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LIFE INSURANCE ASSETS AND LIABILITIES AND THEIR DIFFERENCE

Traditionally, the liabilities of life insurance companies have been so conservatively valued that they contained a large margin of protection for policyholders, even if a company became statutorily insolvent. Most assets have been valued on a basis reflecting their cost.

Viewing the future in the light of today's high interest rates and expenses, can we expect traditional valuation principles, that is, net premium valuation of liabilities and amortized valuation of most assets, to provide the same assurance of company solvency as in the past?

Discussions include:

1. Generally Accepted Accounting Principles (GAAP)
2. Impact of changing asset values on cash flow
3. Organization for Economic Cooperation and Development (OECD) Report - "Financial Guarantees Required for Life Assurance Concerns" (Buol Report)
4. Bews, Seymour, Shaw and Wales paper presented January 27, 1975, jointly, to the Institute of Actuaries and the Faculty of Actuaries, "Proposals for the Statutory Basis of Valuation of Liabilities of Long-Term Insurance Business"
5. Current National Association of Insurance Commissioners (NAIC) investigations
6. Surplus problems of small companies
7. Other pertinent developments

CHAIRMAN PAUL MARKHAM KAHN: During the last decade, we have witnessed almost unprecedented fluctuations in interest rates and in the values of life insurance company assets, which fluctuations have arisen to a large extent from continued inflation. These events render most difficult the prediction of future rates of return on these assets. They lead us to reexamine the basic principles which underlie the valuation of life insurers' assets and which incorporate future interest earnings in the valuation of liabilities. We must do so in order to assure company solvency in the face of extraordinarily heavy liquidity needs resulting from the present heavy demand for policy loans and from the possible forced sale of amortizable securities.

Although actuaries are acknowledged experts in the study of mortality and the application thereof to undertaking long-term financial obligations, they have not similarly engaged in sophisticated analysis of the investment rate of return, the other parameter fundamental to such obligations, at least not in

North America. To remedy this, the actuarial profession must direct their attention to investment activity, to the fundamental purposes of liability and asset valuation, and to reasonable standards of company solvency and surplus needs.

We propose to begin such a discussion here by describing some deficiencies in our current valuation system (Mr. Robertson) and some problems of cash flow (Mr. Winters). Thereafter, we shall receive reports on investigations of valuation systems undertaken by European actuaries as described in the OECD's Buol report (Mr. Halmstad) and by British actuaries as described in the recent paper by Bews and others (Mr. Schermann). We shall then learn the directions proposed for the work of the NAIC Technical Subcommittee on Valuation and Non-forfeiture Value Regulation, its eight technical subcommittees, and the Technical Advisory Subcommittee on the Long Range Aspects of Valuation Regulation (Mr. Montgomery) as well as the surplus problems of small companies (Mr. Epstein).

MR. RICHARD S. ROBERTSON: Before discussing the possible shortfalls of the existing life insurance valuation system, it is very important to put this discussion in perspective. The existing system has served extraordinarily well over the years. Its primary objective has been to protect the interests of and provide security for policyholders. It has done so to the extent that situations where life insurance companies have been unable to meet their obligations to policyholders have been very rare. In those few situations where failures have occurred, the amounts of losses have generally been small. This admirable record was achieved despite overseeing the formation and development of thousands of life insurers, many of which have been seriously undercapitalized. Yet, the growth of the industry, both in size and numbers of companies, is testimony that the system is by no means overly restrictive. With such a history of successful protection of the public interest, it is very important to use extreme care in introducing modifications which might hamper its effectiveness.

Having gotten this off my chest, I now feel less guilty about discussing some of the problems or limitations of the existing valuation system. One hears a great deal of talk these days about GAAP accounting--Generally Accepted Accounting Principles. It is certainly true that, while it is very rare for a policyholder to suffer loss because of the failure of a life insurance company to meet its obligations, the same cannot be said about stockholders. Of course, no one would suggest that stockholders should be protected against loss--their investments are specifically intended as risk capital. However, the investing public is entitled to adequate information to enable it to make intelligent choices relating to investments. Financial statements prepared according to statutory principles have not done a good enough job of providing that information. The GAAP accounting system has, therefore, been developed to meet the objectives of stockholder information, as opposed to policyholder security.

GAAP is not intended to modify or replace statutory valuation systems and should not be considered as such. Nevertheless, I do think that, over the long term, the compatibility of the two valuation systems will increase. Although it horrifies those who are primarily concerned with one system or the other, I think there will be a gradual tendency for the GAAP income statement to take primary importance over the statutory gain from operations and for the statutory balance sheet to predominate over the GAAP balance sheet. One danger of the GAAP balance sheet is that it calculates a book value which is presumed to have significance whereas, in fact, it is meaningless. To a lesser degree, the statutory gain from operations is also misleading.

Turning now to statutory accounting, most life insurance companies that have failed have done so as the result of investment losses, not because of

inadequate policy reserves. It is not possible to completely avoid investment losses by adjusting the asset valuation method. However, perhaps it would be helpful if contingency reserves were required to protect against losses on certain classes of assets in addition to the present Mandatory Securities Valuation Reserve. Properly constructed, such contingency reserves might make it unattractive for financially weak companies to invest in certain classes of assets and this might be a more effective control than attempts to permit or prohibit such investments directly.

Although it gets away from the subject a bit, there is a need for improvement in procedures which are taken as a company's weakening financial position becomes apparent. Some states have reasonably good procedures for exercising various stages of supervision before a company becomes technically insolvent while others have no procedures at all. In far too many states, the process is overly political.

One area of valuation theory which needs considerable work is the matter of deficiency reserves. The idea of requiring reserves for any excess of the present value of future costs over future premiums, computed on a conservative basis, is sound and desirable. But, tying the valuation basis to the level premium valuation basis used for policy reserves has created serious inequities. At times, deficiency reserve requirements have tended to keep nonparticipating premiums at a higher level than would otherwise be necessary. On the other hand, there is evidence that deficiency reserve requirements may not be strict enough for certain types of term plans.

In these areas, and probably certain others, the existing valuation system could be studied for possible improvement. The answers are not obvious, and it may be that significant improvement would be impractical. Research, such as the type the other gentlemen on the panel will be discussing, will be very helpful in evaluating possible approaches to these problems. It will continue to be very important, however, to keep in mind that the existing system should be modified only after a thorough consideration of whether the new program will continue the highly effective job of protecting policyholder interests as we have been fortunate to have with the present system.

MR. ROBERT C. WINTERS: Dick Robertson discussed some of the problems of statutory valuation currently. I will focus more on some constraints, those aspects of U.S. life insurance which have helped shape existing statutes and which limit the choices available for new standards.

I would like to start by taking some issue with the statement of the discussion topic. Specifically, I do not agree that the liabilities of life insurance companies have traditionally been valued so conservatively that they contain a large margin of protection for policyholders even in extreme circumstances. This view has become very fashionable, with the leading promoters of the fashion being members of the accounting and financial analysts fraternities. I suggest that actuaries should be cautious about adopting this fashion.

To take a few very easy examples, it is not at all clear that statutory reserves for paid-up insurance, including paid-up term insurance, include sufficient coverage for both the claims and the expenses of maintaining the business. A good case can be made that for premium-paying level term insurance a mean reserve based on the net cost of insurance according to the current valuation standards is not unreasonably conservative, particularly in view of the cost of renewal and conversion options. For decreasing term insurance, particularly at the higher issue ages, the standard may well be inadequate at the early durations, where gains from select mortality should be set aside; Gary Corbett discussed this point in the morning session. Moving away from the purely life coverages, I suggest that there are a few actuaries who feel that their disability reserves are unreasonably high in the current circumstances.

But, one may say these are side issues. The real test of the appropriateness of reserve valuation is the treatment of cash value policies--that is where the leverage is. And so it is. Moreover, I think few would argue with the proposition that, at the early durations, net level premium reserves are redundant, and CRVM reserves probably are also for at least the earliest years. I would argue, however, that it is not at all clear that current statutory reserves on cash value policies from about the 10th or 15th duration onwards are significantly overstated. I think the case for the cash value floor on statutory reserves is a very strong one. Parenthetically, I also think that the decision not to use a cash value floor in the AICPA Audit Guide for stock life insurance companies was appropriate, because of the substantially different objectives of those reserves. We have major companies in this country with close to half their cash values out on loan, and that does not even count the surrender activity which they are also seeing each year. The asset value of these policy loans is properly their face amount plus accrued interest, and surely the corresponding liability should be no smaller. If the minimum liability for these policies is their loan value, should the reserve for policies as yet unloaned be smaller?

We should also remember that the current valuation standard doesn't have much impact on reserves for a long time to come. Under U.S. practice, the reserve basis is defined at the issue date of a policy; the reserves on a block of issues peak some thirty years later. Thus one who argues that statutory reserves are unduly conservative is taking the position that 1958 CSO reserves at 4% will be redundant in 2005. As a basis for making long-term commitments to the public, that is a tough position to document. Within the working lifetime of many actuaries who are still active, AE 3½% reserves were demonstrated to be clearly inadequate.

I would like to elaborate a bit on the issue of the cash value floor. In the face of the existing policy loan situation, with the real thrust of continued strong inflation as a source of continued heavy cash drains from accumulated values, and finally in economic circumstances which may very well send policyholders to their cash value resources in uncommonly heavy numbers, I argue that a key test of a company's solvency is its ability to cover its demand liabilities.

Of course these are unusual conditions, but that's the point. Statutory valuation finds its principal justification in the demonstration that a company can withstand abnormal circumstances as well as the usual course of events.

This view obviously has a stronger emphasis on immediate-term considerations than is typical in discussions of statutory solvency. But, as many recent episodes--Penn Central and Lockheed are easy examples--have demonstrated, between today and the long term the Lord has placed the short term. I would like to make a quote from a discussion memorandum prepared recently in the Canadian Department of Insurance, "The main problem for a life insurance company is, of course, to have cash available in the future when needed to meet maturing obligations." In terms of statutory standards, I would amplify that statement to specify that the cash in question must be generated each year when it is needed, and from existing business.

We, at Prudential, recently projected our cash flow for 1975. We found that cash outgo for insurance operations would probably be about 60% of cash income. This is a happy state of affairs, but we have been rather fortunate in having a relatively low level of loans and surrenders. If the level of those transactions increases significantly, our situation will be far less comfortable--and the depression of the 1930s produced loan and surrender outflows at close to three times our current level.

In short, I suggest that many of the discussions of statutory reserving have overemphasized the long term and ignored some very real aspects of the

business that we are in--particularly in times of inflation and recession. The demand liabilities which we build up in the course of undertaking long-term obligations are an important financial fact of our operations. In emphasizing this point, I realize that I also raise issues in connection with asset valuation. I shall not try to pursue them now, except to the extent of closing in somewhat the fashion that I opened--by pecking at the program statement of our subject. I suggest that Item 2 may be stated backwards. For a company which faces the need to liquidate fixed-dollar investments in order to cover cash demands, the problem is the impact of cash flow on its asset values, through converting amortized asset values to market on sale.

MR. DAVID GARRICK HALMSTAD: The single most important responsibility of the actuary is to design and manage insurance systems so as to assure their survival with high probability. The fundamental requirements for such systems of solvency, stability, and continuity apply to all insurance operations, wherever in the world they may be located.

An important study of solvency standards for life insurance companies was commissioned in late 1966 by the Organization for Economic Cooperation and Development (OECD) in order to promote stable international insurance operations. The primary objective of the study was to determine a minimum level of solvency for life insurance operations in the participating countries, although the governments of the member countries would not be bound by the recommendations resulting from the study. However, the results of the study are expected to have a significant impact on insurance supervision in those countries.

A Working Party was set up under the Chairmanship of Mr. Buol, at the time a member of the Swiss Insurance Supervisory Service, and included members of the Insurance Supervisory Service and insurers of Austria, Belgium, Denmark, Finland, France, Germany, Italy, Japan, the Netherlands, Spain, Sweden, Switzerland, Turkey, and the United Kingdom. The Working Party was assisted by a Sub-Group of actuaries chaired by Mr. Ammeter (Switzerland) and comprising Mr. Drude (Germany), Mr. Nieto (Spain), Mr. Stewart (United Kingdom) and Mr. Toren (Sweden).

The Working Party's report, Financial Guarantees Required for Life Assurance Concerns (commonly referred to as the "Buol Report"), was published in 1971 by the OECD.

Leaving aside the application to individual countries of the recommendations in the Report, we will discuss the following topics treated in the Report: (1) valuation of reserve liabilities, including selection of the interest assumption and establishment of a special risk reserve, (2) the valuation of investments covering reserve liabilities, and (3) the interdependence of the two.

The Report differentiates between the valuation of liabilities in what it calls "cases amenable to the classic actuarial technique" and other cases. The first category would include permanent insurance, where the mathematical reserve, if prudently determined, is adequate to meet the danger of high excess mortality. These are cases where the savings element predominates and the mortality factor plays only a secondary role. The second category includes cases where the mortality factor predominates, such as portfolios which are too small or have not aged long enough to contain a sufficient savings element, or types of insurance which contain virtually no savings element such as term insurance, accidental death benefits, etc.

In the case of permanent insurance, the Working Party concluded that mathematical reserves, calculated using sufficiently conservative assumptions, would be adequate, and they concentrated on the question of choosing appropriate assumptions. The key assumption, of course, is the rate of interest. The

Working Party recommended the following method for determination of the valuation interest rate.

First, an "unstrengthened" interest rate is calculated as follows:

1. First, the average effective rate of yield on the life company's assets over a sufficiently long period of time (20 years is recommended) is determined.
2. Then, either this average yield, reduced by 10%, or, alternatively, two-thirds of the lowest annual rate of yield in the period plus one-third of the most recent rate, is chosen.
3. Finally, in order to assure that, in spite of a possible downward trend in the rates of yield, the use of either formula suggested in (2) does not result in too high a valuation rate, the condition is added that the unstrengthened interest rate can never exceed 90% of the most recent rate of yield.

The Report recognizes that this method may not always produce appropriate results and provides for exceptions by the supervisory authority.

The Working Party recommends a rate of strengthening the "unstrengthened" interest rate which is based on the theory that strengthening should be more substantial when the absolute level of the valuation rate is high than when it is low. Therefore, a strengthening of 20% of the "unstrengthened" rate as calculated above is recommended. Attention is devoted to demonstrating that this strengthened rate will produce safety margins adequate to absorb significant variations in mortality as well as management expenses.

The case of term insurance was studied by a Sub-Group headed by Mr. Ammeter. The report of this Sub-Group is contained in an appendix to the Report. A paper written by Mr. Ammeter on the same subject was also translated and published in ARCH, 1972-73. The Sub-Group suggests the establishment of a special reserve, in addition to any mathematical reserve called for, according to a formula, developed by risk-theoretic methods, as follows:

$$u = V^{P^i} + V^{\bar{S}} = \frac{0.025}{\lambda} \sum P^i + \frac{8}{\lambda} \bar{S}$$

where

$\sum P^i$ is the total premium for the portfolio (net of reinsurance ceded)

λ is the loading contained in P^i

\bar{S} is the average claim amount.

The first term is proportional to the volume of net premiums, and the second term is not, but rather depends solely on the expected average claim amount. Thus, the second term functions as a fixed minimum reserve amount. For large portfolios, the fixed term is very small in comparison with the variable term.

The Working Party further recommended that, in the case of portfolios where term and similar insurance is a small proportion of the total portfolio, the special reserve could be graduated according to the relative proportion that the term premium bears to the total premium. In such cases, adverse experience in the term portion of the portfolio could hardly endanger the solvency of the entire portfolio. With respect to reserve method, while modified reserves are, of course, well entrenched in North America, the Working Party could not agree on the desirability of permitting so-called "Zillmerization" of the mathematical reserve. This refers to the adjustment of the reserve in the

first year for at least part of the amount of acquisition expenses and the amortization of this amount over the premium-paying period.

The Report covers the asset side of the solvency question in terms which are relatively standard. It begins with an interesting comment on the essential difference between asset valuation and liability valuation--that, whereas valuation of liabilities is an internal factor which may be directly influenced by insurers and regulators, the asset picture is most directly influenced by external considerations. Combined with this point is a stickier one insofar as OECD recommendations apply to its member countries--that is, that the quality and availability of differing forms of investment vary considerably from country to country. This fact, combined with the very different forms of regulation between the countries, forced the Working Party to outline its recommendations on asset valuation in the broadest of possible terms and still, as we shall see, the terms specified were not held to apply in at least one country for very special reasons.

A brief outline of the asset valuation section (Chapter IV) is perhaps helpful.

The Report recognizes the use of conservative valuations for solvency purposes, and recommends a system of "normal" values to be used for solvency testing for various categories of assets. Such "normal" values are suggested to be not less than the "balance sheet" values, by investment category as well as on an overall investment basis.

The specific solvency values recommended seem conventional to American readers--par values are accepted for adequately secured debt instruments, as long as they yield at least $\frac{1}{2}\%$ more than the interest rate used in reserve valuation, for example--with a single exception in the case of common stocks.

A pair of conservative stock valuation methods are suggested. The first of these is a straight 20% reduction of value from the actual market value; the second recommends a variable rate of reduction, to be at least 10% off market value, but a greater reduction in periods when the overall market is moving upward, measured over the past three years. The actual formula of the second method is to value each security at $.90 \times \frac{\hat{i}}{i}$ where \hat{i} is the average of the stock market price index at the end of the past three years, i is that price index of the last year-end, and the $\frac{\hat{i}}{i}$ ratio is limited to a maximum of 1.

For other investments, the suggestions are understandably those consistent with a long-range, continuing business philosophy.

In light of the suggested solvency "normal" value standards set, the Working Party then reviewed the actual methods of valuation used in the member countries and concluded that, in ten of the countries participating, conditions of solvency were met by valuations already used in regulatory statements, except in the matter of stocks, where the new formula was suggested.

The Buol Report also included a chapter on the application of solvency requirements to individual companies, and concluded that solvency established on an overall basis by the supervisors in the company's home domicile should suffice for solvency for other OECD member countries, though, naturally, each company should continue to meet local licensing conditions.

A summary of the United Kingdom's position on the matter of solvency guaranteed through the use of the British "immunization" procedures is included in the Buol Report. Although not specifically designated as such, eleven paragraphs of the Report are essentially a separate report on the investment markets and the asset valuation procedures by which immunization--the matching of the terms of liabilities and of assets--can be applied. A good summary of the process of immunization is included in this section, building to the position that, when immunization is applied, the valuation of liabilities may be based on the current yield of the assets. In the British view, the need for solvency asset values greater than the current market value of those assets is

directly a result of the use of a standard valuation basis, a practice which has not--until very recently--been even suggested in the United Kingdom. When the actuary may revalue his liabilities in terms of a current asset market, and where immunization is applied, solvency is automatically assured.

Such a procedure is possible in the United Kingdom because of the existence of long-term investments enabling the immunization process to operate. The valuation procedure suggested for stocks--fixed or variable reduction from market value--need not apply when, as in Britain, stocks are held for the long term and where considerable investment in such vehicles occurs.

Despite the study of the British system, the Report concludes its study of the asset valuation picture with the observation that the immunization principle of matching assets and liabilities may well work where all of the required conditions exist--the necessary investment vehicles and the lack of regulatory restraints--but that it does not "lend itself to general application on the European Continent." For application of solvency on a multilateral basis, however, a company operating on a satisfactory basis using such matching within its home country should be exempt from certain of the restrictions on the choice of the technical rate of interest suggested in the Report. Moreover, once considered solvent within its home country, its operations elsewhere would be considered acceptable.

The Buol Report is the basis for a distinctive system for establishing solvency in many continental European countries. We believe that it offers members of the Society a valuable insight into the systems of solvency that we use ourselves.

Solvency determination is essentially a blending of conservative and realistic valuations in a coherent system which supports special insurance considerations. The blending of these factors--the design of a solvency system coordinating asset and liability valuation with due regard for local conditions--is what makes a solvency system work.

Consider the British position on immunization. Because of the special investment market, and the far lower level of guaranteed optative benefits (such as surrender values), gross premium valuation at the current market yield, properly immunized for asset maturities, provides a consistent, workable solvency system.

In the United States, with our special emphasis on contractual guarantees of a rigid nature, the appearance of full asset support for fixed liabilities defined at issue is more important than it is to the British. And our European colleagues--as the Buol Report indicates--fall between somewhere.

In each of the three cases, distinctly different approaches are taken, each consistent within itself, consistent with local insurance principles and contracts issued, and each is a viable solvency system. Pressures are building, however, on both the United Kingdom and on us here in the United States, forcing us to adopt our traditional solvency systems to meet new conditions. On this basis, we recommend review of the Buol Report for new insight on alternative systems of solvency control.

MR. HARRIS SCHERMANN: The paper by Bews, Seymour, Shaw and Wales, entitled "Proposals for the Statutory Basis of Valuation of the Liabilities of Long-Term Insurance Business", was presented to the Faculty of Actuaries on January 20, 1975, and to the Institute of Actuaries on January 27. It represents the observations and conclusions of a Working Party established by the Councils of the Faculty and the Institute as a response to the publication of proposed rules for the valuation of liabilities by the United Kingdom supervisory authority, the Department of Trade.

Those rules were part of a release which also contained proposed rules for the valuation of assets (which have since resulted in the coming into force on February 1 of regulations for asset valuation). Taken together, the valuation

rules signal a move away from the traditional British approach of "freedom with publicity" to the supervision of insurance companies.

The authors of the paper summarize the main reasons for this change in attitude on the part of the British supervisory authorities. They survey briefly the methods of supervision in some other countries and point out the inevitability of the adoption of a statutory basis for the valuation of liabilities, as the United Kingdom stood virtually alone in not having such a basis. The brief survey of control systems indicates that the net premium method for the valuation of liabilities is almost universally used and links this to the widely-held view that solvency, pure and simple, does not offer adequate protection. Furthermore, the authors note that the common lack of interaction between the valuation of assets and the valuation of liabilities is a weakness in many control systems.

They go on to review developments in the United Kingdom since the end of the second World War and also the influence of European developments on British thinking.

The system for the valuation of liabilities proposed by the Department of Trade is a net premium valuation. Modified reserves are permitted in recognition of acquisition expenses, the maximum modification being an addition to the net premium of 3% of the sum assured, spread over the premium-paying term of the policy. The supervisory authorities stress the importance of the link between the valuations of assets and liabilities which is to be found in the relationship between the actual yield on the funds of the company on the one hand and the valuation rates of interest on the other. It is provided in the valuation proposals that the weighted mean valuation interest rate is to have a ceiling of the overall yield less a margin of the greater of one-tenth of the rate itself, or .8%; there is provision for the exercise of actuarial discretion in certain circumstances.

The pattern emerges, therefore, of a method of liability valuation that, within traditional British practice, adapts itself to a market valuation of assets by allowing a reduction in valuation reserves by using a higher valuation interest rate paralleling the higher yield rate generated by depreciated market values; similarly with a movement in the opposite direction. The authors examine the characteristics of the proposed reserve valuation rules and, in particular, scrutinize the suitability of the net premium system while recognizing that its adoption as a statutory measure is the natural outcome of the European influences.

The Working Party had as its terms of reference the following: "To consider the desirability and possibility of modification of the method of valuation embraced in the 'six principles' so that:

- a. for the general range of long-term life assurance contracts the value of the net liabilities can be compared with the market value of the assets, even during a period of rapid change, to ensure a reasonable standard of adequacy rather than a mere demonstration of solvency, and
- b. statutory rules for such a valuation can be designed."

The six principles referred to are the five originally put forward by Skerman (J.I.A.92 p.75) in 1966 and adopted by the European Insurance Committee (C.E.A.) Life Working Group with the addition of the sixth. They are:

1. The use of a net premium method.
2. The acceptability of modified reserves.
3. The maintenance of adequate expense margins for future renewal expenses.
4. The use of appropriate recognized tables of mortality.
5. Valuation of interest lower than those implicit in the valuation of the assets.

6. Guaranteed surrender values must be covered by reserves.

The authors, in their evaluation of the net premium method, observe that the greatest objection lies in the impossibility of obtaining complete consistency between the valuations of assets and liabilities, and attribute this characteristic to the fact that the net premium varies inversely with the valuation rate of interest. This leads them to an examination of modifications to the net premium formula generated by recognizing a distinction between the rate of interest earned on existing assets representing the policy reserve and the rates of interest at which future income may be invested. The alternative formulas resulting from this analysis are then used to produce specimen reserve values for a small number of life and endowment plans at selected durations. There is provided a table showing the effect of changes in interest rates from 3% by steps to 20% on the values of an assortment of fixed interest investments with a 3% coupon (net of tax) for a range of maturities. These numerical results facilitate comparisons of changes in asset values and changes in liabilities resulting from changes in interest rates. The methods chosen lead the authors to some observations concerning the net premium method of valuation, and particularly to the conclusion that the variations explored would not appear to merit general application.

There follows a section devoted to general considerations concerning the valuation rate of interest, in particular, some examination of the factors which may enter into its determination, leading to a critical evaluation of the Department of Trade's proposed rule, as outlined earlier in these remarks. During the course of these observations, the authors draw attention to some pitfalls in the proposals for the calculation of a weighted mean valuation rate. These seem to offer opportunities for the actuary to circumvent the apparent intention of some of the proposed rules by placing a literal interpretation on the wording, although it is to be presumed that he will always be guided by professional standards.

The proposed rules specify that tables of mortality and disability are to be recognized as appropriate by the supervisory authority for the class of contract in respect of which the rates are used. The authors comment that it is to be hoped that standard tables will be prescribed; if an actuary in his judgment uses some other rates, it should be sufficient that his justification accompany the return, rather than that prior permission be obtained.

There are other matters of practical detail contained in the proposed rules, upon which I do not intend to comment. One of these other matters, however, is of considerable importance in the context of the North American approach to guaranteed cash values and goes to the root of the proposed British control system. The authors of the paper point out that the proposed rule does not demand that the value of each contract be not less than the guaranteed surrender value, as the actuary may make provision "in such other way as is in his opinion appropriate." It is understood that a suggestion that the reserve could properly be less than the guaranteed cash value, and that the reserving system could incorporate rates of termination, was opposed by the majority of participants in the discussion of the paper at the Institute of Actuaries.

Now it should be remembered that the great majority of British life insurance companies do not customarily include guaranteed cash values in their ordinary permanent insurance contracts. Values are usually subject to change at any time, and within the past few months many strong and reputable companies have reduced their surrender value scales applicable to in-force policies. For several years, however, companies have been issuing a class of single premium deferred annuity, with a guaranteed cash option at the end of the period of deferral and guaranteed cash values during this period. The tax laws for some time operated in such a fashion that these policies provided attractive investment opportunities, and competition between insurance companies led to the

issuing of contracts with surrender options that some companies could not afford as interest rates continued to climb. One of the consequences of this unhappy development has been that guaranteed values of almost any sort share an association with recklessness, and the Department of Trade has been subjected to criticism for "allowing" these developments to occur. This climate, aggravated by the failure of some companies on account of high automobile claims in a fiercely competitive premium situation, must have caused a sensitivity on the part of the supervisory authorities that is a relevant factor in the control systems now evolving.

It will have become apparent, during my review of the proposed rules and the paper written on them, that the underlying philosophy of the control system is that of imminent breakup, as opposed to concepts of going-concern solvency. The insistence upon market valuation of assets and the convenience of a net premium valuation system for liabilities, linked together by movements in interest rates of the same general magnitude and in the same direction, appear to constitute a logical whole. The paper shows that the system is unlikely to work without time, patience, and adaptation to the circumstances of each individual company. The place of guaranteed cash values in this scheme of things, if they have a place, is not easy to define. As part of the breakup approach, it seems to be assumed that the holder of a policy with a guaranteed cash value will regard enforced termination at that value as an acceptable discharge, and similarly that the holder of a policy without guaranteed cash values would consider his "breakup" value as equitable. It is more likely that both would prefer the continuation in force of their reasonable expectations. In this context of fluctuating asset values and changing bases for the valuation of liabilities, there may be room for the use of termination benefits discounted for the probability of termination. Once the imposition of contract termination is contemplated as the logical goal of a control system, one is involved in the abrogation of contractual obligations; should termination guarantees, designed as a policyholder option, have a different status?

All this seems highly relevant to the scene in the United States and Canada. With interest rates at their present high levels, and expenses continuing their upward movement, we are forced to consider how long we can continue to regard our in-force business as "sheltered" from the outside world, in the sense that, traditionally, a block of business has its guaranteed cash value and reserve bases determined at the outset and enjoys a degree of protection against market fluctuations in asset values. These are characteristics of a going-concern approach to solvency which has worked well within the limits of external fluctuation we have hitherto experienced. There is a limit to the pressures of higher interest rates and cash flow problems that our structure can withstand without some modification. If we should decide to move in the direction of allowing market values to have a greater effect on statutory asset valuation, we may well move in the direction of the United Kingdom and Europe. In those circumstances, we may think in terms of valuing guaranteed cash values by discounting them, for policies already in force. For new issues, it may be time to reconsider our approach to guaranteed nonforfeiture by stressing the role of guaranteed paid-up values and moving away from guaranteed cash values.

Returning to the paper by Bews and his colleagues, they conclude that the Working Party has failed to find a modification to the valuation formula to achieve the desired relationship between changes in the values of assets and liabilities consequent upon a change in the rate of interest. "No one asset or group of assets can immunize a portfolio against large changes in the rate of interest." Nevertheless, it seems to be taken for granted that the Department of Trade's proposals will be proceeded with, largely on account of the pressures which gave rise to them. The hope is expressed that the Department will continue to have a sympathetic attitude to the companies requiring time

to adapt to the new regulatory environment.

I have tried to select the main issues dealt with in the paper and thus to illustrate the range of topics covered. I owe the authors an apology for not having reflected adequately the impressive depth of thinking they have brought to their endeavors to carry out the Working Party's terms of reference. If this review has aroused your interest, you will no doubt want to read the paper itself when it is published in the Transactions of the Faculty and the Journal of the Institute.

MR. JOHN O. MONTGOMERY: The National Association of Insurance Commissioners (NAIC) Technical Subcommittee on Valuation and Nonforfeiture Value Regulation has been charged by the NAIC to:

1. Review valuation and nonforfeiture value legislation and regulation.
2. Identify the problems currently encountered and recommend practical solutions which can be implemented now.
3. Reconsider the fundamental purposes of statutory regulation in the light of the present state of the knowledge and technology of actuarial science, study systems alternative to the present using theories and technology not previously available, and eventually recommend some course of long-range development of statutory regulation.

At the present time, the NAIC Technical Subcommittee reports only to the (C3) Life Subcommittee and is, therefore, restricted to investigating the valuation and nonforfeiture value regulation associated with general account life insurance and annuity business. Eventually, such regulation must also be considered for other lines, such as health insurance, credit insurance, separate account business and the various fire, casualty and automobile liability lines of business. For this reason, the Technical Advisory Subcommittee on the Long-Range Aspects of Valuation Regulation includes a number of review and commentary members associated with such other lines of business so that the Advisory Subcommittee can have the advantage of direct communication with persons knowledgeable in those fields. When those areas are opened up for exploration by the NAIC, a nucleus of advisory persons will then become available with some experience as to what has been going on in the life insurance and annuity area.

The original NAIC Task Force has been expanded into a Technical Subcommittee to increase the number of states participating in the study of valuation and nonforfeiture value regulation. Thanks to the efforts of the staff of the American Life Insurance Association, a review of the developments in valuation and nonforfeiture value regulation since the days of the Guertin Committee has been accomplished and is summarized as an attachment to the Task Force Report presented last December to the NAIC which will appear in the proceedings of the NAIC reporting that meeting.

Eight immediate problems have been identified and are to be considered by eight separate Task Forces within the membership of the NAIC Technical Subcommittee. Some of these Task Forces may require special professional actuarial advice on specified technical problems and will then ask the NAIC Technical Subcommittee to request such advice from either the American Academy of Actuaries or the Society of Actuaries, depending on the nature of the request. The immediate problems to be studied are:

1. Premium Deficiency Reserves
2. The "Uniform Percentage of Gross Premium" Rule
3. General Account Index-Related Products
4. Nonforfeiture Value Regulation Expense Assumptions
5. Split-Life and Related Plans
6. Deposit Term and Related Plans

7. Deferred Annuities and Deposit Funds
8. Life Cycle Plans, Multi-Track Plans and Other Recent Developments

At the present time a technical advisory subcommittee to consider the long-range aspects of valuation is in the process of organization. This advisory subcommittee will report directly to the NAIC Technical Advisory Subcommittee on Valuation and Nonforfeiture Regulation and is charged specifically with finding practical solutions and testing these solutions for three problems:

1. The matching of assets with cash-flow requirements.
2. The definition of how much surplus should be retained as a margin of safety under the present system for determining statutory solvency.
3. The definition of alternative methods of determining statutory solvency.

In connection with the first of these problems, two questions have been asked;

- a. How should the asset portfolio vary with the nature and distribution of insurance and annuity business for which such assets are generated and are required for the maintenance of such business in a statutorily solvent position with a reasonable margin for surplus?
- b. What practical rules or regulations, if any, can be devised to assure that an asset portfolio will be able to support a particular distribution of business with a reasonable degree of confidence?

Answers to these questions, of course, will require the NAIC Technical Subcommittee to define criteria for a "reasonable margin for surplus" and "a reasonable degree of confidence". These definitions may well depend on the results of other assignments to the Long-Range Valuation Technical Advisory Subcommittee, the American Academy of Actuaries, or the Society of Actuaries.

The definition of the surplus required as a safety margin under the present system for determining statutory solvency poses a number of questions;

- a. How can risk theory, through the introduction of the chance of fluctuation and consideration of different economic conditions in the various parameters (investment return, mortality or morbidity or claim losses, voluntary withdrawal rates, and expenses including taxes) be used to establish the surplus which should be retained under varying degrees of confidence?
- b. What is the effect of the application of credibility through considering both the magnitude and number of risks involved, both with respect to claims experience and with respect to investment experience, and also considering the effect of reinsurance?
- c. How can the findings with respect to risk theory and credibility be translated into some practical working rules to be used as a basis for drafting model regulations or legislation?

Answers to these questions require the NAIC Technical Subcommittee to define the predetermined chance for ruin to be established for study purposes and to determine the priority of risk structures to be studied. These definitions will require technical information for which the NAIC Technical Subcommittee will most likely ask the Society of Actuaries for assistance.

In exploring alternative valuation systems, aside from the obvious question of what alternative systems are available, questions to be answered are:

- a. To what extent should risk theory be considered in the definition of alternative valuation systems?
- b. To what extent should credibility of experience, considering the magnitude and number of risks involved for both claims and investments, be used in

defining an alternative system?

- c. Should the present valuation system be retained for situations where there is minimal credibility?

The NAIC Technical Subcommittee will specify the alternative methods to be tested, the limits of the values of the various parameters and the form of such limits, and the acceptable criteria for credibility of experience. This will require some technical assistance from the Advisory Subcommittee and the Society of Actuaries.

As you can see, the NAIC Technical Subcommittee on Valuation and Nonforfeiture Valuation Regulation is embarked on a vigorous and comprehensive program to bring about more effective regulation in these areas. Hopefully, the immediate problems can be resolved within a year or two. However, some of them are chronic symptoms of deficiencies in the present system and may require some redefinition of the present system before they will completely disappear. The NAIC Technical Subcommittee has been organized as a fairly permanent committee with the prospect that the current studies into the long-range aspects will take some time to complete and that problems will continue to arise which will require some form of current action.

MR. NATHAN H. EPSTEIN: A small surplus is the surplus problem of the small company. In fact that is how I would define and rank companies--by surplus rather than by assets or in-force.

However, one advantage of having a small surplus is that it forces management to think through every decision very carefully since the impact on surplus is immediate.

From a conceptual point of view, there is no difference between the surplus problem of a small company and that of a large company.

In my opinion, the amount of surplus determines four things for a company:

1. The level of risk retention (both mortality and morbidity)
2. The risk-reward ratio of investment policy
3. The amount of "going-concern" expenses not appropriately attributable to the policyholder
4. The expansion rate of the business from internally-generated funds

Criteria have to be developed for each of these four uses of surplus. Both minimum and maximum surplus levels must be established.

For example, we can use risk theory to determine a schedule for mortality retention which might go something like this:

<u>Amount of Surplus</u>	<u>Retention Limit</u>
One Million	\$ 25,000
Ten Million	250,000
One Hundred Million	2,500,000

We could then establish that, for risk retention, a surplus of one million would be a minimum since a retention of less than \$25,000 would not generate sufficient return to make the operation viable, and a surplus of one hundred million would be a maximum since insurance of over \$2,500,000 on one life would be unwise from an underwriting point of view.

Similarly, various tools have to be used or developed to come up with criteria for the other three uses of surplus. Once this is done, the relationships between the factors must be studied to come up with overall surplus standards.

In a small company the small amount of surplus imposes a very real

discipline on management. Retention limits, investment policy, expense budgeting and growth potential are matters of daily concern. Yet there are standards of good management which every company, large or small, should follow, whether or not there is immediate disciplinary action from the taskmaster of surplus.

A company with a large surplus might be tempted to issue a "loss leader" absorbing expenses by surplus.

It might be tempted to develop a corporate life style for its executives with plush offices, chauffeur-driven limousines, jet planes, etc. which is beyond business necessity.

It might be tempted to take certain investment risks which simply are not prudent with surplus burying all mistakes.

A small company cannot do these things. A large company cannot either. Good management is good management--small company or large company.

As actuaries--managers of the business--it behooves us to see that our company products are priced realistically, our company assets invested optimally, our company money spent wisely, our company service given promptly, our company obligations secured safely--regardless of company size.

MR. GOTTFRIED BERGER:* It seems to me that we have developed more questions than answers. However, this means progress since the first step in solving a problem is to raise the right questions.

Would you agree with the following statements? So far, we have valued assets and liabilities independently and have required that assets exceed liabilities by a substantial margin called surplus. Thus, the solvency criterion is, in essence, an inequality.

Under the new concept, surplus becomes a function (which may be called 'minimum fluctuation reserve'). This function depends on two groups of parameters:

- a. from the liability side, parameters which measure the risk of fluctuations of mortality, persistency and interest
- b. from the asset side, parameters which measure the quality of the investments as well as the risk of fluctuation of the market value of bonds in case of insufficient immunization.

Obviously, the amount of the "minimum fluctuation reserve" depends on the standards being applied to the valuation of reserves and assets. Thus, the introduction of the new system would not necessarily call for a change of Statutory reserve valuation rules. However, if we start from GAAP reserves, the first group of parameters mentioned above would represent the "reserve deltas."

Do I see this right?

MR. W. KEITH SLOAN:⁺ I would like to pass on to you some examples of the utility, even at the present time, of some of these concepts in making regulatory decisions.

As I am sure you are aware, in Arkansas we have quite a number of miniscule companies, virtually any of which is likely to be on the verge of insolvency

*Dr. Berger, not a member of the Society, is President of Cologne Life Re-Insurance Company.

⁺Mr. Sloan, not a member of the Society, is Life & Health Actuary of the Arkansas Insurance Department.

at any given time. Last year the question arose as to whether to proceed on the assumption that a given company, which was in this marginal situation, would be better treated as a going-concern or as a probable insolvency. Since it was small and not actively soliciting insurance, I was able to apply several of the procedures we have discussed, the crucial one being the valuation of the assets at the reserve valuation rate, taken as an income stream, including maturities. In this situation it developed that the assets would support the liabilities, both as to amount and timing, so the decision was made to allow the company to continue with no further action.

More recently, we have applied risk theory principles in a credit life reinsurance situation, and it appears likely that the credit insurance subcommittee may use at least that portion of these deliberations before the general application is possible.

MR. ALLAN F. LEBOURVEAU: I would like to voice my strong objection to the concepts that statutory financial statements are prepared on a liquidation basis and are designed primarily to assure company solvency. Statutory financials, like GAAP financials, should be prepared on a going-concern basis. While GAAP financials are designed for stockholders, statutory financials should be (and I believe historically have been) designed for the protection of beneficiaries. The primary question that statutory financials should answer is whether the funds held are at least as great as those that a prudent fiduciary would hold for the protection of beneficiary, recognizing the long-term nature of the obligations and the likelihood of reasonably long and severe periods of adverse experience.

MR. GODFREY PERROTT: With the increase in consumerism, which should lead to more knowledgeable policyholders, we should expect an increase in the loan percentage unless policy loan interest rate legislation is changed. The more knowledgeable policyholders become, the more they will be aware of what a bargain policy loans are in the loan market.

Under any theory of reserving, this leads to the conclusion that aggregate reserves should be at least equal to cash values. If, as it has been suggested, the primary purpose of reserves is to secure the beneficiaries beyond all reasonable doubt, then, regardless of the assumptions as to policy benefits (excluding cash values), the insolvency may result from being 100% loaned if the reserves are less than the cash values.

MR. ROBERT TOOKEY: Since the matter of policy loans has just become a focal point in this discussion of quality of assets in a life insurance company's balance sheet, I would like to discuss a policy loan portfolio on the books of one of our clients which constitutes nearly half of the total assets of that company. Most of these policies were written just before the "4 in 7 rule" went into effect, and the maximum loan interest rate was 5%. In some cases even a lower rate was used and graded loan interest rates were sometimes employed where the ultimate effective rate could be as low as 3.75% for very large policy loans. The business written on this minimum deposit plan basis has persisted quite well, and we attribute this to several factors. First, of course, if the insured wished to initiate a new minimum deposit plan he would have to meet the 4 in 7 rule whereunder he would actually pay for four out of the first seven annual premiums in cash. Second, current policy loan interest rates are higher--in about 26 states it is possible to charge as much as 8% without violating State Usury Laws and more than one company operating nationwide is issuing policies allowing an 8% maximum policy loan interest rate in those states where this is permissible. A third factor is that inflation has escalated nearly everyone into a higher tax bracket and, as a result of the deductibility of loan interest, the minimum deposit approach becomes that much

more attractive. I might add that the assumption that the maximum income tax rate is 50% does not quite hold, particularly in states with rather high and steeply graded state income rates. For example, in our State of California the maximum state income rate is 11%. This means that, in the case of the individual in the 50% federal income tax bracket, this 11%, since it's deductible from taxable income, is an effective increment of $5\frac{1}{2}\%$ to the 50%, thus placing the individual in 55.5% tax bracket. In those cities in which a city income tax is imposed, the total tax rate on the individual's income may be further increased.

The foregoing forces have operated to encourage persistency among policyholders owning an old policy under which they enjoy the full deductibility of policy loan interest and the policy loan interest rates are relatively low. In the pricing of these policies (they were programmed for minimum deposit business), the rate structure anticipated a relatively low yield on assets, namely the policy loan interest rate with a small amount of breakage to cover investment expenses.

The relatively good quality of this business is not apparent to the members of our industry who have had traumatic experiences with minimum deposit business, as indeed many of them have, where it was sold in the wrong way at the wrong commission rates to the wrong folks. But where it is an attractive product that was sold properly to people in appropriate income tax brackets, it has proved to be a good source of revenue for the insurance company.

A parting thought on policy loans as an asset: Where bonds can depreciate in value and the company can sustain substantial loss in selling bonds below the purchase price to process surrenders and policy loans, in the case of a fully-loaned policy you know that that loan asset is going to remain at its stated value as shown on page 2 of the Convention Blank.

MR. JOHN M. BRAGG: At the present time there is a link between the interest rates used for reserve and nonforfeiture purposes. For example, if $3\frac{1}{2}\%$ is used for reserve purposes, it is also used for nonforfeiture purposes. The nonforfeiture interest rate, however, is a matter of product design, whereas the reserve interest rate is a matter of solvency, and these considerations are different. A case can no doubt be made for using a higher rate for nonforfeiture purposes, perhaps similar to that which would be used for bank savings account purposes. The reserve calculations, at a lower interest rate, would presumably take the cash values into consideration, and this would probably involve the use of lapse rate assumptions. Premium deficiency problems might also enter the picture. I hope that such arrangements will be considered in any future nonforfeiture and reserve regulations.

MR. LOUIS GARFIN: The concept of a loss leader would not be acceptable, at least for a mutual company, and should not be permitted. It would be contrary to the basic and general principle that equity must be maintained among the various classes of policyholders.

(Editor's Note--The remarks presented by Mr. David G. Halmstad commencing on Page 143 were prepared jointly by Mr. Halmstad and Mr. Russell M. Collins, Jr.)

