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**INTERNATIONAL SOLVENCY  
REQUIREMENTS FOR LIFE COMPANIES**

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- o Internationally, banks are moving toward consistent capitalization requirements. Solvency requirements for life companies show little international uniformity. The panel will discuss:
  - Minimum reserves and minimum surplus requirements in:
    - The United States
    - Canada
    - Great Britain
    - Europe
    - Japan
    - Mexico
  - Are these directed to the wind-up or going concern situation?
  - How satisfactory have the requirements been?

MR. HORACE W. MCCUBBIN: Our format will be that for a panel discussion with the individual panelists each discussing the solvency requirements for life companies in a specific jurisdiction. We will cover the United States, Canada, Mexico, Japan, United Kingdom, and Europe.

As indicated in the program, solvency requirements for life insurance companies in these various jurisdictions differ from those for banks which have an international coordination body which does not have a counterpart in the insurance industry. For insurance companies, solvency considerations must recognize the various types of organizations, the diversity in products, different risks, different financial reporting and reserving standards, and different regulatory environments.

Solvency requirements for life companies is an extremely topical subject as there is evidence of a growing concern about solvency within the life insurance industry, regulatory bodies, and the financial press.

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Indeed, if you needed to be reminded of that, you were handed a copy of *Contingencies* as you came into the meeting yesterday or today, with the front page saying, "Is the Money Still There? A Roundtable on Solvency." The level of concern and the reactions to it are in varying stages of development in the jurisdictions represented by the panelists.

I would like to begin by crossing the ocean and going over to the United Kingdom. I'm going to ask Jeremy Goford to address that territory. Jeremy is a consultant with Tillinghast in London, England and an FIA on the council of the Institute in the United Kingdom. They are presently looking at practicing certificates for actuaries, obviously of some concern when the actuaries are trying to demonstrate by their reporting the solvency of companies.

MR. JEREMY GOFORD: I'm going to talk about the United Kingdom and solvency reporting. The preservation of solvency in the United Kingdom is the activity of the Appointed Actuary. First of all I'm going to go through the mechanics that the Appointed Actuary follows and then talk about his role more generally.

### LAYERS OF SOLVENCY MARGIN

We have various layers of solvency margin in the U.K. I'm sure that's not unique.

Regulation 54 says that the reserves should be calculated on actuarial principles with prudent assumptions. The reserve that the actuary comes up with is subject to a minimum defined in Regulations 55-64, and there are various opinions as to whether Regulations 55-64 make particular sense in particular situations, but in any event, they're covered by the Regulation 54 requiring the actuary to do his own thing. Regulations 55-64 are very much a test as to whether the actuary has come up with a number which is more than the minimum. There are some specific reserves he has to think about.

- o Closed Fund Reserve -- Does he have enough money in the pot if the company closed to new business? Are there any other additional reserves he should hold, for example, to pay off a redundancy payment, get rid of leases, etc.
- o Mismatch Reserve -- The Government Actuaries Department in the U.K. issued some guidance to say they would like to see a mismatch reserve so that the company could stand a fall in equity values of 25% and the rise in interest rates of 3% in fixed interest stocks and still meet solvency requirements.
- o AIDS Reserve -- The Government Actuaries Department issued a table that they said they wanted to see used in determining the mortality assumptions.
- o Maturity Guarantees -- These guidance notes were so penal that effectively, they drove maturity guarantees out of a variable product. Those that have old style products left have to set up maturity guarantee reserves.

Having done all that, the Appointed Actuary must then think about policyholders' reasonable expectations. In other words, not only are his guaranteed benefits being met, but if he's got a participating policy, will his reasonable expectations be met? And to

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that end he will hold an investment reserve, that is to say, the assets will be held at less than market. Most of that forms a thing we call the estate in the U.K. In addition to that, there may well be some surplus assets allocated to policyholders. The totality of assets allocated to policyholders is called the fund. So there may be some surplus in the fund too. Then, in addition, there is the shareholders profit and loss account and share capital.

Now these things have to be tested against the minimum margin of solvency, and there are some rules for forming them which I shall come into, but they come in three layers again. There's a minimum guarantee fund, which is absolute rock bottom that the Department of Trade and Industry (DTI) will stop your trading at if you go below. There's a required minimum margin of solvency which you have to maintain in normal circumstances. But then, the DTI would like a little bit of extra as well, and in the case of life companies, they like to see you holding at least 25% more than the required minimum margin, and for casualty companies, they like to see 100% more. And when I say, "like to see," that has a little bit more force than the English language might suggest.

### APPOINTED ACTUARY

So, the Appointed Actuary himself, calculates the reserve under Regulation 54 on actuarial principles with prudent assumptions. There's also guidance from the Institute of Actuaries to do with the actuary's statutory responsibilities. Particular items for special consideration are, for example, comparisons with reserves against guaranteed cash values to make sure you're holding at least that. A very important set of guidance on data. The actuary is responsible to make sure the data reflect the policies that are actually there -- the sort of investigations he should do, what action he should take if he gets close to insolvency, and what reports he should produce. The actuary is not just responsible for current solvency but for ongoing solvency of the company. So he must do projections and report to the Board to demonstrate otherwise that solvency is adequate in the future.

The Appointed Actuary position is a personal appointment. In the U.K., it is a personal appointment to the Board. You do not do this job as an employee of the company. You have access to the Board, you also have a dotted line to the DTI, if you have a problem. So his main responsibilities other than straight solvency relate to policyholders' reasonable expectations, making sure his data are right, recommending bonuses on participating policies -- that's dividends, and in certain circumstances, having a veto over the assets which the company was about to invest in, in order to keep them reasonable, i.e., appropriate to the liabilities. More companies have gone insolvent in the U.K. through asset problems than liability problems.

### REQUIRED MINIMUM MARGIN

What is the actual required minimum margin? The formula is 4% of reserves, but if you've got a linked policy or a variable policy, then it's only 1% of the reserves, and if you've also passed on the expense risk to the policyholder by making deductions in the fund when you need it, then there's no minimum margin required. There's a required minimum margin in proportion to the sum at risk, which is the sum assured minus reserve, of 0.3% but less for shorter term policies. You can play games with the required minimum margin by reassuring, but only down to 85% on the reserve number

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and down to 50% on the sum at risk number. Again, there's a minimum guarantee fund which, if you fall below the regular margin, you have to do a report to the DTI. If you fall below the minimum guarantee fund, then you're closed to new business. And there's a minimum of 800,000 European Community Units of Account (ECU) which is about £500,000, I guess about \$1,000,000.

### **EFFECT OF REQUIRED MINIMUM MARGIN**

The effect of having a required minimum margin is to produce margin on margin. The margin calculated is quite unrelated to the risk inherent in the business, quite unrelated to the matching requirements inside the company. It's up to the actuary to make sure that, despite the fact that there is this required minimum margin hanging around, he's actually holding the right reserves too. In other words, he can't hide behind having a required minimum margin. The question then, is whether you should price including the required minimum margin as an additional outgo, which makes your profit test look pretty horrible for whole life policies particularly. Otherwise, financing the required minimum margin just has to come out of profit.

### **HISTORY OF REQUIRED MINIMUM MARGIN**

I was asked to give a bit of history. That actually took quite a bit of research to find. It all started in 1966 when Ron Skerman produced the six principles in the paper to the Institute. We had the equity/property crash in 1973-74 which spawned the Insurance Companies Act, which ring fenced policyholders' assets. Then the Policyholders' Protection Act in 1975 which gave policyholders 90% of their money even though the company had gone bust. Then along came the European Community (EC) directive in 1979. The minimum margin was included in the 1981 Insurance Companies Regulations. And then we have had guidance notes out of the Institute and the Government Actuaries Department since then.

### **BREACH OF MINIMUM MARGIN**

What happens if you breach the minimum margin? If you breach the main minimum margin, you have to submit a plan for restoration of sound financial position. If you breach the guarantee fund, which is the lower one, you must submit a short-term financial scheme.

### **BANKS**

Then finally, I was asked to compare the situation between insurance companies and banks. The comment, though, about some bank products being written as life products is that we've had some U.S. companies interested in the U.K. who want to write bank products as insurance products because the solvency margin is 4% rather than 8%. I'll leave you with that thought.

**MR. MCCUBBIN:** Obviously, in the United Kingdom, the actuary plays a very strong role when it comes to solvency. We're going to stay in the European Continent. I'm going to ask our next speaker, Demos Papasavvas, to discuss the situation in respect to Europe.

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Demos is a consultant with Bacon and Woodrow in Surrey, England, an FIA, has a reinsurance company background prior to his present employment, and has been involved in the European insurance situation for some time now.

MR. DEMOS K. PAPASAVVAS: The solvency margin requirements that Jeremy has just described for the U.K., also apply to the other European Community countries. They were introduced through the first life insurance directive which was issued back in 1979. This was part of the plan to actually bring the member countries of the European Community closer together and to get them working more as a single unit.

The main aim of the minimum solvency margin requirements was to secure the benefits of the policyholders, and while all countries were in favor of this, it was interesting to see how different countries reacted to what had been suggested. Italy, for example, where a number of companies were not that well off, was in favor of lower margin requirements, while Germany, with financially very strong companies, was very much in favor of higher margin requirements.

The requirements seemed to have achieved their purpose in that no company has since been forced into liquidation with the policyholders losing out. The imposition of the minimum solvency requirements did lead to a number of mergers among smaller companies but did not really cause any major problems. A number of companies had to write up their assets, but especially for the more established companies, this was not particularly difficult. As a result of the requirements, however, it has been more difficult for companies to expand fast and also for new entrants to come into the market.

Even though the solvency margin requirements are identical throughout the European Community, the valuation methods and base used in each country differ. In most of the European Community countries, the method and basis is, in fact, fixed by the authorities while we have already seen in places like the U.K. and Ireland, these are pretty much up to the discretion of the actuary of the company.

The Commission of the European Community is very keen to harmonize the legislation as it affects the life insurance companies throughout the Community and is currently working on a framework directive in life insurance. For this, it has asked the views of the Common Market Committee, which is a committee made up of insurance companies from the European Community countries, and also the Groupe Consultatif, which is the Association of the Actuarial Societies in Europe.

Although the reports of these two committees have not yet been made public, I did manage to obtain copies of them and also permission to quote from the two reports. What I will try to do is describe the different circumstances that apply in different European Community countries while outlining the content of the two reports.

In the Common Market Committee's report, it is stated that the directive should be designed so that, (1) customers can enjoy the wide range of products while being adequately protected, (2) the insurance sector can take full advantage under the same conditions as other operators in the financial market, and (3) fair and free competition exists between life insurance undertakings for different member states. One of the

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concerns of the Commission of the European Community is that with a single market operating post-1992 which would allow any company in the European Community countries to sell its business anywhere in the Community, it would be unfair if all the companies were not subject to the same requirements.

On the question of mathematical reserves, the report states that it is very important to ensure that solid technical bases are used and it supports the idea of a uniform layout for the most important mathematical reserves on the balance sheet, and also for harmonizing the definitions and methods of valuation. It does, however, underline the following points:

1. **Mortality Tables** -- What currently happens in European countries is that the companies, with the exception of the U.K. and Ireland, are using mortality tables which are fixed by the authorities. In the majority of these cases, these tables are, in fact, based on population mortality because there are not enough statistics on assured lives mortality. In some countries, the actual tables that are being used are not even the population mortality tables of those countries but those of a different country. In Portugal and Greece, the tables used are ones that apply to French population mortality in the years 1960 and 1964. Although this may appear to be quite strange and unacceptable to us here, it should be mentioned that the main priority of the Supervising Authorities is to ensure that adequate reserves are actually held to cover the liabilities of those companies and by using tables which aren't considerably heavier than those that would actually apply to that part of the business, that should not really be a problem. There was a lot of support for a common European mortality table to be used, but countries like the U.K. strongly objected to this, and it was finally agreed that there is no need to harmonize mortality tables used.
2. **Technical Interest Rates** -- In the majority of countries, the rates used in valuation are the ones used in the calculation of premium rates and are fixed at very low conservative levels by the authorities. They are usually the same for all types of contracts, and they only change when the investment conditions in the various countries change. The Committee is in favor of having maximum rates imposed by the authorities but some countries want the companies to be free to fix their own rates which are appropriate to their own commitments.
3. **Expenses** -- Traditionally, in a lot of the European Community countries, the expense for both premiums and valuation was fixed by the authorities. But this has been changing with the companies in more and more countries being allowed to use the rates that reflect their own expense ratio. On this, there seems to be universal agreement among the Common Market Committee members in that it should be left up to each company to use whatever rate is suitable with the Supervisory Authority in each country being well placed to assess the basis that's actually being used.
4. **Zillmerization** -- A number of companies in Europe are reducing the reserves that need to be held to allow for the very high initial expense that they are incurring, and there are countries where this is not allowed, like Spain, but there are also

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countries like France where companies are forced by the government to use Zillmerization as this would increase their profits, and hence, their tax bill. The Committee feels that Zillmerization should continue to be used, where it is currently applied, but it should be subject to a maximum limit. For a certain group of companies in places like Greece, if Zillmerization were to be discontinued or severely restricted, insolvency problems would arise.

Regarding the assets backing the technical reserves, the report states that the company's policy should be based on the best interest of the policyholders.

In a number of countries, there are very strict guidelines on the assets that can be invested in, and while the Committee accepts the principle, it disagrees with the fixing of minimum percentages for certain categories of investment. In Denmark, there is a requirement that at least 60% of the assets backing technical reserves must be invested in fixed interest stocks or property.

On the localization of assets, the report states that companies should be free to take advantage of the different financial markets. It does, however, accept that in the event of winding up, there could be a risk of not being able to meet commitments to local policyholders if the assets are not localized and does feel that compensation should be guaranteed by other means. What those other means are, however, is not specified in the report.

Regarding the matching of assets and liabilities, there has recently been a tendency to relax the requirements, and the point is made that they should continue to apply, subject to allowing the insurance companies some management flexibility.

Turning now to the report prepared by the Groupe Consultatif, there were two questions that were specifically asked:

1. Do different methods or bases for calculating technical reserves for life insurance in different member states lead to significantly different protection for policyholders in different member states?
2. Would different methods and bases for calculating technical reserves lead to significant distortions of competition if the principle of single license with home country supervision were adopted throughout the European Community?

The intention is that in each European Community country, a company would be subject to authorization and control by the local supervising authority, and having secured this, it would then be free to sell its products in any of the other member countries of the European Community. One thing that's important to underline here is that there's quite a big difference and variation in the actuarial profession between the various member countries of the European Community. As a result of that, it's not surprising to hear that there was a lot of discussion among the members of the Groupe Consultatif as to what should be recommended, and full agreement was not easy to reach. It did, however, reach a number of conclusions.

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1. In spite of the differences in the method and basis of calculating technical reserves, each method appears to provide ample protection for domestic policyholders.
2. Provided that sound actuarial principles continue to be applied, mutual recognition of supervisory systems would be satisfactory.
3. There is no way in which competition could be significantly distorted by the different methods and bases used in the different member states, again provided that sound actuarial principles continued to be applied.
4. Any attempt to introduce uniformity of methods or bases for calculating technical reserves throughout the Community would be inappropriate, unnecessary, and harmful.
5. The Groupe Consultatif recommends that in order to maintain solid actuarial standards throughout the European Community, the relevant directive should contain a statement of actuarial principles for the calculation of technical reserves for supervisory purposes. This could include some general actuarial principles such as:

Technical provisions should be calculated on a "suitably prudent" basis and not on a "best estimate" basis.

The calculation of technical reserves should allow for all the guaranteed benefits offered under the conditions of the policy. For example, if the contract offered guaranteed surrender values, then some allowance should be made in the calculation of reserves.

The calculation of technical reserves should take into account the reasonable expectations of the policyholders in respect to bonuses to be declared. This does not necessarily mean that the bonuses to be declared in the future should be the same as the ones currently declared, but that the current method for allocating such profit should continue to apply.

The calculation of technical reserves should not discriminate against either domestic policyholders or nondomestic policyholders. Again, this does not mean the technical bases to be used should be the same -- they should be consistent.

The method of calculation of technical reserves for liabilities should be compatible with the method of valuation of the corresponding assets.

6. The Groupe Consultatif also concludes that the determination of valuation basis should be the responsibility of an actuary and that calculations should be carried out under the control of an actuary.



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This report, together with the Common Market Committee report, were to be discussed in a meeting last week, and some sort of decision is expected to be made before the end of the year.

Regarding the position in Eastern Europe, it's fair to say that their solvency margin requirements are pretty much nonexistent. As I understand it, there are some companies which are state owned which do not even hold reserves for their liabilities let alone, a solvency margin. Having said this, however, it looks as though there will be a number of changes in the near future with a shift towards the requirements that apply in the European Community countries. The Insurance Division of the European Commission is currently helping out the Polish and Hungarian authorities in actually working out their own legislation.

**MR. MCCUBBIN:** We're going to take a jump across the Atlantic and come to a more familiar country to most of you in the audience, the United States. Jim Reiskytl is currently Vice President for Tax and Financial Reporting with Northwestern Mutual, FSA, previous board member of this society, served on the Trustee committee which the U.S. actuaries will be quite familiar with, and is on the NAIC advisory committee on the Mandatory Securities Valuation Reserve (MSVR).

**MR. JAMES F. REISKYTL:** Since the U.S. minimum reserve and surplus requirements are well known to most of this audience, I will cover them briefly so as to insure a common understanding, and enable all of you to easily compare them to the others being presented today.

State valuation laws establish minimum reserves based on prescribed mortality or morbidity rates, maximum interest rates, that for each year of issue since 1980 are automatically tied to the bond index which keeps them in line with current economic conditions, and in many cases, the reserve method, and are never less than the cash values, if any.

The actuary must establish higher reserves if he feels that these minimums are inadequate. Each year, an actuarial opinion must be provided as part of the annual statement that identifies the reserves reviewed, states that they have been calculated according to commonly accepted actuarial standards, that they are at least as great as called for in any policy provision or benefit, that they meet the state law requirements, and that they make good and sufficient provision for all unmatured guaranteed obligations -- there is more to this statement but these are the key points for today's discussion. Note that the entire focus is on liabilities not assets!

A new model valuation law and regulations is nearing adoption by the National Association of Insurance Commissioners (NAIC), perhaps by June 1991, that incorporates a valuation actuary concept that has been underway for many years. This new concept would require the actuary to look at not only the liabilities, but also the assets that underlie them and to do cash flow testing in some instances. This would require that a statement from the actuary in a confidential memorandum be available to management and state regulatory authorities. Much has been done and some important details are still being finalized. At the same time, actuarial standards of practice are being

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developed. One critical aspect to be resolved goes to the heart of the statement -- Should the opinion cover "appropriate" provision, "adequate provision," or "good and sufficient" provision? After that's resolved and approved by the NAIC, it must be adopted by all the States -- that probably will take another four or five years -- and not to be forgotten, in the U.S. reserves and tax reserves are tightly interwoven!

The minimum surplus requirements vary considerably by state, from as low as \$200,000 in Colorado and Delaware, (plus \$400,000 in capital) to \$4 million in New York for all companies and in Rhode Island for domestics. Vermont's is actually the lowest I know of at \$150,000 (\$250,000 capital). Florida is the only state whose requirements increase with size at 4% of liabilities if greater than \$1.5 million. Requirements may vary for stock or mutual, domestic versus foreign, or by line of business (Life, Health, D.I.). Most states also have minimum capital requirements. My study suggests that these minimums, with very few exceptions, are absolute amounts.

### SOLVENCY

In the U.S., the states regulate life insurance companies and their solvency, not the federal government. The NAIC has developed an early warning system to assist the states in detecting and preventing insolvencies -- known as the Insurance Regulatory Information System or IRIS for short. This is really a solvency test, not a test of future economic health of the company. This IRIS system consists of two phases. The first is statistical, and the second, analytical.

In the statistical phase, 12 ratios are calculated each year based on key financial data compiled from individual company annual statements. These ratios were developed over a number of years to identify companies with conditions that are likely to produce future financial problems. A usual range of results has been established for each ratio based on empirical studies. If a company falls outside the usual range for four or more ratios, further analysis is required. In the analytical phase, a team of experts made up of examiners and financial consultants meets annually to determine which companies need additional scrutiny. They establish priorities; first, second, third, and no priority at all. The company state of domicile is then notified to follow up those with first priority with a supplemental examination, and if necessary, on site review.

These solvency tests are fairly good identifiers, having only missed four failures in the last five years. In fact, 40 of the 60 failures were identified three years before they actually occurred. Unfortunately, they also pinpoint hundreds of companies that aren't in trouble, diluting the effectiveness of this particular process.

The system has some practical problems according to a recently released ACLI report: (1) NAIC edits found 60% of the statements reviewed had errors that took time and effort to correct -- some deliberate to beat the IRIS test. (2) There's a great variation in timing and quality of state response to targeted companies. (3) It's voluntary in most cases. Only half the states have adopted this final act (1984 Model Act) -- nevertheless, over 99% comply, and only very small companies or companies operating in one state typically are not participating at this point.

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Empirical studies show four ratios to be most effective indicators: change in surplus to beginning surplus, operating gain to total income, change in total premiums to last years total premiums, and increase in life reserves to single plus renewal premiums. Four were questionable and four of limited use. The most meaningful ratios focus on significant changes (premium, gain, surplus or reserves) from year to year.

### RECENT EXPERIENCE

The NAIC July 30, 1990 report noted that ten life/health companies went insolvent in 1988 and 27 in 1989. The industry has averaged 11 multi-state insolvencies over the last five years and that's about 0.5% of the total 2,300 active life companies in the United States.

The upsurge was largely attributed to the escalation of health care costs and lower margins on interest-sensitive products. (Total assessments \$86 million annually = 0.05% of premium.)

The ACLI Task Force on Solvency investigated 68 insolvencies between January 1, 1985 and September 1, 1989, and found that they occurred in 24 states -- the most, 16, in Texas. The most common problem was affiliate transactions (ranging from the parent company charging excessive management fees to their subsidiaries, the parent taking funds and replacing them with worthless stock or heavily mortgaged real estate, to purported reinsurance with no risk transfer), a factor in 69% of the insolvencies. One line of business was cited as a factor in 60% of the insolvencies (78% of which were in A&H); underpricing was a factor in 59%, and unsound investments in 46%. It's noteworthy that general economic conditions only caused 13%.

Unfortunately, fraud has played a significant role in the last five years. The July 30, 1990 NAIC report notes, "Enforcement of insurance laws and regulations is one of the weakest links in present regulatory system . . . with little fear of meaningful administrative sanctions or criminal prosecution, there is no effective penalty for wrong doing and no real deterrent."

Another factor, of course, is the guarantee fund. Forty-seven states have a guarantee fund, covering their resident's life and annuity contractual agreements up to defined limits and two other states are pending.

As an example, California will become effective January 1, 1991. It provides 80% of the contractual obligations and puts some risk on the policy. It cannot be greater than \$250,000 in death benefit for one life, or more than \$100,000 present value of annuity benefit, or in total \$250,000 per individual. It also has a super maximum of \$5 million per policyowner, regardless of the number of policies. In addition, interest is covered up to Moody's Corporate Bond Yield Index less 6%, averaged over the last four years but not less than 3%.

Potential insurance insolvency in the United States has received a lot of attention lately. I'll just mention a few. The first is Congressman Dingel and the House Oversight Committee. They issued the report on "Failed Promises," primarily focusing on three property/casualty failures and are currently conducting hearings. The IDS position

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paper, "Will the U.S. Life Industry Keep its Promises. Solvency Issues in the 1990s," has been widely reported, particularly their comment that 20% of the major insurers are at significant risk. The ACLI has responded to this. Their task force report just came out in September, which was a detailed commentary on the various efforts and finally the NAIC solvency agenda, which has been going on for years, and it's the top priority issue of the new President of NAIC.

Just how well is the system working? My personal opinion is it's very good. It could and will be better, if many suggested improvements are to be implemented.

To be more specific, the NAIC, in 1989, adopted financial regulation standards for the states that define the minimum authority and resources needed to effectively regulate solvency. These standards cover three major categories: (1) laws and regulations (such as examination authority, capital and surplus, valuation of investments, CPA audits, actuarial opinion on liabilities, reserves, etc.); (2) regulatory practices and procedures (review of financial statements, resources to examine appropriately); and (3) organization (professional development, evaluation, etc).

To implement these standards, the NAIC has developed an accreditation process. First, each state is to do a self evaluation. Then, they may apply for NAIC accreditation. If they do, an independent team made up of academics, former regulators, and retired executives of insurance companies will review the department for each major area, and if they comply, they will be publicly recognized in a five-year accreditation.

Further, the NAIC December agenda reflects potential changes and their strong interest in solvency issues:

- o Possible new disclosure of the company's perspective on the operating results -- additional required annual statement footnote.
- o Model exam and exam processes -- exposed in October.
- o Risk-based capital -- concluded formulas are feasible for life and P/C that are preferable to current system.
- o High-yield securities -- have already acted in the MSVR to increase the bond category from four to six and tighten the requirements for high risk investments.
- o Sale of future revenues.
- o Credit for reinsurance.

The ACLI Task Force on solvency has also made a number of recommendations to improve detection and prevention of insolvencies as well as other recommendations, highlighting among other things, annual CPA audits and increased expenditures in the states to beef up the departments, that if implemented will improve regulation.

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Finally, summarizing from my personal perspective, I believe most of these recommendations are excellent, and they deserve further study and implementation, especially those used to determine fraud. If I were going to sum it up in a couple of words, I'd say we need to beef them up and speed them up and try to be as consistent as we can in this process. I believe that we should give some thought to risk-based assessments for the guarantee funds (that are being considered in other financial areas), and look at the California approach to co-insurance, which has great personal appeal.

**MR. MCCUBBIN:** It's obvious from the first three speakers, there certainly is variety in how solvency is handled in the jurisdictions. We've got some very established bases, particularly in the U.K. and U.S. as presented. Fernando Puente-Diaz is the Corporate Vice President for Planning with Seguros la Comercial in Mexico City. He's a member of the Association of Mexican Actuaries and has been involved in the work that's being done by the industry on solvency, and of course, evaluating his own company's position in that respect.

**MR. FERNANDO M. PUENTE-DIAZ:** First of all I would like to thank the Society of Actuaries for inviting us, the Mexican Actuaries, to your annual meeting to share with you the current Mexican situation.

During the past 18 months, Mexico has changed in all aspects, maybe more than in the last 18 years. One of the main changes is in the economy. Banks and government-owned industries are being privatized. The financial sector of the economy is suffering the greatest transformation in the modern history of the country. The financial opening has already begun. The insurance and bonding law has been modified as well as those of other financial intermediaries. Also, the formation of financial groups is already permitted.

On the other hand, talks have recently been initiated between the governments of the United States, Canada, and Mexico in order to establish a free trade agreement between these three countries. This free trade agreement will include some financial services, such as insurance.

All this has changed the insurance operation in Mexico. Before the amendments to the general law of insurance institutions dated January 3, 1990, the Mexican insurance sector was totally restricted and highly regulated.

Until recently, authorities tried to secure the solvency of insurance companies through its strict regulations including the establishment of official prices equal to all companies, arbitrary requirements of certain types of reserves, and other measures which severely restricted innovation and development within the industry. This scheme did not achieve its objective. In 1987, the first bankruptcy in the history of insurance in Mexico occurred.

The opening of the Mexican economy has made necessary the modernization of the regulatory system and of the plans necessary to warrant the solvency of insurance companies.

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Before going any further in explaining the Mexican solvency project, I would like to comment on the principle legal changes that occurred in January 1990 and give you some figures on the Mexican insurance industry, as well as comment briefly on the accounting practices and setting up of reserves, which are different from the United States.

### MAIN LEGAL CHANGES

The main legal changes recently approved can be classified into two groups according to their purpose: right of establishment and deregulation.

#### Right of Establishment:

- o The concept of "concessioned activity" is eliminated and replaced by "authorization." This will permit the entrance of more participants to the industry. By the way, in Mexico, there are only 43 insurance companies operating.
- o Foreign investment is allowed up to 49%, upon prior authorization from the Treasury Department or Secretaria de Hacienda.

#### Deregulation:

- o Prices are liberalized, permitting the insurance company to register its own prices, and a system of solvency margins is established.
- o The minimum capital to operate in the sector is increased.
- o Commissions are liberalized, permitting each insurance company to establish its compensation system within the maximums approved.
- o The requirement of prior approval of documentation, prices, advertising, opening and change of offices is canceled, establishing only the prior registration.

Although these changes are included in the new law, some of them are not operational yet because additional regulations must be issued by the Treasury Department.

### THE INSURANCE INDUSTRY IN MEXICO: HIGHLIGHTS

Total premiums in 1989 were \$2.5 billion, representing 1.3% of the gross national product.

The Mexican insurance industry covers practically all lines except workers' compensation and pension funds, which are covered primarily by the Social Security. There are no compulsory insurance policies of any kind, nor tax incentive to individuals on the purchase of insurance.

In Mexico, all insurance companies but one are multiline companies. Property and casualty represents more than 65% of the market's premiums and 75% of the life premiums are concentrated in six companies.

### RESERVING AND ACCOUNTING PRACTICES

At the time it becomes aware of a loss, the insurer establishes a reserve for incurred losses, whether paid or not yet paid. Once all obligations for payment on a particular

## INTERNATIONAL SOLVENCY REQUIREMENTS FOR LIFE COMPANIES

loss are satisfied, any excess reserves are released or increased if underestimated. There is no concept for incurred but not reported loss reserves.

Insurers track the ratios of investments to reserves to ensure adequate liquidity. An 85 to 90% coverage ratio is generally considered adequate because of several factors:

- o Unpaid premiums receivable are not included in investment. Premium financing is a widespread competitive necessity in the Mexican market.
- o Reserves reflect gross loss exposure while amounts receivable from reinsurers are a separate asset account.
- o Technical reserves include some mandatory ones which in reality form part of the company's equity.

### CURRENT SOLVENCY REQUIREMENTS

Article 60 of the insurance law empowers the Treasury Department to establish the amounts and calculation procedures for the minimum warranty capital. These solvency requirements mainly seek three objectives:

- o An adequate balance between the equity and the risks assumed by the insurance company.
- o Adequate underwriting and reinsurance practices.
- o An appropriate level of capital resources in relation to the financial risks assumed on the investment portfolio.

Also, when there is a deficit in the minimum warranty capital, the institution must submit to the authorities a regularization plan within a period of 15 days.

According to the foregoing, a system of solvency margins was designed including specific requirements for life, accident and health, property and casualty (separating automobile and earthquake from the other lines) and investment portfolio. The system is directed toward going concerns. For nonlife lines, except earthquake, the procedure establishes the application of two groups of factors to the annual premiums and to the average losses of the last three years (in real terms), selecting as solvency margin the greater. This is done line by line. These factors were calculated according to the Mexican experience of the last ten years and the desired confidence level. Due to the fact that our topic is limited to life companies, I will not enter into more details for nonlife and investment requirements, but if someone is interested, I will be glad to comment on these issues at the end of the session.

For life lines, there are various specific provisions:

- o The mathematical reserve for policies in force should be annually valued and constituted according to actuarial procedures.

## PANEL DISCUSSION

- o An independent actuary must audit the technical reserves and send the authorities the results of such research, establishing if they are adequate or not.
- o The new solvency margins scheme includes an addition to the mathematical reserve of 0.06% of the sums insured.
- o The insurance company must set a cumulative reserve which seeks to absorb the negative fluctuations in the technical results. This reserve is increased annually by 1% of the net life premiums and can be used only with prior approval of the Insurance Commission. This reserve is deducted from the solvency requirements previously mentioned.

As an additional comment, it should be made clear that the best selling life products in the Mexican market are the universal life type. However, there is no interest guarantee, but a percentage of the rate obtained by the insurer is granted.

### APPLICATION

Up to date, the reporting systems are not completely defined. However, it is expected that the calculations of minimum capitals should be made quarterly, and the necessary financial statements thereon will be prepared.

In the case of life operations, the sums insured shall be determined based on the actuarial projection for the current year, which should be rendered by the actuary responsible for the company.

It is also expected that the Treasury Department will create a special technical committee for the permanent evaluation of this solvency margin, which can modify the system in force.

### ASSESSMENT

This solvency system is totally new for my country, so there is no experience to date. However, the results of the surveys taken during the formula development show that it will be necessary for some medium and small size companies to either merge or increase their capital in order to continue operation.

### SOLVENCY REQUIREMENTS FOR BANKS IN MEXICO

Finally, I would like to comment briefly on solvency requirements for banks in Mexico. As you may know, in 1982, the banks in Mexico were nationalized. In April 1990, the government announced its intention to reprivatize them. To date, this is underway and we expect it will take 6-12 months to be finished. The current banking law, which I believe will change as the banks are reprivatized, establishes that a bank's capital and surplus will never be less than 6% of its assets.

MR. MCCUBBIN: I'm Horace McCubbin, Chief Actuary of the Canada Life in Toronto, an FSA, an FCIA, and fortunate, or unfortunate, as your perspective, to be part of the industry body and committee that was addressing solvency for Canada for the whole of the last five years.



## INTERNATIONAL SOLVENCY REQUIREMENTS FOR LIFE COMPANIES

### BACKGROUND

In Canada, solvency requirements for life companies are currently being introduced by the industry and the Office of the Superintendent of Financial Institutions (OSFI) the regulatory body in Ottawa. The background for these developments is as follows:

- o OSFI has an increased interest in solvency issues for life companies because of recent bank, trust, and property and casualty company failures and a sense of changing company surplus positions. The OSFI commissioned an independent actuarial study on solvency in 1985.
- o There was a perception by the life insurance industry of the need to introduce a consumer protection plan similar to those in place in Canada for banks and trust companies. The Canadian Life and Health Insurance Association (CLHIA), which is the industry body comparable to ACLI in the United States, initiated a separate study and developed a risk-based formula.
- o CIA undertook studies of the solvency questions in order to support the proposed introduction of GAAP financial reporting in Canada. It is a developing theoretical model to solvency measurement, rather than the formula basis as developed by CLHIA.

The present status in Canada is that the CLHIA consumer protection plan has, in fact, been introduced and has a formula based solvency requirement. The OSFI is expected to produce a regulatory requirement later this year, and the basis will be very similar to CLHIA's but more stringent, especially in respect to the available capital component. The CIA is expected to introduce an interim solvency testing approach in 1991.

Bases being adopted are essentially pragmatic, except for the mortality component. However, formulae were extensively tested for reasonableness by a number of surveys in the course of their development, and the results of those surveys prompted a series of revisions.

### DEVELOPMENT

In the early stages of development, the primary purpose of the solvency requirement was debated. The choice was between the early warning system and a wind-up basis. Both OSFI and CLHIA formulae provide an early warning system to identify companies that may be heading for some difficulty. The intent is to have time to work with the companies to modify their business plans and other conditions so as to continue as a viable operation. Reactions would be on a staged basis, becoming more severe as the formula indicated a worsening position.

In both formulae, a "going concern" concept was underlying the derivation of the factors. The factors recognized regular financial reporting requirements for Canada, including the reserving approach and assumed ongoing business plans.

The need for more specific measures of solvency grew out of an increasing concern for the viability of companies resulting from a changing environment:

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- o There was increased competitiveness, resulting in reduced margins, influencing companies to go into untried areas of expansion and there was changing in the corporate makeup of companies through the formation of subsidiaries. All these put additional strain on the capital and surplus of the companies.
- o There was a significant expansion of life companies into investment-related products, and this required the recognition of new types of assets and investment risks, specially disintermediation and mismatching.
- o In 1978, there was greater freedom given to the Canadian valuation actuaries to set the level of reserves that led to an overall weakening of reserves in the industry and a growing sense of concern on the part of the regulator. The proposed introduction of the Policy Premium Method of reserving under the GAAP financial reporting, may be effective in 1991 and that may cause a further weakening and obviously more concern.

### CURRENT REQUIREMENTS

The basic approach is to develop a ratio of available capital and surplus to surplus requirements, both terms being defined by a formula. Ratios approaching or falling below 100% indicate that some action needs to be taken. However, the trend in the ratio is as important as the absolute value in assessing company condition.

The required level of surplus is based upon the risk exposure of each company with factors having been developed for each type of risk and with these factors being applied to appropriate based statistics. It's important to recognize, therefore, each company's individual characteristics, such as its products and its investments. To the extent that the company actuary doesn't feel that a specific risk for his company has been adequately covered by the formula, there is to be a suitable adjustment made by him.

The risks which are addressed are mortality, morbidity, pricing, default, and disintermediation. A sample of factors from the formula follows:

- o On mortality, the factor is \$1.00 per thousand of net amount of risk for permanent coverages.
- o For default of A bonds, 1% of book value.
- o For disintermediation, 2% of reserves on 10-year GIC, and the list goes on.

Of fundamental importance is the reserve level reflected in the development of the formula factors. Since 1978, the Canadian valuation actuary has been charged with calculating reserves, using appropriate assumptions and a net premium method which allows for the deferral and amortization of initial expenses, subject to a 150% net premium limitation. Overall, the reserves calculated on that basis are appropriate and adequate, but certainly not unduly conservative. For the interest assumption to be appropriate, the actuary was required to recognize the assets supporting the reserves and make appropriate provision for default, disintermediation, and mismatching. The solvency formula factors assumed this type of reserving. The first question someone

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might well ask is, "Well, if you go to the PPM method in a year, what happens to the formula?" I can't tell you exactly, but I can tell you it will change.

The OSFI formula in respect of the "available capital and surplus" is consistent with that used for banks, at least in the general description. It uses what is referred to as a tier 1 and tier 2 approach for capital and surplus, tier 1 being readily available and tier 2 being less available, and in the workings of the formula, tier 2 has a maximum imposed upon it related to tier 1. The unappropriated surplus counts fully for tier 1, unrealized gains on stock are taken at 45% of their value and placed in tier 2, and similar gains on real estate are not counted in either tier 1 or tier 2.

As with solvency measurements for banks, OSFI was quite concerned with the double counting of the surplus in subsidiaries and with the validity of goodwill in a company's statement. To avoid the double counting, the regulator has required that life insurance subsidiaries and real estate subsidiaries be consolidated for purposes of determining the required and available surplus. The question of goodwill is handled really quite simply. The value is nil.

### APPLICATION

Obviously, as the regulatory formula from OSFI has not been conjugated as yet, the reporting requirements are not actually known. However, I fully expect that we will have an annual reporting along with the annual statement filing. I do not anticipate that the results of those tests will be published in either the annual statement to the government or the public statements of companies, but rather will be communicated in the Valuation Actuary's Report to the Superintendent in Ottawa. I further speculate that the various components of the formula will be filed, as well as the final result in order to allow more extensive analysis of the various trends. It is also quite possible that the valuation actuary will be required to certify the appropriateness and accuracy of those filings.

### ASSESSMENT

Not having been introduced, there is no assessment to date of the effectiveness of the formula suggested. From the surveys taken during the formula development by the CLHIA, the results were seen to fall over a sizeable range, and the components of the formula were indicative of trends within a company.

I would now like to turn to our last speaker. Henry Siegel is Vice President at the Equitable Life Assurance Society, an FSA, and has served in Japan as CFO for Equitable.

**MR. HENRY W. SIEGEL:** It's probably accurate to state that in Japan, solvency regulation is approximately where it was in the United States 20 years ago. While this is not unique for the world, for some it may be surprising given the huge size of the Japanese market and the reputation that Japan has for both strict regulation and high tech achievement. The complete state of affairs can only be understood in the context of the uniqueness of the Japanese environment.

At present, there are 25 life companies licensed to do business in Japan and another five foreign branches who are also licensed. This is in a life insurance industry where the

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premium is larger than that in the United States. The largest of these companies, as you may know, are huge. Even the smallest of the 20 domestic companies would be large by U.S. standards. Since World War II, there has never been an insolvency of a life company in Japan.

The Ministry of Finance (MOF) is responsible for regulation of insurance with considerable self regulation by the members of the Life Insurance Association of Japan (LIAJ).

Regulation in Japan is very much based on the "convoy" system. Everybody stays together, and everybody wins. I guess, you'd call this the "rising tide lifts all ships" theory. The principal goal of regulation is to assure that the guarantees made by life companies can be met, that is, that they remain solvent.

As a result of this desire to assure the well-being of all companies, there is very minimal product or pricing differentiation in Japan. In fact, major products are developed jointly by all companies through the committees of the LIAJ, and all companies must adhere to these standards. It's probably needless to point out that the combination of process and objective assures high profit margins for all companies, which limits, if it doesn't completely eliminate, the possibility of insolvency.

The product development process includes the development of standard reserve formulations for each product which must be adhered to closely by each company. These formulations are basically the same reserve factors we all learned back in life contingencies with Zillmerization allowed for fixed products. Most companies, however, are currently using full net level reserves due to MOF's, so-called guidance, that this is the goal for the industry. Valuation mortality is conservative, and interest rates range from quite low on participating products to as high as 6.25% on nonparticipating life products.

Cash flow testing, while beginning to become of interest for some of the larger companies who've been selling huge amounts of single premium endowments in the past few years and are now seeing them mature, has largely been irrelevant to companies which are trying to invest as much as \$100 million a day worldwide.

Furthermore, most of the products which have focused concerns on solvency in the United States do not exist in Japan. There is no universal life, there are no GICs and there are no SPDAs. The only truly investment-sensitive product currently offered is variable life without a guaranteed interest option.

According to Japanese insurance law, every company must appoint an actuary who is responsible for all reserve, liability, and premium calculations. The actuary must certify that all reserve calculations have been done correctly and meet regulatory requirements. The actuary does not, however, need to opine on the adequacy of these reserves, which is more or less taken for granted if the formulae are followed. Given the types of products issued, this has been, and continues to be, a reasonable assumption.

Reserves are calculated annually, although the Ministry of Finance requires submission of forecast results twice a year.

## INTERNATIONAL SOLVENCY REQUIREMENTS FOR LIFE COMPANIES

Until last night, my comments on the future were that I didn't see major changes likely in the Japanese system. Generally, the companies are satisfied with the current system and there's very little pressure, I thought, from outside to change it. Furthermore, the forces which have brought about changes elsewhere, namely the introduction of interest-sensitive products and a few well-publicized insolvencies, have not, and are not, likely to occur in the Japanese market any time soon.

Last night I learned, however, that outside pressures are in fact coming to bear on the Japanese market, and the Ministry of Finance, which also regulates banks and investment companies, has raised a very interesting question: namely, how come banks have solvency requirements and brokerages have solvency requirements and you guys don't? So there is now a committee in the Life Insurance Association of Japan working with the Ministry of Finance to study solvency requirements in Japan. They are thinking about reducing the emphasis on net level reserves, and in general trying to find ways to put a solvency requirement in place.

The end result of this undoubtedly will be, if the MOF wants it, solvency requirements in Japan sometime in the future. But since the companies, as I stated, and I think this is still the case, aren't particularly interested in it and the pressure is coming from outside, it will only come because those very same companies want to enter the banking and the securities industry and it's kind of hard to enter those industries and not have any solvency requirements on your own books.

MR. MCCUBBIN: We do have time for a number of questions or observations. Does anyone have a question?

MR. MICHAEL E. MATEJA: I'd be interested in the comment from Mr. Goford, about the record of insolvencies in the U.K. Has the Appointed Actuary or is the Appointed Actuary really worked to reduce the incidence of insolvency?

MR. GOFORD: There were a bunch of insolvencies around 1973 when the asset values fell. There was one company which bought properties in order to sell property bonds but bought more properties than it actually needed to cover the liabilities that it had. And then it started to sell income bonds instead of property bonds, and there was an obvious mismatch between the assets and liabilities. The property market crashed and that company went insolvent. All but one of those companies were picked up by other companies in the industry. One was allowed to go insolvent, that was Nation Life. The reasons why it went insolvent are now covered by the mismatch reserve, where you have to set up this additional reserve which has to allow for a 25% drop in equities and a 3% rise in interest rates. So, it works pragmatically. When there is a problem, Government Actuaries Department now will put out guidance notes as to the sort of reserves it wants to see to cover that eventuality. So it's certainly improved a lot since 1973, and with only 120 companies, the appointed actuaries are quite well known by the Government Actuaries Department. The Government Actuaries Department actually knows which actuaries need support in order to set up sufficiently strong reserves, maybe against the resistance of their management. Remember it is a personal appointment by the Board, being an Appointed Actuary.

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**MR. OWEN A. REED:** It's well known that the Japanese companies are fairly heavy into foreign securities. To what extent do the regulatory authorities monitor or control the degree to which they invest in foreign investments?

**MR. SIEGEL:** There are limits on the amount of foreign securities the Japanese companies can invest in. No more than 30% of the assets of the company can be invested in foreign securities.

**MR. W. PAUL MCCROSSAN:** My questions also concern the U.K. Appointed Actuary. The first has to do with the extension of the concept to property and casualty companies. Is it going to be fully enforced or is it life only? And my second question has to do with the expected future financial position of the companies. How are these reports working out? There seems to be considerable controversy, in Canada at least, about the ability of the actuary to comment effectively on the future financial position as well as the actual current position.

**MR. GOFORD:** As far as the Appointed Actuary role in the U.K. is concerned, it's limited to life companies. But there is a move by Lloyds of London to have what is called the reinsurance for closing or in effect the reserve at the end of the three year account, independently certified. This is because at the end of a three year account, the liability, which is unlimited in Lloyds, passes from one group of names or syndicate to another group. Whichever group thinks it's disadvantaged wants certification to make sure the reinsurance for closing is not too large or too small. There aren't enough property casualty actuaries to do the certification. That's the problem of doing it in the U.K., and that's also the problem here. I understand that in the U.S., there's a suggestion that there should be an Appointed Actuary system for property casualty here and it sort of started there maybe rather than on the life side. I'd be interested to see how that develops. On projecting the future, I think with the sophistication of the models that are around now, there's really no excuse for an Appointed Actuary not knowing the sort of scenarios which are going to cause him a problem with the portfolio and the expense level he's got and the sort of sales manager that he's got, which is particularly crucial. In making sure that he stays solvent, in the next three years say, it's his responsibility to say to the Board, "If your sales guy does this, then you'll need another five million. Where's it going to come from?"