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**THE FUTURE MEASUREMENT OF FINANCIAL  
SOLVENCY OF LIFE/HEALTH INSURANCE  
COMPANIES IN THE UNITED STATES**

Moderator: SAM GUTTERMAN  
Panelists: ALLAN BRENDER  
CURTIS E. HUNTINGTON  
RICHARD K. KISCHUK  
Recorder: SAM GUTTERMAN

- o The valuation actuary concept currently is evolving in the United States.
- What alternative set of responsibilities and environment could a valuation actuary be operating under in the future?
- What methods may be used to determine the financial solvency or solidity of life/health insurance company in the future?
- What can the current experience in Canada or other countries provide as an indication of what is in store for the United States?

MR. SAM GUTTERMAN: The Valuation Actuary has been a slowly evolving and challenging concept for the actuarial profession to tackle during the 1980s, evolving in an environment that is not standing still. We have various audiences to communicate with, including management, owners (whether stockholders or policyholders), regulators, potential acquirers, financial analysts and tax authorities, to name a few. They each have their own background, expectations, and needs. We live in an era of changing products, markets, and experience. With this as a backdrop, financial measurement and analysis will prove to be difficult.

As described by Gary Corbett in his Presidential address, the traditional function of actuaries as financial gurus of the life insurance industry is being challenged by others with different backgrounds and responsibilities. Because of these varied evolving expectations and alternative approaches that are and will be used, the measurement of financial solidity and solvency will not only be difficult and complex, but also different than that of the past.

Curtis Huntington will be our first speaker. He is currently the corporate actuary of the New England Mutual Life Insurance Company. He has formerly served as General Chairman of the Society's E&E Committee and is currently a member of the Board of Governors of the Society. He will be addressing the internal environment that the actuary may be facing in the future in approaching the measurement and implications of financial solidity of a life and health insurance company.

Richard Kischuk will be our second speaker. Rick is currently principal and co-founder of Crown Point Management Consultants, and was formerly with the Lincoln National Life Insurance Company. He is also currently serving on the Society's Board of Governors. He will be discussing alternative users of

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financial information and future methods that may be used in the measurement of the financial solidity and solvency of a life and health insurance company.

Allan Brender, our last speaker, is currently a professor of actuarial science at the University of Waterloo and a consultant for Mercer, and has done extensive work for the Canadian Government in the area of solvency measurement. Allan is currently on the Council of the Canadian Institute of Actuaries (CIA). He will be addressing additional perspectives on the potential future direction that may be anticipated in the United States by reviewing the recent experiences from outside the United States, including Canada and various European countries.

**MR. CURTIS E. HUNTINGTON:** My objective is to discuss an alternative set of responsibilities and environment that a valuation actuary could be operating under in the future.

My focus naturally will be influenced by my own background. I work in a large eastern mutual company, and I have all of my work experience in that environment. But, I will try to raise issues from other operating environments as well. My focus will be on the United States experience.

Clearly the role of the valuation actuary in the United States is one that is evolving. We are, in fact, quite far behind much of our industry in the rest of the world; but we are making progress. What I will try to do is point out some of the players that are involved within the valuation actuary movement in the United States, initially focusing on two: the valuation actuary, and the chief financial officer (CFO) of an insurance company. I will suppose at the beginning that these are two different people, and then will discuss later in the session why they may in fact be the same person.

The topics to be discussed are the current environment, the CFO's key responsibilities, the emerging role of the valuation actuary, the skills necessary to succeed, and the future roles of the CFO and the valuation actuary.

In the current environment in the United States, we see an insurance industry in a state of turmoil. The easy accommodations we had within the industry even ten years ago are no longer prevalent. We have intense product competition; we have increased emphasis on investment return; and we have interest volatility. Think back 10 or 15 years ago and try to imagine what these issues were like and you can see just how different an environment we face today. Products are coming out in a never-ending spiral. There is competition not only from other members of our industry, but also from banks and other financial service industries. Investments will clearly be critical to the success of future products; the interest rate volatility that we see is significantly higher than it has been in the past. In addition, we see the federal government, as well as other regulators, are intensively concerned over recent failures in the industry, as they have had impacts beyond the confines of our industry. We also see a tremendous growth of interest-sensitive products, both within the individual and the group lines and in annuity products. As for guaranteed investment contracts (GICs) just look at the revenue numbers from GICs to see how important they are to the industry.

The current environment also shows a desperate need for improved financial measures and controls. Clearly, statutory accounting is inadequate; this has been recognized as being inadequate by the accountants for the stock insurance industry for a number of years, and hardly any mutual companies today operate

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their internal books using statutory accounting. They are either using GAAP as evolved by the accounting industry or in many cases, modified GAAP or near GAAP, modified to take care of the needs and management of their own companies. A return on equity (ROE) is probably stressed by the management of these companies, and the availability of adequate amounts of surplus is critical for the operational well being of the company.

The need for new financial controls has in turn required that these companies develop new methods, new procedures and new techniques. The development of measures for these purposes will provide challenges for the industry and the actuarial profession.

As I indicated, there are basically two players in this process. The first player is the CFO. To see what the role of the CFO is, I suggest while this is a fairly new concept or position within the insurance industry, the functions involved have been performed in various places within the companies in the past. The bringing together of all these functions into one clearly identified position of CFO is new and has only occurred in any significant numbers very recently. This role has been created to address the financial management committees of these companies. It is basically a new position.

In many senses, the CFO has become the keeper of the capital structure of the company. The CFO is a person who deals with various financial publics, talks with the rating organizations, talks with investors, talks with the investment community as a whole, and has a variety of reporting requirements that deal with these various audiences. Typically, the CFO has a difficult task and must understand, measure, and translate the economic realities that exist within his company and within his environment. The products that he deals with typically have a very long life cycle that must be fully accommodated and dealt with in terms of the analysis, looking to the long-term vitality of the company. The focus is clearly not just on today. The focus has to be a forward looking one, and this alone is worthy of the futurism section sponsorship of this session. The environment tomorrow will be significantly different.

We all need to be cognizant of those changes. We must be able to evaluate and assess the future financial soundness of the firm in the changing environment. But within this context, we still must be involved with and be cognizant of the valuation concept. In the United States, for too long, we have had a CFO clearly involved with the investment side and a second major player, the valuation actuary, involved with the liability side. It is important that as we bring the valuation actuary concept along, we see a merging of these two areas of concern, the investments and the liabilities. That said, the areas are really not always being analyzed together. The second major player within the future environment will be the valuation actuary. As we have seen, there is beginning a formal valuation movement in the United States. The embryonic stage has not fully taken hold. We see spits and spurts of it in various areas. The most advanced form of it at this point is probably the New York Regulation 126 statement of a qualified actuary, which has been in effect for two years and is going through some evolutions of its own. The National Association of Insurance Commissioners (NAIC) has established a committee to propose revisions in the Standard Valuation Law. The Society of Actuaries (SOA) has a number of committees that have been working on the role of valuation actuary, including one that is starting from basic principles. If you go back and look at this Principles Committee and the Actuarial Standards Board, you will discover that

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the effects are really setting the foundation to help the role of valuation actuary proceed.

Within the corporate structure, the valuation actuary tends to be today a member of the financial management team. He or she frequently serves as a form of an internal auditor, an actuarial auditor.

Let me give you a little more of my background. I spent five years as my company's internal auditor, after coming out of an actuarial environment, and before I became the corporate and valuation actuary. My company perceives the valuation actuary as serving as an actuarial auditor for the firm; we believe that such an auditing function, and the skills associated with this function, are critical to the success of the valuation actuary concept.

The CFO helps to assess the soundness of the capital structure and the adequacy of the reserves, but he or she needs the assistance of the valuation actuary as a member of his or her team to perform these functions. And finally, the valuation actuary needs to be cognizant of and to satisfy the needs of Regulation 126 type reports that will be required increasingly in the future.

The team members will have various skill levels that they bring to their jobs and to their profession. These skill levels will not remain static, and in fact, many of the skills that we currently have today may not be adequate for the future. If we look at the valuation skills necessary to succeed, in particular, we find that traditional actuarial training is inadequate. We see the evolution even in the texts that we use in the SOA's education system. Look at the growth of calculations involving variance and the statistical methods of looking at various future trends. We need only look at the requirement of Regulation 126 with scenario testing requirements in which you must look at all the various components and compare that with the skills and the tools that the actuary has available to see that there is an inadequacy.

Within the insurance company environment itself, the organizational structures have become increasingly complex. I have already mentioned that there is a diverse group of product lines, with frequent changes in products and changes in the structures of companies, all of which have an impact upon us. The emphasis upon investment-related features in our products is very important. In addition, subsidiaries are developing products that are new, in areas that actuaries have not been involved with before, and that require new skills to review. From a practical viewpoint, there is no one person or entity within the current insurance company who is capable of filling all these roles. You need a person who is an expert in actuarial pricing techniques; a person who is familiar with statutory, GAAP, and other internal accounting systems; a person who is an expert on investments and investment strategies; a person who can deal with traditional asset and liability cash flow measures; but, also a person who can deal with new and broadened corporate concepts.

The education that the actuarial profession provides in our traditional training program gives us a foundation to build upon, but that is not sufficient to take care of the needs of the future. The traditional training we have dealt with tends to be one dimensional and I believe that strong continuing education requirements established within the industry and by people who are not traditionally perceived as teachers of actuaries are very important to the future success of our profession.

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The future roles of the CFO and the valuation actuary are complex and they may in fact be in conflict. If you have a CFO, that person is most likely the keeper of the Company's capital structure and may in fact be the leader of the financial management team. The valuation actuary, however, has expanding responsibilities partly created by a regulatory environment. He or she is a key member of the team and must participate as a multi-scenario planner and operate in sort of an internal auditing function. In both cases, however, these members of the team that run a company operate as we have heard in the Valuation Actuary Symposium in Toronto last month, not as the captains of the ship, but as navigators. They are people giving directions to the management of the company to assist them in designing and plotting the future course of the ship. The individuals who perform these functions must maintain some independence of the managements that they operate with and yet frequently they are also members of that management team. This creates some interesting professional ethical problems which I think will also be subject to some intensive studies in the future as to how you maintain that independence, deal with the independence issues, and yet acquire sufficient knowledge about the operation of the company to perform the multiple tasks that are needed.

I anticipate that many large companies will operate with a valuation actuary who is independent and is not also the CFO. But for many smaller companies, that will not be possible. We will find in many smaller companies that one individual may be required to handle both roles. They, in fact, will be the CFO and they will also be the valuation actuary. Actuaries will also be members of management teams. Interesting potential conflicts of interest involving their independence will occur in that particular environment.

I think communications between the CFO and the CEO and the valuation actuary are critical to the success of this valuation actuary function. That communication involves both availability of opportunities to communicate and also an understanding of a common language -- a language that is both spoken and written. It will require communications that are capable of conveying complex ideas to audiences that have slightly different backgrounds and yet must be capable of mutually reaching a common conclusion. There are clearly other players in the roles that will be involved in the future. We have the Actuarial Standards Board in the United States and have guidelines from the CIA in Canada. We have various mechanisms established by regulators both at the federal and state level in the United States, and yet within all of this we have a great deal of uncertainty about the future. The products that we deal with are long-range products, not amenable to easy modeling. There is an important element of risk sharing between both the company and the public in the future, and I think that it will be critical that we adequately communicate the roles that we each play and the knowledge that we each have and be able to understand what each needs in order for the valuation actuary concept to emerge as the vital force it has the right to be in United States.

**DR. ALLAN BRENDER:** I've been asked to discuss the ways in which current experience in Canada and other countries can provide an indication of what is in store for the United States with respect to the future measurement of solvency and the role of the valuation actuary. I will concentrate on the lessons to be learned from the Canadian experience but will also refer to particular experiences in Finland and, more so, the United Kingdom.

To set the scene, let me remind you that the valuation actuary in Canada is currently responsible for the choice of reserve assumptions and the calculation of

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policy reserves. The actuary's certificate in the annual statement states that the assumptions chosen are appropriate both to the company's circumstances and to the nature of the policies which are being valued. Although it would appear from this description that the actuary's view is limited to the liabilities, I'd remind you that both the Memorandum to Valuation Actuaries issued by our Federal Regulators and the Recommendations on Life Insurance Financial Reporting, which are the professional standards of the CIA in these matters, both require the actuary to take into account the assets, and the cash flow they generate, when choosing his interest rate assumptions for valuation purposes. So, in fact, the actuary has to pay attention to both sides of the balance sheet at this moment.

In the United Kingdom, each company must have an appointed actuary who also has considerable freedom in the calculation of policy reserves. Again, attention must be paid to the company's assets as there is requirement for a specific mismatch reserve which is, in particular, intended to protect against a sudden decline in the company's equity investments.

Returning to the Canadian scene, some of the same factors which have generated the valuation actuary movement in the United States have caused us to re-examine the role of the valuation actuary in Canada, and it seems likely that this role will be enlarged in the near future. In particular, the valuation actuary will soon be required to move beyond the company's reserves and to carry out an annual solvency study. This study involves a projection for at least 5 years of all the company's operations under a wide variety of scenarios of possible future experience. The primary tool will be a computer-based simulation model. The model is similar to some of the models which are being used to satisfy New York's Regulation 126 requirement. But the Canadian model is much more extensive since it covers all the company's operations and not just certain products; it must test variations in a wide variety of parameters and strategies and not be confined only to changes in interest rates and investment policy. The actuary must also test the sensitivity of the company to changes in levels of mortality, morbidity, withdrawals, new business acquisition, asset defaults and expenses, including the effects of possible future inflation as well as productivity changes. In addition, tests should be made of the effects of changes in other factors to which the company is particularly sensitive; these could include such things as the determination of shareholder or policyholder dividends, marketing strategy and the introduction of new products or the discontinuation of current products, or such things as the effects of the introduction of a new group claims system. Finally, in contrast to New York Regulation 126, the Canadian test is a test of the adequacy of total reserves and surplus and not a test of reserves alone.

There seems to be an international trend towards an annual actuarial study of surplus needs. Finland already has a form of this in place. Their current system involves the notion of an equalization reserve, what we would call a special contingency reserve. This reserve is determined through risk theory methods based upon an analysis of the actual risk contained in the company's portfolio. The Finns have done a great deal of work recently on testing solvency of general or property and casualty companies using extensive cash flow simulation models. They are now beginning to investigate the same problem in a similar approach for life insurance companies. The actuaries, I might say, are working in very close cooperation with the industry and the regulators; everyone is involved in this project together. Their pioneering work has had a great deal of influence in Europe and I believe it will extend into life insurance as well. In the United Kingdom, the Institute of Actuaries has had for several

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years a working party on solvency of general insurance companies. That working party has worked in close collaboration with the Finns and has produced some excellent work, again involving cash flow simulation models. To the best of my knowledge, the United Kingdom does not yet have a formal solvency requirement or rather a requirement for an annual surplus study, but it seems to be their intention to produce one. In Canada, as I've said, we have begun our surplus requirement studies with life insurance companies, but it seems reasonably likely that we will eventually extend this to property and casualty (P&C) companies as well.

Solvency testing by means of simulation models may be the wave of the future, but it has to be viewed in relation to the current solvency requirements. Apart from the usual provisions which are embedded in mandatory conservative valuation tables and interest rate assumptions, we find explicit formula-based solvency requirements in the European Economic Community, Canada, and in the United States, in the State of Wisconsin. The Canadian formula establishes a minimum continuing surplus which must be held by a life company. Insurance legislation was amended last year to permit the introduction of this requirement. At this time, regulations under the Act are being drawn up to specify the exact formula. However, a similar formula has already been developed by the insurance industry in connection with the introduction of a national consumer protection plan or guarantee plan; the statutory formula will be similar, although not identical, to the industry formula. The industry formula involves a detailed calculation of a component for possible asset default; this component is related to the company's actual portfolio, a provision for deteriorating mortality or morbidity, based upon total net amounted at risk figures, and a provision for the loss of investment income; this last item is not the C-3 mismatch risk. The formula basically assumes that one is matched. It should be noted that the mismatch risk in Canada is usually much less severe than it is in the United States, due to differences in investments that are available and product design, and, in particular, due to the absence in Canada of an equivalent to the Standard Non-Forfeiture Law in the United States. The dynamic solvency test which actuaries will be required to perform involves checking to see whether the company will be able to satisfy the minimum solvency or surplus requirement during each of the five years in the projection period.

A great deal of work is going on to expand our horizons and to expand the role of the valuation actuary with respect to solvency. I want to describe what we have learned so far about how the job has been done, and what is needed. My observations are based partly upon the experience I've seen in Canada, and some are my own personal opinions; I take full responsibility for those.

Firstly, we hear a great deal about the need to expand actuarial training, to broaden it, to produce a new valuation actuary. I think Curtis has forcefully presented the case for this point of view, and I agree with him. But, I'm also concerned about the actuary's traditional technical abilities and tools. Our experience in Canada has been that since responsibility for choosing assumptions has been given to the valuation actuary, and this is a 10-year experience now, which began in 1978, we have seen a wide range in assumptions, too wide a range, we feel now, to be acceptable. We have seen a need to make our professional standards much more technical in order to narrow that range. We have to do such things now as specify how one goes about choosing "best guess" expected values for such factors as mortality rates, lapse rates, expenses, and investment earnings rates. In addition, we have to provide guidelines as to how to choose appropriate margins for adverse deviations in order to adjust our "best

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guess" rates to make them appropriate for valuation purposes. We have to develop new valuation techniques and standards for new products when the old standards no longer apply. We still rely on the actuary's professional judgment, but the profession must give the actuary more technical guidance. As we move beyond valuation into the area of provisions for solvency, we shall have to provide the actuary with additional tools for risk analysis and with the education to properly make use of them.

Some of the new areas into which the valuation actuary is about to enter also have their own very technical aspects. These too have to be mastered. For example, if we are going to model interest rates, we shall have to pay more attention to what the field of finance has learned about interest rate processes. I am particularly concerned about the approach to interest rate modelling, which has been taken by many actuaries, with respect to Regulation 126. In many cases, there appears to be an almost total disregard for any body of knowledge concerning interest rates simply because that knowledge falls outside the usual scope of actuarial science. As we enter new areas, I think it is our professional responsibility to learn and evaluate what has been done by others in these areas. Similarly, if we want to make probability statements about reserve and surplus adequacy, we will have to pay much more attention than we now do to technical aspects of stochastic processes and probability theory. If we are going to rely on stochastic simulation, we are going to have to pay a lot more attention to whether the computers really generate unbiased random numbers. If we don't do these things, things which in fact the readers of our reports assume that we have done, we are not only fooling our readers but I think we are also fooling ourselves.

It may not be sufficient to rely on our formal education process to provide the potential valuation actuary with all the required skills, tools and knowledge. We will have to consider whether continuing education should be required. The question has also been raised in Canada as to whether a minimum level of experience or some form of apprenticeship should be required for the valuation actuary. I don't want to suggest we have agreement on this, but the scope of the job leads me to think that we are going to continue to pursue that question.

Education, training, and professional standards are all extremely important in the development of the role of the valuation actuary; but they are not sufficient to ensure that these responsibilities are properly carried out. We have to be concerned with the quality of the job which is actually being done. This is important not only for the company and the individual actuary but also for the profession as a whole. The introduction of the valuation actuary assumes a liberalization of regulation and the assumption by the valuation actuary of a great deal of the responsibility for the monitoring of the financial health of the company and the protection of the policyholders, responsibility which now rests almost exclusively with regulators. Of course, this ultimate responsibility will remain with regulators, for they are charged by the law with this responsibility. In pressing for the valuation actuary, we as a profession are saying to regulators and the public, "Trust me! I can do the job better." But can we deliver? During the past three or four years the CIA has come to recognize it has a serious problem with noncompliance with its Recommendations for Financial Reporting. A fundamental part of the current activities to expand the role of the valuation actuary involves a tightening up of our professional discipline and the introduction of some form of auditing of the valuation actuary's work, perhaps through a system of peer review or by some other means which we have not yet determined. I suggest to you that the question of enforcement of professional



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standards is one of the most important and difficult issues which will have to be faced by the Society and the Academy in the introduction of the role of the valuation actuary.

I would like to look at the role of actuaries in regulation. If the valuation actuary concept is to work, it seems that we require a high degree of actuarial competence and professional involvement among insurance regulators. The valuation actuary's proposed responsibilities with respect to solvency come close to those of the regulator. In order that these responsibilities may be met, there will have to be close cooperation between the actuary and the regulator. This will require well-informed actuaries in the role of regulators. In both Canada and the United Kingdom, happily, we find that this is the case. In both countries, the regulatory staff includes actuaries who are not only knowledgeable and well respected by their peers, but are also deeply involved in the affairs of the profession. The development of the actuarial role and actuarial technique has been greatly facilitated by the presence of these people in professional bodies charged with these developments. Though there are some examples of this type of actuarial regulator in the United States, based on conversations with many American colleagues, I would guess that such individuals are far too rare. It seems to me it would be in the best interests of all concerned, and a necessity for the successful implementation of the valuation actuary concept, for some combination of the Society, the Academy, and the ACLI to actually encourage the presence of more qualified actuaries among the United States insurance regulators.

I would like to touch again on the matter of the valuation actuary's position within the company. I first note that the CIA's Committee on the Role of the Valuation Actuary, which reported in 1985, considered the question of the independence, a question which can be summarized by a question, "can the valuation actuary be an employee of the company while serving this function or must he or she be an independent external practitioner?" The committee concluded that in order to be able to carry out all the duties of the expanded role it envisioned, the valuation actuary would have to be very knowledgeable about the company's operations, strategies, and plans. Therefore, it would be preferable if that person were a senior member of management, in fact, the most senior actuary in the company. An external consultant would not be likely to have access to all of the required information.

With respect to solvency testing, I should mention that the CIA is framing its requirements based on the presumption that the valuation actuary is, in the first instance, an advisor to management. The report which the actuary will prepare is directed to management and is intended to provide it with early warning of potential hazards that the company may be facing or could face if its operations were to be changed in some way. Of course, it should be recognized that regulators will be aware that this report has been prepared and that they have the power to ask for a copy if they consider it necessary to their supervisory task. The question naturally arises as to the actuary's responsibility if management does not respond to a clear warning of danger. The next step would seem to be to take the matter up with the company's Board of Directors. We therefore have to consider whether the valuation actuary has independent access to the Board. I note that in the United Kingdom it is a requirement of the Institute of Actuaries that a member will not accept the position of appointed actuary or valuation actuary unless that person is guaranteed, as a condition of the appointment, that they have direct access to the company's Board of Directors independent of access through management. In Canada we have not yet

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formalized our position on this question, but I think there is a strong possibility we will follow the United Kingdom in this respect. I understand from numerous conversations that it is a policy of the ACLI at the moment to not favor independent access of the actuary to the Board. I think that's an issue you'll have to reconsider.

In Canada, it is also being proposed that the valuation actuary, having given notice of possible future difficulty and having seen no response from the company in a reasonable period of time, shall then be required to inform the regulator of his or her concern. As with several of our other proposals, this too is inspired by an existing requirement in the United Kingdom, which is placed on the Appointed Actuary by the Institute of Actuaries. The dual role of the valuation actuary as a member of senior management and also as an indirect agent of the regulator is fraught with difficulty and great potential for conflict of interest. The Guidance Notes of the Institute of Actuaries in the United Kingdom recognize this possible conflict of interest and make it clear that when a company is in difficulty, the actuary's first duty is to the profession, the policyholders and the regulators. In a litigious society such as the United States this policy may not be tenable. Nonetheless, these issues will have to be faced and thrashed out both here and in Canada.

Finally, I want to observe that the whole question of solvency is very vibrant and receiving a great deal of attention internationally. There have been a number of conferences in the last three years. There was an International Conference on Solvency in Philadelphia in 1986. The second such conference occurred this last May in Brighton, England, and in Helsinki there was another solvency conference this summer immediately preceding the International Congress of Actuaries. It's sad to say the representation of the North American Life Actuaries was limited, I think, to one person. There were lots of North American P&C people, lots of Life and P&C people from other countries; I think we, the life actuaries, should begin to broaden our horizons and pay attention to what is going on internationally.

While the valuation actuary concept is an exciting one, and the expansion of that person's responsibility into areas of solvency is indeed challenging, the holder of the position must be a true professional, knowledgeable, technically skilled, and must possess seasoned judgment and great personal and professional integrity. There are difficulties associated with the role. But it would seem from both the Canadian and particularly the United Kingdom experiences that these difficulties can be overcome and the idea can be made to work. Hopefully, then, we will have much better and informed judgments as to an insurer's continuing solvency.

**MR. RICHARD K. KISCHUK:** Solvency measurement is an area that has undergone a lot of development in the last 10-15 years. But we were starting at ground zero, and there is still a long way to go. Having worked in this area for most of the past 12 years, I'm pleased to be able to share some perspectives on where we seem to be heading.

### **THE BASIC APPROACH**

"Solvency" is determined by regulators based on a comparison of assets and liabilities, using statutory accounting practices. If an insurance company is solvent, we may go on to talk about "solidity," which relates to an insurance company's financial strength and its ability to meet its obligations to policyholders and investors in the future.

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As we look ahead to how "solvency" and "solidity" will be measured in the future, there is both good news and bad news. The good news is that we are moving toward a standard approach to evaluating solvency and solidity. This dynamic approach is very straightforward and it applies equally well to a variety of situations. The basic approach may be summarized as follows:

1. We select an appropriate surplus standard;
2. The current surplus position is compared with the surplus standard

This comparison provides us with a current measure of solvency or solidity. For many purposes, we may stop there. But often, there is a need to measure the risk of falling below the surplus standard in future years. In that case, we may continue as follows:

3. Project sources and uses of surplus funds;
4. Project surplus levels and compare them with the surplus standard; and
5. Determine the confidence limits of our projections by evaluating the volatility of future sources and uses of funds.

### SURPLUS STANDARDS VARY

Earlier, I said there was both good news and bad news. The good news is that we are moving toward a standard approach. The bad news is that different people will continue to come to different conclusions about the solidity of a life insurance company. In part, this comes about because of the judgment involved in the evaluation process. But more important, this reflects the perspectives of the various stakeholders.

Regulators compare a company's assets and liabilities according to a prescribed accounting method. If assets exceed liabilities, the company is considered to be "solvent." In addition, a company must maintain enough surplus to meet statutory requirements, which vary from state to state. Regulators also have a concern about future solvency. The NAIC's Insurance Regulatory Information System (IRIS) ratios have been developed to alert regulators to situations where future solvency may be impaired.

In addition, solvency and solidity are evaluated by rating agencies, such as A. M. Best, Standard & Poor's and Moody. Here, the emphasis is on the company's ability to pay benefits or to repay debt. Rating agencies use leverage ratios to evaluate a company's surplus position. Financial projections may be used to evaluate future solvency and solidity. Strategic plans and quality of management are often considered. While rating agencies tend to look further into the future than regulators, the time horizon is generally limited to the duration of the debt obligations and insurance contracts to which the rating applies.

Many companies have developed their own internal benchmarks for evaluating surplus position. In order to achieve their objectives, most life insurance companies must maintain surplus in excess of the minimum statutory requirements. The most common internal benchmark is to use a target surplus formula. These formulas are still fairly primitive and often conflict with the standards used by rating agencies. Capital budgeting is also in the early phases of development at most companies and is not sufficient for projecting the impact of today's management decisions on future solvency and solidity.

We can summarize by saying that most of today's approaches used by regulators, rating agencies and management emphasize the comparison of the current surplus

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level with a surplus standard. Most approaches are still relatively weak in addressing the risk of future insolvency.

### **DETERMINING CURRENT SURPLUS LEVEL**

Determining the current surplus level may seem like the most straightforward part of the process. But generally it is not. Companies often maintain their books on two or more accounting bases. There are alternative treatments for the Mandatory Securities Valuation Reserve (MSVR), contingency reserves, affiliate investments, dividend liabilities, deficiency reserves, interest reserves and other items. These items must all be treated in a manner that is consistent with the surplus standard that is being applied.

For measuring solvency or solidity, statutory accounting is the most appropriate accounting basis. After all, "solvency" is determined on a statutory basis. It is possible for a company to be insolvent and yet have a positive net worth on a GAAP basis.

Many analysts treat the MSVR and other contingency reserves as if they are part of statutory surplus. However, this is generally inappropriate. Unlike surplus, the MSVR is not available to meet all contingencies. It is available only as an offset to certain capital losses. Therefore, it is not appropriate to treat the MSVR as "surplus." The same may be said of contingency reserves, dividend liabilities, deficiency reserves, interest reserves and other items that are often treated as surplus equivalents. In order to treat these items properly, analysts must use surplus formulas and leverage ratios that are more sophisticated than the ones that are in general use today.

It is also important to analyze affiliate investments, loans to subsidiaries and interaffiliate reinsurance transactions to determine the potential future impact on solvency or solidity. A common approach is to simply subtract affiliate investments from the company's surplus position. This approach is generally too simplistic. It does not adequately differentiate among the various levels of risk inherent in these transactions.

### **SOURCES AND USES OF FUNDS**

A "sources and uses of funds statement" should be an integral part of a company's financial plan. Where this is not the case, one must be developed, reflecting the company's strategic plans and objectives. Often, these statements are developed based on GAAP. To be useful for solvency measurement, they must be modified to be consistent with both the surplus standard and the definition of surplus that are being employed.

Depending upon the surplus standard that is being used, projections may also have to be modified to remove the impact of future sales. Assumptions should be reviewed to determine what margins for adverse deviation have been included. The appropriate degree of conservatism will vary, depending upon the purpose of the projection.

Finally, the time horizon should fit the use to which the projection will be put. For some purposes, the projection may be very short term -- one year or less. To determine company ratings, projections may extend over the term of the policy or security being evaluated. For management purposes, the analyst may use a fixed planning horizon or may vary the projection period depending upon the management decision that is being considered.

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### FOUR BASIC SITUATIONS

The sources and uses of funds projection is then used to project the company's surplus position relative to the surplus standard. Every company can be classified into one of four basic situations:

- o surplus position is below standard and deteriorating;
- o surplus position is below standard but improving;
- o surplus position is above standard but deteriorating; and
- o surplus position is above standard and improving.

Depending upon the user (regulator, rating agency or management), this analysis will suggest a particular course of action.

However, before relying on the results to too great an extent, the analyst should quantify the volatility of surplus cash flows. Most companies have invested considerable time, effort, and money in projecting life insurance and annuity cash flows. Yet these are probably the most stable and predictable sources of capital, as long as assets and liabilities are matched reasonably well. On the other hand, models for projecting health insurance results (when they exist at all) are generally much less reliable. Many companies have difficulty in predicting health results from one quarter to the next, much less from year to year. As a result, executives of most health writers were surprised by the underwriting losses that developed in 1987 and 1988. The ratings of some companies were downgraded, and the ratings of many other companies have been threatened as a result.

Similarly, most corporate planning models either ignore capital gains and losses or else treat them very simplistically. However, swings in investment gains and losses are often more important than operating gains in planning the amount of surplus that will be available to support a company's growth strategies. And capital losses have the potential to generate unpleasant surprises, often threatening a company's ratings.

Finally, most corporate planning models assume that each year's increase in surplus will be available to support the growth of the company's in force business. Realistically, these models should incorporate management's strategies for growth and diversification through acquisition and the formation of new subsidiaries. Projections should also consider the risk of affiliate losses requiring an infusion of capital.

### SUMMARY

Most of today's approaches compare a life insurance company's current surplus position with a surplus standard. Most approaches are weak in addressing the risk of future insolvency. A projected sources and uses of funds statement is the basic tool that can be used to evaluate future solvency. Using this approach, a company can be classified as in one of four basic situations. This classification will then suggest a particular course of action. However, before management relies on the projected results, the analyst should qualify the volatility of future surplus cash flows.

With this information in hand, management can anticipate the impact that its decisions will have on future solvency. Risk-reward trade-offs can be evaluated based on the volatility of surplus cash flows. Management can then select the strategies which generate the most profit for the least amount of risk.

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**MR. GUTTERMAN:** Are there any different implications for a stock versus a mutual life insurance company in these issues?

**MR. HUNTINGTON:** Mutual companies often have more limited sources of capital than stock companies, and from that standpoint there may be more potential difficulties in projections. In other words, if surplus falls below a surplus standard, a mutual company cannot just go and raise capital through stock sales to cover the difference. On the other hand, mutual companies traditionally have had reserve cushions in fairly large books of traditional participating whole life business that have provided more margins than for the typical stock company. Having said that, a lot of the distinctions are currently eroding not only because of possible demutualization, but also because of the fact that many mutual companies have gotten involved quite substantially in nonpar business and also have invested substantial amounts of surplus in downstream subsidiaries that produce the same kinds of risks and margins that are in stock companies. There is a potential for some mutual companies to have the worst of both worlds, much the same risks, but more limited means of raising capital.

**MR. KISCHUK:** I conclude that the implications for both types of companies are basically the same. You potentially have a different audience in the stock company environment where you have stockholders to worry about, as well as your traditional audiences. But the ultimate goal is to satisfy all audiences; the needs of the stockholders are not that different from the needs of regulators, policyholders, and company management. Consequently, the same basic standards would be useable and desirable in all environments.

**DR. BRENDER:** When we began to put together our standards in Canada, one of the things that came up is that you don't need nearly as much margin for participating business because you can always cut dividends. One of the things I'm sensitive to, particularly watching the behavior of companies as interest rates go down, is that you may not cut dividends. It takes a lot to get people to move sometimes, and one ought not to test this sort of thing in doing dynamic testing: what happens if experience goes bad and you don't cut dividends? There should be a required type of testing in every case. We have one situation in Canada which is quite different than in the United States, which is worth commenting on: we have a rule in the law that statutory reserves are the only reserves that can be published. Also, we're trying to reach agreement with the accountants on what is the definition of GAAP; it will be fairly liberal. That means that stock and mutual companies are really judged on a similar basis, which may not, in fact, be true in the United States.

**MR. MELVYN E. BERMAN:** I have a question as to whether there is any experience from other countries relative to life insurance company financial failures. I think we have had very few in the United States.

**DR. BRENDER:** I understand that there have been quite a few life insurance company failures in United Kingdom recently. There was one major one in Britain in 1974. There has been one failure, one major failure recently in Britain, but it is not clear whether the company failed financially or whether they were put out of business because they couldn't meet their current dividend scale, but they were technically solvent. There have been lots of failures of other financial institutions, the savings and loans in the United States, trust companies, and banks in Canada (when you have two out of eleven banks fail, you worry). One other point that I think should be made is that in many countries, the same regulators who regulate insurance companies, regulate other

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financial institutes as well. Therefore, the regulators are looking at the problem not just from the perspective of insurance companies, they are looking for analogies in different types of institutions, and they are seeing that there are lots of overall problems.

**MR. HENRY W. SIEGEL:** I just returned to the United States after serving as CFO of a Japanese subsidiary for two and a half years. It's always interesting to me that when we talk about international experience, we never talk about the largest life insurance market in the world, Japan. In Japan, the actuaries are in a very different situation in some ways than they are in the United States because the products are so different. By law (and in Japan the insurance industry is regulated at the national level), the actuary must attest to the solvency of the reserves and the correctness of the premium. He must be able to attend all board of directors meetings, and furthermore, he must approve all changes in agent compensation. If he finds that the company is doing anything that is unwise and not correct, he has a legal obligation to tell the Minister of Finance. According to punitive provisions in the law he can go to jail if he violates any of these requirements.

One other comment: I have a lot of trouble with the concept of a separate CFO and valuation actuary, because I think their functions are inherently conflicting. Ever since GAAP was put in, the accountants seem very comfortable in talking about reserves, telling actuaries what reserves ought to be, and how to do the accounting for them. I think that once you put the actuary and the CFO in separate, competitive positions, the CFO, generally a non-actuary who tends to be a business school graduate, thinks he/she has become an actuary. Without a legal requirement that the valuation actuary, the chief actuary of the company, be able to attend board meetings, and in my opinion, be a board member, I think that the actuary is going to be in a difficult position.

**MR. HUNTINGTON:** On the latter point I agree with you. I think, however, that in the United States we face an environment in which there tends to be a conflict and I think part of the reason for that conflict was indicated by Gary Corbett: the education level of the actuary and the perceived ability of the actuary to function at all levels of management is not, in many companies, as good as it ought to be. We have a challenge as an industry to make sure that the problems that you have identified do not occur. I think we have the responsibility to work together as an industry to make sure that we can assure that these two positions will work will together.

**MR. DONALD B. WELCH:** Do you feel the valuation actuary will have any or should have any obligations for the value of a non-ongoing operation? Also, do you feel the valuation actuary should concern himself with the differences created by claims capacity versus debt capacity versus normal statutory or GAAP measurement standards?

**MR. KISCHUK:** To me, your first question brings to mind things like life insurance company leveraged buy-outs, and where a company is broken up for more than its current market. Conceptionally, I don't see the valuation actuary being that concerned about that kind of a scenario.

On the other hand, relating to your second question, claim capacity and debt capacity, especially with a lot of insurance becoming more highly leveraged these days, debt capacity certainly becomes relevant, and it may determine the company's ability to raise funds in an emergency and to be able to survive certain

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scenarios. In fact, debt capacity should be built into the models and explicitly addressed in certain scenarios.

Ratings can be relevant. We've seen instances where there can be a real impact on a company in terms of behavior of its policyholders, availability of capital, and so on, if its rating is downgraded. It has probably not been considered enough. If you just look at statutory solvency you may miss that aspect, and if a company's financial position starts to deteriorate, you can see the company goes down very rapidly if that deterioration becomes public knowledge and outsiders start to act on that information.

DR. BRENDER: With respect to the liquidation question, let me articulate what I think is the philosophy being taken in Canada. We haven't articulated it very well, but we have a formula requirement, the approach to which is to make sure that there is enough money so that if you have to close the operation down, the existing policyholders will be taken care of. The ongoing test that we are requiring is to see that at each time in the projection period you have enough to take care of the existing policyholders, and for others that you have at least time enough to meet the formula, and you'll be able to do this no matter what kind of experience you have, including at least a reasonable range of practical experience.

One point that Rick mentioned has to be emphasized. The whole question of public knowledge is incredibly sensitive. We have a problem if we have a formula mandated surplus: is it going to be public information? If the company is very close to the minimum requirement, does the fact that it can barely satisfy its requirements if made public then cause insolvency almost as a self-fulfilling prophecy? You have to be very careful about creating "runs on the bank" because of perceived weakness when the weakness may or may not be present. I think you've seen the same kinds of things with respect to savings and loans in the United States.

MR. TIMOTHY J. ADAMS: At Wyatt, I act as a credit analyst for groups that purchase GIC and annuity buy-out business from insurance companies. In my experience as a credit analyst I've already encountered most of what has been discussed so far in this meeting. I was wondering, however, if the SOA has any plans or has made any effort to identify what an analyst should be looking for when trying to determine how well a company is doing or whether it is likely to encounter problems in the future?

MR. HUNTINGTON: I do not think that that is something the Society would normally get directly involved in. Our belief would be that we would provide the tools to train people to do analyses, but the analysis and the standards would not be part of what would be established within the SOA, American Academy of Actuaries (AAA), or CIA framework. We would rely upon the practitioners in the field to start developing those standards to be set by the Actuarial Standards Board in the United States, or within the guidelines established by regulation.

MR. ADAMS: The rating organizations, to my knowledge, do not employ any actuaries. In fact, I am aware of one organization that at least in one country does not use any actuarial input at all. I find when giving advice to my coworkers that I have to perform a lot of studies on my own and contact each company on my own. On top of that I use the input from the rating organizations to come up with my own opinions on the financial rating of a company.



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MR. HUNTINGTON: One of the ratings that always fascinates me is the rating on the claim-paying ability of an insurance company, and the importance that the rating agencies place upon that rating. The management of the companies recognize the importance of having that rating favorable, but from a practical viewpoint, it is irrelevant. Multi-billion dollar companies will continue paying claims; the industry knows it is going to happen, and the management knows it is going to happen. We are going through a lot of sound and fury to come up with a rating in an area that is potentially almost an irrelevancy. And yet, it is something that the rating agencies have decided to emphasize and management would be ill-advised not to pay attention to it. The industry can help by establishing an improved knowledge base within the rating companies to aid in understanding what is really going on and getting rid of something that does not accomplish a great deal.

FROM THE FLOOR: Isn't there an inconsistency between a statutory reserve valuation concept, where you are trying to hold as much reserve as you possibly can to meet the given contingencies, and a valuation actuary surplus concept where the idea is to always make sure that in any scenario, or in as many as you can think of, you don't fall into insolvency, which means that your assets aren't as big as your reserves? In other words, the lower you make your statutory reserves, the more likely it is you won't fall into insolvency. Therefore, there is a tendency to reduce your reserve and therefore increase your surplus. If there is a surplus requirement, it may have to be a large surplus requirement.

DR. BRENDER: Well let me put it the way one of our former superintendents put it to me. First of all, we do say that our statutory reserve will essentially be a GAAP reserve. And even the current reserve, although it's not officially GAAP, is fairly liberal by United States standards. But we are moving to a full GAAP reserve which will be the statutory one. Regulators may argue that a reasonably accurate measurement of income is one of the leading indicators of future insolvency. So it's even in their interest to have a reasonable measurement of income, and as far as any conflict is concerned, you can have what you might call real reserves on one hand and a required appropriation of surplus, and we have that notion. It's something like the Finnish actuaries have, a notion of equalization reserve. They have an even better deal because their tax people will let them deduct increases in this reserve. You just have to put your provision for solvency somewhere else, and manage to have an income statement which you feel you are comfortable with. I don't see why these are inconsistent.

MR. KISCHUK: There is some element of conflict. You can conceptualize that instead of having C-1, C-2, and C-3 components of target surplus you can build these into reserve margins. However, I think you would end up needing more assets under that concept, unless you had some provision for reserve release to account for that. You could have large losses on mortgages, for example, and also have margins that might only be released in the event of adverse mortality. If you have surplus, it's there to absorb losses from any contingencies and so in theory you need less surplus for a combination of risks. However, if you liberalize the reserve requirements and hold less reserves, I think you get back to what Allan was talking about. There should be some kind of mandated surplus level.

FROM THE FLOOR: In the case of rating agencies, there is at least one rating agency which wasn't mentioned here, which I happen to know does have

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actuaries on its staff. I do realize that many of the rating agencies, with the exception of Best's, are fairly new in the game. This does not necessarily mean that the oldest rating agency is the best. I am aware of several situations in which one of the oldest rating agencies was going to lower the rating of an insurer unless it could come up with additional surplus: the insurer chose then to strengthen its reserves. In another case, an insurer was using the net level method of reserving and holding a large amount of surplus; and increased its new life insurance business tremendously and had results showing losses from operations; the agency threatened to lower its rating unless it could show more profit.

I am aware of the fact that some of the major rating organizations do not have actuaries on their staff. I am aware that in at least one case, the agency puts a great deal of stress upon surplus, and of course it is very easy to create statutory surplus by either reducing reserve standards, through surplus notes or contributions to surplus by a parent, or more recently by banks making loans to insurance companies and not requiring repayment unless the premium for a given block of business is in force and as a result, the insurance company does not put up any liability for it. I am also aware of the fact that some major rating agencies will allow an insurer to not have its rating published if the insurer does not like it, and that same rating agency will charge the insurer perhaps \$10,000 to \$100,000 for rating a company. I think a great deal of work needs to be done regarding the evaluation of the rating agencies.