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## NONFORFEITURE AND VALUATION CONCERNS IN THE 1980'S

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WILLIAM K. NICOL

The panel will discuss the impact in the 1980's of the adoption of the 1976 amendments to the standard non-forfeiture and valuation laws, the probable result if the recommendations of the Society's Special Committee on Non-forfeiture are adopted, and the anticipated revision to the Commissioner's Standard Ordinary Mortality Table.

1. What changes can be expected in non-forfeiture and valuation requirements in the 1980's?
2. What changes in products, non-forfeiture provisions and dividend options will likely emerge from these?
3. What will be the effect of these and the change in the CSO Mortality Table on future gross premium, cash value and reserve levels?
4. Will these changes be compatible with all economic forecast scenarios, or should other changes be proposed?
5. Will the adoption of the revised non-forfeiture and valuation standards create a need for increased risk charges and/or profit or contingency margins in gross premium rates, for higher company surplus levels? Should attention to solvency measures be increased?
6. Are the allowable valuation interest rates, especially for Group Annuities and Individual Single Premium Annuities, sufficiently liberal? Should substantially higher (or dynamic) rates be allowed, and what will be their impact?

MR. ARDIAN C. GILL: The first and third of the scenarios presented for the business environment in the 1980's, high inflation and social democracy, imply continued inflation and high interest rates.

The 1976 amendments to the Standard Valuation and Non-forfeiture Laws called for the following changes.

In the area of valuation:

1. Valuation interest rates on life insurance and annuities were increased to  $4\frac{1}{2}\%$  ( $5\frac{1}{2}\%$  for single premium products and  $7\frac{1}{2}\%$  for immediate annuities).
2. Female setback was moved to six years.
3. New annuity reserve methods were introduced.

4. New deficiency reserve methods were introduced which used the minimum reserve rather than the reserve used in the policy to determine the existence and the magnitude of deficiency reserves.

In the area of non-forfeiture:

1. We went to 5 $\frac{1}{2}$ % on annual premium products and 6 $\frac{1}{2}$ % on single premium products.
2. Deposit term requirements changed.
3. Annuity cash value methods changed.
4. Expense allowances were introduced and there is some element of price regulation which may well be an omen for the future.

The Unruh Committee made some other proposals in non-forfeiture and valuation which are still under consideration.

MR. RICHARD S. MILLER: The ACLI proposal to the NAIC which has been exposed now to the NAIC membership is basically in two parts: One part is the dynamic interest rate and the other part is deemed or conjecturized as the technical amendments to incorporate the remainder of the suggestions of the Unruh Committee. Principal among them are the changes in the treatment of the excess first year expense allowance. The primary item here is the decrease in the per 1000 allowance and a tremendous increase in the percentage of the premium allowance. In the future, even more significant, is the use of a level premium regardless of the actual premium pattern in the contract for purposes of determining the premium to which you apply the expense allowance percentage. For example, an ART-100 policy would have exactly the same excess first year expense allowance as a traditional whole life policy issued at the same age. Any two policies with identical benefits and premiums coterminous will have the same expense allowance.

Another item which will establish a little bit more flexibility for us is the suggestion to allow a change in non-forfeiture values only to be approved without the need to seek reapproval of the policy form. Another item which would lead to simplification is the use of the average face amount during the first ten years as the death benefit for purposes of the per 1000 allowance.

The last item, which is purely actuarial in nature, and which is of great interest here, is the deletion of the circularity of using the non-forfeiture premium as the basis for the non-forfeiture premium. We will now be using just the net level premium as the basis for the non-forfeiture premium.

Those are the technical amendments in substance. There are some 30 odd of them. They are all contained in the ACLI release of March 21 which includes the dynamic proposal as well.

MR. WILLIAM K. NICOL: The new sex-distinct tables are based on intercompany mortality experience between 1970 and 1975 policy anniversaries. The first five policy years of experience were excluded from the data, except for the young ages, in order to introduce an element of conservatism by eliminating the favorable select experience. Also, wide variation in individual company mortality experience is present in the early policy years due to differences in underwriting rules, nonmedical limits, etc. Both nonmedical and medical experience were included for all policy years, even though the 1958 CSO Table excluded nonmedical experience during years 6 through 15, because the percentage of nonmedical business has grown substantially over the past twenty years.

The experience mortality rates were graduated using Jenkins' fifth difference modified osculatory interpolation formula. Minor adjustments in experience rates were made so that

1. the rates at the very young ages would be more consistent with those of other mortality tables;
2. the rates at the very old ages would grade smoothly into a rate of 1.000 at age 100 for the Basic Tables and age 99 for the Valuation Tables; and
3. an overall ratio of actual claims to expected claims based on the graduated Basic Tables would be 1.000

There is a significant dip in mortality rates in the 20's in the Male Basic Table. It was felt that since the dip was so much more pronounced than it was twenty years ago, to remove it would effectively disregard the experience at important insuring ages. This dip manifests itself in the male loaded table (Table K(M)) as well. Although there was a very slight dip in the 20's in the crude female experience, this dip was removed by the graduation process.

The margin formula used to load the Basic Tables consists of a quadratic function of age divided by the curtate expectation of life calculated from the Basic Tables. The use of a margin function involving the reciprocal of the curtate expectation of life (which was the type of formula used for the 1941 CSO Table) enhanced the attainment of monotonic nondecreasing margins. The prime constraint on the margins was that reserves on the loaded table for a model office of insurance would not be materially different from those reserves developed using the underlying 1970-1975 fifteen year select and ultimate mortality experience. The resulting model office reserves based on the proposed male and female valuation Tables K (M) and K (F) are about 7% lower than those based on the 1958 CSO Table.

The adoption of the 1980 CSO (its proposed title) will reduce cash values and reserve values by about 7% in the aggregate from values on the 1958 CSO Table based on model office studies. The 1980 CSO (female) values will be about 12% less than the corresponding 1958 CSO (3-year setback) values, and the 1980 CSO (male) values will be about 6% less than the corresponding 1958 CSO values.

Whole-life valuation net premiums on the 1980 CSO (female) table are about 80% of the corresponding 1958 CSO (3-year setback) net premiums while male net premiums are about 90% of the corresponding 1958 CSO nets.

The only explicit effect on gross premiums will result from lower nonforfeiture values on the new tables with a more pronounced effect on female lives than on male.

Actions of NAIC Life, Accident, and Health Technical Subcommittee at Tampa, Florida, on March 28, 1980:

- 1) Exposure drafts of new standard valuation and nonforfeiture laws to be presented to NAIC at June, 1980 meeting with adoption desired at December, 1980 meeting.
- 2) Adoption of 1980 CSO Tables (Tables K(M) and K(F)).
- 3) New laws to provide for use of any more recent mortality adopted by the NAIC that has been approved by regulation promulgated by the commissioner for use in determining the minimum standard of valuation or minimum nonforfeiture standard.
- 4) Essentially, all recommendations of the Unruh committee incorporated into proposed new nonforfeiture law.
- 5) Proposal for use of dynamic interest rates as valuation and nonforfeiture minimum standards will be in a separate exposure draft.
- 6) Though not specifically addressed through proposed legislation, the technical subcommittee has a charge to develop dynamic policy loan interest rates.

MR. JOHN C. ANGLE: Topic 5 asks the question: "Will the adoption of the revised nonforfeiture and valuation standards create a need for increased risk charges and/or profit or contingency margins in gross premium rates, for higher company surplus levels? Should attention to solvency measures be increased?"

A mutual life insurance company should answer the questions asked by Topic 5 by saying "yes". But you came not for the answers but to hear the fabric of reasoning that leads some of us to these conclusions. The conclusion that most mutual insurers will need to hold greater contingency reserves and surplus in the years ahead, and to raise premium margins, rests upon a finding that individual life insurance policy reserves have grown weaker while risks have increased in our inflationary era. My conclusion rests on three points about our present era:

1. Most companies will hold the weakest possible statutory policy reserves for newly-issued individual life insurance. The "ultraconservatism" which once characterized statutory life policy reserves is draining away.
2. The risks have increased. I will mention the rapid reduction in gross premiums for participating life insurance, a decline in the quality of many balance sheets and the contingent liabilities that may be presented by State Guarantee Associations.

3. The interest rate risk has been increased as the industry has raised long-term interest rate guarantees in individual life insurance policies. Compare present guarantees to the long-term interest rates seen in the United States during the 120 years from 1850 to 1969. The interest rate in these years ranged from a low of 2.61% from 1940 to 1949 to a high of 5.10% seen from 1860 to 1869. The interest rate, significantly, was 3.64% or less in 60 of those 120 years. (1) How certain can we be that 4 $\frac{1}{2}$ % is a prudent long-term assumption?

Let me now expand on these three points. The first suggests that individual life statutory reserves will be set, almost universally, at the minimum level permitted by law. This will soon mean CRVM at 4 $\frac{1}{2}$ % interest and Table K mortality. Individual whole life valuation interest rates of 6% or higher may well follow if the ACLI-proposed dynamic interest rates are accepted for individual life insurance.

This new preference for minimum reserves exists because we actually tax conservatism in the United States. As Peter Plumley (2), and the late John Fraser (3), have taught us there are several imperfections in the Life Insurance Company Income Tax Act of 1959. Two of them impose opportunity costs on companies holding low interest assumption net level reserves. The 10-for-1, or Menge, rule operates at today's investment returns to tax 2 $\frac{1}{2}$ % reserves much more than 4 $\frac{1}{2}$ % reserves. No one, it turns out, can afford a "conservative" interest assumption for either new or old business. Section 818(c) of the Income Tax Act also offers many companies financial incentive for holding CRVM rather than net level reserves.

There are other opportunity costs paid by the conservative beyond those imposed by the Internal Revenue Service. These include loss of sales when one's premiums are judged too high by the market or by Consumer Reports. A company seriously behind the market may also lose agents and in extremis fire its actuary.

Such concern for the job security of actuaries may explain Interpretation 7-B of the American Academy of Actuaries. (4) This guide tells Academy members recommending a statutory reserve standard not to recommend one so conservative "that a company could withstand any conceivable circumstance." Reserves at such a level of conservatism, says the Academy, "would imply an excessive level of pricing."

I do not know if the Academy considers interest rates of 3.64% or less a "conceivable circumstance." The Academy's interpretation, however, is one sign of the extent to which the post-war price inflation has shifted the consensus of our profession on this matter of conservatism. In 1932 Henry H. Jackson spoke for most members of the Actuarial Society of America when he wrote that a mutual life insurer's basis of valuation should be one "universally recognized as conservative." (5) He meant, of course, net level premium, 3% and the American Experience Table. But since those days "conservatism" has come under attack from all sides. A typical view was that of Accounting Professor Robert Raymond who wrote in 1964 that "ultra-conservatism is built into" life insurance company balance sheets. (6)

While the myth of the "ultraconservatism" of statutory reserves survives,

a significant degree of implicit margin has been drained away by the modernization of interest and mortality assumptions and by the new preference of mutual companies for minimum statutory reserves. Lambert Trowbridge and his committee are quite right to ask The Society to investigate the explicit margins needed for the risks faced by an insurance company and to suggest that those margins appear in balance sheets as designated contingency reserves. (7)

This leads us to the second point, which is that the pricing, diversification and contingent risks have increased. Take the pricing risk. Mutuals, for most of the past 130 years, have favored gross premiums high enough to minimize the risk that any block of business would not be self-supporting. Joseph B. MacLean, addressed this matter in a 1945 edition of his book, Life Insurance. He wrote that participating premiums should be based upon "conservative, perhaps ultraconservative" assumptions as to mortality and interest. For nonparticipating premiums, MacLean added that it was sufficient for premiums to be on a "safe" basis. (8)

Today one can find participating premium rates, for some size bands, that are at or below those charged for nonparticipating policies. The traditional high premium, high dividend policy is rapidly losing favor with the market and its consumer advisers.

Here, again, I find the company tax law to have a bias against conservatism. This is because only the first \$250,000 of policy owners' dividends can be deducted from the taxable investment income of a phase 1 company. The law thus creates an incentive for companies to issue low premium, low dividend individual life insurance policies.

Beyond the reduction of margins in premiums and reserves, one can see other items affecting the risk-bearing capacity of life insurers. Here are four worth mentioning:

1. The conventional annual statement does not consolidate the financial statements of subsidiaries with those of the parent company. Only profits and losses flow upward to be reflected in the value of the parent company's investment in subsidiaries. Premium writings, reserve obligations and other financial measures of risk, however, are not consolidated nor monitored by NAIC solidity tests.
2. Reserves are not a good measure of the risks in writing such coverages as long-term disability insurance.
3. The ratio of surplus to liabilities of most mutual life insurance companies peaked in the late 1960's and would have declined steadily since then had not most companies adopted the CRVM reserve standard in recent years.
4. Since World War II, most states have organized State Guarantee Associations. Any weakening of the general solvency levels will burden stronger life insurance companies with contingent liabilities of an unknown dimension.

My third point, and the most important one, is to stress the interest rate risk inherent in long-term guarantees of 4 $\frac{1}{2}$ % or higher. Prime quality corporate bonds yielded 3.64% or less during 60 of the 120 years stretching from 1850 to 1969. (1) Since 1970, however, the yield on such bonds has averaged more than 8% as investors have demanded a greater inflation premium in the interest rate as a condition for purchasing bonds. Have we entered a new era of ever higher interest rates? Is inflation so built into our political system that there is no retreat? Obviously no one knows the answer to these questions. Accordingly, I do not intend to subject you to a long recital of the options of economists on both sides of these questions. Let me simply conclude that the outlook for interest rates over the next 30 years is highly uncertain. It thus seems prudent to act on the possibility that interest rates may again slide into a long-term decline. In such a decline, we might again face interest rates of 4% or less for periods of 20 years or more, as we have twice before during the past 120 years.

Obviously, we need research on the possible dimensions of the interest rate risk as described in Attachment 3 to the Preliminary Report of the Committee on Valuation and Related Problems. (7) The Committee will hopefully pursue its research and in time offer quantification of the seemingly substantial contingency reserves required.

In the meantime, I see four choices that actuaries can offer companies that wish to sell ordinary life insurance based on the assumption of historically high interest rates. The first choice is to put a price on the interest rate risk involved and to accumulate the risk premiums in a contingency reserve. The Company, in so doing, may run into the legal ceiling on surplus in Section 207 of the New York Insurance Law.

A second choice for mutual companies is to return to the tradition of a high premium - high dividend pricing philosophy tied to more modest interest guarantees. I do not have much hope for this alternative given the tax costs and the realities of the marketplace.

A third choice for life companies is to abandon the long tradition of guaranteed premiums; instead, they should introduce nonguaranteed flexible premiums that would vary inversely in some proportion to the return on long-term government bonds. This approach is already used by stock life companies and deserves consideration by mutual companies. This means, of course, abandonment of pricing based upon a company's own experience. However, the IRS stands in the way of premiums which vary by company experience because of its position that reductions below the maximum dictated by company experience would constitute dividends.

The fourth choice is to adopt split or graded interest assumptions. This choice avoids the interest rate risk but raises cash values, and hence premiums. It also may not deliver the federal tax benefits we would assume since some IRS officials, at least those who hold forth in New York City, hold that an average interest rate must apply throughout the life of a block of policies for tax purposes.

My colleague, Ashby Bladen, (9) tells me that economists employ the term "institutional rigidity" to describe the conditions besetting individual life insurance today. "We are", says Ashby, "a thoroughly 19th century

institution structured in law and through custom to assume the range of interest rates seen in that century."

Tinkering with these rigidities by altering only the valuation interest rate will not allow us to survive in an era of short-term rates of 20%, of marginal tax rates of 100%, of policy loan borrowings in excess of cash flow, or of an unprecedented long-term interest rate risk.

#### References and Notes

1. Sidney Homer, A History of Interest Rates, Second Edition (New Brunswick, Rutgers University Press, 1977), Tables 41, 42, 43 and 45. Homer gives the following time series of long-term interest rates. The series is based upon New England municipal bond yields through 1899 and on yields on new prime corporate bonds since 1899:

<u>Decade</u>	<u>Long-Term Interest Rate</u>
1850 - 1859	5.06%
1860 - 1869	5.10
1870 - 1879	4.98
1880 - 1889	3.60
1890 - 1899	3.50
1900 - 1909	3.47
1910 - 1919	4.23
1920 - 1929	4.56
1930 - 1939	3.64
1940 - 1949	2.61
1950 - 1959	3.33
1960 - 1969	4.94
1970 - 1979	8.60*

\*J. C. Angle estimate

2. Peter W. Plumley, "Certain Inequities in the Life Insurance Company Income Tax Act of 1959", TSA XXVIII (1976), p. 11
3. John C. Fraser, "Income Tax and Reserve Valuation," The Actuary, November, 1972
4. Interpretation 7-B: Adequacy of Reserves, Revised June, 1978 by Academy Committee on Life Insurance Financial Reporting Principles, 1980 Year Book, AAA, p. 403-404
5. Henry H. Jackson, "The Wisdom of Mutual Life Insurance", TASA XXXIII (1932), pp. 126-127
6. Robert H. Raymond, Financial Statements of Life Insurance Companies, (Michigan State University, 1964) quoted in Ernst & Ernst GAAP (New York: 1974)
7. "Discussion of The Preliminary Report of The Committee on Valuation and Related Problems", Record 5:1 (April, 1979) pp. 241-294

8. Joseph B. MacLean, Life Insurance, 6th Edition (New York: McGraw-Hill, 1945) pp. 92-93
9. Ashby Bladen, How To Cope With The Coming Financial Crisis (New York: McGraw-Hill, 1979) See also reviews in The Actuary, November, 1979 and Transactions preprints for 1980

MR. MILLER: A recurrent theme of this meeting has been the flexibility of response to changing conditions. One of the most hopeful items that I see in the current environment which will allow us to flexibly respond to these changing conditions, is the proposal now before the NAIC Technical Subcommittee to use dynamic interest rates within the valuation system.

The need for such dynamic rates was brought home when we had the 1972 amendments increasing interest rates. Before they were even passed, we had a series of 1976 amendments again increasing interest rates in valuation and hopefully those amendments might be completed in a year or two.

In the current situation, many new products are being inhibited by the use of current interest rates. We also have laws on the books in many important insurance states which will automatically revert to some of the lower interest rates by the year 1990.

As a result, the ACLI formed a committee under Yuan Chang to construct a proposal to avoid some of the adverse impact that we are seeing from the use of unrealistic interest rates in the valuation process.

Some areas where there has been adverse impacts are:

- i. PBGC Buyout Market.
- ii. Federal Income Tax - the effect of unrealistically low rates on the Menge Adjustment.
- iii. Unrealistic non-forfeiture values - which are much higher than called for by today's asset shares.
- iv. Pricing effects - deficiency reserves. These effects are particularly felt in stock companies, but also in mutual companies in the structure of dividend emergence.
- v. There is the adverse federal tax effect of the dividend limitation.
- vi. There is psychological damage in having policies at so many varying interest rates.

The ACLI committee operated under certain restrictive ground rules:

1. The committee did not wish to affect asset valuation.
2. It did not wish to affect the reserve basis on in-force business. In other words, there would be no retroactive application of reserve standards to in-force business.

3. For political reasons, we did not address ourselves to the question of the policy loan rate and reinstatement rate.

The most dramatic effect of the proposal is that under today's environment, the valuation rate for certain contracts for use in the 1980 Annual Statement will be 12-3/4%.

For individual life insurance we would still, however, have a maximum valuation interest rate of 5 1/2%, although a 7% non-forfeiture interest rate might be permitted in 1983 because of the lag built into the proposal to accommodate the mechanical process of changing ratebooks, etc.

There are some criticisms of the Committee proposals.

One major criticism was the use of the Seasoned Utility Index as the basic index to which all the variable interest rates were tied. The use of this index was decided upon three months before the Three Mile Island incident, which raises the basic question of whether we are putting all our eggs in one basket by our use of such an external index. An alternate to that particular index is being investigated; however, an external index is almost mandatory for several very important mechanical reasons. The de facto valuation interest rate situation, that we currently have for many group annuity products as a result of the New York and California regulations, is that we are using an internal index generated from the investment returns on new investments of selected life insurance companies, and this has had the very troublesome effect of having a lag factor of one year's investment returns determining the reserve basis for a different year's issues.

There is a problem of different treatment of deferred annuity and individual life insurance.

The most serious and crucial complaint is that the resulting rates are just too high. The desire to have split interest rates has often been expressed. Had we gone to split interest rates in the proposal, we could have satisfied the conservative bent but the effect on non-forfeiture values might have been to increase them, and this would have been too high a price, going in that direction.

Another valid criticism is that there are instances when there are products which can be sold under the proposal without any surplus strain. In this instance, there is no automatic break for a company on its pricing. The current situation on GIC contracts is a case in point.

There are some alternative approaches to the dynamic interest rate proposal.

- i. One obvious alternative is to return year after year and ask for increases in interest rates. There is a proposal to be presented before the NAIC asking for a 1/2% increase in each interest rate.
- ii. Then, there is the question of whether old business should be strengthened when the outlook is adverse.
- iii. There is the question of whether the interest rate on single

premium life insurance should be higher than that for annual premium life insurance.

- iv. Northwestern Mutual's transfer approach is another answer to this question. Whether the current reserve bases should be applied to a 1930 issue is an open question. Apparently, the state departments are going to allow it and that certainly is an approach that has an effect on the Federal Income Tax picture. If we would extend that concept only very slightly, with a modest change in current laws in some states, we might even go to something approaching GAAP for mutual companies which would involve very high interest rates perhaps 8% or 9%, and net premiums and benefits calculated on the basis that illustrated dividends are pure endowments within the reserve system. This would produce reserves approximating the present 3½% or 4% reserves while incorporating some non-guaranteed benefits into the reserving process. That is not as completely dramatic as it might sound, because for years we have incorporated into our reserving system non-guaranteed benefits such as immediate payment of claims and refund of premiums past the date of death.
- v. Another imaginative actuarial approach which might be taken to solve some of the problems that the lack of flexibility in interest rates has caused us is to break the contract into pieces. Companies inhibited from selling single premium life insurance today could instead sell a combination of ART-100 and SPIA providing an increasing endowment benefit over the years. The benefit would exactly be equal to  $c_x$  for the premium required for the ART. That policy would not have any cash values since it is an immediate annuity. Whatever reserve it has is at 7½% for the bulk of its value and the only problem with it would be the absence of the tax-free buildup inside the contract for the policyholder. For many policyholders this is of no consequence anyway.
- vi. Another approach would be a combination of ART-100 and a side fund accumulation. We have seen some illustrations in a replacement market which use this type of approach.
- vii. Perhaps more logical would be to go to the Canadian/United Kingdom (UK) approach where the valuation is certified by the actuary and the valuation is driven by assumptions which he feels are currently appropriate and adequate. In that regard, I would like to mention that the current (U.S.) certification calls on the actuary to certify that values within the balance sheet are adequate to meet all obligations. I wonder whether we should not be looking at the asset side of the house when we sign our names to those statements.

MR. GILL: Mr. Nicol has told us that we are headed into an era of lower reserves and lower nets - 80% of current net for female, 90% for male. A combination of these lower nets and higher interest rates can lead to a dramatic decline in the potential cash that life insurance companies will be able to accumulate even if they can keep their distribution systems working properly.

Mr. Angle is reminding us that the basic issue, now as in the past, remains the question of solvency, and that is what valuation is all about.

With regard to tax considerations, there is a factor in the 818c(2) election which can distinctly work in your favor especially if you are taxed on Gain. The current net level premium at age 35, for example, is \$14, while you can get credit for a \$21 premium as an allowance under this election. If the new interest and mortality bases drop you down to \$12, the distribution costs will be covered very soon through that election of an increased reserve.

Mr. Nicol, have you quantified the change in net premiums, say, for a female age 35, non-smoker, at ~~5.4%~~ interest levels?

**MR. NICOL:** The question of non-smoker mortality is a question of real interest to the NAIC. There has been a suggestion that we should have a mortality table, if not reflecting non-smoker versus smoker mortality, one reflecting preferred risk versus non-preferred risk mortality. It can be stated that the differences between smoker and non-smoker mortality are more material than the differences between female and male mortality. This has been brought out in a recent paper. If you take a look at the valuation process, the mortality differences become pretty insignificant compared to the differences in valuation which results from a change in interest assumption.

**MR. GILL:** We have recently done some experimentation with the level of possible rates using female discounts and non-smoker mortality. If one throws in one other element, the 818c(2) election, we have some gross premium rates down in the \$8.50 range for female non-smokers at age 35. So, this gives you some idea of where we are headed, not only in competition, but in ability to maintain the inflow of money.

Mr. Miller, do you feel that the current political legislative process is flexible enough or your proposals are flexible enough to permit us to survive such guaranteed asset products in an environment that is portrayed by scenarios A or C?

**MR. MILLER:** The laws we have to date permit us to survive if we are truly convinced that we must market a product which has, for example, no cash values stated in the contract. A par contract can be constructed which looks like an increasing premium contract, or even an ART-100 product with a dividend scale placed on top of it which results in a level premium. The payment of those dividends is subject to future action, and the required non-forfeiture values are minimal. We can market that product today, and I think the public is willing to accept it. The capacity to get this type of product has probably been inhibited by a feeling of manipulation rather than a proper recognition of what asset shares should be. Mr. Gill has asked whether the difference in asset shares results from interest rates or from distribution cost differences. After 15 years the asset share is dominated by interest rates. The 20th year cash value in products we are now selling is, by my own evaluation, two premiums higher than the natural reserves we are holding on our GAAP basis which are very good approximations to the proper asset share. This is an unhealthy situation.

MR. GILL: Mr. Angle, you have asserted our reserves should be adequate for all conceivable circumstances. I am not sure that any of us conceived the circumstances of scenarios A and C. Do you believe that our current system can be modified or at least is flexible enough to permit us to adopt that maxim of being adequate under all conceivable circumstances or is more radical surgery required?

MR. ANGLE: We will eventually end up questioning our long tradition of guaranteed premiums. Something has to give if we have fully guaranteed cash values and low guaranteed premiums, and a historically high interest rate. There is an unknowable degree of risk which we are now shouldering whereas in the past we were quite comfortable having a level of premium and a dividend margin that permitted us to survive under most any circumstances. It was not that long ago that companies went into the first year of a depression and survived because they could cut dividends by 50% to 75%. These cuts were made across the board. It would worry me if the entire industry were to get itself into such a position that it could no longer absorb such shocks of that kind. It simply may mean that we will have to consider how we survive under a number of new scenarios.

MR. GILL: Is it the premiums or the values that are at issue? How can you protect yourself from disintermediation by non-guaranteed premiums?

MR. ANGLE: You cannot, of course. We are also confronting instability. We have seen an inversion of the rate curve, where short term rates are suddenly much higher than long term rates, which brought about significant disintermediation by itself. It is the oscillation and variation of the interest rates, as well as the rate of inflation, which has brought about the economic instability of our time.

MR. GILL: We did a fairly elaborate study a few years ago on inflation and the casualty industry and our conclusion, relative to profitability, was that it wasn't so much the rate of inflation to which profitability was sensitive because one can react to that and build it in, but protection against the change in the rate of inflation. The same force may operate here in the life insurance business.

Mr. Angle has implied or stated it is the perception of the consumer or the policyholder that is important and if he perceives that there is no future value to the policy, he will go elsewhere, or to a cheaper form of policy. On the other side of the coin, I recently read a report of the Albany Life in the United Kingdom (the United Kingdom is a leading indicator for us in many respects in terms of labor, inflation, and interest rates) which reported a strong, approximately 34% increase, in the inflow of funds. The suggestion was that in times of uncertainty, people save.

MR. ERNEST J. MOORHEAD: Some months ago, the ACTUARY had an article about the Society's own computer operation, SOFASIM. The article brought out two particular points:

1. SOFASIM has been heavily designed for the study of non-participating life insurance and not for participating life insurance.

2. Actuaries are not doing enough with the Society's rather extensive computer operation.

With regard to the split interest rate, I would regard the choice of the 20th year for the interest rate changeover point as a sensitive matter because disclosure procedures also use the 20th year for their studies and I wonder whether the use of duration "n" might be used instead of duration "20" in discussing the interest rate changeover time?

MR. ANGLE: I would be happy to say "n", or "n where n frequently is 20."

MR. DONALD D. CODY: These remarks come from my background as a member of the SOA Committee on Valuation and Related Problems but they are personal. They relate to the relationship of valuation bases to needed surplus, which reduces the capacity of the company for undertaking further risks, and to the management of risk among products and lines.

We actuaries have primarily been concerned with pricing for several decades rather than with capacity and surplus requirements. We are now squarely facing a problem of capacity utilization and a surplus squeeze with little theoretical preparation. Involved is the related problem of risk management, i.e., how is available surplus to be committed among various products and lines with different lengths of assets versus lengths of liabilities. Control of this commitment is, of course, through pricing and marketing decisions. Priority of emphasis ought now to be solvency (or solidity) and pricing rather than the reverse as it has been.

On life insurance products, assets are short compared with liabilities and thus surplus decreases as new money rates fall. The degree of immunization also decreases in these conditions. Surplus required on life insurance for interest risk should therefore be determined by assuming low new money rates. However, in times of very high interest rates, as now, liabilities shorten due to disintermediation, affecting investment earnings. In a long continuing high variable inflation, life insurance might shift to a situation of assets longer than liabilities, similar to that for deferred annuities and guaranteed interest contracts (GIC's), in which guaranteed cash values and loan rates are not viable.

In the deferred annuity and GIC lines, assets are usually long relative to liabilities and the risk against which required surplus should be calculated is rising high new money rates. Today, companies holding large amounts of such contracts have a large surplus need to cover capital losses on security sales (or losses in other lines drawn on) to cover withdrawal and maturity values.

The current cash flow squeeze arises from outflows of loans on life insurance and from withdrawals and maturities on deferred annuities and GIC's together with a slowing of inward cash flow on group annuities and flexible premium individual contracts. To the extent that existing surplus contributed by a particular product or line is utilized, future pricing is impaired on that line. To the extent that existing surplus contributed by other lines is utilized, future pricing on other lines is impaired as well. Historically low or absent profit margins on deferred annuities and GIC's imply that current losses on these lines must be impairing future pricing on all lines. This indicates the desirability to build appropriate surplus in all lines.

As valuation standards become more liberal and surplus intrinsic to reserves is reduced, it is clear that explicit surplus must be increased. Also, deferred annuities, GIC's, and other asset long contracts appear to need more profit margin, not less, if other lines are to be protected against recurring environments like the present one.

Another pertinent point is that to the extent that different lengths of liabilities in various products and lines can be better matched by assets customized by imputation of particular types of assets (as is done in Canada), by separate accounts, or in well financed specialty subsidiaries, the above problems can be reduced but not eliminated.

The current approach by the ACLI toward higher valuation interest rates together with further dynamic formulation does not appear to reflect these sophistications appropriately. It is my feeling that additional research is needed before squeezing surplus margins out of valuation reserves without setting clear objectives for more extrinsic surplus by product and line and understanding the effects of distribution of assets by duration to maturity.

As to the question asked about the utility of SOFASIM in its stochastic mode in this type of research, our committee has turned its current thinking away from stochastic models, especially the mind-boggling stochastic model of the new money rates. We are considering deterministic approaches using bounding scenarios, such as the least disastrous ones where government bail-out of the industry is likely to be needed. Companies holding intrinsic and extrinsic surplus determined for such scenarios would still be solvent while weaker companies would require government or industry aid.

MR. ALAN LAUER: It seems to me, that in times of very high interest rates, the use of the dynamic interest rate structure may mean that we may be counting excessively on being invested long in today's interest rates whereas it seems likely that as soon as interest rates drop appreciably these investments will be called on us. What are the implications for valuation assumptions?

MR. MILLER: Mr. James Bridgeman of the Aetna made a very extensive analysis of various investment scenarios. One of these was the scenario of declining interest rates and progressive refunding of long term bonds into lower yielding current interest rate vehicles. The dynamic interest rate proposal can withstand that scenario with only a little bit of discipline needed on the part of management in retaining surplus in good years as a cushion against the bad years. If all surplus is dissipated in the good years, there obviously will not be enough left for the bad, difficult years.

MR. GILL: Mr. Miller, was any consideration given to changing the structure, or did you feel compelled to work within the structure of guaranteed cash values and a fixed interest rate valuation?

MR. MILLER: We worked within the existing structure.

MR. JESSE M. SCHWARTZ: The trend today is towards lower premiums and the use of higher interest rates in life insurance products. With the trend

to indexed permanent life insurance policies and adjustable life, is the day of non-guaranteed premium for these additional amounts of insurance coming much sooner than has previously been anticipated?

MR. GILL: I would point out that one can consider participating policies as non-guaranteed if one considers the premium to be the gross premium less the dividend.

The threat of inflation on the maintenance cost is not really a serious one for larger permanent policies because the interest rate can similarly inflate margins. On term plans, however, especially those renewable to very high ages, inflation of the maintenance cost can be a very serious problem. Some UK companies have gone to the use of a non-guaranteed policy fee for that reason. Presumably, there are no non-forfeiture problems that get in the way of that.