

**1990 VALUATION ACTUARY
SYMPOSIUM PROCEEDINGS**

Session 1

Panel: An Overview of The Status of The Valuation Actuary

**An Overview of The Status of The Valuation Actuary
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MR. HAROLD G. INGRAHAM, JR.: On July 1, 1990, the Actuarial Standards Board (ASB) entered its third year of operation as the standard setting body for Academy members. It's fair to say that much has been accomplished -- thanks largely to the foundation work of its predecessor organization, the Interim Actuarial Standards Board. Recognition here should also be given to the Academy's planning and coordination of efforts.

The ASB has adopted, exposed, or has under development, actuarial standards of practice and actuarial compliance guidelines dealing with a broad array of topics. A review of the most recently distributed Actuarial Standards of Practice Manual -- the *ASB Boxscore* -- and the articles appearing monthly in the *Actuarial Update* will attest to both the breadth and degree of this involvement.

The ASB is committed to the concepts that the actuarial profession be proactive rather than reactive. It believes that standards of practice should not be structured so as to preclude the exercise of an actuary's professional judgment. As most of you know by now, the ASB has instructed its operating committees "to avoid being overly prescriptive and to allow the actuary to deviate when he/she has justification."

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To further these ends, the ASB has initiated the development of standards for emerging areas of actuarial practice. Examples of this include continuing care retirement communities, and long-term-care benefits and facilities.

The ASB is also focusing attention on developing standards for previously unaddressed areas where there are clearly demonstrated needs. Examples here include appraisals of insurance companies and expert witness testimony by actuaries.

Of course, at the same time, the ASB is addressing the need for standards in areas concurrently being addressed by insurance regulators. And these are the areas I'd like to discuss with you.

I am chairperson of the ASB's Life Committee. In July 1990, the ASB adopted Actuarial Standard of Practice No. 14 -- "When to Do Cash-Flow Testing for Life and Health Insurance Companies." This standard was developed by the Life Committee with substantial assistance from the Academy's Committee on Life Insurance Financial Reporting.

The standard provides guidance to the actuary in determining whether or not to perform cash-flow testing as part of forming a professional opinion or recommendation for a life or health insurance company. It further provides guidance in determining the type and depth of any

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testing. And it also provides guidance on when to do cash-flow testing in areas other than testing statutory reserves.

Two particular areas of conflict surfaced in the exposure process for this standard. One involved mutual company respondents who questioned the need to do cash-flow testing for the setting of annual policyholder dividends. The ASB rejected any postulation that such business should be substantially exempted from cash-flow testing. However, this standard does state that, if the actuary can demonstrate that a block of business (such as participating business) is relatively insensitive to influences (such as changes in economic conditions), the actuary may determine that cash-flow testing isn't needed to support the opinion or recommendation being given.

The second area of conflict pinpointed in this "When to Do Cash-Flow Testing" standard involves smaller company considerations. The ASB recognized that extensive testing would be disproportionately expensive for smaller companies. And that this would be so, even if such companies included actuaries (with appropriate qualifications) on their professional staffs. The situation is exacerbated in the case of companies that would need to hire actuarial consultants to carry out the valuation actuary function, as envisioned in the NAIC's Model Regulation.

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The consensus of smaller companies on this testing issue expressed general support for the role of the valuation actuary. The main thrust of their concerns, however, as expressed to the ACLI last year, was that there should be sufficient flexibility in the process to permit appropriate modifications -- in recognition of the expense impact on smaller companies.

These considerations were recognized in the "When to Do Cash-Flow Testing" standard, which stated in Subsection 5.6:

There are practical limitations on the amount of cash-flow testing which is needed to support an actuarial opinion or recommendation. The analysis needs to be refined to the point where, in the judgment of the actuary, further refinement would not result in a materially different opinion or recommendation. Materiality considerations should influence the complexity and frequency of the cash-flow testing.

Thus a company, whose business is concentrated in products that are not particularly investment sensitive, would not be expected to perform multiscenario cash-flow testing. Rather, the company would rely on alternative, presumably simpler and less expensive analyses. However, it clearly wouldn't seem appropriate to waive testing requirements where a smaller company concentrated its business in products that are subject to the kinds of risks for which multiscenario cash-flow testing is most needed.

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As you know, specific provision has been made in the amendment to the Standard Valuation Law and in the proposed Model Regulation for some regulatory relief where justified in the case of smaller companies. As currently written, the Model Regulation provides that smaller companies (below \$500 million of assets), which meet certain criteria that vary by size of company, are either exempt from cash-flow testing or need do such testing only once every three years.

A proposed standard that has consumed a great deal of the ASB Life Committee's time and energy over the past 18 months is one entitled, "Guidance on Estimating and Providing for the Cost of HIV-Related Claims Covered Under Life and Health Insurance Policies."

This proposed standard was exposed for comments in winter 1990 and reexposed in revised form in summer 1990. The main reason for reexposure was to eliminate an inconsistency in the first exposure draft. One of its subsections had stated that reserves should be increased directly, instead of making an allocation of surplus, if reserve testing indicated that reserves should be increased. Another subsection, however, had indicated that any excess claim costs not covered by reserves could be provided for by an appropriation of surplus or by other adjustments. And this second point of view was espoused by about one-third of the respondents to the first exposure draft.

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The second exposure draft eliminated this inconsistency. It made clear that reserves should be increased directly to cover any estimated excess claim costs instead of alternatively making an appropriation of surplus.

Unfortunately, the second exposure draft wasn't clear on a very significant point. And that point was whether additional reserves should be set up if any further HIV-related claims are anticipated. In other words, some respondents weren't sure whether the second draft could be interpreted:

- either to allow part of the margins in existing reserves to be used for future HIV claims,
- or to require that additional reserves be set aside equal to the present value of all anticipated HIV claims.

Most respondents endorsed the first of these two interpretations. As stated by one commentator:

The valuation actuary should be free to assess the adequacy of reserves. If they are deemed adequate in light of HIV-related infections and other factors affecting the risk, then no additional reserves need be established.

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At its meeting in October 1990, the ASB received and accepted the Life Committee's recommendation that the ASB amplify Recommendation 7 of the Academy's Financial Reporting Recommendations and Interpretations, rather than promulgating an additional actuarial standard specific to the cost of HIV-related claims. In this regard, let's consider Recommendation 7 itself as a standard of practice.

Of particular weight to the Life Committee were comments such as the following:

- Recommendation 7 gives specific advice as to the practices that are to be followed by an actuary opining on the adequacy of statutory reserves.
- The principles applicable to the recognition of HIV claims in actuarial practice are identical to those applicable to all other causes of claim.
- Therefore, it's inappropriate to imply that HIV claims should be treated differently than other causes of claims in order to develop an opinion on the adequacy of statutory reserves.

These arguments persuaded the ASB that a separate standard of practice for HIV claims should not be adopted.

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Nevertheless, the ASB expressed concern that not all actuaries, opining on the adequacy of reserves held in statutory financial statements on behalf of life and health policies, are following the requirements of Recommendation 7 with respect to HIV claims. The ASB noted that the advice in Recommendation 7 is pertinent to the evaluation of the adequacy of statutory reserves, and it's applicable to all causes of claim -- including claims resulting from HIV infection.

As a result, the ASB will circulate with the next issue of *The Actuarial Update* an Interpretation of Recommendation 7, in order to provide guidance on how HIV-related claims should affect the testing for the adequacy of statutory reserves required by Recommendation 7.

Recommendation 7 states that, in those instances where (for various reasons) the statutory reserves might not make good and sufficient provision for unmatured obligations, then the actuary should make further tests -- possibly by a gross premium valuation -- before expressing an opinion as to such policy reserves and other actuarial items.

The Interpretation goes one step further and states that, in performing the gross premium valuation or other test, the implications of the HIV epidemic should be taken into account. In this regard, the actuary may take into account reasonably anticipated actions of the company, such as dividend scale decreases or changes in nonguaranteed pricing elements.

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The Interpretation makes clear that, if in the actuary's judgment the reserve testing does indicate a need to increase aggregate reserves, then the reserves should be increased directly rather than by appropriating surplus. Moreover, the actuary isn't precluded from establishing additional reserves or appropriating surplus if the extent of HIV-related claims is of sufficient magnitude that (in the actuary's judgment) a specific and separate provision is warranted, even though not required, for aggregate reserve adequacy.

The disposition of this proposed standard in the manner just described shows, I think, that the ASB is capable of responding to membership input -- in particular, dissenting input.

In this context, the current activities of the regulators should be noted. They have proposed that an additional paragraph be included with the instructions for Actuarial Opinions in Life and Fraternal Blanks. This paragraph would describe how the insurer provided for the cost of HIV-related claims for life and health insurance, and it might include the amount of any additional reserves established.

Also, the New York Insurance Department recently circulated a questionnaire entitled, "AIDS, Financial Implications, Life and A&H Insurance" to about 400 insurance companies; that was to be completed and returned by October 15, 1990.

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A letter released in mid-October 1990 to all chief actuaries of life companies operating in Illinois is also worth noting. This letter addressed the "reserving for AIDS" issue, with respect to the Actuarial Opinion for the 1990 Life Annual Statement.

The Illinois letter notes that the Actuarial Opinion does require an opinion as to whether reserves "make a good and sufficient provision for all unmatured obligations of the company." It also states that, in making this opinion, the actuary "should evaluate the actuarial assumptions used by comparison with plausible sets of adverse circumstances, in relation to the time periods over which such circumstances can plausibly be expected to prevail." And the letter makes clear that the test is of the adequacy of reserves -- not reserves plus allocated surplus.

The Illinois letter further states that, just because there's no adopted standard yet on AIDS reserving, that shouldn't be used by the actuary as an excuse to overlook the impact of AIDS when signing the actuarial opinion for life insurance companies.

And it concludes by stating that, when signing a Statement of Actuarial Opinion, the actuary should also be mindful of Professional Conduct Interpretative Opinion 3. In particular, the actuary must comply with any documentation requirements.

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The ASB is now developing a meaningful working liaison with the NAIC's Actuarial Task Forces. We recognize that there's a need for closer contact between the ASB and the state regulatory actuaries, especially with respect to standards of practice, qualification standards, professional support for the regulatory discipline process, and guidelines for the use of standards.

To this end, a working group has been organized to determine the proper form and content for future liaison meetings between the two groups. The ongoing ASB representation in these meetings would be the chairperson of its Life, Health, and Casualty Operating Committees. Our first such meeting is scheduled in conjunction with the December 1990 NAIC meeting in Louisville.

One critical priority for the ASB in 1991 will be the development of standards relating to the role of the valuation actuary. There are those who feel that such standards should be very broad with no specificity whatsoever. On the other hand, some might believe that such standards should possess a level of specificity comparable to that of the New York Insurance Department's Regulation 126. The ASB recognizes that, from the regulators' viewpoint, a greater degree of specificity than currently contained in the standards dealing with cash-flow testing may be desirable. But at the same time, the ASB doesn't want to adopt a "cookbook"

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approach in developing standards because it recognizes the need for the exercise of professional judgment by the qualified actuary.

One final comment about standards compliance and enforcement. There seems to be a mistaken feeling among many insurance company actuaries that actuarial standards of practice apply primarily to consultants -- not to them. This is definitely not the case. And it would be unfortunate if it takes a well-publicized discipline case to pound this point home.

I believe that the creation of the ASB has provided a sound case for the promulgation of practice standards. However, the issue of enforcement of such standards, obviously important and significant, still requires further discussion and action. Obviously, in the absence of an enforcement mechanism, our standards could become meaningless.

As stated in an excellent article on this subject by Jim Murphy, the Academy's Executive Vice-President, that appeared in the April 1990 *Actuarial Update*, enforcement of standards of practice requires a variety of steps:

- The standards must be promulgated and publicized throughout the profession and among its many publics.
- A method for verifying compliance with the standards by actuaries is necessary.

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- Counseling and advisory services should be available to actuaries who are working within a particular standard for the first time.
- An equitable (yet effective) disciplinary mechanism must be in place to deal with those relatively few individuals who intentionally deviate from standards without justification, or who engage in activities without any consideration of the applicable standards.

The Academy feels that the biggest "holes" in the current system are compliance verification and monitoring. It believes -- rightly, I think -- that the primary goal of enforcement should be to catch the problem at the beginning rather than at the end. In other words, counseling and advisory services should be available prior to the need for any disciplinary action. This is particularly true in cases of inadvertent failure to comply with standards.

You know, the ASB can only effectively operate with the continued active support and participation of the actuarial profession. Much of the ASB's work is executed through its operating committees and the other ad hoc committees and task forces which have the responsibility for researching and drafting the standards.

Currently, there are close to 200 actuaries involved in the standards development and promulgation process. However, this significant effort will be expended in vain without the

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continuing support of our membership. This support requires giving the time necessary to review the exposure drafts and to provide meaningful comments. And this support also requires the necessary commitment to professionalism, to assure adherence to the promulgated standards.

**THE CHANGE IN THE VALUATION LAW
TO ESTABLISH A MEANINGFUL ROLE FOR THE ACTUARY**

MR. WALTER S. RUGLAND: Over the past decade actuarial, regulatory and industry groups have been working to achieve a simple objective: provide a basis for integrity of the statutory balance sheet for life insurers with respect to policyowner liabilities. This effort was initiated by the statement of the NAIC's Technical Advisory Committee, at the time it recommended the adoption of 1980 amendments to the Standard Valuation Law (SVL), that a new valuation law basis was needed to maintain the traditional conservatism of statutory reserves.

In December 1990 the NAIC will consider 1990 amendments to the SVL that do this.

Development Track

The proposed change in the law and a proposed accompanying model regulation had their roots in the report of the Special Advisory Committee on the Valuation Law (SAC/VL) which was chaired by John Tweedie, then Senior Vice President and Chief Actuary of Metropolitan Life.

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The SAC/VL worked within several restraints:

1. It maintained all current bases of statutory accounting, including asset reporting, factor-based development of minimum reserves, and the Mandatory Security Valuation Reserve (MSVR).
2. It did not ask actuaries to opine on surplus adequacy.
3. It did not ask actuaries to opine with respect to ongoing solvency.

These restraints came from understandings that were perceived to exist among the various stakeholders in SVL development activities: actuaries, regulators and industry management.

The objective of the SAC/VL, as dictated by its charge, was to develop a basis for a meaningful role for actuaries within the structure of the SVL, and suggest regulations that would implement it.

The Result

The current actuarial opinion for life insurers' annual statements has no statutory basis; the instructions to the compilation of the Annual Statement require it. It was instituted in 1975, and the work of the actuary is guided by Recommendation 7 of the Actuarial Standards of Practice, which were promulgated in the mid-1970s.

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The proposed change in the SVL creates a statutory base for the actuary's opinion, and authorizes a regulation to implement the concept. The proposed regulation contains rules for appointment of the opining actuary and guides to be followed in preparing the opinion.

Highlights of the Proposed Revision to the SVL

The major change in the SVL is the addition of a new Section 3, which develops the actuarial opinion concepts; other changes are made to implement the provisions of this new section:

Section 3 Actuarial Analysis Opinion of Reserves and of Assets Supporting Such Reserves

This section shall become operative at the end of the first full calendar year following the year of enactment.

Subsection A(1) requires an annual opinion of a qualified actuary from all companies. This opinion is to be that the reserves are computed appropriately, satisfy policy assumptions, are consistent with prior statement calculations, and satisfy the laws of the state of filing with respect to requirements and minimums:

Every life insurance company doing business in this state, shall annually submit the opinion of a qualified actuary that the reserves and related actuarial items held in support of the policies and contracts specified by the commissioner by regulation are computed appropriately, are based on assumptions which satisfy contractual provisions, are consistent with prior reported amounts and comply with applicable laws of this

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state. The commissioner by regulation shall define the specifics of this opinion and add any other items deemed to be necessary to its scope.

Subsection A(2) sets the initial date of the opinion:

Such opinion shall be submitted with the annual statement reflecting the valuation of such reserve liabilities for each year ending on or after December 21, 19 .

Subsection A(3) indicates the opinion must cover all business:

Such opinion shall apply to all business in force including individual and group health insurance plans, in form and substance acceptable to the commissioner as specified by regulation.

Subsection A(4) provides the opinion be based on standards of practice promulgated by the Actuarial Standards Board (ASB):

Such opinion shall be based on standards adopted from time to time by the Actuarial Standards Board and on such additional standards as the commissioner may by regulation prescribe.

Subsection A(5) discusses the conditions necessary for the commissioner to accept an opinion filed with another jurisdiction:

In the case of an opinion required to be submitted by a foreign or alien company, the commissioner may accept the opinion filed by such company with the insurance supervisory official of another state if the commissioner determines that such opinion reasonably meets the requirements applicable to a company domiciled in this state.

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Subsection A(6) requires that the opining actuary be a member of the American Academy of Actuaries (AAA) and satisfy other conditions as established by regulations:

For the purposes of this section, "qualified actuary" means a member in good standing of the American Academy of Actuaries who meets the requirements set forth in such regulations.

Subsection A(7) limits, by state, liability for the opining actuary to claims from the commissioner or the company for which the opinion is given, except for fraud or willful misconduct:

Except in cases of fraud or willful misconduct, the qualified actuary shall not be liable for damages to any person (other than the insurance company and the commissioner) for any act, error, omission, decision or conduct with respect to the actuary's opinion.

Subsection A(8) authorizes regulators to establish and take disciplinary action against the actuary and/or the company:

Disciplinary action by the commissioner against the company or the qualified actuary shall be defined in regulations by the commissioner.

Subsections A(9) and A(10) require the opining actuary to prepare a memorandum to support each opinion, and discusses the nature of the memorandum, and the effect of not preparing it.

It does not require automatic filing of the memorandum:

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A memorandum, in form and substance acceptable to the commissioner as specified by regulation, shall be prepared to support each actuarial opinion.

If the insurance company fails to provide a supporting memorandum at the request of the commissioner within a period specified by regulation or the commissioner determines that the supporting memorandum provided by the insurance company fails to meet the standards prescribed by such regulations or is otherwise unacceptable to the commissioner, the commissioner may engage a qualified actuary at the expense of such company to review the opinion and the basis for the opinion and prepare such supporting memorandum as is required by the commissioner.

Subsection A(11) establishes a statutory basis of confidentiality for memorandum supporting the opinion:

Any memorandum in support of such opinion, and any other material provided by the company to the commissioner in connection therewith, shall be kept confidential by the commissioner and shall not be made public and shall not be subject to subpoena, other than for the purpose of defending an action seeking damages from any person by reason of any action required by this section or by regulations promulgated hereunder; provided, however, that such memorandum or other material may otherwise be released by the commissioner (a) with the written consent of such company or (b) to the American Academy of Actuaries upon request stating that such memorandum or other material is required for the purpose of professional disciplinary proceedings and setting forth procedures satisfactory to the commissioner for preserving the confidentiality of such memorandum or other material.

Subsection B(1) enacts the requirement for the opining actuary to provide an asset adequacy opinion in addition to the opinion required in Paragraph A(1) unless the company is exempt

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from the requirement for this additional opinion. The wording of the opinion is included in the statute:

In addition to the opinion required by Paragraph A(1) of this Section 3, every life insurance company, except as exempted by or pursuant to regulation, shall also annually include in the opinion of the same qualified actuary that the reserves and related actuarial items held in support of the policies and contracts specified by the commissioner by regulation, when considered in light of the assets held by the company with respect to such reserves and related actuarial items, including but not limited to the investment earnings on such assets and the considerations anticipated to be received and retained under such policies and contracts, make adequate provision for the company's obligations under such policies and contracts, including but not limited to the benefits under and expenses associated with such policies and contracts.

Subsection B(2) recognizes a company's possible need for a transition in complying with the new provision of the SVL. It authorizes the regulation to address transition:

The commissioner may provide by regulation for a transition period for establishing any higher reserves which the qualified actuary may deem necessary in order to render the opinion required by this section.

Subsection B(3) confirms that a company providing an asset adequacy opinion must also comply with all aspects of Subsections A(1) through (11) and that provisions in those sections also apply to the asset adequacy opinion where appropriate:

All provisions of Paragraph A(1) through (11) of this Section 3 shall apply to this additional opinion.

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Subsection 6b is added to the SVL to establish the level of reserve needed to satisfy the asset adequacy opinion as the minimum reserve, if that level is greater than the aggregate of the factor derived reserves mandated elsewhere in SVL:

In no event shall the aggregate reserves for all policies, contracts and benefits (covered by the statement of actuarial opinion as required by Section 3 of this law) be less than the aggregate reserves determined by the qualified actuary to be necessary to render the opinion required by Section 3.

Section 7 is expanded to recognize the reserve amount that may be additionally established to satisfy the asset adequacy option, and provide for release of that amount in subsequent years if it is no longer needed to satisfy the asset adequacy test at that time:

Any such company which at any time shall have adopted any standard of valuation producing greater aggregate reserves than those calculated according to the minimum standard herein provided may, with the approval of the commissioner, adopt any lower standard of valuation, but not lower than the minimum herein provided; provided however, that, for the purposes of this paragraph, the holding of additional reserves previously determined by a qualified actuary to be necessary to render the opinion required by Section 3 shall not be deemed to be the adoption of such a higher standard of valuation.

Subsection 10 is added as a new section to bring into the SVL the reserves for health coverages. The health reserve standards are to be set by regulation. A model NAIC regulation already exists, but it has not been promulgated in many states; it would need to be promulgated to complete the structure of the revised SVL:

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The minimum standards for health (disability, sickness, and accident) plans are defined in a regulation promulgated by the commissioner.

The Proposed Actuarial Opinion and Memorandum Regulation

To accompany the change in the SVL, which authorizes a regulation to provide significant details as to how Section 3 will be handled, the NAIC is considering a proposed model regulation.

Many parts of the regulation repeat aspects of the new sections of the SVL. Then subsequent subsections provide more detail. This discussion will comment on various selected proposed subsections and in that way provide a description of the pertinent concept of the regulation.

Article III provides the scope of the regulation. It is a broad one: all companies, all lines, all business. It identifies a potential exemption from the asset adequacy opinion, but holds final say on the exemption for the commissioner.

Article V, Section 2 discusses the criteria for a qualified actuary. The actuary must be an Academy Member and meet its qualification standards, must be familiar with the laws of "this" state, and must meet standards of conduct outlined in the regulation.

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Article V, Section 3 defines the "appointed actuary." This actuary provides the opinions required by the SVL. The actuary must be a qualified actuary, appointed by the company board, or by the authority of the board. Upon appointment, the company must notify the commission; when replaced, the commissioner must be informed of the reason for the change.

Article V, Section 4 establishes the ASB standards of practice as the basis for the appointed actuary's work on the asset adequacy analysis, and requires conformance to them.

Article V, Section 5 identifies the liabilities to be included in the opinion and discusses the possible protocols:

1. In subsection (b) it requires that if reserves calculated on SVL bases do not satisfy the opinion required by SVL Section 3, an additional reserve must be established.
2. In subsection (c) it allows an initial three-year transition to establishment of the full amount of additional reserve.
3. In subsection (d) it allows for release of any additional reserves in subsequent years if not needed. Release must be disclosed in the actuary's opinion for the year of release.

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Article VI discusses Required Opinions. As outlined in the SVL, all companies must provide the opinion required by Section 3a of the SVL; additionally, unless exempted, all companies must provide the asset adequacy opinion required by Section 3b of the SVL.

There are both subjective and quantitative tests to satisfy for eligibility for exemption, and all must be satisfied. The subjective tests, described negatively are:

1. The commission must not have indicated an asset adequacy opinion was to be submitted; if there is such indication it must be submitted.
2. The company must not have been on the NAIC examiner team "priority one" list either of the prior two years.
3. The company must not have been on the NAIC examiner team "priority two" list both of the last two years; i.e., once in two years does not disqualify exemption eligibility.

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The quantitative tests can be summarized as follows:

Ratio Tests	Satisfaction Criteria For Company Asset Classes		
	Under \$20 Million	\$20 Million to \$100 Million	\$100 Million to \$500 Million*
Capital and surplus to cash and invested assets	> .10	> .07	> .05
Annuity and deposit fund liabilities to all policy liabilities (excluding MSVR)	< .30	< .40	< .50
Non-investment grade bonds to capital and surplus	< .50	< .50	< .50

* Companies with assets between \$100 million and \$500 million are only eligible for exemption for two years subsequent to provision of an asset adequacy opinion. In other words, such opinion is required at least once every three years.

Companies with assets exceeding \$500 million are never exempt.

If a company is eligible for exemption and the commissioner does not ask for an asset adequacy opinion, it may proceed on the basis of being exempt from the opinion.

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Article VII of the Regulation addresses the form and substance of the appointed actuary's opinion in the situation where the exemption is taken.

An "Article VII Opinion" is similar to the current opinion required by the instructions to the blank, except it does not include a "good and sufficient" opinion. It governs all companies that are exempted.

With respect to a comparison with other aspects of the current opinion, Article VII requires more disclosures; provides more instructions with respect to reliance on others; requires documentation of eligibility for exemptions with the opinion; and gives instructions as to qualified opinions and the like.

Article VIII governs the appointed actuary's opinion to be provided in all cases other than those covered by Article VII (except for documentation of eligibility for exempt status). The Article provides instructions regarding the asset adequacy opinion and the ramifications of it. If MSVR assets are used for the asset adequacy test, disclosure must be made; if prior reserves established to satisfy the test are released, disclosure of the amount of release must be made; methodology of the analysis approach must be disclosed. Also, the appointed actuary must

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attest to either no material change in the company between the statement date and the date of the change, or the effect of a material change on the opinion.

The SVL wording of the asset adequacy opinion (SVL Section 3 B) is repeated in the Regulation. This opinion is with respect to the adequacy of the reserves within the context of conservatism the actuarial profession would assign to statutory reserves. The ASB will provide guidance as to the understanding and definitions necessary in practice.

Article IX provides instruction as to the appointed actuary's memorandum required by the SVL. Preparation of it is required for all opinions, both Article VII types and Article VIII types. Reliance on other actuaries is provided for; they must be qualified.

The SVL itself governs confidentiality of the memorandum as well as the process of regulatory review. The memo is not to be automatically filed but is available to regulators; it must be acceptable to them if so reviewed.

ASB standards apply to the asset adequacy analysis undertaken by the appointed actuary.

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Article X provides other considerations with respect to the Article VIII asset adequacy opinion:

1. Aggregation is discussed and permitted. Methods are identified, and disclosure in the opinion is required.
2. Assets can be used for only one set of liabilities in adequacy testing, and only at statement value.
3. MSVR assets may be used to the extent the identified assets used in the test create the actual MSVR assets. This assumes the MSVR is a reserve, and as a result, it is a part of the appointed actuary's opinion.
4. Interest scenarios that must be considered are listed; they are similar to those of New York Regulation 126.
5. Adequate documentation beyond the memorandum is required; the test is whether or not there is an adequate work process trail that another actuary could follow.

Comments on these Developments

The appointed actuary's guidance will be provided by the ASB. As such it will be continually reviewed and revised within the procedures governing the ASB. Regulating actuaries and the ASB have begun discussions to assure mutually supportable roles in this area.

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The work documentation in the memorandum should be of a scope sufficient to provide necessary data and understanding to company's management. Management is intended to be the prime beneficiary of the appointed actuary's work. The memorandum is not automatically filed with the regulator, but held confidential within the company and available for regulator review.

Reserves cover reasonable deviations, not catastrophes. The appointed actuary is not providing a solvency opinion or doing a surplus adequacy test.

MSVR assets are taken into the calculation on the basis on which they are established. To the extent they are used, they are reserves.

To the appointed actuary these changes in the SVL provide a significantly different role in valuation. The appointed actuary is responsible by statute for the reserves (Article VII basis or Article VIII basis) unless the opinion statement is qualified to the extent of avoiding such responsibility. For Article VIII the responsibility includes asset consideration and an adequacy opinion.

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The statutory status of the actuary is clear, including appointment, qualification, and work product. ASB standards provide the professional base for the actuary's work.

The change in the SVL model is expected to be made by the NAIC in December 1990. The proposed model regulation may be approved for exposure at the same time. The model regulation could be approved in either June or December 1991. Instructions to the Annual Statement blank will need changing during 1991. The earliest date for application of the new provisions of the valuation process will likely be December 31, 1992 annual statements.

Appointed actuaries for nonexempted companies are being asked to answer two questions:

1. Do the statement entries comply with the SVL?
2. Given the accepted level of conservatism, and an ongoing business assumption, what assets are needed to support the reported liabilities?

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MR. MICHAEL E. MATEJA: Walt Rugland's presentation pretty well sums up the current status of the valuation actuary as anticipated by the title of this session. The valuation actuary should be a reality within the next year or so. Is the job finished? Should we sit back and relax? My answer to these questions is an emphatic NO! The current status of the valuation actuary, in my opinion, represents only a humble beginning. We are seeing the first practical benefits of the efforts during the 1980s by the actuarial profession to come to grips with risk. I believe there is much additional work to be done, work that is vital to the actuarial profession, the insurance industry and the general public. My primary goal is to share with you my vision of the work that remains, and explain why it is so important.

My specific goals are threefold:

- To share with you some ideas about risk management and its relevance to valuation. Some of these ideas date to the very first Valuation Actuary Symposium in 1984;
- To explain why there is a need to measure risk. I submit that only when risk is measured can it be truly managed;

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- To describe the conceptual framework for a new statutory valuation law built on the premise that risk can be measured by a valuation actuary.

My vision for a new statutory valuation framework can be simply expressed as the realization of the ultimate potential of the valuation actuary. Conceptually, the valuation actuary is being asked to understand and quantify the risks assumed in an insurance company. Only if risks exceed the level anticipated in current statutory valuation standards will the results of the valuation actuary's efforts have any practical effect -- that effect being to increase reserves above current statutory minimums. Given the general reliance on the valuation actuary to understand and quantify risk, I believe we should think in terms of a continuum of risks and a corresponding continuum of valuation reserves. The simple valuation prescription for the future should be -- modest risks require modest reserves, while substantial risks require substantial reserves. But, I am getting ahead of myself.

Let me go back to the very beginning.

The word *risk* more than any other is responsible for all of the concerns about reserve adequacy and financial strength in the insurance industry today. What is risk? Some of you may have been present at the first Valuation Actuary Symposium in 1984 where I was the lead-off

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speaker. This is the first idea I explored, and I think I asked the very same question. I've gotten a lot of mileage from this over the years, and I've asked more than one audience the simple question, what is risk? At one such presentation, I got this answer -- it's a four-letter word. It was certainly an accurate answer, and given the connotation of four-letter words, certainly appropriate. The answer I was looking for relates risk to deviations from expected cash flow. The cash-flow definition of risk that we developed in the early 1980s also has proved enduring.

However you define risk, you can be sure it is a matter of concern in an insurance company. The reason, of course, is simple. Insurance companies fundamentally are risk managers. This idea also comes from the 1984 presentation.

If you review the proceedings of the first Valuation Actuary Symposium, you will find that I explained risk management in terms of functions that a risk manager performs: identifies risk, controls risk, transfers risk, and finances risk.

These are certainly critical ideas, and well worth some study and reflection as you formulate your own ideas about risk management.

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In recent years, however, I have had to translate this conceptual understanding of risk management into more practical terms. Most of you will be familiar with these ideas, but they are necessary groundwork for what follows. Risk management components consist of contract terms, investment programs, earnings, reserves, and surplus.

Any risk management program begins with a contract or policy, which defines the product and effectively defines future liability cash flows. As anyone who has done cash-flow analysis can appreciate, allowing substantial variations in future liability cash flows can translate into the potential for substantial risk. Even seemingly innocent contract provisions can be costly under the "wrong" circumstances. Developing contract language that defines liability cash flows, and understanding the potential for variations from expected, are the first critical steps in an effective risk management program.

There are obvious opportunities to control risk through contract terms, the most significant being withdrawal rights and minimum interest credits. I personally think that more can be done to manage risk by carefully drafting contracts. I also believe that some risks simply can't be taken, and these can be excluded in a well-drafted contract.

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The next component of an effective risk management program is on the asset side. The investment program defines the underlying quality and the resultant exposure to asset default. Perhaps more importantly, it also determines the exposure to mismatch. Once the liability cash flows have been defined, an intelligent investment program is relatively easy to develop. I have sometimes described our business as manufacturing future cash-flow streams, and this is an appropriate way to think of the investment function. Current premiums and deposits are converted into future cash flows, which ideally match the product cash flows.

Any investment that cannot be expressed readily in terms of fixed future cash flows is a potential source of risk. This, of course, is part of the reason for the current concern about real estate investments. Bricks and mortar don't equate to cash, and many real estate deals could leave companies holding bricks and mortar instead of cash. The risk in insurance has its origins in cash flow, and I believe we too often forget this basic fact.

Earnings are an important part of any risk management program. A company that prices its products with adequate margins, and gets its price, is obviously in a stronger financial position than the company that is "buying business." Earnings are usually considered a deduction from surplus requirements in theoretical analysis. Practically, earnings are also a source of reserve strength.

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Valuation reserves conceptually should reflect the risks assumed as defined in the products and the underlying investments. As I believe we all now appreciate, the spectrum of risk that is possible in the relationship of asset and liability cash flows is truly broad. The proposed amendments to the Standard Valuation Law finally recognize that current statutory minimums can no longer be relied upon to adequately provide for the high end of the risk spectrum.

The final component of an effective risk management program is surplus. Unfortunately, this is the component that gets all of the attention in the media, primarily because it is a relatively simple task to divide surplus by assets or liabilities and compare the ratios. The conventional wisdom is that high ratios are better than low ratios, but this generalization is not always valid. Truly adequate reserves, based on a realistic assessment of asset and liability cash flows, are easily the equivalent of an additional 2% to 4% in the surplus to liability ratio relative to a company with weaker reserves. Similarly, strong earnings are important; they are the first line of defense.

Focusing solely on surplus is a gross oversimplification of the problem of understanding financial strength. It, in essence, assumes that all other components of a risk management program are equal for all companies. I personally can't accept this assumption.

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Let me try to bring this back to the subject at hand -- valuation reserves. I am convinced that at a practical level, there is substantial variation in the risk management practices followed by the various companies. Accordingly, I believe there is substantial variation in the level of risk assumed. In current valuation law, a single valuation standard is established to cover the full spectrum of risk assumed. When the proposed amendments become effective, we will finally begin to recognize the practical effect on reserves of increased levels of risk.

To an external observer, however, most companies still will look remarkably similar from a risk perspective. There is simply no objective way to differentiate the prudent risk manager from the aggressive risk manager.

This leads conveniently to my second point -- there is a need to measure risk. Given the current state of affairs in our industry, I think that the need is really critical. The recent verdict of the stock market, in my opinion, reflects the uncertainty about the level of risks assumed in our industry. Until we are in a position to more precisely measure risk, and reflect such measurements in the financial underpinnings of our business, we can expect investors as well as regulators to be wary of all companies. If understanding risk was the major accomplishment of the 1980s, then I see measurement of risk as the challenge of the 1990s.

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Measurement is the essential first step to management and control. Examples of this are common in business. Take sales, for instance. Have you ever wondered why so much time and effort is devoted to measuring sales results? The answer is simple. Once sales are measured, they can be managed. Ask any sales person how sales results affect them.

The relationship between measurement and management is intuitively obvious. Sales, expenses, interest, and earnings -- all are measured, and successful managers have learned to manage them. It's time to add risk to the list. Certainly, this is possible on some reasonable basis given what we have learned during the 1980s.

A reasonable basis to measure risk does not imply a process with three-decimal-point precision. Risk is not easily measured. But I think we have progressed to the point where we can objectively look at risk and draw some very meaningful distinctions. I also recognize that for some risks, we may never be able to establish meaningful distinctions. This does not invalidate the concept.

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If risk is so fundamental to our business, as I believe it is, I find it curious that so little effort has been devoted to measuring it. I have a theory about this that goes back to the very beginnings of our business. At the turn of the century, when the dominant products were life insurance and annuities, the many companies selling these products were essentially risk look-alikes. They had similar underwriting and investment programs, and any price variations were largely attributable to differences in expenses. This, in fact, is the concept that still endures in the current valuation and nonforfeiture laws. From an historical perspective, therefore, there was no practical need to measure risk. This situation endured through perhaps the mid-1970s, and ever since then, companies have been spreading out on the risk spectrum. You only have to look at the wave of new products and new investments available to get some appreciation of this.

As I survey the scene today, companies certainly aren't risk look-alikes. The risk spectrum is very broad, and I believe there are new risks that we are only beginning to understand. A good example of this is found in the work of the Joint ACLI-National Association of Life Companies (NALC) Task Force on Regulation XXX. Persistency can be a material risk for products covered by this regulation, but current valuation law does not recognize it.

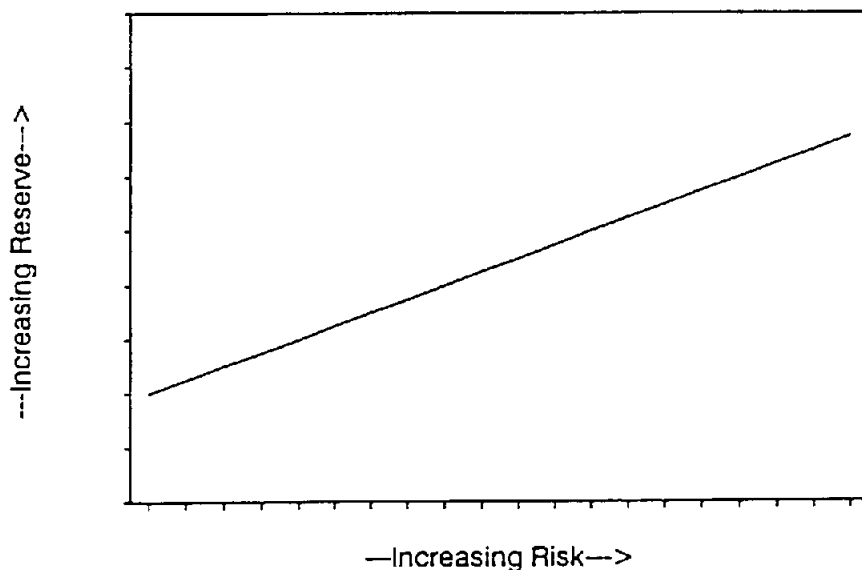
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I have one last thought on the issue of measuring risk. Given the difficulty of the job, we have to expect regulators, as well as management, to be skeptical. We need to prove that we can measure risk on a responsible basis before we get the chance to do so. The proposed amendments provide the opportunity we need.

I think I have sufficiently set the stage to move on to a discussion of a new conceptual framework for statutory valuation, built on the premise that risk can, in fact, be measured. To develop this framework, I need to establish some basic relationships between risk and reserves (Chart 1).

CHART 1

Risk versus Reserve Intrinsic Relationship



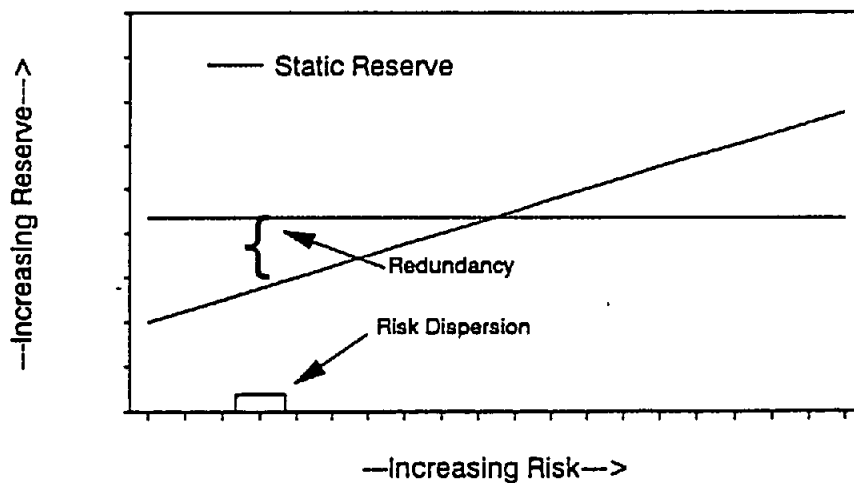
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Here I have shown what I call the intrinsic relationship between risk and reserve. I have chosen to show this relationship as a straight line for the sake of simplicity, but clearly this is an oversimplification. Everything that we know about the risk-reserve relationship suggests that it is an increasing function, as illustrated. The shape of the curve is not relevant to my point as long as it is conceded that it has a positive slope. This curve could apply to any product where there is potential for risk to vary. You can think of it as the reserve defined by best estimate expected values.

The historical perspective on valuation is illustrated in Chart 2.

CHART 2

Risk versus Reserve Historical Perspective



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Current valuation reserves are represented by the static reserve, which is shown as the horizontal line on the graph that intersects the basic risk-reserve line. The level of the static reserve was chosen in an historical context to provide some redundancy as illustrated. This was possible given the narrow risk dispersion of the companies on the risk spectrum as indicated on the X-axis. You will recall my previous explanation that, in an historical context, all companies were essentially risk look-alikes.

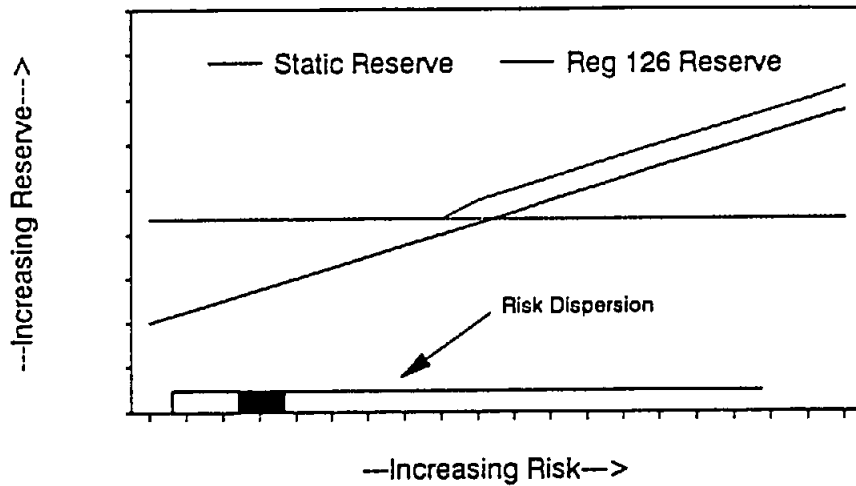
This historical valuation model of reserves has endured for perhaps a century. In the 1980s, we finally recognized its flaws, or perhaps more precisely, the volatility in the financial markets forced us to reexamine its appropriateness.

Next, we have the valuation actuary approach, as embodied in the proposed amendments to the Standard Valuation Law and current New York Regulation 126 (Chart 3).

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CHART 3

Risk versus Reserve Valuation Actuary Approach



Note first that on the X-axis, there is recognition that companies are no longer concentrated in the narrow risk dispersion range as assumed in the historical valuation model. Some companies assume lower risk, while other companies assume greater risk. For companies where the risk assumed is greater than anticipated by the static reserve, a new reserve line has been added -- the Regulation 126 reserve. This is the basic approach followed in the New York regulation applicable to annuities and single premium life insurance business. This is what we're now headed for throughout the industry with the proposed amendments.

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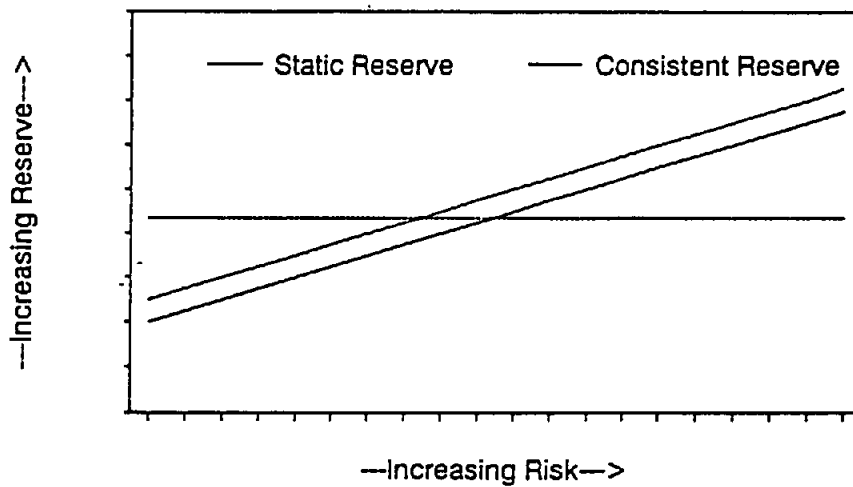
The relationship between the Regulation 126 reserve line and the intrinsic risk-reserve line at the high end of the risk spectrum is somewhat arbitrary. The difference represents the margin necessary to achieve an adequate reserve, according to presently accepted standards of practice.

I have been a staunch supporter of the valuation actuary approach, and I remain so. However, if your company is down at the low end of the risk spectrum, you have a right to feel unfairly treated. I do. The reward for prudently managing risk is a reserve that is overly redundant. Practically, this represents an ineffective use of capital, which, in turn, leads to poor returns on equity and uncompetitive products relative to other players in the financial services marketplace. There are policyholder equity concerns as well.

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Here is where I believe statutory valuation must evolve to (Chart 4).

CHART 4
Risk versus Reserve
Risk-Adjusted Reserve



The ultimate goal is a risk-adjusted reserve, where the margin inherent in the reserve increases gradually over the risk spectrum. The reserve is consistent with the underlying risk, and thus labeled the consistent reserve. It is a logical extension of the proposed amendments to reward companies at the low end of the risk spectrum at the same time that companies at the high end are forced to set up higher reserves.

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In my opening remarks, I characterized the proposed amendments as a humble beginning. Clearly, there is much work to be done to achieve a practical risk-adjusted valuation reserve basis as illustrated here. I am convinced, however, that we must undertake this work. The reasons are compelling.

First and foremost, I believe it is our professional mandate -- it's our job.

Second, we need to be concerned about effective use of capital. Historically, there was little concern about redundancy in reserves. The world is a different place today -- capital is a scarce resource, and we must use it wisely. Burying surplus in reserves is simply archaic.

Consumers should have great interest in effective use of capital, because there is a direct impact on price. My staff put together the report included in Appendix A to illustrate the potential benefit. The analysis isn't rigorous, but a 15% reduction in price for a life insurance product can't be taken lightly.

Finally, the entire industry can benefit. I firmly believe that we need to become more aware of the risks we assume; that's what this business is all about. We all need to become more sensitive to risk management at a practical level, as I discussed earlier. Companies should be

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free to assume more risk, but there must be a quid pro quo. Today, there is no cost associated with increased risk and no real reward if a company controls risk. The stick will be there when the proposed amendments are adopted. The carrot implicit in the risk-adjusted reserve approach is even more effective in my judgment.

The critical requirement is to measure risk. Once risk is measured, and the costs associated with risk are more explicitly recognized, all kind of possibilities open up beyond a more rational valuation law. We can look forward to risk-based guaranty fund assessments, and eventually the analysis will extend to surplus. I have never been an advocate of direct regulatory control over surplus levels, but with risk-based capital standards on the horizon, I have chosen to switch rather than fight. I have done so with the thought that this could be a stepping stone to risk-based reserves.

Also in Appendix B, you will find a report prepared by COVARA, the Committee on Valuation and Related Areas. This report attempts to summarize the implications of COVARA research during the 1980s. The important conclusion is that there is real concern about the historical valuation model. The report findings provide the foundation for the goals I have set before you. At the COVARA meeting that preceded the annual Society of Actuaries meeting in Orlando in October 1990, it was agreed that COVARA would undertake the research necessary

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to someday present a practical risk-based statutory minimum valuation reserve methodology. We'll be looking for some help. If you're interested, contact me. This is your chance to help shape the valuation law of the next century. It will take a lot of work to implement the concept, but I am convinced that the benefits will be worth whatever it ultimately takes to make risk-based reserves a practical reality. With the current focus on financial strength throughout the industry, this could prove to be an idea whose time has come. Let's get on with it.

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APPENDIX A

LIFE INSURANCE VALUATION: RESERVE LEVELS THAT VARY BY RISK

Purpose

The purpose of this paper is to demonstrate that there is a need for a change in current valuation methodology to better recognize the underlying risks assumed.

A fundamental principle of valuation is the consistent provision for risk. Failure to consistently identify and assess risk increases the potential for inappropriate reserve levels and, ultimately, insurance company insolvencies. This paper will describe how current valuation laws account for two specific risks: mortality and mismatch. The paper will identify problems associated with current laws and propose a new framework for valuation. The risks will be investigated through two specific products: individual whole life insurance for mortality risk and Guaranteed Investment Contracts (GICs) for mismatch risk.

Background

The life insurance marketplace is evolving at an unprecedented rate. Unfortunately, the current valuation framework is not keeping pace. Statutory minimum reserve requirements are still

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basically determined by discounting static cash flows that are the same for all companies using fixed valuation interest rates.

Until the 1970s, this approach to valuation produced reasonable results. Product portfolios consisted mainly of individually underwritten traditional life insurance policies, with little variation between companies. Competition was less intense, as customers focused more on price and less on credited rate. Investment philosophy was likewise consistent, with the vast majority of assets invested in government securities and high grade corporate bonds. Longer-term trends toward modestly higher interest rates with little policyholder anti-selection and improved mortality experience provided additional margins on already conservatively priced products.

This uniformity of products and investments was the foundation of current valuation law. Today, however, such consistency does not necessarily exist. The risks in the life insurance industry today are more varied and more complex.

Companies can assume a wide range of risks through business practices that can range from overly conservative to extremely speculative. Current minimum reserve requirements do not

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adequately reflect the level of risk assumed by insurers. Consequently, statutory reserves do not provide similar levels of adequacy among products or companies.

New products are often designed and sold as vehicles that emphasize investment performance instead of basic security. Policyholders have demanded higher returns on these products, resulting in lower profit margins for insurers. As the number of these products grows, the insurance industry is increasingly exposed to investment risk (asset default, mismatch, etc.).

Traditional underwriting practices have likewise undergone a transformation. Finer classifications, from "super-select" or "preferred" to nonmedically underwritten, have resulted in products that have vastly different underlying mortality characteristics.

These factors, coupled with an increasingly volatile economy, require a valuation approach that more appropriately identifies and reflects the risks assumed, thereby assuring a more consistent level of adequacy in statutory reserves. Such an approach would also result in more equitable pricing, more effective use of capital, and a greater likelihood of solvency.

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Mortality Risk -- Individual Life Insurance

Current Valuation -- Traditional individual life insurance reserves have always been determined by discounting future premiums and death benefits using specified interest rates and mortality tables. Infrequent updates to the valuation mortality table have been made to reflect more recent mortality experience. More recent changes in valuation law have allowed the use of separate smoker and nonsmoker versions of the 1980 mortality tables.

Problems -- For a given class of products and issue years, uniform mortality assumptions are applied to the entire life insurance industry. This "broad brush" approach fails to recognize fundamental and often substantial differences among many companies and products in the level of mortality.

A recent study of mortality experience of 23 major life insurers (see Charts A1-A3) revealed the following:

1. Individual company mortality experience for standard medical policies issued between 1970-1984 varied from 65.3% to 117.9% of the mortality based on the 1975-1980 Basic Table. Such variations were significantly greater for many individual issues years and ages.

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CHART A1

Comparative Mortality Study
Between 1981-85 Anniversaries
Standard Medical Issues

Issue Year Groups
All Ages Combined

ISSUE YEARS=1970-84

<u>COMPANY CODE</u>	<u>MORTALITY RATIO</u>	
	<u>Based on 1975-80 S.B.T.</u>	<u>Based on 1965-70 S.B.T.</u>
A	117.9%	86.6%
B	114.6	83.6
C	108.4	78.5
D	108.1	77.9
E	107.7	79.9
F	107.0	77.8
G	105.0	77.6
H	104.3	76.1
I	103.1	74.7
J	102.9	74.8
K	99.9	73.8
L	99.5	73.7
M	98.4	72.0
N	94.5	68.0
ALL COMPANIES	92.5	67.7
O	92.2	67.6
P	88.5	66.2
Q	88.4	66.4
R	80.2	58.6
S	78.2	56.4
T	75.7	54.4
U	73.3	53.3
V	70.3	51.6
W	65.3	48.4

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CHART A2

Comparative Mortality Study
Between 1981-85 Anniversaries
Standard Para-Medical Issues

Issue Year Groups
All Ages Combined

ISSUE YEARS = 1970-84

<u>COMPANY CODE</u>	<u>MORTALITY RATIO</u>	
	<u>Based on 1975-80 S.B.T.</u>	<u>Based on 1965-70 S.B.T.</u>
A	123.9%	91.0%
E	116.2	87.4
C	109.5	81.6
L	105.9	78.6
G	104.8	78.4
O	100.9	73.6
D	99.9	75.0
F	98.7	73.1
B	98.2	72.7
J	96.9	71.7
Q	94.5	72.6
P	94.0	72.3
ALL COMPANIES	93.6	70.1
M	93.0	69.7
N	92.6	67.6
R	88.1	65.2
T	86.0	62.8
K	84.2	63.9
U	69.9	52.4
I	69.3	51.2
S	68.9	50.8
H	65.8	49.8
W	58.7	45.8
V	50.2	38.0

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CHART A3

Comparative Mortality Study
Between 1981-85 Anniversaries
Standard Non-Medical Issues

Issue Year Groups
All Ages Combined

ISSUE YEARS = 1970-84

<u>COMPANY CODE</u>	<u>MORTALITY RATIO</u>	
	<u>Based on 1975-80 S.B.T.</u>	<u>Based on 1965-70 S.B.T.</u>
E	118.3%	96.8%
J	110.3	86.1
C	110.2	87.3
A	104.7	82.2
T	103.6	79.2
L	103.6	83.2
G	95.2	75.6
ALL COMPANIES	92.5	73.4
M	91.3	71.8
O	91.2	72.6
B	90.7	73.2
H	90.0	68.8
F	89.4	70.8
Q	88.2	70.5
P	87.8	73.8
R	87.2	66.9
V	83.8	68.1
D	82.1	64.4
U	75.8	58.7
I	74.3	56.3
N	69.8	55.7
W	69.2	53.5
S	65.4	49.2
K	64.2	52.1

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2. Similar results for paramedical issues ranged from 50.2% to 123.9% of the 1975-1980 table.
3. Nonmedical issues ranged from 64.2% to 118.3%.

From these results, one can see that individual companies have significantly different results even within similar underwriting classes. Not only does current valuation methodology fail to recognize these company-specific differences, but even more fundamentally, current valuation does not even consider any basic underwriting characteristics.

In the industry today, there are at least four primary underwriting classifications. These are:

1. Super-Select or Preferred: individuals who apply for large amounts of insurance and pass extensive blood screening, medical and other underwriting tests.
2. Select: similar to super-select but slightly less stringent medical underwriting.
3. Standard Issue: generally no initial medical underwriting, questionnaire only.

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4. Sponsored: little or no underwriting or perhaps only on a group basis, extremely limited questionnaires.

The exact definition and number of these underwriting classes is not as important as understanding that a wide range of such practices are common and that expectations of future mortality are similarly varied. However, current valuation uses only a single mortality table -- the 1980 CSO.

The effect of these mortality variations can have a significant impact on the adequacy of valuation reserves. As seen in Charts A1-A3, it may not be at all uncommon for various companies to expect mortality results in excess of those provided in the valuation basis for several underwriting categories. In other instances, valuation margins are obviously overly conservative.

An example will illustrate this point. We have developed three sets of Commissioners Reserve Valuation Method (CRVM) reserves for a male age 35. The first set of reserves were computed using the 1980 CSO table and 5.5% interest.

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For the second set of reserves, we assumed that a medical issue would experience mortality at 70% of the 1975-80 Select and Ultimate table. We then developed a new valuation mortality table from mortality rates equal to 70% of the 1980 Basic Table and similar loadings as in the 1980 CSO. Reserves were then developed using this new table and 5.5% interest. A similar approach was taken for a guaranteed standard issue (GSI) with experience mortality of 200% of the 1975-80 Select and Ultimate table.

Attachment I contains a graph of the three sets of reserves for the first twenty durations. Reserves for the medical issue are about 20% lower than the reserves based on the current 1980 CSO table, while the reserves for GSI are about 30% higher than those based on the current 1980 CSO table. Clearly, there is a significant difference in the level of reserve adequacy.

This difference in the level of reserves can have a significant impact on pricing. We developed gross premiums for a medical issue and a GSI on two bases: (i) reserves and cash values based on the current 1980 CSO table, and (ii) reserves and cash values based on the adjusted mortality tables determined above. A chart of the gross premiums is contained in Attachment I.

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For the medical issue, the difference in gross premiums is a reduction of about 15% (8.08 on the current basis versus 6.99 on the adjusted basis). Similarly, the difference in GSI premiums is an increase of about 15% (10.37 versus 12.11). This is a significant difference in price. It raises a question of equity, namely whether GSI is being subsidized by the medical issue because of the reserves. An additional advantage to a closer match between reserve mortality and experience mortality is a more level emergence of profits, especially beyond the pricing horizon.

Finally, using different mortality tables for different classes of business is already in use to some extent. Some substandard business is already reserved for using multiples of the current table. In addition different mortality tables are used for extended term insurance to recognize the different nature of this business.

Modifying the Standard Valuation Law to allow for varying mortality classes has the potential to produce adequate reserve levels that are more consistent and equitable.

Considerations -- A simple solution to modifying reserve levels that precludes manipulation or abuse probably does not exist. However, the following measures have the potential to greatly enhance the current valuation framework.

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1. Implementation of the valuation actuary role on a broad and responsible basis. The valuation actuary would be held accountable for analyzing and understanding the risks inherent in the insurance portfolio and for assuring that the reserves, together with the assets supporting them, are adequate to mature the liabilities.
2. The next valuation mortality table should be developed as an array of tables which explicitly recognize the range of products and mortality experience in the marketplace. The choice of an appropriate table from this array would be the responsibility of the valuation actuary. Specific tests for table selection could be developed to provide more discipline to the process. However, changes in reserve levels would be allowed in response to changing conditions and emerging experience.

Practical ways can be found to implement the concept of varying life insurance reserves based on the underlying risk.

Mismatch – Guaranteed Investment Contracts (GICs)

The Product -- A GIC is a contract underwritten by an insurance company that guarantees a rate of return to be paid over a specified maturity on the contract holder's deposit. In return for this guarantee, the contract holder forfeits some degree of control, liquidity and yield.

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All GICs begin with the initial deposit(s), a repayment schedule and a guaranteed interest rate. The final GIC product offered, however, may vary tremendously and ranges from the most simple to the complex and sophisticated.

Deposits may be made in a single lump sum or in installments. Principal and interest can similarly be returned in one lump sum or according to a specified installment repayment schedule. Interest rates are generally specified at issue or at the time deposits are accepted and remain fixed regardless of future market fluctuations.

Current Valuation -- The valuation of a GIC is conceptually fairly simple, especially when life contingencies are not involved. Generally, the reserve is equal to the present value of the expected future cash flows.

The Standard Valuation Law (SVL) specifies the maximum allowable valuation interest rate to be used in discounting cash flows and hence, specifies minimum reserves. Minimum reserves for all GICs issued after 1/1/82 are determined using calendar year statutory interest rates that are defined by the Dynamic Valuation Law (DVL).

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Two bases of valuation exist under the DVL: the change in fund basis and the issue year basis. All GICs without cash settlement options must be valued on an issue-year basis. GICs with cash settlement options may be valued on either basis. Issue-year valuations use the calendar-year statutory valuation interest rate determined in the year of issue of the contract. Change in fund basis valuation uses the calendar-year statutory valuation interest rate applicable in each year there is a change in fund.

Additional Reserve Requirements -- All GIC business written in New York state must be certified in compliance with Regulation 126. This process involves extensive cash-flow testing of reserve adequacy utilizing, among other items, varying asset default and future interest rate scenarios. If statutory minimum requirements prove to be inadequate, the company must establish additional reserves.

An actuarial opinion and memorandum must be submitted to the state of New York certifying reserve adequacy. Reserves may be strengthened as a result of Regulation 126 but cannot be reduced below statutory minimums. The process is somewhat judgmental and currently there are no uniform standards for determining reserve adequacy.

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Problems -- Using the same valuation interest rate for a given class of products can produce inconsistencies in the level of reserve adequacy. Ignoring the effects of Regulation 126, a company's investment strategy has no impact on statutory minimum reserve levels. Companies engaged in overly aggressive investment strategies could face significant losses should the market move significantly. Companies with conservative investment strategies may be overreserved and unable to grow and price competitively.

Because of the guaranteed payment stream in a GIC, mismatch risk is a significant factor in determining adequate reserves for GICs. The level of risk depends on how well cash flows are managed and matched to the guaranteed benefits. The reserves established should be held in investments sufficient to mature the liabilities over a wide range of possible outcomes. These possible outcomes should recognize any uncertainty as to the timing and/or amount of benefit payments, as well as any uncertainty as to the return on investments held. These uncertainties arise from movements in interest rates, which in turn affect the exercise of calls on securities, prepayments on mortgages, deposit activity, book value cashouts and others.

The following example illustrates a mismatch problem. For simplicity, a level yield curve and an initial margin of 0% between the earned rate and the credited rate are assumed.

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ABC and XYZ Insurance Companies both issue a \$1,000 lump-sum GIC with a guaranteed rate of 10% that will mature in five years. ABC decides to closely match assets to liabilities and invests in a seven-year par bond at 10%. XYZ invests aggressively in a three-year par bond at 10%, anticipating a rise in interest rates. Attachment II has a graph of the initial cash flows.

If interest rates stay at their current level, 10%, both companies will earn 10% on their assets and be able to mature their obligations in five years. However, if interest rates shift, the results change dramatically. The second graph in Attachment II shows the present value of profits for the two companies under various interest rate scenarios.

The XYZ company has incurred significantly greater risk, as its results for interest rate movements of $\pm 5\%$ vary from -126 to 85, while the results for the ABC company vary only from -9 to 27. If the goal were to have sufficiency over this range of interest rates, XYZ would need to establish 126 of additional reserves, while ABC would only need 9.

The above example is somewhat oversimplified. However, in practice, actual considerations would mirror those used.

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Another approach to determining the necessary reserve would be a stochastic one. That is, model interest rates as a random variable, and determine the present value of the loss over several thousand scenarios. The expected loss, likely loaded by some amount, would be held as an additional reserve. Attachment III shows the results of 2,000 simulations for various length par bonds backing the five-year GIC described above. The various curves are for different levels of interest rate volatility. The second graph in Attachment III is similar to the first, but assumes that the bonds can be called at the end of four years. It is interesting to notice how much the call option can increase the loss.

A company's ability to implement appropriate matching strategies has a large impact on the level of risks assumed and on the adequacy of the reserves held, as evidenced by Attachment III. The level of GIC reserves can be related to the level of underlying risk in a contract through the above approach.

This second approach essentially determines the value of an option that lets the company trade the investments that are currently held for investments that exactly match the liability. Option pricing is a logical extension to valuation methodology: the perspective shifts from discounting static cash flows at a fixed interest rate to discounting cash flows that vary with the interest rate scenario over a multitude of interest rate scenarios.

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Considerations -- A valuation system that adequately assesses mismatch risk will likely require recognition of both asset and liability cash flows. The following suggestions for change are similar to those for mortality:

1. Implementation of the valuation actuary role on a broad and responsible basis. Again, the valuation actuary must be held accountable for analyzing and understanding the risks inherent in a portfolio and for assuring that the reserves, together with the assets supporting them, are adequate to mature the liabilities.
2. Implementation of methodology to allow the setting of reserves at levels appropriate for the degree of mismatch risk assumed. This can be implemented through some form of cash-flow analysis, either by evaluation of specific interest rate swings or through the use of an option pricing model.

As mentioned earlier, practical ways can be found to implement the concept of varying life insurance reserves based on the underlying risk.

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Applicability to Other Coverages

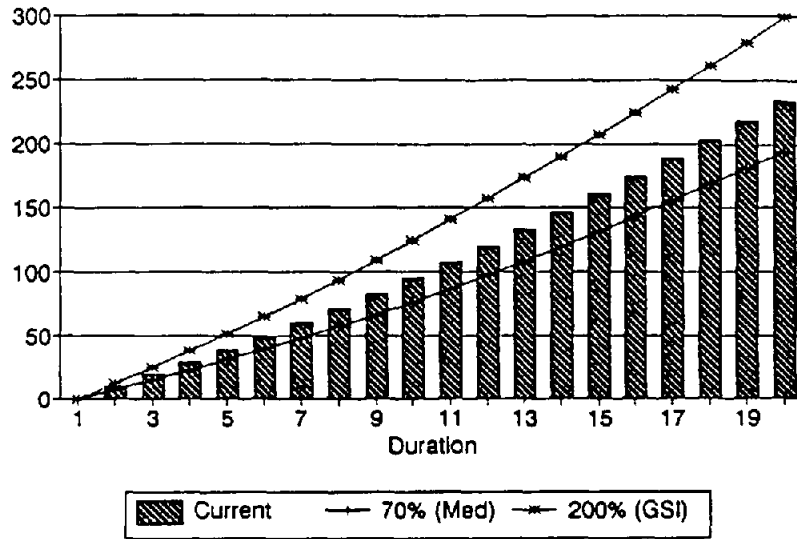
The above examples raise some issues relative to specific risks on specific products (i.e., mortality risk on individual life insurance and mismatch risk on GICs). However, the concept of reserve levels that vary by risk can be generalized to any risk on any product.

For those risks that are narrowly dispersed (i.e., the range of possible outcomes is small), the result will be similar to current valuation practice: one reserve level for all companies. However, for those risks that are widely dispersed, the result will be reserves that more consistently recognize the level of risk involved.

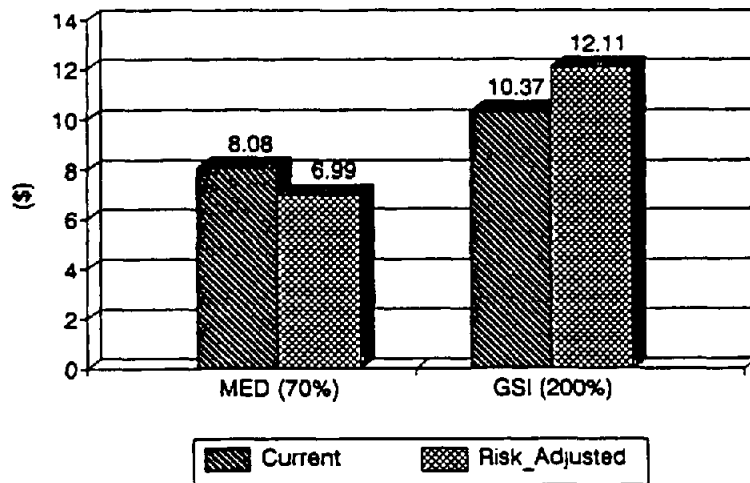
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ATTACHMENT I

CRVM Reserves
GCOL Male 35



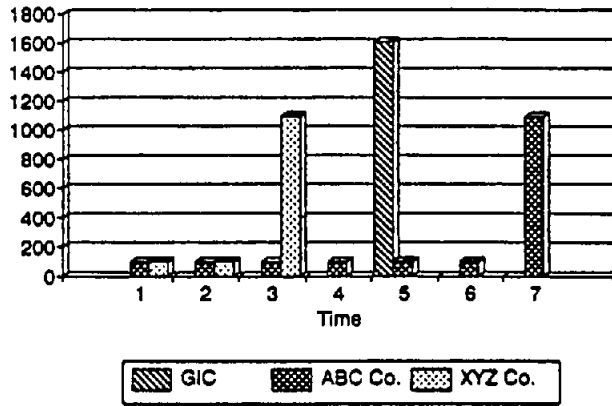
Gross Premiums
GCOL Male 35



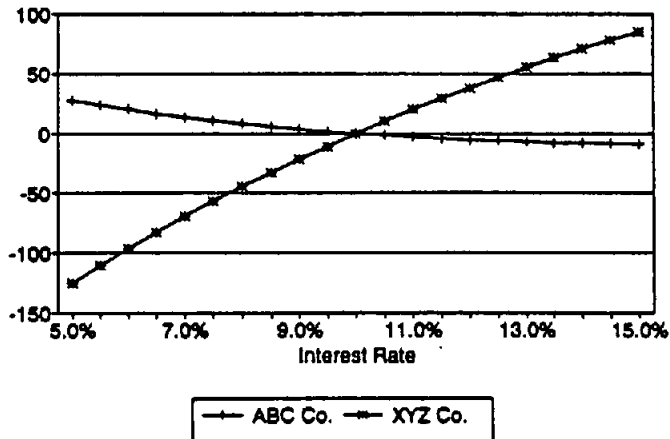
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ATTACHMENT II

GIC Cash Flows Contract versus ABC Co. and XYZ Co.

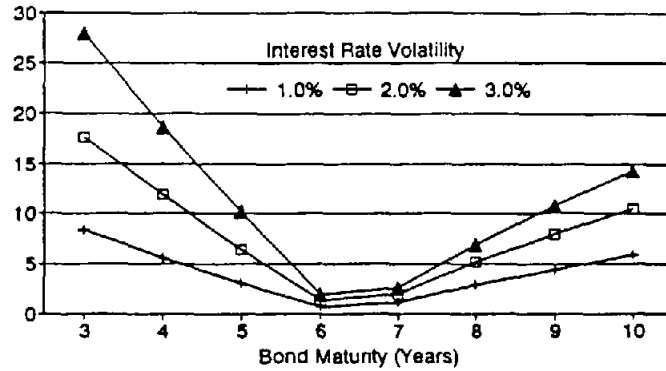


Present Value of Profits ABC Co. versus XYZ Co.

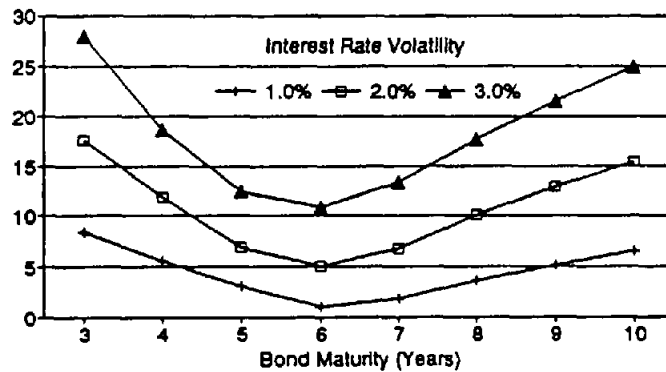


ATTACHMENT III

Present Value of Loss by Bond Maturity
Without Call Activity



Present Value of Loss by Bond Maturity
With Call Activity*



*Call at End of Year Four

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APPENDIX B

COMMITTEE ON VALUATION AND RELATED AREAS KEY RESEARCH FINDINGS OCTOBER 1988

During the last several years, the Committee on Valuation and Related Areas (COVARA) has directed research which has resulted in the development of improved techniques for understanding and evaluating risk in an insurance company. Primarily conducted by COVARA's C-1, C-2, C-3, and Combination of Risk Task Forces, detailed discussion of the methods and procedures are included throughout the Society's literature and were presented in summary form by each Task Force at the Society's 1987 Annual Meeting. The purpose of this paper is to present the major findings of this research and to assess the broad implications of these findings, with particular focus on the valuation function in an insurance company.

The Valuation Model

The historical valuation model focuses solely on liabilities and is based on an idealized series of cash flows defined by the reserve assumptions and methods chosen by the actuary from the range permitted by regulatory authorities. It has long been recognized that actual cash flows were likely to develop in a substantially different manner from those assumed in the valuation. In fact, such differences are commonly reflected in pricing. Nonetheless, in a stable financial

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environment, during which asset values remain reasonably constant, the historical valuation model generally produces reasonable and perhaps overly conservative results. In a volatile, financial environment, however, reserve adequacy cannot be presumed.

Recent COVARA research, conducted during a period of unprecedented interest rate volatility, clearly invalidates the historical valuation model. It has been demonstrated that mismatch risk, which depends on the relationship of asset and liability cash flow, can overwhelm the conservatism contained in statutory reserves developed for more stable times. The presence of other risks, including asset default and impairment and general pricing uncertainty, further erode the presumed conservatism of reserves computed under the historical valuation model. It follows that only by understanding the interaction of asset and liability cash flows can a judgment be made about reserve adequacy. The valuation model of the future must be built on a foundation that clearly recognizes insurance as a cash-flow business and will require an understanding of the behavior of these cash flows to responsibly discharge the valuation function.

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Principal Findings

1. Insurance is fundamentally a cash-flow business.

While this finding is hardly original or profound, recognition of the cash-flow nature of the insurance business is at the heart of subsequent findings. The implication of this finding extends to all aspects of the management of an insurance company, but it has particular significance to the valuation function.

2. Risk in an insurance company represents deviations from expected cash flows.

Risk analysis and management are central to the successful management of an insurance company. Thus, the implication of this finding is very broad and requires senior management, as well as the valuation actuary, to understand both the potential for deviations from expected cash flow and their magnitude. Conceptually, product prices and/or valuation reserves should increase as the potential for deviation increases.

3. The adequacy of reserves held under any valuation system is dependent on both asset and liability cash flows.

This finding requires a fundamental change in the way valuation actuaries traditionally have assessed the adequacy of valuation reserves. Assets no longer can be ignored. Asset cash flows are equally important as liability cash flows, and it is the relationship between these

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cash-flow streams (under reasonably anticipated future conditions) that ultimately determines reserve adequacy. In this context, the adequacy of reserves is defined as the range of future conditions over which the reserve maintained is judged to be sufficient.

4. Cash-flow analysis is an effective means to assess reserve adequacy.

This finding has a major impact on the practical work of the valuation actuary and the responsibilities of the valuation actuary in rendering an opinion on reserve adequacy. For most insurance products and investments, expected cash flows will change under different experience assumptions. Cash-flow analysis reveals the implications of such changes and permits an objective assessment of the range of future experience conditions where reserves will be adequate. While detailed cash-flow analysis may not be necessary in all instances, and may not always be explicit, any judgment about reserve adequacy must be based on a firm understanding of the underlying asset and liability cash flows.

5. Reserve adequacy must be assessed in the context of surplus and other risk management resources. The focus on risk and cash-flow analysis in the valuation process has heightened appreciation for the overall risk management process for an insurer. Valuation reserves historically have been set independently of the insurer's other risk management resources, which include the margins inherent in pricing, other related liabilities required to be

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maintained by regulatory authorities such as the MSVR and surplus. In the future, the valuation process must recognize all risk management resources of an insurer and must make an explicit judgment regarding the level of risks to be borne by reserves and surplus.

Perhaps the most significant implication of this finding is with respect to the level of risk appropriately recognized in valuation reserves. Valuation reserves and surplus levels are clearly interrelated in theory, and valuation reserve adequacy must be assessed based on some overall target level of risk management capacity. In a probabilistic sense, valuation reserves should be established so as to be adequate with a fairly high degree of probability, perhaps as high as 90% or 95%. Surplus should provide assurances that an insurer can fulfill contractual obligations under more adverse circumstances.

This finding also requires that other sources of providing for risk (i.e., pricing margins and other reserves), be recognized in establishing valuation reserve levels. Conservative pricing should be rewarded by reduced valuation reserves. Similarly, given the current operation of the MSVR, valuation actuaries should be permitted to recognize this "reserve" in making judgments about provision for asset default risk in valuation reserves. In the event the MSVR is reevaluated and modified, then the valuation actuary's recognition of this item may need to be altered accordingly.

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Implications of Findings

The above findings have had a profound impact on both valuation theory and practice in recent years. Cash-flow analysis has emerged as the foundation upon which the valuation function must be built. Currently, efforts are underway in the regulatory arena to formally recognize these findings in valuation laws and regulations by requiring the actuary who signs the statutory actuarial opinion to undertake cash-flow analysis where appropriate. Judgments about reserve adequacy based on such analysis will compel valuation actuaries to better understand and provide for the risks assumed at an individual insurer level.

While valuation actuaries and regulators are most directly affected by recent COVARA findings, all levels of management in an insurance company should understand the implications of these findings on their respective responsibilities and objectives. Pricing actuaries, in particular, must become more sensitive to the variability of cash flows associated with their products and reflect such variability in the reserve level assumed in pricing. In the investment area, the investment function must become more focused to produce asset cash flows consistent with those associated with the underlying products. The need for timely cash-flow data has major implications on accounting, administration and systems. Assuring that all areas of an insurance company are operating on a basis responsive to the above findings will test the skills of senior management in effectively leading their companies in the future.

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Based on the experience of COVARA members, it is apparent that the above findings present major challenges to all associated with the management and regulation of insurance companies. We firmly believe that responding to these challenges is essential to the long-term viability of the insurance business.

