, simply use the data from Prudential and Metropolitan and stop right there.

Second, I am concerned about the impact of this proposal on competition within the industry. There are currently 57 life companies chartered in Pennsylvania, 5 or 6 of which I would characterize as large, with the rest evenly split between medium and small. The latter two groups already face a competitive disadvantage with respect to interest earnings. While I recognize that the proposed mechanics for changing the valuation interest rates have certain internal controls, I am afraid that without considerable further study and without greater checks and controls, the competitive edge which the giants have over the rest of the industry may become more disparate, more quickly, and in another decade or so Pennsylvania's 57 domestic life companies may shrink considerably in number. Whether that is likely or not, good or bad, I think further consideration must be given to the impact of this proposal on competition within our industry.

MR. JOHN E. HEARST: The ACLI has a difficult, if not impossible, task developing a dynamic valuation interest rate considering the problems the insur-

ance industry has had with dynamic concepts in the past. Discontinuities can occur which render the dynamic concept useless.

Indexing with 20 year utility bonds may lead to serious problems as investment practices of companies change. Recently, companies have been investing a larger proportion of their assets in obligations with shorter maturities. These obligations now, unlike their past experience, have significantly larger yields than obligations with longer maturities. If the difference in yields continues to widen, indexing with longer maturities will increase federal income taxes unnecessarily.

The proposed weight, 35%, for life products does not adequately recognize the impact of federal income taxes. This weight results in a valuation interest rate of 5.1% when yields are 9% and 7.2% when yields are 15%.

If this relation of yields to valuation interest applies to companies taxed solely on investment income, the federal income tax will be 18% of total investment income when yields are 9% and 36% when yields are 15%.

The use of a larger weight, e.g., 90%, combined with a lower ultimate valuation interest rate, will materially reduce the impact of federal income taxes. If this relation of yields to valuation interest were to apply to the preceding example, the federal income tax will be 3% of investment income when yields are 9% and 6% when yields are 15%.

This proposal is much more complex than the use of a level interest rate. However, some method must be found to reduce materially the impact of federal income taxes if life insurance companies are to compete for the saving dollar.

MR. CARL H. ROSENBUSH, JR.: I thought that a dynamic interest rate would be one which would apply to all issues and not be just a new method of changing legal limits. The various bodies considering this problem should study allowing the actuary to vary both mortality table and interest rate as circumstances dictate. This method has worked quite well in British jurisdictions and elevates the actuary from a checker of numbers to a judge of the company's future risk.

While the NAIC might not be willing to make such a drastic change at this time, they might consider a similar change in the method of calculating deficiency reserves. It seems reasonable to test the ability of a gross premium to pay benefits and provide the next year's reserve based on current circumstances. Since the 1958 CSO is representative of mortality experience of several years ago, it could be adopted as a deficiency valuation standard (then perhaps the new tables when they are approved). As in the dynamic interest method, the maximum interest could be allowed to vary each year, but for all years of issue. Here the appropriate measure would not be an external index but the company's investment earnings for the year. An example would be to base it upon the interest rate given in Exhibit 2 of the Annual Statement.

Given a mortality table and interest rate, the net premium or premiums to compare to the gross premium or premiums could be calculated. Or if the company wished, the net premium could be calculated to amortize the net amount at risk on the policy's statutory basis. The rationale is to set up an extra reserve if and only if the gross premium is not able to pay benefits and establish a reserve increase based on current mortality experience

and the current investment portfolio of the Company. This method would decrease the deficiency reserve burden of the company which is mainly caused by the lag between actual and legal mortality and interest rates in the valuation bases.

As far as ACLI's wish not to bother legislators too often, I cannot see any objection to carrying frequent requests for interest changes to the legislature. It will help divert their minds from thinking of new ways to increase spending and taxes!

Actuarial Assumptions for Insurance Contracts vs. Pension Plans  
 Referred To In Discussion By Ms. Anna M. Rappaport

	<u>Insurance Contracts</u>	<u>Pension Plans (Not Insured)</u>
Standards for Assumptions	Have minimum valuation standard (set by law)	ERISA requires best estimate of assumptions
Types of Valuation and Assumptions used	Uses net premiums - mortality	Uses assumptions as to all factors which may influence cost
When Set	Life of policy at time of issue	Year by year as experience warrants change
Effect of Experience	Participating contracts - reflected in dividends and insurance company profit  Non-participating contracts - reflected in insurance company profits	May require adjustment in actuarial assumptions

