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ACTUARIAL CONSIDERATIONS FOR MUTUAL COMPANIES

Moderator: C. L. TROWBRIDGE. Panelists: ROBIN B. LECKIE, MYRON H. MARGOLIN, ROBERT L. POSNAK, JOHN K. ROBERTS*

1. How is the overall level of retained surplus determined?

2. Do companies have surplus management programs?

3. What are the rights of participating policyholders?

4. Are Generally Accepted Accounting Principles (GAAP) being used for mutuals?

5. How do companies reconcile growth and surplus? What limits should be placed on growth?

6. What actuarial considerations are involved in acquisition,divestiture, merger or windup?

(This session will include a discussion of the paper, "Some Actuarial Considerations for Mutual Companies," by Robin B. Leckie.)

MR. C. L. TROWBRIDGE: In recent years formal papers accepted by the Committee on Papers for publication in the Transactions of the Society of Actuaries (TSA) have often been presented and discussed in a Concurrent Session on a somewhat related subject. In this case, we have the extreme form of this serendipity. Robin Leckie's TSA paper has a title identical to that of this Concurrent Session. Moreover, each of the six questions listed in your program booklet are matters that Mr. Leckie treats in his excellent and important work. One suspects that the program committee was well aware of the paper when the Concurrent Session was planned. If so, the devotion of the entirety of a Concurrent Session on the matters that Mr. Leckie raises simply emphasizes the importance of these questions.

MR. ROBIN B. LECKIE: Mutual life insurance companies represent more than one half of the total life insurance assets, business in-force and new business in both the United States and Canada. Surprisingly very little has appeared in the actuarial literature pertaining to the nature of a mutual company and the principles which should direct the actuary and management in meeting the equitable interests of all parties. I do not mean to imply we do not have well established management principles, pricing practices and dividend distribution procedures. What has not been dealt with in depth, and with refined actuarial sophistication, are the considerations to such general questions as:

(1) What is the appropriate level of surplus that should be held in a mutual company to cover certain defined risks?

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(2) How should that surplus be maintained and what contributions should be required by participating policyholders to maintain that surplus?

(3) What rights do current policyholders have to the existing surplus funds of the company?

(4) How are policyholders affected by growth or non-growth of their company? How should they be affected?

(5) What principles are involved in buying or selling a block of participating business of or by a mutual company?

Mr. Trowbridge's excellent paper* of 12 years ago was the last paper to discuss the surplus considerations of mutual companies. And that paper did not attempt to grapple with the answers to many of the above questions. The purpose of the current paper has been to lay out a general framework of mutual company principles for consideration and discussion by actuaries and others. Hopefully this will lead to further development of the many issues and questions that the paper does not resolve, or where the single solution presented may not be the best one, or the only acceptable one.

I should mention that the paper does not attempt to determine the level of surplus appropriate for a mutual company. This is a problem that has been examined or is currently under study by a number of actuaries. I suspect we may see a considerable addition to the actuarial literature on this subject in the next few years. In particular, I commend to you The Preliminary Report of the Committee on Valuation and Related Problems, which is looking at the subject in its broadest context and pinpointing those areas for which further investigation is needed. As a matter of fact, the Committee has prepared an outline of a research project to define the risks for which surplus is necessary and the corresponding size of surplus requirements. This project has been assigned to the Actuarial Education and Research Fund for consideration by interested actuaries. For more information you might attend the session tomorrow morning when the preliminary report is to be discussed.

In brief, the paper states that mutual companies should establish a surplus target or targets to which their surplus maintenance policy should be directed. The surplus maintenance policy defines the contributions required from each policyholder to maintain surplus or needed to reach the ultimate surplus level. The paper states that the charge should remain essentially unchanged during all phases of the company's development, whether as a new young company or as a large stable company, or as a company in decline or windup.

It is also concluded that policyholders have no rights to existing surplus funds and should not be permitted to make decisions which significantly alter the course of the company to their own advantage or disadvantage. The paper also points out that excessive growth objectives of companies can be in conflict with the best interests of the policyholders and that management should have a clear and stated policy for growth.

*"Theory of Surplus in a Mutual Insurance Organization," by C. L. Trowbridge: TSA, XIX, 216.

There is a section on some of the considerations involving the acquiring of additional blocks of business or the divesting of blocks of business to other companies. In our company, because of its international operations, there have been a number of divestitures and acquisitions and recently we were involved, although not successfully, in a very large intended transfer between mutuals.

The program booklet sets out six questions for this concurrent session to which I would like to respond and indicate how the paper deals with them.

<u>How is the overall level of retained surplus determined</u>?

The paper does not attempt to develop an answer to this question. A couple of colleagues are looking into the determination of the level of surplus appropriate for current conditions and the level of surplus we anticipate needing in the future. The studies parallel those framed by the Committee on Valuation and Related Problems and also by some other mutual companies. We have been using a variation of the Scenario or Deterministic approach. We have not used the Stochastic approach, although that method does have considerable merit. Preliminary indications are for contingency levels with the following characteristics:

(1) For single premium nonparticipating business, the requirements are fairly minimal because the interest guarantees can be easily matched or immunized. The risks to be covered are statutory market deficiencies and defaults.

(2) For participating ordinary insurance, again the requirements are small because the dividend scale provides a cushion and there is some interrelation between the variables of interest, lapse and expense. In addition to the investment risk, we estimate a required surplus of approximately 4% is needed to cover the policy loan anti-selection risk. It must be borne in mind that it would be difficult for one company on its own to cut dividends significantly without jeopardizing its future business prospects.

(3) For nonparticipating insurance, requirements are much higher, possibly 3 times as much as for participating contracts since there is no dividend cushion.

(4) The requirements are higher in the U. S. where the opportunity for anti-selection on policy loans caused by the regulatory climate there is more severe than in Canada.

There are considerable advantages in having a relatively strong surplus in that it provides flexibility in managing the investment program and enables the company to take advantage of opportunities as they become available. The disadvantage is that a high charge may be required from policyholders to maintain the surplus at that level.

<u>Do companies have surplus management programs</u>?

The paper was written as a result of studies carried out while attempting to develop a surplus management program. The reason we wanted a program was two-fold; first, it is desirable to know what surplus is required over the long-term and where the earnings will come from to maintain the surplus at

the appropriate level; and second, we wanted to be able to make an appropriate charge to our product lines and territorial divisions to maintain surplus. Essentially this becomes a fixed charge so that remaining earnings are those that can be theoretically distributed to policyholders in the form of dividends or through lower premiums or whatever. It is much easier to keep track of operations, and at the same time have some degree of decentralized decision-making, if the contributions necessary to maintain the company's overall surplus requirements are first defined.

At the present time, the surplus management program is very much a trial and error approach for which I anticipate many improvements and refinements over the next several years. However, I look for the changes to be consistent with the principles set out in the paper.

What are the rights of participating policyholders?

Theoretically, the participating policyholders control the company. Their financial interests in the company, however, must be considered temporary and non-transferable. The participating policyholder has a right to his share of the earnings of the company, contributed to by the group to which he has been assigned. He has a right to fair and equitable management conducted in the interests of all participating policyholders. He should not have the right to alter the course of the company, to effectively transfer to him contributions made to the company or its surplus by prior generations of policyholders.

Is GAAP being used for mutuals?

Financial reporting changes in Canada, effective in 1978, have reconciled GAAP and supervisory requirements, and applied the result consistently to mutual and stock companies. Thus, in this sense,GAAP is being used in Canada by mutuals on a consistent basis between companies, and with stock companies.

In our company we have developed what we call an internal profit and loss statement by territory and product line in which cash values are used in place of reserves, including negative cash values in the first few years. The income statement derived is used for internal management and decision-making. This is illustrated in the paper.

How do companies reconcile growth and surplus?

As yet we do not establish precise surplus targets as a current or future objective. I suspect that few companies do. At the present time, it is felt our surplus and contingency reserves are adequate and probably exceed slightly any surplus target we would set. Thus, at this time, there are no defined constraints on growth, except that we seek new business in lines and areas in which we feel we are effective and for which we can provide a legitimate and useful service to our policyholders and which can make some contribution to the continuing strength of the company. We write substantial volumes of nonparticipating annuities and pension business and this has inevitably led to some proportionate reduction of surplus. However, we do see a slow-down in this business in both Canada and the United States within two or three years, not so much because of surplus constraints as other market factors.

In summary, our approach is to set no limitations on growth at this time, but we would not hesitate to adopt them if needed to secure the financial strength of the company.

What actuarial considerations are involved in acquisition, divestiture, merger or windup?

There is a major mutual company merger in the works in the United States at this time. The principles for a straight mutual company merger were set out and debated in the Kayton-Tookey paper* six years ago. The technical controversial issues are probably resolvable based on these principles or with minor modifications. There are, however, always difficult practical issues.

At the time my paper was written, my own company was involved in acquiring a large block of business of another mutual company. The principles for the acquisition of a block of business or of entering into new fields of operation are not well established. The paper has attempted to identify some of the considerations involved and has outlined an approach which is consistent with the theory in the paper and the equitable interests of all groups of policyholders.

A rather interesting situation is the case of a possible windup of an otherwise healthy mutual company. Who then receives the surplus bounty? I would contend that after current policyholders have received the contributions they have made to the profits of the company through the regular or a modified dividend distribution, that any excess funds left over should, in Canada, revert to the Crown, that is to the government; or in the United States, to the insolvency funds of the various states. But not to the policyholders or employees. On that rather controversial and arguable point, I will conclude.

MR. ROBERT L. POSNAK:

GAAP for Mutuals

For those of you who breathlessly await pronouncements of the accounting profession, I would like to suggest that you begin ventilating again. There is nothing coming from the American Institute of Certified Public Accountants (AICPA) that is going to alter the destiny of mutual company accounting, much less the thinking of mutual company actuaries and accountants. The AICPA set up a task force a few years ago to develop some GAAP guidelines for mutual companies, but they have given up. Among other things, the task force could not figure out what a mutual company is. One can well imagine the difficulties involved in structuring a set of accounting principles around so slippery a creature as a mutual life insurance company.

Lack of a clear and consistent overall conceptual base bedevils the accounting profession in general. To throw the mutual company mystique into our conceptual morass is to add insult to injury.

However, it would be unfair to fault the accounting profession for failing to come to grips with fundamental questions about the nature of a mutual company. Those fundamental questions can only be dealt with intelligently by mutual company management.

*"Merger of Mutual Life Insurance Companies," by Howard H. Kayton and Robert C. Tookey: TSA, XXIV, 261.

At this point I would like to share with you what mutual company executives have to say about some fundamental questions that must be dealt with to develop a sensible accounting model. The questions were asked of 13 mutual companies that collectively comprise a major portion of the mutual company segment of the industry. The questions were very difficult; it took a great deal of time for most companies to respond. For example, it took one company three years to put together their answers.

What follows represents only a few highlights. The commentary offered by the participants is incredible in its richness, reach, and diversity. The commentary made by the 13 companies fills about 150 single-spaced typewritten pages. A full analysis of the commentary will be published soon.

Who Owns a Mutual Company?

Of the 13 companies, nine said that no one owns a mutual company. Four companies said that policyholders own the company, that is, that the rights spelled out in the contract, the charter, and the statutes represent ownership in the company and its surplus. One large company stated that "the rights for all policyholders are substantially the same as for stockholders."

For what it may be worth, my own view is essentially the same as that of J.A.C. Hetherington, who - in an article in a 1969 edition of the Wisconsin Law Review - said that management exhibits the principal characteristics of ownership in the economic sense but that surplus is not really owned by anyone. I would go further and say that management's ownership is in the nature of a public trust. The "public trust" view seems to be shared by several of the participants in the survey.

A few accountants (including some on the AICPA task force) believe that policyholders are equivalent to stockholders and that income should be measured (1) before dividends (2) using GAAP assumptions essentially the same as would be used for nonparticipating business. On the other hand, if policyholders merely have contract rights, income must be measured after full provision is made for the accruing cost of those rights, including the right to share in divisible surplus.

Are Net Level Reserves Appropriate?

In 1946, Owen Lincoln wrote an article on mutual company reserving practices that said:

> "From a purely theoretical aspect, a valuation system which takes into general account the actual incidence of expense is a more accurate measure of future liabilities than is a net level premium method."

Twelve of the 13 companies agreed with Mr. Lincoln, whether or not they were actually using net level or modified reserves for new business.

This seems to suggest that, at least in theory, mutual companies should defer acquisition costs. Again, my view is that acquisition costs should be deferred and amortized in a pattern that matches the company's dividend assumptions.

Is the Concept of "Profit" Relevant?

Seven companies said that the concept of "profit" is relevant to a mutual company; six companies said it is not. In general, companies supporting the profit concept considered "profit" to be measured in terms of the net increase in statutory surplus. Two observations should be made about this concept of profit:

- To the extent that a company uses net level reserves, one could argue that this concept is inconsistent with the response to Owen Lincoln's statement.

- This concept clearly views policyholders as something other than owners. In short, the concept calls for provision for future dividends in measuring "profit."

What is Surplus?

I am going to spend a little more time on questions relating to surplus, partly because the questions have relevance in an accounting context but mainly because the questions relate well to the subject matter under consideration today. I will take the questions one by one and present a general summary of responses.

Are records kept of contributions to surplus by lines of business? In general, the answer was "yes," although the degree of detail varied greatly. Usually the line breakdowns followed the convention statement definitions, but some companies broke each convention statement line into several sub-lines. In most cases a fund accounting approach is employed. For a few companies the segregation of surplus by line was a recent development; in those cases, of course, the beginning balances had to be estimated.

Do you consider surplus a "revolving fund" not associated with any particular class of policyholders? Six companies said surplus was a free revolving fund; two companies considered surplus properly assignable to classes of policyholders; and five viewed surplus as a kind of hybrid. The hybrid view is perhaps best expressed by considering surplus as a temporary revolving fund, to be distributed to existing policyholders only as the next generation builds up sufficient surplus for the company to keep going.

What is the source of financing for deficits (for example, health lines that produce cumulative deficits)? For new business ventures directly related to the life business (for example, variable life)? For new business ventures not directly related to the life business (for example, property and casualty)? It is very difficult to summarize the answers to these questions. Recognizing that any generalization would be simplistic in the extreme, let me attempt the following simplistic generalization:

> For those companies adopting the revolving fund concept, free surplus would be used for financing. To the extent the financing is permanent, e.g., a deficit that will not be recovered, then future generations must bear a somewhat heavier charge to restore the fund.

- For those companies that consider surplus assignable and ultimately refundable to specific lines of business, the financing is considered to be shared pro-rata by such lines. To the extent the financing is not recovered, it would reduce pro-rata the ultimate refund to the lines.

For nonparticipating products (if any), to what line or lines of business are gains allocated? Again, for companies adopting the revolving fund approach, nonparticipating gains are generally allocated to the revolving fund. For companies segregating total surplus by line of business, nonparticipating gains are allocated to the lines to which they most logically relate.

These questions are difficult indeed. The answers were not necessarily internally consistent in all cases, but - given the inherent fuzziness of the subject matter - the answers were quite remarkable for their relative clarity.

Robin Leckie's Paper

I would like to pause at this juncture to volunteer a comment about Robin Leckie's paper.

The questions in our survey were, to put it mildly, difficult. The questions defy answers. No definitive answers were offered by the participants. But it is clear to me that the answers represent a major contribution to the effort to arrive at definitive answers.

So it is with Robin's paper. The paper deals brilliantly with the fundamental questions that often troubled and frustrated the participants in our survey. Robin's paper is deceptively simple; it reflects many years of deep thought and practical experience in a mutual company environment. And it offers answers! I sincerely hope that Robin's paper is the first of a series of papers that ultimately leads to a consensus on the fundamental issues.

The "Internal Liability" Concept

In the event it is not intuitively obvious, Robin's proposal for an "internal liability" measurement is a GAAP concept. In fact, the internal liability he speaks of is very close to the notion I put forth in 1973 - that the use of dividend fund accounts in lieu of statutory reserves was the major element in converting a statutory statement to a GAAP statement.

This assumes, of course, that the policyholder is not an owner in the economic sense. It follows then that, in measuring a mutual company's net income, provision must be made for all obligations to policyholders, including residual amounts expected to be distributed to them in future dividends. Dividend funds may represent the best current measure of the ultimate cost of the package of benefits that will be paid to policyholders.

From an accounting point of view, negative funds should be taken into account in drawing up a GAAP statement. This is a simple acknowledgment that a mutual company is a going concern and that the probability is very strong that such negatives will be recovered.

Reserves (and associated acquisition costs) represent the major problem to be dealt with in developing some GAAP rules for mutual companies. The other elements of GAAP - deferred taxes, the treatment of capital gains, and the like - are relatively simple by comparison.

Who Is Using GAAP?

GAAP figures are increasingly being used by mutual companies for internal consumption. The main reasons are probably as follows:

- GAAP has achieved some degree of credibility in its nine-year history.

- Mutual companies' statement surplus has been eroding, and there has been increasing restlessness about surplus positions on the parts of boards of directors, most members of which do not have much (if any) background in insurance accounting.

- The use of modified reserves for recently-issued business, while holding net level reserves with respect to business issued in prior years, has hopelessly muddled operating statements prepared on a statutory basis.

How is GAAP being used and applied?

- At least one mutual company uses GAAP as a primary management tool. Performance is judged on the basis of GAAP numbers. The mechanisms developed to generate GAAP numbers by line and by profit center are elaborate.

- Another mutual company uses GAAP primarily to indicate somewhat superficially that growth is not causing any real erosion in surplus. GAAP makes the president feel better and helps communicate with the Board. The GAAP figures are generated more or less on the back of an envelope.

- Other mutual companies that are using GAAP fall somewhere between these extremes.

Most companies are applying GAAP in a highly experimental mode. As the questionnaire served to point out, mutual company executives are generally in the same boat as the accountants in coming to grips with the basic foundations for a GAAP statement. But the GAAP experiments now being conducted will eventually prove to be very, very worthwhile. When the conceptual issues are resolved - as I believe they will be - the cumulative effect of all of these experiments is likely to be a prompt implementation of GAAP.

My expectation is that GAAP will come to be used quite widely by mutual companies in the next decade. I expect also that GAAP figures will be released publicly; it is difficult to rationalize giving the figures to insiders while withholding them from outsiders on the theory that they will be misunderstood. Further, mutual life insurance companies represent a very significant force in our economy, and it could be argued that the public deserves some standard measurement of mutual company performance. This is particularly true if a mutual company is considered to be in the nature of a public trust.

It is often said that net cost is the only valid measure of mutual company performance. I for one do not believe this. I suspect there are a few companies that are in danger of net-costing themselves into financial difficulty. Any method that demonstrates superior performance while obscuring a deteriorating trend is, on its face, dangerous and possibly abusive. The approach finally adopted will have to be more objective than a simple net cost calculation.

Mergers and the Like

It would be difficult to improve on Robin Leckie's discussion of this subject. I believe that we are likely to get some practical experience from the Mutual Benefit-Union Central merger; I certainly hope a paper is done on that merger after it is completed.

Mergers

It appears that the internal liability concept, besides being a reasonable approach to GAAP, is also a reasonable approach to merger accounting.

Using the three-fund approach specified in Kayton and Tookey's paper, the sum of the three funds would represent the combined internal liability; the combined internal liability in turn becomes the measure of the net GAAP reserve.

In short, it would appear that a single basic approach might be used to unify surplus management objectives, management performance measurements, equity considerations, and GAAP accounting.

Acquisitions and Divestitures

I frankly have difficulty envisioning the outright purchase of an entire mutual company. Who would be paid? How much?

The "stocking" of a mutual company appears at first blush to be surrogate for an acquisition. Stock is issued to existing policyholders that represent such policyholders' interest in surplus. This has in fact been done.

Does this compromise the notion that the policyholder has no legal interest in surplus - merely an expectancy? Probably not. "Stocking" is a departure from the going-concern rule. The entity has fundamentally changed its form and has in the process "capitalized" the policyholder's expectancy and altered the policyholder's interest by issuing some paper. The policyholder can take his paper into the market currently and realize his expectancy - or some portion of it, depending on the market value. Or he can hold on to his paper and benefit from his pro-rata share of earnings. In either event, his share of earnings would bear no necessary relationship to the dividends he would have received as a policyholder.

One could argue that one mutual company could buy another mutual company and, in a manner consistent with the "stocking" approach, the acquired company could distribute the proceeds to the acquired company's policyholders. But when one cuts through all of the bookkeeping, I believe that the net result will be to charge the policyholders of the acquired company for any premature distributions by altering future dividends. This would seem to be a futile exercise, and I would think that all mutual combinations would be effected essentially in the form of a merger.

Acquisition or Divestiture of a Block of Business

The sale of a block of nonparticipating business by a mutual to a mutual would pose few unusual problems. For all practical purposes such a sale would probably be treated like the sale or disposition of an investment.

The sale of a block of participating business by a mutual to a mutual is different. The situation is a small-scale version of the outright sale of an entire company. It would appear that the policyholders' expectancy would have to be transferred with the block of business - which presumably would mean some transfer of surplus from the selling company to the buying company. I do not see that the situation is greatly different - at least in conceptual terms - than the transfer of an entire company.

Winding-Up

Hopefully the winding-up of a mutual life company will not need to be addressed in the foreseeable future. There are quite a few mutual casualty companies in various stages of liquidation which provide some practical guidelines that can also be applied to mutual life companies.

MR. MYRON H. MARGOLIN: I would like to begin with the topic of surplus objectives. This is an issue which has received a lot of attention in the last few years, having been discussed at several Society meetings and at other forums. It is probably no coincidence that the increasing level of this discussion has occurred during a time of generally decreasing surplus levels, and maybe we would be better off with less talk and more surplus - but talk is cheaper.

Besides the gradual decline in surplus levels, there are several other factors which have generated interest in this topic. Let me touch on just three. One is the recognition that our economies, U. S. and Canadian, are somewhat more fragile and less easy to control than we had been accustomed to think. The optimism of the 1950's and 1960's - eras of steady growth, of rising stock values, of apparently successful fiscal and monetary policy has given way to concerns about runaway inflation, trade deficits, energy shortages and perhaps future depression. Government seems unable, or at least unwilling, to take the strong measures which would hopefully curb inflation, assure adequate energy supplies and prevent depression. The insurance business is highly vulnerable to both extremes, depression and inflation.

Diversification is a second factor which bears on this subject. Technically, an investment in a subsidiary, such as in a property and casualty company, can be capitalized as an asset on the balance sheet and is not necessarily a drain on surplus. Nevertheless, the formation of a new company is a risky venture, and there is always the possibility of a failure which would produce a substantial decrease in surplus.

Finally, we all recognize that even a moderate degree of inflation is going to have adverse consequences in the long run. So far, rising interest rates have tended to offset the effects of increased unit costs. But even if inflation can be brought under some reasonable degree of control, portfolio interest rates will tend to level off, while unit expenses are likely to continue to rise.

These are the sources of our concern; now what is the answer? How much surplus should a life insurance company hold? I am sure that no one in this audience expects a specific number, some percentage of assets or liabilities which would be valid as a suitable surplus objective for all companies, at all times and under all conditions. There are striking differences among companies in the composition of their assets as well as the composition of their liabilities. A company which invests relatively heavily in common stocks obviously has different surplus needs than one which invests more conservatively. A company which has relatively much term insurance in-force will have different surplus needs than a company with a great deal of permanent.

It might seem more plausible to expect a formula which would contain a number of factors or parameters applicable to separate components of a company's assets and liabilities - for example, a surplus objective equal to 50% of common stock assets plus 5% of bonds plus 0.1% times Group term insurance in-force, etc. Certainly such a formula would be an improvement over the single number solution, and in many cases actuaries will conclude that such a formula will serve their companies' needs properly.

However, this afternoon I am not going to propose such a formula. I do not believe there is one formula which is correct, because I do not think that there is one technique or methodology which you can apply to derive such a formula. This does not mean that the problem of surplus objectives has no answer. Rather, the point is that there is no single precise answer any more than there is a unique answer to the question of how much the gross premium for an individual life insurance policy should be or how much the annual contributions ought to be to a company's pension plan. In all of these cases there are several alternative methodologies which can be used to help you to find a reasonable answer or a range of reasonable answers rather than a single precise number or formula.

There are apparently at least two distinct approaches or methodologies which are now being used by a number of insurance companies to help them set surplus objectives. For convenience let me label these two approaches the Stochastic Method and the Scenario Method. Each of these methods has its advantages and its disadvantages, which I would like briefly to discuss.

The Stochastic approach uses the techniques of Risk Theory to respond to this question: For a given surplus level what is the probability of ruin during the next N years? The essential ingredient of this method is a mathematical model which incorporates a frequency or probability distribution of the year-to-year change in surplus, or of the year-to-year operating results of an insurance company. In applying the method, you simulate in Monte Carlo fashion the hypothetical financial operations of the company over some span of years. You then repeat the simulation process over and over, counting how many times the company survives the span of years and how many times it does not. This gives the probability of ruin.

It seems intuitively clear that the numerical results of this model, the probabilities of ruin, must be very sensitive to the assumptions made as to the tails of the distributions. Implicit in the tail is a certain probability that the Dow Jones Index will decline to, let us say, 200, or that some disastrous level of bond defaults will occur. Accordingly, one possible objection to this model is that historical data seem insufficient to establish these probabilities with precision. Historical data may be inadequate, or

misleading, as guides to future probabilities, and subjective estimates of these probabilities may lack credibility.

A second question has to do with the way the conclusions of the Stochastic approach are expressed. Basically, the output says that with a specified surplus level, the chances of ruin in the next N years are P percent. Deciding on a suitable value for N is not a difficult question. Ten or twenty years seems reasonable. But how can you select P, the probability of ruin? Should management be satisfied with a 95% confidence of survival? 99% confidence? 99.9% confidence? I have not worked with this particular type of model, but again it seems intuitively clear that the necessary surplus level is very sensitive to the stipulated value of P. A value of 99.9% might call for several times the surplus level that 95% calls for. I would simply have no idea how to advise top management on which value to use.

These two concerns, the difficulties of assigning probabilities for the tail of the distribution and the selection of an appropriate confidence level, are not necessarily fatal to this model, but they should be carefully considered.

Let us turn now to the Scenario approach. As implied by its name, this method tests how much surplus would be needed for the insurance company to survive a certain calamitous event. First you specify the parameters of the event in the form of a scenario. For a depression scenario, you might stipulate an assumed decline in a suitable common stock index, an assumed rate of bond defaults, an assumed rate of unemployment. Then you translate these parameters into their effects on company operations - sales, lapses, policy loans, asset values, dividends, etc. The last step is to determine the drop in surplus. From this you calculate how much surplus you should have had at the start so as to maintain positive surplus throughout the duration of the scenario.

The major problem with the Scenario approach lies in deciding how bad things can get. Let me explain. Suppose you fix a set of parameters describing a certain calamitous event, like a depression, and set your surplus objectives accordingly. Then you will be protected against a depression of that magnitude - but no worse. Either you are saying that an even worse depression cannot occur, or that if a worse depression does occur, government will somehow bail us out. Either way, you may be skating on thin ice.

But perhaps this is an advantage after all. Unlike the Stochastic approach, with this method you can make clear exactly what you are protected against, as well as what you are not protected against. Framing the problem this way may help in explaining your recommendations to top management and to your Board, so that they understand the decisions they have to make.

These descriptions, of both the Stochastic and the Scenario approaches, are necessarily only very sketchy, omitting some very important technical considerations. What I hope to have conveyed is a sense of the pros and cons of each.

Let me turn now to another topic - the rights of policyholders in mutual life insurance companies. I agree completely with Robin Leckie's conclusion that policyholder rights are not absolute. Apart from their contractual rights to the insurance benefits, their rights are basically limited to the right to receive divisible surplus and the right to elect the Board of Di-

rectors. But I would like to amplify on this subject of rights. Scholars tell us that rights and obligations are what they call "correlative." If a person or entity X has a certain right in relation to entity Y, this means that Y has a certain obligation towards X. So, if we want to find out who has rights vis-a-vis mutual insurance companies, one way is to ask ourselves to whom do mutual insurance companies have obligations.

Certainly in-force policyholders are one entity towards whom mutual companies have obligations - not just the contractual obligations of the policies but also these other obligations of apportioning divisible surplus and giving the right to vote. But I think it is a fact that mutual life insurance companies are so much a part of U. S. and Canadian economic life, are so interwoven into the fabric of our countries, that we have come to assume other roles or obligations as well. We are major suppliers of investment capital with established ongoing relations with many borrowers. We are major employers. We are a mechanism for sharing of family financial risk - and are so looked upon, not just by today's in-force policyholders, but by society at large.

In other words, I am suggesting that a mutual life insurance company has accrued additional obligations to other parties - not just to the generation of policyholders who began the company or who were present when it was mutualized - not just to the generation of today's policyholders - but also to future generations of policyholders, to current and future agents and employees, and to the business community and to society at large. Accordingly, these other entities have acquired certain rights vis-a-vis mutual insurance companies.

This concept is consistent with the increasingly popular view among management scholars that corporate management is a trustee for the entire business entity, whether in stock or mutual form. As such, management is responsible for identifying and balancing the claims on the business from all so-called constituencies or stakeholders, only some of which stem from ownership interests.

If you accept this concept, I think you may find it much easier to justify growth. A mutual insurance company is positively obliged to grow - perhaps as fast as it can - so long as it meets two conditions. The first is to maintain enough surplus so as not to jeopardize its survival. The second condition is to return, ultimately, to each generation of policyholders essentially all the surplus they have originally contributed, subject possibly to a small risk charge or permanent contribution to surplus. By growing, the company will be fulfilling its obligations to insure, to invest and to employ.

MR. JOHN K. ROBERTS: For the past two years at the Pan-American, a task force of actuarial officers from each of our profit centers and corporate areas has discussed many of the topics on our program.

Our experience suggests that the topics are complex and elusive to pin down. One reason is that actuaries not only can, but most certainly will, have significantly different but defensible positions on many of the topics on our program.

However, as our understanding deepens, I see several management tools - fundamental in a mutual company structure - coming into focus which will significantly influence and strengthen our overall company management process. One such tool could be the surplus management system I will describe.

I must hasten to emphasize that the comments and concepts in my presentation reflect my own personal viewpoint and not necessarily those of Pan-American or my other actuarial associates at the Pan-American. Several of them are in this room this afternoon and do not be surprised if they challenge my comments. Our continuing lively discussions on these surplus and equity topics have been one of the most rewarding experiences of my professional life.

A surplus management system can be a primary planning tool used by a corporate management to not only assess the current and long term financial strength and vitality of the company but, in the case of a mutual company, it can be the mechanism to assure that current and future participating policyholders receive their insurance on an equitable cost basis. In this capacity, a surplus management system should advise and guide management on the following three topics.

First, it needs to advise on the levels of surplus required now and in the future to assure long term company solvency and vitality. This assumes the company has some type of formula for required surplus. The job of the actuary is to use this formula plus assumed future company growth rates to project the amounts of surplus that would be required in the future based on the required surplus formula.

In doing so, I would suggest the required surplus formula not dictate to management a precise level of surplus to be maintained. Rather, it would be more useful to management and consistent with at least my current understanding of surplus requirements to suggest a range - probably a fairly broad range - within which the actuary would recommend that management plan to maintain surplus.

Mike Margolin included the same thought in his comments when he said, "There is no single precise answer to the question of how much surplus is required ... rather there is a range of reasonable answers."

Before I go on, note that this component of the surplus management system does not tell management whether the company will, indeed, have on hand the required amounts of surplus or how fast it can afford to grow. We need to identify the next two components of the surplus management system before we can tackle these two vital questions.

The second component of the surplus management system is a surplus distribution system that generates equitable policyholder dividend scales. Equity is the key word here. How a company defines policyholder equity will be much influenced by how it answers the question on our program: What are the rights of participating policyholders and, particularly, their rights in relation to ownership of company surplus?

Robin Leckie, in his paper - and all three of our other panelists in their remarks - essentially subscribe to the viewpoint that existing policyholders do not own company surplus. While it is not my intent to establish a united front on this stage, particularly on what can be a controversial subject, I,

too, personally endorse the philosophy that policyowners do not own company surplus, at least for the purpose of establishing an equitable framework for policyholder dividends.

Assuming that a company adopts this philosophy - and it is a prerequisite under this type of surplus management system I am describing - the dividend distribution process should be structured to return to policyholders all of their own contributions to surplus after making a charge for a permanent contribution to surplus.

In particular, the surplus charge in normal circumstances should be independent of current growth levels of new business and current levels of company surplus. As will be illustrated in a minute, this is fundamental under this type of surplus management system to adequately answer equity questions related to growth and surplus.

Having established an acceptable range of surplus and developed an equitable dividend system, the third component of the surplus management system needs to advise on the amount of company surplus funds that will be needed to finance anticipated growth.

Company financial projections are an essential part of this surplus management system and are needed to test whether acceptable surplus levels will be maintained in the future if the dividend system operates unimpeded and the company's new business growth materializes as projected.

The financial projections provide the actuary with the information needed to advise company management on these two questions:

(1) How do you reconcile growth and surplus?
(2) What limits should be placed on growth?

In doing so, the following basic principle should guide management: Before company funds are invested in growth, management has the obligation to be satisfied that future company solvency and vitality are protected and policyholders receive insurance on an equitable basis.

In fact, Mike Margolin stated the company not only has the right but is obliged to grow provided it meets the same two conditions which he expressed as:

(1) "Maintain enough surplus so as not to jeopardize its survival."
(2) "Return, ultimately, to each generation of policyholders essentially all the surplus they originally contributed, subject possibly to a small risk charge or permanent contribution to surplus."

If the financial projections, which are based on anticipated growth rates, indicate acceptable surplus levels will be maintained in the future without impeding the operation of the dividend distribution system, there is no conflict between growth and surplus and policyholder equity.

But, what if the financial projections indicate satisfactory surplus levels will not be maintained under the anticipated growth scenario? What options are open to management?

Starting with theory, let us assume the company is absolutely sold on the required surplus formula it is using and that it is convinced that a higher policyholder surplus charge is not justified to sustain vitality; then management has only two options open if surplus and growth conflict. It can either reduce growth or develop additional nonparticipating profit sources. The second option itself requires that the company consider it proper to use the additional nonparticipating profits to increase surplus and not for increases in policyholder dividends.

In practice, there may possibly be two additional options open to management that do not violate the basic principle of protecting solvency and policyholder equity, although both are susceptible to abuse.

First, if the level of anticipated growth can be justified as needed to sustain company vitality, it is possible the policyholder surplus charge is too low and should be increased enough to bring projected surplus up to adequate levels.

On the other hand, it may be desirable to analyze the required surplus formula itself to question whether it is functioning realistically under the future projections. Particularly if the required surplus formula is crude, it may be that the projected mix of business might suggest it is the required surplus formula (and not the projected actual surplus levels) that is the problem.

Under both theory and practice, policyholder equity should place a constraint on management not to elect the first option of reducing policyholders' dividends (with the possible exception already noted of increasing the surplus charge) as a means to reconcile a conflict between growth and surplus.

Let us come back to our program questions. Provided the rights of policyholders are as outlined in our panel comments, the surplus management system described herein has no difficulty reconciling growth and surplus, with the limit on growth being that amount which would result in generating an inadequate level of surplus or requiring an inequitable adjustment in dividends to existing policyholders.

But I have saved until last what is the first question on the program: How is the overall level of retained surplus determined? Possibly it is the first question on the agenda because most dividend texts suggest you determine the amount of desired retained surplus as the first step in arriving at the amount of divisible surplus. However, the approach I have described does not call for the amount of retained surplus and amount of divisible surplus to be linked under normal circumstances.

Rather, the amount of change in retained surplus during a year is the net result of the statutory gain on existing business in-force plus earnings on existing surplus less dividends payable to existing policyholders (without regard to the current level of surplus) less the statutory surplus strain created by the current level of new sales or other company development efforts. In effect, under this surplus management system, the amount of retained surplus is, normally, the last item determined - not the first.

In summary, this type of surplus management system is designed to:

(1) Advise management on a surplus range needed in the future to maintain the continued financial solvency and vitality of the company;

(2) Provide a conceptual framework for the equitable treatment of participating policyholders that is independent of the current growth posture or decisions by management related to current development projects; and

(3) Advise on the surplus impact of various growth scenarios to, hopefully, give the company adequate lead time to plan its operations so it can grow at its capacity to produce new sales without jeopardizing the company's financial strength or the equity structure of policyholder dividend scales.

The concepts on which the system is based may appear to be simple but, if so, they are deceptively simple. Our experience suggests, since most of the concepts deal with the fundamental basis for the mutual company operation, they quite appropriately generate extensive and probing management discussion.

Beyond that, it is not easy to develop all of the pieces of the system to the point when they are fully operational on an ongoing basis. For example, developing realistic overall company financial projections on a regular basis is a major undertaking.

I have found most effective management systems can evolve over time. And an evolving surplus management system has the potential to become the company's most powerful longer-range financial planning tool. Finally, because of the philosophical topics it requires a company to consider, it also ends up providing a philosophic financial framework to guide management of a mutual company.

MR. ROBERT F. LINK: Robin has given us a fine paper, on which I hope to submit written comments later. The paper has been the stimulus for a very high quality session where we are asked to be very technical and very philosophical at the same time, in an area where the stakes are high. My comments right now tie into the remarks of Messrs. Margolin and Roberts.

Mike Margolin gave a comparison of the Scenario and Stochastic methods of determining surplus needs. The Equitable has been working with the Stochastic approach for several years now. Anyone who is interested can look up my descriptions of our work in the Record of the Boston meeting last year and the Atlanta meeting the year before.

Mike cites as a shortcoming of the Stochastic method that the statistics of the past are not a reliable guide to the future. This is of course true. However, any method of determining the target surplus that is necessary for risk involves explicit or implicit assumptions about the future. The question is not whether the assumptions correspond to the past. The question is what are the assumptions (whether known or not) and with what degree of detail and precision are they expressed.

Incidentally, the Scenario approach is implicit in the Stochastic approach. One way of communicating the target surplus determined by the Stochastic approach is to illustrate the kind of events that the given target surplus could withstand.

Mike also mentioned the problem of choosing the right insolvency probability. Again, we agree that it is a problem. Our answer is to estimate as well as we can from available data the probabilities of other companies. We then set our desired probability in the light of this information. A prime strategic objective is to minimize the probability of going down while others survive. The precise probability levels matter less than the relative position.

One special advantage of the Stochastic approach is that it is possible to recognize degrees of correlation among various risks. The additional surplus needed to cover an additional risk depends importantly on whether unfavorable variances with respect to the additional risk are likely to materialize at the same time as unfavorable variances on other risks. Business with uncorrelated risks does not need as much marginal surplus as business with correlated risks. Our model has a correlation structure that ties in particularly to economic conditions in general and the inflation rate in particular.

John Roberts talked about things a company can do if it finds a mismatch between its actual surplus and its target surplus. One additional possibility is to reduce the target surplus by reducing risk. For example, one could reduce the risk element in the investment portfolio. The most obvious way of doing this is to reduce the common stock component in the portfolio. A second possibility is to increase reinsurance. A third might be to make dividend policy more sensitive to changes in conditions.

MR. MARGOLIN: If I may, let me comment on the remarks Bob Link addressed as to the two methods. I must agree entirely, that in a sense both methods are guessing games. Perhaps the question boils down to what kinds of guesses are you more comfortable making.

Are you more comfortable guessing as to the probabilities of this or that, or are you more comfortable guessing as to how bad a depression will get? If these were easy matters, the problem would have been solved a long time ago, and there would be no need for us discussing it.

MR. HENRY B. RAMSEY, JR.: I would really like to congratulate Robin on both selecting the topic and contributing this really very valuable piece of literature. I think it is really food for thought for all of us.

I am intrigued by your two basic formulas in the note, Robin, which I think are excellent. One illustrates the situation where the growth rate is greater than the earnings rate. The other one shows the growth and the earnings rate being identical and the surplus contribution at zero. A conceptual link between these two formulas is to conceive of the surplus return as not consisting of an investment return, but as the return provided to surplus by the group which needs surplus.

In an ordinary contract, for example, which has a demand for surplus for new business strain plus a margin, it must pay the price of that surplus to provide an appropriate return. Let this be 10% to match with a 10% growth rate assuming it borrowed the funds as it might do if it were a completely separate company. If it could earn, let us say, a net of 5% under today's conditions if it is fully taxed, it must provide an additional 5% as a return to whomever provided that surplus.

MR. TROWBRIDGE: Let me throw in a remark or two of my own. I have been very interested in the question of surplus-growth tension. It is a question that Robin has handled by socializing his surplus-growth relationships. He says in effect that if your company starts growing at a different rate, you maintain your contribution to surplus at the earlier growth rate. You do not permit the permanent surplus charge to vary simply because the company grows faster or slower than it has before. I have a good deal of trouble with that concept, for a couple of reasons.

We are now in a period where growth rates almost necessarily are higher than before simply because of inflation. Everything we measure is in dollar terms and the dollar (U. S. or Canadian) is diminishing in value at a more rapid rate. So growth rates, if we are to stay up with the economy at all, must pick up. Therefore, our charges for surplus also rise or our surplus objectives must be less ambitious. Inflation is thus a challenge to Robin's idea that the contribution to surplus can be relatively uniform even though growth rates change.

I have even greater trouble with the troublesome fact that growth of business in some lines is much greater than in others. If one line of business is growing very fast and another line is growing slowly, is it fair to the slow-growing line to charge it with contributions to surplus based on the overall growth rate? Many of us have found that some lines are growing so fast that they cannot maintain their own surplus at any kind of a reasonable level, except by getting a contribution from some slower-growth line. This may be legitimate or it may not, but it certainly presents a basic issue that we have to face. In my discussion of Robin's paper I am raising these issues, among others.

MR. LECKIE: In our own company, we are looking at surplus targets that will vary by line of business and with growth rates permitted to differ between lines. I would hope we could justify it, and we would then attempt to relate our surplus charge to the growth rate that we are allowing for the line. As a result, we might have a lower surplus target for that line.

We also have a general corporate surplus which is not related to any particular line; it is used as a device for development and for internal management. I hope that perhaps I can get into that in the discussion of the paper.

I would like to just take a moment to once again state that all this paper is doing, and perhaps all we are doing at the table this afternoon, is presenting a framework within which the actuaries and the companies can develop their own ideas and formulate the principles that appropriately guide us, or should guide us, in the future. I hope we are not reading the paper to find all the answers; the paper was intended to provide the framework from which the answers can be derived, with proper input from management and recognition of the circumstances of the company.

In Canada, as you know, we have what we call Valuation Actuary. The Valuation Actuary does not look to the law to tell him what valuation bases to use. He uses the bases that are considered appropriate of the circumstances of his company and applies his professional judgment. This is really what this paper is doing; it is providing the means for which you can apply your professional judgment in the management of surplus and all its attending considerations affecting pricing, particularly dividend distribution.

In my response, I will certainly comment on why I emphasize in the paper the use of liabilities as the basic function for surplus management. Liabilities have been used, partly, in order to produce a formula that is independent of the current surplus. Whereas, if you use assets, you are right away into a lot of trouble because your current surplus is involved. In our own company we look, though, at the nature of the risks involved, so you could easily use premiums or in-force or some other measure. We tend to look at each one of these and then tie them into liabilities as a simple expedient enabling us to pull it all together.

The final remark I wish to make is that there is a formula in the paper called R, ratio of surplus to liabilities, equals the surplus charge divided by the growth rate, the growth rate being reduced by the earnings in surplus: $R = e \div (g-i)$. I contend that in the past "i", in general, has always been more or less fixed; forget the earnings on surplus. Yes, we should be managing it, but it is immaterial here. I contend that "g" is the one we tend to manage as we maximize "g", the growth rate. We let "R", the surplus ratio, shift from time to time as the middle variable and "e", the charge to policyholders, is the residual. As a result, we have been charging our policyholders for the growth that we have been incurring and we often do not know what that charge is; it is just reducing the divisible surplus.

However, I contend the paper is telling you to do something else. It is telling you to fix the "e" to start with, allow the "R" to fluctuate up and down, just as it did before, and then come back and put the pressure on "g". It tells you to watch growth in order to keep these three things in balance, because no matter what happens these three things are fundamentally tied together.

MR. TROWBRIDGE: Certainly the relationships between growth, surplus, and the charge for surplus make up an interesting subject and a very important one.

MR. JOHN C. MAYNARD: We have been looking at a wealth of ideas this afternoon, and I would like to just throw in one fairly obvious remark. The ideas we have been looking at show relationships between a great many factors - growth, lines of business, business in different countries and some other things, too. But, in looking at the results you obtain and building a surplus theory around them, we should not forget one very obvious factor, and that is operational efficiency.

If you are not careful in relating these ideas, you might think that your surplus is going down just because you are growing at an above average rate for awhile. This could be the wrong conclusion as you might be becoming operationally inefficient. So to the various thoughts, formulas, and relationships in the paper, I would add this thought about the necessity to monitor operational efficiency in a large and complex company of the kind to which these ideas relate.

If someone asked my opinion about the most important test of operational efficiency, I would say it was this - watching the comparison between new business expenses you charge against your new business with your actual new business expenses.

MR. LOUIS GARFIN: We have all been on a very high plane, but the last two or three comments can lead into something that I can relate as to a very

practical bit of history that we have had in our company. There was a period of time when our group health insurance was growing very rapidly. We were establishing surplus objectives and gain from operation objectives and failing regularly to achieve them, and we had a growing concern about the rate of growth of that business as well.

We established first of all a ground rule that said that the contribution to surplus which you would expect from that business would be greater if the rate of growth were greater, and we established a schedule. We established at the same time the general concept that we were looking not just for growth in that business but for profitable growth, and incentive compensation was tied in with that for our executives.

There were some quite remarkable changes. The profitability was turned around; this was done by an attention to pricing and to our business. Growth has continued, and for the past eight years we have had an increasingly profitable operation with increasing growth. My point is that it seemed to us, certainly, that the contribution to surplus was indeed related to growth, and we found that it is possible and quite desirable from our point of view to follow that kind of a concept.

One of the things you said, Robin, that I thought was quite brave, was that if you found it necessary in some circumstances when the level of surplus was not keeping up to the desired level (declining by some measure), that you would have no hesitation in reducing the company growth. I wondered how you might try to achieve that, without having very deleterious effects on the operation of the company.

MR. LECKIE: I hope I do not have to find out. I would certainly look for every other avenue to fix this first. I suspect that maybe for some of the companies for which the surplus ratio has been falling, the time is going to come when they are going to have to say we just cannot maintain a 10% or 12% growth rate and still be solvent 20 years from now. It is their choice as to how they do it.

MR. TROWBRIDGE: There is one really simple answer to that question that has always appealed to me. If a company has a growth objective, and also a surplus objective, the annual contribution to surplus becomes the product of the two. Then if for some reason your growth objective is being exceeded, and you maintain your surplus objective, you find you must increase the price. If you charge more for your product, if we have a price-sensitive system, your growth rate may well go down. So extra growth begets a higher price which slows the growth. At least it is a self-correcting mechanism if you let it be.

MR. LECKIE: It is self-correcting, but inequitable.

MR. TROWBRIDGE: Well, that is a strong statement of opinion that we can accept or reject as we choose.