1995 VALUATION ACTUARY SYMPOSIUM PROCEEDINGS

SESSION 7

Surplus Management

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SURPLUS MANAGEMENT

MR. GEORGE J. HEBEL, JR.: I'm a principal with Tillinghast in the Dallas office, and I generally consult to life insurance companies in the areas of financial reporting, reinsurance, mergers and acquisitions, profitability, and strategic planning. Bob Nelson is vice president and corporate actuary for Fortis Incorporated. As corporate actuary in a holding company, he focuses on both statutory surplus issues and asset/liability management related issues. Mike Zurcher is corporate actuary for Lincoln National Corporation. Among his responsibilities are Lincoln's internal capital formulas. Mike has been a participant, since its inception, in the industry group that was working with the NAIC on its risk-based capital (RBC) life formula. Mike Lombardi is a principal with Tillinghast and is life practice leader for Tillinghast in Canada. Mike provides advice to insurance companies in the areas of appraisals, asset/liability management, financial reporting, and strategic planning. Mike also is the appointed actuary for a number of companies in Canada and has been heavily involved in dynamic solvency testing. I'd like to just make a few comments here relative to why are we talking about surplus management. What are the environmental changes? What stimulated this level of discussion? I'll comment a little bit about that.

Afterwards I'm going to turn it over to Bob Nelson, who in the context of solvency and surplus requirements will be addressing issues related to appropriate asset levels, and the conceptual framework for risk capital. He will deal with specific issues related to RBC and surplus management and also comment on relationships with rating agencies. Afterwards, Mike Zurcher will then, generally and within the context of Lincoln National's capital management processes, discuss the development of capital management techniques and their uses; issues related to line of business allocations, and in particular, internal and external influences on those allocations that can be quite problematic. He will also link this up with rating agency issues and finally discuss some specifics on the issues of C-3 risks. Afterwards we will turn it over to Mike Lombardi, who will then address dynamic solvency from the Canadian perspective, in particular from the practitioner's perspective. This will involve comments relating to the environmental stimulus, management opportunities and reactions as a result of dynamic solvency testing, and contrasting the Canadian experience with what

may be developing in the U.S. After that, he will move on to issues related to raising and enhancing capital.

So why are we talking about surplus management and dynamic solvency testing? I think some of the reasons for this are fairly obvious to everyone. The industry has undergone some radical change. There have been a number of insolvencies; some have been very high profile. We have decreasing policyholder confidence levels. We have increasing concern from agents and investors. In some cases we've been perceived as having parallels with the savings & loan (S&L) industry. There's been pressure on profit margins. Some of this has come from increased competition. Some of this is developing from some management, operating, financial inefficiencies, changes in interest rates, and changes in default rates. We have regulatory pressures on capital. We have mutual companies that are trying to find ways to access capital. There has been an increase in activities related to mergers, particularly among mutuals, and finally we have increasing rating agency scrutiny and its impact. So, really we have a number of elements that are causing managements to basically review and reflect on how to deal with their limitations and inefficiencies, as they can identify those.

So what do we mean by surplus management issues? My perspective is, it's a balancing for the need for growth, which eats up capital, with the need to maintain a level of financial strength. In many cases, this tends to focus management on dealing with how to essentially raise capital or deal with the inadequate capital, and also deal with underutilized capital. In relation to both of those, you sometimes get into internal allocation issues, which we want to talk about later. So I think in summary, I guess one way to put it is that capital management itself requires the integration of financial management with strategic and operating management as a base for assessing current capital issues accurately: measuring the requirements and developing availability of necessary funds.

However, I think it's critically important that the right issues be addressed when dealing with capital management. Is it really the need for more funds to finance profitable growth? Or, is it the need to find funds to overcome operational inefficiencies, expense overruns, or other problems that have not yet been identified by management? What are the practical or related implications of surplus management issues? We're not going to get into all of these. One issue we will deal with is how is

capital raised or increased. What is the cost of capital and thus the required return on capital, and the determination of appropriate levels of capital overall for the organization? And then again, we'll discuss internal allocations. So I guess another way to summarize is that, in general for an organization, the capital management or the planning process involves maintaining an appropriate integration between required capital, growth, profitability, value added, and ratings.

MR. ROBERT A. NELSON: Let me begin by saying that I've always considered this a topic about capital and not about surplus, but I'll try to honor the statutory accounting rules and say surplus as often as I can. The basic agenda I want to present to you is to come up with an objective for what the practice of capital management or surplus management is all about. I want to give you an idea of the conceptual framework that I employ as corporate actuary of Fortis, and then get all the disclaimers in about best laid plans, practices and purpose. The starting point from my point of view is, what's the objective? I think traditionally this has been covered by taking the asset, subtracting away the liabilities, and the question is what is S. What is the surplus supposed to be? I find this an ineffective way of approaching the problem. I think a better way is to say, don't do the rearranging of terms, assets equal liability plus surplus, what are the assets supposed to be? What I do is, I ask you in your intuition, to think how it doesn't really make any difference what the arbitrary split is between liabilities and surplus. It's just whether or not there's enough assets to make good on the promises.

I sat in on a session at this symposium about changes in nonforfeiture law and reserve requirements. They're talking about the formulas that get applied to promises that have already been made. Changing the formula doesn't change the cost of those promises. Those policyholders are not going to be more secure by having higher reserves and liabilities, unless there's more assets to go back with it. It won't make any difference. So like I say, I tend to look at this as an asset problem and a capital problem, not really a surplus problem.

In order to start the whole discussion, you need some conceptual framework from which to begin. Now in the phrase risk-based capital or surplus, questions that come to my mind are, whose risk, whose capital, and just what do we mean by risk? I'll try to answer the questions that I see from the

rating agencies point of view of whose risk? The NAIC's risk is policyholders, but it's also state guarantee funds. The NAIC doesn't particularly care about shareholders. Whose capital? The NAIC says it's the policyholders' capital, if they're interested. In my role as the corporate actuary of a stock company, I can't only pay attention to the policyholders. I'm also trying to perform a function for the stockholders of the company. I have to look at their risk and look at their capital. The definition of risk has to do with uncertainty. Any place there's uncertainty in the future cash flows, there is a risk. Whether we can measure it or not, it exists.

The way I try to approach this problem is by using the prudent man concept. I try to ask myself, well, what level of capital would a reasonable and prudent man need to run the business? In that regard, I'll give you an analogy. Imagine that each of us was considering starting a restaurant -- not an insurance company, they're way too complicated. Being good students and strategic planners, we'd sit down and ask, what are we going to need capital for? We decide we need a lease. We're going to have to buy tables and chairs. We're going to have to put in a kitchen. We'd start writing down dollar amounts next to each one of those: $300,000 for a lease, $250,000 to redecorate the place. If we were particularly good, we'd also say, well how much cushion do we need for working capital? Well, we want to have about $50,000 so that we can pay our suppliers and our vendors. If we were even better, we would take a look in the neighborhood we're opening our restaurant and say, hey, do you know what, the summer is a bad time. There is not much restaurant business in this neighborhood in the summer. We better have even a little more money to cover us through that period. Now if we decided that we should have $50,000 to make it through the summer, that's a real good indication of what our level of risk is. Because the next gentleman may tell you, no, that it's too likely that that's not going to be enough. I want $100,000. Neither answer is right. Those answers really reflect the risk profile of whoever is answering the question. If you want to make sure that that restaurant doesn't go bankrupt, start with $10 billion. I guarantee you, the restaurant will not go bankrupt.

Why not use $10 billion? Well, there's a good reason, and it has to do with the cost of capital. I want to explain the relationship between leverage and the cost of capital. For an insurance company leverage may not be obvious to everyone. In a manufacturing concern, we are talking about the

amount of public debt issued, or bank loan. But I submit to you that an insurance company very much has money that it has borrowed. It has borrowed funds from policyholders. Nothing could be more striking than an annuity company that is paying interest to policyholders. This is a loan. The cost of capital curve looks the same for every business. For a while, without any debt, all the capital requires an equity return. As more debt is taken on, which will have a lower cost than the equity capital, the cost of capital decreases. There does get to be a point in time, however, when the firm is overleveraged, and the curve is going to start taking off.

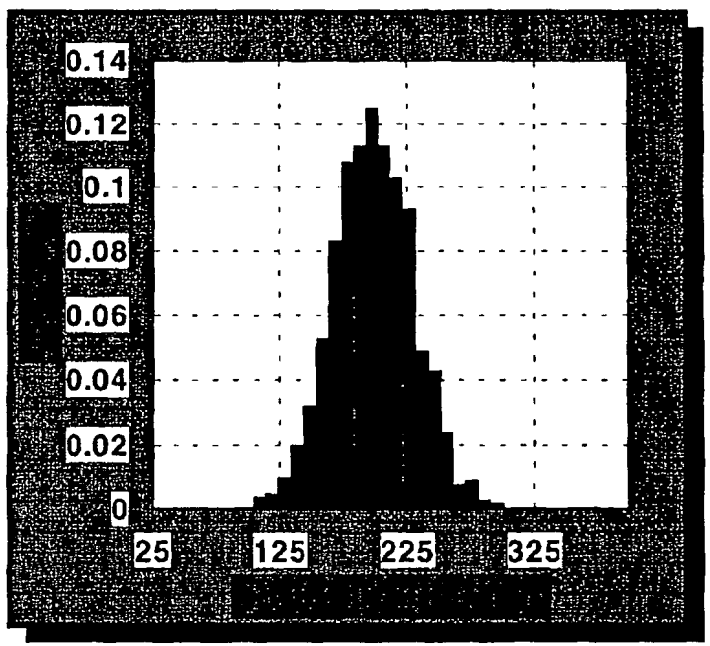
What does overleveraged mean? Well it means something different for every line of business, for every type of business. How much leverage a group can stand has to do with the types of bad luck that can occur. In insurance, these are the standard four ways that we categorize bad luck: underwriting risk, investment risk, marketing risk -- most of us are in a situation of prepaying for the policies that we acquire -- and general business risk.

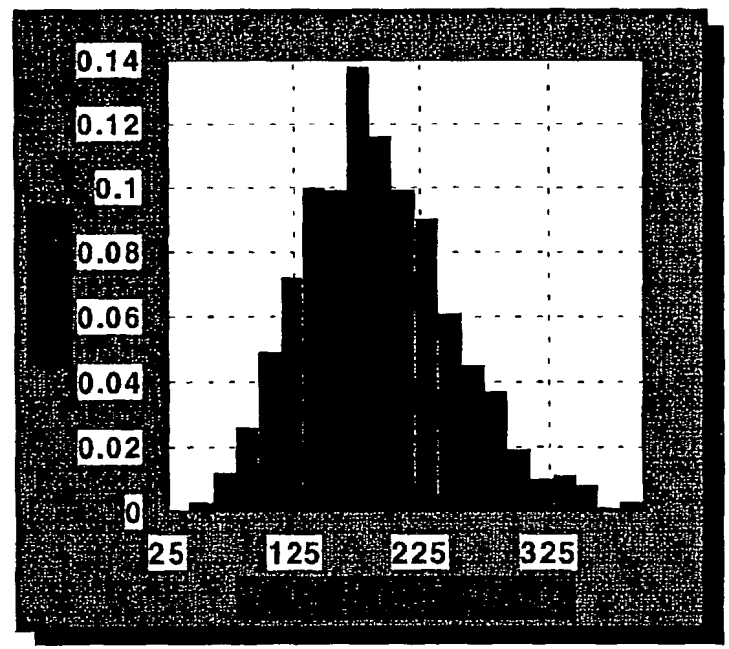
Let me talk a little bit about underwriting risk and how I've tried to approach it, as I try to solve these problems. One of the things that I recognize is that it's volatility that creates the need for risk capital. Chart 1 shows a couple of graphs of volatility. When I model a line of business (this happens to be for a health insurance line), I try to predict how much surplus will be needed to reach a certain level of prudence, I try to recognize that the different lines of coverage have different volatilities. The charts depict two types of medical insurance and their underwriting volatility. The one on the left is an indemnity coverage, typical of a policy that pays $100 a day of coverage in the hospital. The one on the right is fee-for-service; there are a lot more variables than the one on the right shows. What will the monthly reported losses be? There are going to be way more swings, if you're dealing with the fee-for-service business. What I do is I create models that permit the losses to vary every quarter. I generate these patterns of losses by passing incurred through a stochastic process.

There are also investment risks, and specifically investment risks have to do with the type of assets. The two most prominent in our business are credit risk and liquidity risks. This is something common in banking, to try to evaluate what liquidity and credit risks are. I think common practices try to understand those and then express them as a percentage of the market values. I'm careful there about

CHART 1

Underwriting Risk
Volatility of Reported Losses



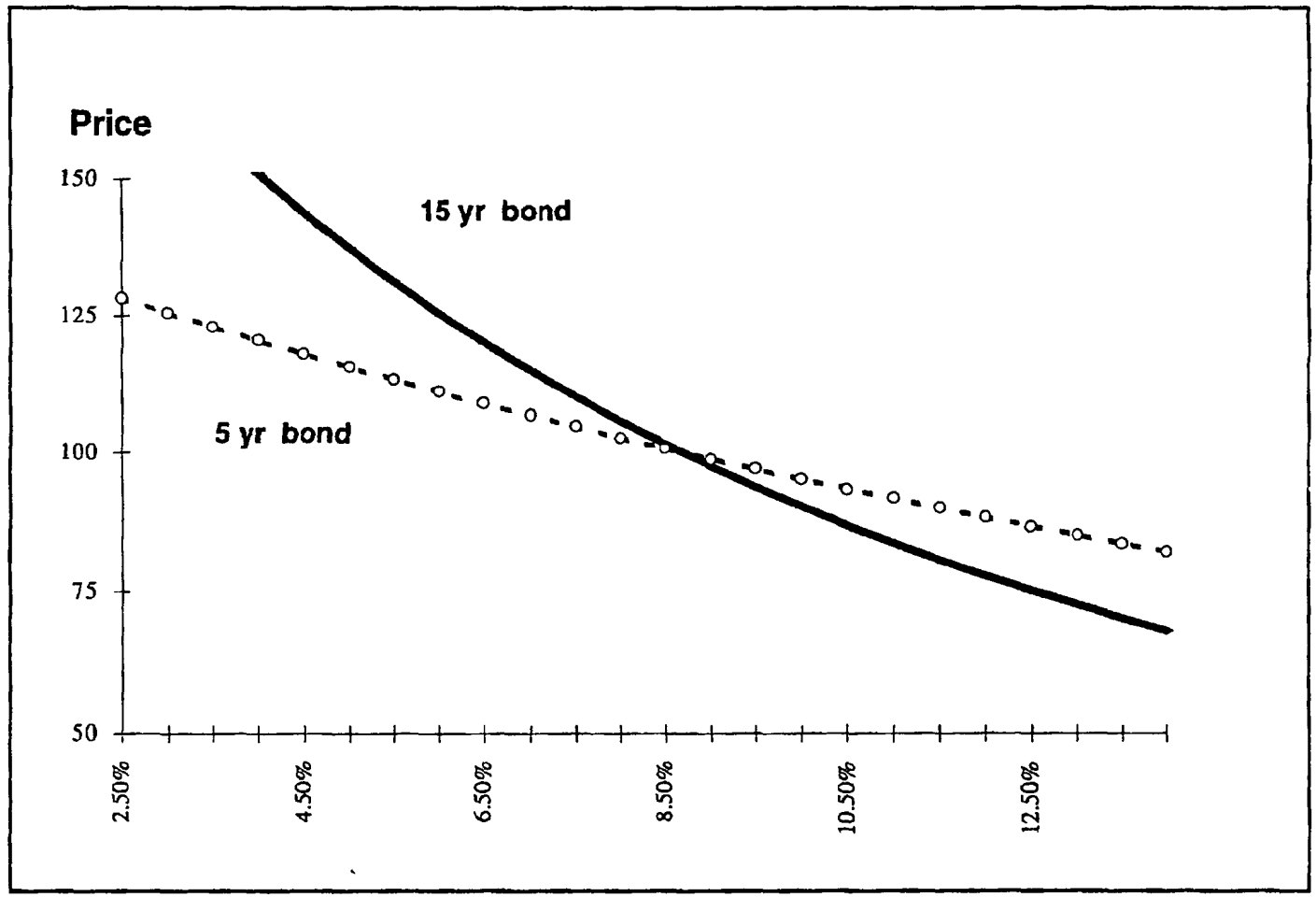


Two insurance policies, each with the same expected claims, but one is a fixed indemnity (life) policy, the other is fee for service.

CHART 2

Interest Rate Risks Can Be Managed by Prudently Selecting Assets

Different bonds have different prices for different interest rates.



market values, not book values. The volatility of the cash flows is going to be more related to the market value, than it is to any historical or book value. Chart 2 shows interest rate risks, and I may be boring you a little here with too basic information. It's important to remember that different types of assets have different types of price behaviors with respect to interest rate movements. This is interest rate risk, not default risk. All I've done is just try to graph out for you that the difference is striking. This is the price of either a 15- or a five-year bond as we move across interest rates. The most striking thing is, they have radically different curves. What I've done is kept the 15-year bond curve on there and drawn in an approximation for what a callable liability looks like and it's price behavior. The big difference between the bond and the callable liability is, the callable liability is never going to go much below $100. As long as people have the right to get their money out for $100, the fact that you did a calculation that showed it was $74, doesn't really matter. It's worth $100. That little straddle can be very problematic.

Now let me talk quickly about the RBC formulas that I've seen and how they try to quantify these elements. Once again, from the NAIC's point of view, the issue is the security of policyholders. The NAIC is concerned with the state guarantee funds and its solvency. The guarantee funds are okay even if every dime of surplus is gone. As long as all the policyholders were paid, the commissioner did his job. The other rating agencies like Standard & Poor's, and A.M. Best tend to be consumer advocates. In general they view solvency from the point of view of a purchaser of a policy in the company, but not necessarily from the point of view of a shareholder thinking about buying the company's stock. Well, if they don't have the same point of view as stockholders, why even bother to look at them? The answer is because a lot of very bright people helped make those formulas. They've already been able to identify some key characteristics and some of the key levers involved in the risk; plus it's a good way of getting an idea of what the relative risks are, at least by other educated people looking at the problem, product by product. You can benefit from looking at how they pictured the relationship among investment risk, credit risk, interest rate risk, and underwriting risk. Last but not least, most of these people have gone to some length to quantify the relative risks inside an investment portfolio. It's probably more than the people in this room are up to doing, coming up with haircuts and capital requirements by different asset classes. It's really not our training, and there's a wealth of information about it in other disciplines.

But while you can take a look at what these people say, you have to be careful not to be dictated by their point of view. Because if I could make one point, it would be that, it's very important for each of you to assess what the correct surplus level is for your company. Don't cede that responsibility to the NAIC. Don't cede it to A.M. Best. My reason is twofold: one is strategic and one is practical. The practical one is shown in Table 1. The difficulty is that these other people don't all agree about what the level of risk is. Even worse, they don't even agree in the sense of whether S & P or A.M. Best is always the most conservative. They assess things differently, and they'll come to different conclusions than perhaps you or I would.

TABLE 1

Target Surplus Comparisons

Company	Measure	Computed Assets	Target Insurance	Surplus Total
A	S&P	7.8	94.3	102.1
	RBC	2.7	103.1	105.9
	Internal Factors	20.0	139.7	159.8
	Actual			122.8
B	S&P	11.8	114.3	126.1
	RBC	23.6	99.8	123.4
	Internal	26.5	191.8	218.3
	Actual			221.0

The second reason is the strategic reason. The need for surplus arises from the volatility of cash flows. The more volatile those cash flows are, the more capital a prudent person would want. When you see the formulas from A.M. Best and then you see the formulas from S & P, Moody's, and the NAIC, remember that what they're doing is giving you a cookie cutter and that cookie cutter is based on averages. On average, this is reasonable. When they tell you that the factor for health insurance is 17% of an annual premium, they mean "on average." What I submit to you is that, if you have good factors, that are based on your own experience and your own ability to manage, if you are good at providing medical insurance, your volatility should be less or your operating margin should be

higher. You should need less capital than average. If you're not so good at it, you're going to need more capital. This is an important tool, because if you've done the assessment, you can help focus other people in your company on what they aren't very good at and what they are really good at. Identifying strong product lines is a natural result of the assessment of capital needs by product line. If you've developed some of this discipline of making your own assessment, then I think you become a very valuable member of the strategic team. On the other hand, if what you do is parrot what A.M. Best says you need for an A rating, then you are not really helping the organization identify its strengths and weaknesses.

So after looking at the work of other groups, you can walk away with a couple of things to help guide you in this search for your own internal surplus factors. First, they can form the template for your own factors. They can help you see how your capital requirements compare to other people in your industry. You can, after doing that, establish target levels for all your product lines. You can also apply those same factors that you have to competitors and see where they stand. Last but not least, as long as they're your own, you can change them as often as you like, reflecting changes in the environment around you.

MR. MICHAEL L. ZURCHER: My contribution to the panel will be a discussion of a few practical issues that I have had to address in recent years related to Lincoln National's capital management and allocation process. I have been a participant for some time in setting Lincoln's risk capital formula. I have also been involved since its inception with the industry group that recommended the initial NAIC RBC formula in 1991. From these and related experiences, I have gained some insights as to the development of risk capital standards and their application. As a practitioner, the primary insight I have come to appreciate is that the more I know, the more I know I don't know. Despite all the progress that has been made in recent years related to these formulas, using them in the day-to-day management of our companies still requires as much art as science.

Lincoln National and its subsidiary life group has been using a risk capital formula since the late 1970s. It was originally developed to provide a risk-needs measure to compare against actual statutory capital. Such a comparison helped us, as a stock company, to identify available capital for

shareholder dividends and business growth, as well as any shortfall requiring an infusion of capital. The formula also quickly became the basis on which capital was allocated to business lines for product-pricing and performance measurement. Let me call the level derived from this internal formula the capital risk target as it is used to identify minimum company-level capital needs based on risk analysis techniques. As Bob mentioned in his discussion, this target reflects the company's own view of its risk profile.

The formula successfully served these two purposes until the early 1990s when insurance company solvency issues became front page news. Suddenly, not only did the NAIC get into the RBC business, but the rating agencies also began touting their own formulas and made them the centerpiece of the capitalization component of their rating processes. We, like many other companies, were faced with the fact that the capital formula we had developed internally was at odds with external rating agency and NAIC formulas.

As Bob mentioned, you can't cede the responsibility for setting risk standards to the rating agencies. Clearly, to maintain a desired rating classification you cannot ignore their capitalization thresholds. The trouble is, each rating agency's threshold is based on a different formula structure and is elusive to identify; in part because capitalization is only one component of a rating decision, albeit an important one. You will probably have to talk to the rating agencies to get a feel for their thresholds, then apply some good judgment taking into account the accessibility of additional capital. Ultimately, your judgment may be validated only if the company bumps up against the threshold, and you are so informed by the rating agency. I will call the capital level judged to satisfy ratings considerations as the capital rating target.

Specific factors within your internal risk formula, based on information and models not available externally, will differ -- both higher and lower -- from rating agency factors. C-3 risk factors are the most obvious of these. Similarly, the internal formula aggregate target will be higher or lower than targets from the rating agency formulas. Recognizing the desire to maintain a particular rating, our true aggregate capitalization target thus becomes the greater of the risk target and rating target.

Currently, our rating target is in excess of the risk target. Thinking back to the two purposes of our formula, using the rating target will satisfy the first purpose, which is to define the overall capitalization target of the company. The second purpose, however, allocating the overall target capital to business lines, is no longer satisfied because the risk and rating targets are out of synch.

So, what alternatives do you have in allocating capital to the lines when your rating target is in excess of your risk target? I believe three basic tenets of any approach are fairness, risk control, and maximization of value. A corollary conclusion is that the approach should allocate at least the risk level of capital to every line of business.

One approach is to use the external formula on which your rating target is based. If your rating target is 200% of the NAIC formula, then allocate based on 200% of the NAIC. My concern with this approach is that if a given external formula factor is out of line with your internally measured risk, the related line of business bears the brunt of the inconsistency, leading to inappropriate pricing, performance measurement and strategic decisions. This approach potentially violates all three tenets.

A second approach simply pro-rates the excess using your internal risk formula. If your ratings target is 20% greater than your risk target, then the allocation uses 1.2 times your internal risk factors. This approach has some appeal because of its simplicity and apparent fairness to all lines of business. However, it is not clear that the company is maximizing its value through this approach. A key role of company leadership is to manage its portfolio of businesses to maximize value within appropriate risk considerations. In this light, a pro-rata approach may be less than optimal.

A third approach is to use your internal factor-setting methodology, but increase each risk's percentile protection level until in aggregate the appropriate rating target is reached. Although I have never tried this approach, it should produce better allocations than pro-rata. However, it will probably be difficult to consistently adjust all the factors to the higher percentiles.

A final approach I will mention starts with allocating the risk level of capital using the internal risk formula, just like the pro-rata approach. The excess of rating over risk capital is then fully allocated

to the lines at management's discretion taking into consideration anything they wish. Presumably though it would include items such as product and investment market conditions, regulatory environments, distribution systems, and fixed and variable expense structures. The idea is that the strategic allocation of the excess permits the company to maximize its aggregate return on capital. This approach may have some risk in that it requires the company to interject a different and perhaps untried set of skills.

Potentially underlying all these approaches are allocations where the company-level internal target includes a covariance adjustment. That square root can really complicate things when it comes to allocations. While the consideration of marginal capital factors are relevant in managing your company-level rating targets, their use in allocating to lines of business are questionable. I do not believe covariance-based marginal allocations are appropriate because you are always dealing with the chicken and egg question. A company with relatively high C-1 and C-3 risk will have C-2 marginal capital appearing inexpensive. But is it fair to allocate capital to the C-2 line using a low marginal factor?

In this case, C-2 capital is cheap only because the C-1/C-3 lines blazed the trail in the past. Shouldn't these C-1/C-3 lines reap the benefit of the covariance adjustment instead? There is no clear answer. I think most companies that are using a covariance-adjusted target prorate the adjustment across all risks in their allocation process.

I have one more comment related to the rating agencies. It is worth your time to understand how each rating agency has interpreted and applied your data within its formula. Believe it or not, they do make mistakes. Rating agencies may make adjustments where company-specific risk is clearly inconsistent with industry average risks. Let them know when your company does not fit the industry norm, the average Bob was talking about, and when the industry norm itself is out of line.

I would now like to turn to a few items related to setting C-3 risk factors that we have had to consider recently. Our approach in setting these factors has been to annually evaluate the risk profile using the current asset/liability mix and interest rate environment. The basic methodology entails

running a large number of randomly generated interest scenarios and for each scenario, determining the amount of capital needed at time zero such that the accumulated statutory earnings at all future years remain non-negative. Ranking the results from all the scenarios provides factors at different percentile levels.

The first item is related to your starting interest rate environment. In the last couple of years there has been more volatility in interest rates than at any other time we have been using this C-3 process. The starting environment is a major factor in any risk analysis. Using volatile starting environments from year-to-year in the C-3 analysis results in volatile C-3 factors. This in turn can play havoc with pricing and planning functions. We are now using a longer-term average yield curve as our starting point rather than the current curve. This mitigates annual changes to the C-3 factor other than from the changes in asset/liability relationships.

Another item has to do with new business commingled with in-force business. There is always an issue as to whether new business should get the same C-3 treatment as more mature liabilities when the supporting assets end up commingled in the same portfolio. The new business might be priced assuming a different investment strategy than actually employed for the larger in-force portfolio. In reality, that new business strategy may be overwhelmed (and perhaps lost) by the sheer mass of the in-force assets. This issue is more visible when in-force asset/liability management has resulted in high C-3 factors. I feel it is dangerous to anticipate a strategy that cannot actually be tracked once the assets are commingled -- especially if the portfolio is actively traded.

Another consideration is whether you treat new business in your analysis. We have always developed our risk factors based on in-force business only. If new business is always anticipated, it is easy to become addicted to relying on new business cash flows to fund near-term liability obligations, masking the true risk profile of the assets and liabilities.

The final item relates to the complexity of today's models. In some sense, the increasing sophistication of asset/liability models places more and more dependence on the assumptions underlying them. This is especially true as the assets and liabilities themselves have become more

complex. The models and assumptions recognize interest sensitivity for both assets and liabilities. For example, the liability side requires lapse assumptions while prepayment assumptions for mortgage-backed securities are needed on the asset side. Thus, we capture the first order effects of interest-rate risk in the models. But what about assumption risk? What if our assumptions themselves prove to be significantly in error? We all realize this potential exists for lapse assumptions, but the same is just as true for prepayment assumptions. It is important to perform sensitivity tests related to these types of assumptions so as to understand the associated sensitivity of the C-3 factors.

While I do not have time to discuss them in any detail, I want to mention a couple of other risks that you likely will have to think about soon if you haven't already. Variable or separate account products are becoming a more significant component of many product and asset portfolios. Risks related to these products are often dismissed because the "risk resides with the policyholder." While this is largely true, at least as it relates to C-1 and C-3 risks, other risks such as expense, financing, persistency, guaranteed minimum death benefits, and asset guarantees need to be considered.

International risks such as currency, sovereignty, and data quality are a second category of risks that are relatively new. Do we really understand these risks, at least as they relate to capital standards?

Having listened to my presentation, you probably have a sense of the many things yet to be learned. As we proceed into the future I look forward to working with many of you and especially your ideas in trying to solve some of these questions.

MR. MICHAEL LOMBARDI: In the first part of my presentation I will review the Canadian dynamic solvency testing experience, starting with some background on the Canadian regulatory environment. Then I will be moving on to any lessons learned, particularly as they may be relevant to the emerging situation in the U.S. In the second part, I will review the practical issues facing an insurance organization, whether Canadian or American, that needs to raise capital or enhance its surplus position. I will cover the various options available as well as review briefly the advantages and disadvantages of each approach.

Let's discuss dynamic solvency testing and the regulatory environment. As most of you know, the Canadian regulatory environment is a little different from the more familiar American environment. To better appreciate the Canadian dynamic solvency testing experience, it is important to understand the context under which it developed. In contrast to the U.S., solvency regulation in Canada is primarily at the federal level, through the Office of the Superintendent of Financial Institutions, commonly called OSFI. There is one set of financial statements; that is, Canadian GAAP and Canadian statutory financial results are identical.

With respect to reserves, there are no mandated regulatory reserve assumptions. Rather the appointed actuary must each year review emerging experience and establish best estimate assumptions. Plus within prescribed minimum and maximum values, for a suitable margin for adverse deviation, the method since 1992 has been a gross premium valuation method known as the policy premium method or the PPM. Coincident with the introduction of PPM, a whole package of changes was also introduced. The actuary was given legal protection from prosecution, so long as he or she is acting in good faith. A surplus formula was introduced called the minimum continuing capital and surplus requirements (MCCSR). This formula while structurally similar to the RBC formula later introduced in the U.S., includes different C-1, C-2, and C-3 factors. It does not include C-4 and is strictly additive; that is, there is no covariance or square root refinement. Finally there is a requirement that the actuary conduct an annual investigation into the future financial condition of the company and report the results to the board of directors, a dynamic solvency testing process.

The process of dynamic solvency testing involved the building of a simulation model to project the company's total operations, including future new business, under a variety of scenarios reflecting differing future experience. The scenarios studied include a base scenario consistent with best estimate assumptions. Other scenarios include several that are based on those suggested in the Canadian Institute of Actuaries Standard of Practice. Each scenario involves changing just one assumption at a time and projecting the outcome, including the effect of any associated changes in reserve basis. It is also recommended that the actuary examine the impact of combination of risks and additional company-specific scenarios, selected to further investigate variations to which the company may be particularly sensitive. Currently no opinion needs to be given on whether the

investigation demonstrates a company is in satisfactory condition. However in 1997, this will change, and actuaries will begin to express public opinion on their company's future financial condition.

What are the common themes and lessons emerging from the dynamic solvency testing experience during the last three years? Here are some do's and don'ts. Don't try to build too complex a model. Where warranted, use shortcuts and reasonable approximations. Be aware that company plans do change during the year. Make sure your results are still relevant. Get expert advice when you find yourself outside your area of expertise, especially for when dealing with noninsurance subsidiaries, foreign branches, and complicated assets. Finally, don't overwhelm the board with statistics. Stick to executive summaries.

What has been the impact of dynamic solvency testing? Several changes have been observed as a result of the dynamic solvency testing process. Business plans are now prepared in a more disciplined, consistent manner, throughout the company. There is a greater understanding of how the company operates and its inherent risks. The actuary is brought into the corporate planning loop much earlier and more completely, resulting in better communication between the actuary and other areas of management. By its early identification of potential problems, dynamic solvency testing buys the company more time to arrange alternatives. Occasionally, dynamic solvency testing analysis has demonstrated that a currently unsatisfactory situation will become progressively worse, thereby initiating or even accelerating plans to exit a line of business or territory, or even to sell the entire company.

I'll turn to issues now. The dynamic solvency testing experience has created several issues and concerns, some of which remain controversial and perhaps U.S. actuaries may soon inherit. First of all, there are broad standards. The dynamic solvency testing standard of practice is too broad, consisting of only a few pages. While some actuaries feel that this is adequate, others feel a need for much greater guidance for such items as selection of plausible assumptions or specific asset default parameters would be appreciated. How do we reflect the impact of corrective action? What is the best way to factor in management's likely response? This is a very thorny issue. On the one hand communicating the results of an adverse projection that ignores the mitigating effect of corrective

actions, such as changes in dividend scales or perhaps crediting strategies or product pricing, can generate results that appear catastrophic or at best, perhaps unrealistic. On the other hand, assuming that management will always take immediate and effective action to completely neutralize the scenario may mask the seriousness of the risk. A middle approach is where the actuary assumes there is some delay in implementing necessary change or that there will be an inadequate response by management. Even if the approach is fully disclosed in the dynamic solvency testing report, and depending on corporate culture, this may require a certain degree of courage by the actuary. Although the original audience for the dynamic solvency testing report was the board of directors and the company management, a widening audience of third parties, has unfortunately become increasingly interested in seeing the reports. OSFI, the federal regulator, now demands to see a copy of the report within 30 days of its finalization. Auditors and rating agencies are also making increasing requests to see the results of the dynamic solvency testing investigation. There is increasing concern about the disclosure of proprietary information, possible misinterpretations and the need to preserve confidentiality. This is resulting in a greater temptation to streamline or sanitize the "official" dynamic solvency testing, supplemented perhaps by private internal correspondence with management.

To whom is the appointed actuary most accountable? Is it to shareholders, to management, to regulators, to policyholders, or maybe to the general public? In the Canadian context, these distinctions are less clear-cut or mutually exclusive then they would be in the U.S. Although it is true that the appointed actuary is employed by the company and is often a trusted member of its senior management, it is also true that he or she has been entrusted with certain regulatory responsibilities.

Legislation also exists to facilitate this regulatory role, including immunity from prosecution, when the actuary is acting in good faith, a legal right of access to corporate plans and other information required to perform his or her duties, and the obligation by each of management and the appointed actuary to explain to OSFI the circumstances surrounding dismissal or resignation by the appointed actuary.

Now we get to one of my favorites, public dynamic solvency testing opinion. Until 1997, the work of the appointed actuary includes no public dynamic solvency testing opinion. As that year

approaches, a number of actuaries are becoming increasingly concerned. Unlike rating agencies, which have refined rating categories, the actuary's proposed opinion will be of the either/or type. Either the financial condition is satisfactory or it is not. A negative opinion, by starting a run on the bank, could result in a self-fulfilling prophecy, where no opinion or a more qualified opinion might have allowed the company to work out its problem.

The legal protection for the actuary, acting in good faith, unfortunately does not extend beyond Canadian borders. The Confederation Life insolvency and the cross-border lawsuits that have been generated have had a sobering effect on some appointed actuaries. Even if legal protection were absolute and all court challenges were won, the legal costs associated with defending any and all aggrieved parties may ultimately negate the benefit of this protection.

Last, I have the "none of our business?" issue. Is an opinion on the insurance company's future financial condition within the realm of actuarial practice? Some would argue that while actuaries can and should make conditional what-if types of scenario assertions, they have no business making statements that go beyond the realm of actuarial science. The analogy that's been given is, if it rains tomorrow, I should bring an umbrella. If it snows, I should get some boots. But I can't tell you what the weather is going to be tomorrow. Others, on the other hand, claim that the Canadian Institute's guiding principles, which require it to put the public interest ahead of the interest of its members, argue strongly for an expression of opinion from those more qualified to do so, rather then leaving the public confused by assessments from less informed or less qualified sources. I'll leave it to your imagination who these may be.

Further it is claimed that this is not a big step after all, since the public rightly or wrongly currently perceives unqualified statutory reserve opinions as an assurance that the company's position and condition is satisfactory.

Will dynamic solvency testing follow a similar course in the U.S.? This is a good question. Given the conditions under which dynamic solvency testing evolved in Canada, its course of development in the U S. will most likely not follow the same path. Dynamic solvency testing in Canada is just one

part of an entire regulatory package. In the U.S. it seems it will be an add-on patch to what may already be a very burdened financial reporting system, or so I am told. Canadian regulators have managed to remain largely nonadversarial in their relationships with the insurance industry and vice versa. Also Canadian society, perhaps because of a much lower per capita ratio of lawyers, is not a very litigious society. These statements are less true of U.S. state regulators, insurance industry, or society. The appointed actuary in Canada enjoys some legal protection, when acting in good faith, and has generally felt less inhibited in voicing opposition to management action that may be contrary to policyholder interest. Finally, in the U.S., the loyalty of the company actuary is more closely aligned with management than with regulators, and the roles are more clearly delineated. Regulation is seen as a concern of regulators. Company actuaries see themselves as trusted management advisors and executives. Also advising the board on the nature of insurance risks is seen as a management, not just an actuarial, responsibility. In any case, although dynamic solvency testing will probably not follow the same evolution here as it has in Canada, it probably will become a very useful management and planning tool.

I will now turn my attention to some practical issues related to the raising of capital or the enhancement of surplus. A company with a strong capital base has a potential competitive advantage. Not only does it illustrate financial strength to consumers and rating agencies, but also it permits the company to participate actively in and benefit from insurance industry consolidation, through acquisition of blocks of business or small companies operating in similar markets. A company can achieve critical mass and make use of economies of scale.

Capital and surplus position can be improved through a variety of internal and external means. Internal means of improving capital and surplus include such familiar techniques as increasing prices, reducing expenditures, better management of the investment portfolio, limiting the growth of new business to affordable levels, tightening up on underwriting procedures and improving claim controls. Easy for me to say. Such actions improve the bottom line, thereby contributing to a greater increase in company surplus. Internal growth and operational efficiencies will continue to be important.

However, when companies talk about significantly improving their capital position, they generally mean raising new equity, whether common or preferred; issuing debt instruments; initiating a process of demutualization; or entering into significant reinsurance transactions with third parties. Each approach comes with certain advantages and disadvantages. Practical considerations and trade-offs are inevitable. When deciding how to improve surplus, there are several considerations or ranges of options.

Companies operating on a branch basis as privately owned subsidiaries or as mutual companies, by virtue of their restricted ownership structure, will have a more limited range of capital raising options and very importantly, but not necessarily, a lower limit on how much capital can be raised than those available to a publicly traded stock company. Strong consistent earnings and unique competitive advantages in core operations reduce the cost of capital. Alternatively, the poorer a company's financial results, the greater the perceived risk and the cost of capital. If there is too much risk, capital may not be available at any cost. Whether the cost of capital comes out of after-tax earnings, or whether the cost is tax deductible, also makes a difference.

Some options such as reinsurance can release capital relatively quickly, while other options such as demutualization are cumbersome and may take years to complete. In some cases it may be important to identify the extent if any to which a given instrument will be recognized as surplus on the balance sheet, in the regulatory risk-based formula, in both or in neither. Some forms of capital, such as retained earnings and common shares are permanent capital and can be fully used to satisfy target surplus requirements. Other forms of capital, such as subordinated debt in Canada or surplus notes in the U.S., are considered more temporary in nature, and regulators or rating agencies may deem only part, if any, of the capital as available to meet target surplus requirements. Finally, the issuance of debt or equity securities or the process of demutualization, will generally involve some loss of ownership, control, or freedom to operate.

I'll turn now to equity financing. All stock companies have common shares, which have a claim on the residual earnings and assets of the company after servicing the required claims of creditors, preferred shareholders, and policyholders. Preferred shareholders are entitled to dividends at a

specific rate that must be paid before dividends can be paid on common shares. Other features of preferred shares may include an option by the company to reacquire the shares, called callability; an option by the preferred shareholder to convert the holdings to common shares, called convertability; or the ability to postpone payments under certain conditions, for example, cumulative shares.

Sources of equity capital include private strategic investors, private financial investors, and public markets. Private strategic investors are companies that wish to acquire a company stock for some related business purpose, such as entering new markets or merging operations to achieve operational efficiencies. A potential advantage to the acquired company is that the buyer may have a longer time horizon and regularly provide capital and other support. Private financial investors are investors whose goals are primarily financial, rather then strategic. Typical examples of private financial investors include venture capital and other private equity funds. Public equity capital comes from individual investors and institutional investors, such as mutual funds, pension funds, and other financial institutions. Making an offering of stock to the public, known as an initial public offering (IPO), is an expensive and involved process. There is a need to comply with Securities & Exchange Commission (SEC) requirements in the U.S. or Provincial Securities Commission requirements in Canada. Both lawyers and investment bankers will generally be retained. The availability of attractive financing through this route, depends not only on the company fundamentals, but also on general market conditions and the market's receptiveness to insurance company offerings, both of which may fluctuate over time.

There are several advantages to equity financing. It provides access to a relatively large pool of potential investors. Operating restrictions are very few, and finally there's no requirement to buy back or retire the shares. One disadvantage of equity financing is its high cost of capital, typically around 15% after tax from common shares, somewhat less for preferred. In addition there is dilution of earnings for existing shareholders, and there can be a loss or reduction of control by management. Again, this is more so for common shares then preferred, since these latter do not normally come with voting rights.

Debt financing includes lines of credit, commercial banks and finance companies, and the public and private bond offerings. Lines of credit are usually used to cover short-term cash-flow needs and are not sufficiently large to fund substantial investments. Commercial banks and finance companies that finance company loans typically require the repayment of principal in annual installments over a five- to ten-year period. Public and private bond offerings usually involve an investment banker, registration with the SEC, and periodic filings of documents, such as 10-Q Quarterly and 10-K Annually. Canadian registration and filing requirements are similar.

One advantage of debt financing is tax deductibility of interest payments and the lower after-tax cost of capital. Another advantage is that debt does not dilute corporate ownership. As with equity, debt financing allows wide access to capital markets. Debt is usually more effective if it is issued by a parent company, such as an upstream noninsurance holding company. The debt funds received by the holding company can then, in turn, be used as equity contributions into the subsidiary insurance company. Unfortunately for mutual companies, for which there are no upstream holding companies, this mechanism is only available to stock companies. The obvious disadvantage of debt is the requirement to pay back the principal and retire the debt. Although debt can always be rolled over and refinanced, unfavorable rating agency opinions may be rendered if there is too much debt. While debt involves no loss of control, some forms of debt impose additional operating restrictions and increased reporting and disclosure.

Finally, if the insurance company or its holding company parent generates insufficient taxable income, the issuance of debt will end up not being very tax effective after all. Special forms of financing, such as subordinated debt, is debt that is of long-term duration and ranks junior to all other forms of debt. It has all the normal advantages of debt including tax deductibility of interest payments. In addition, in Canada, it is one of the few options available to mutuals for raising capital. One added benefit is that 50% of the subordinated debt can count towards meeting Canadian required surplus targets.

Surplus notes, also known as surplus debentures, have scheduled prepayment of principal and interest, with maturities ranging from ten to 50 years. Under GAAP accounting, these are considered debt instruments. However for statutory purposes, most states permit surplus notes to increase statutory

capital. Surplus notes are of two types: the approval and the preapproval type. Because of December 1993 changes to NAIC guidelines, which recognize only the approval type of surplus notes as equity, most notes issued today are of the approval type. This means that the insurance commissioner in the state of domicile has to approve in advance every payment of interest and principal, besides of course, approving the original issuance of the note. In the preapproval approach, the commissioner establishes general conditions under which the insurer may automatically make payments. An example of such a condition might include the maintenance of a specific minimum RBC ratio. Naturally investors prefer the greater certainty associated with preapproval types of surplus notes. Surplus notes were historically associated with second rate or troubled companies. However, given the large demand and market acceptance of notes today, even highly rated companies such as Prudential, Metropolitan Life, and New York Life issue surplus notes.

Mutual companies have fewer options for increasing capital then stock companies. However one option open to them is demutualization or the conversion of a mutual company into a stock company. Through demutualization, a company can broaden its capital raising options to include public or private stock offerings. Other advantages include enhanced structural flexibility, easier acquisition financing, and improved management incentives. Enhanced structural flexibility can occur through the creation of an upstream holding company; thereby reducing or eliminating regulatory limitations over noninsurance activities. Easier acquisition financing arises when company stock, instead of cash, is traded in acquisitions. Finally, improved management incentives are possible through the ability to offer stock related performance awards. The disadvantages of demutualization include its long cumbersome process and the corporate culture changes associated with moving to a stock company. Management becomes accountable to more assertive owners who can and will replace management for unsatisfactory performance. Further, the companies in most need of demutualization, companies with poor earnings and limited capital options, are the least likely to be attractive or command significant ownership premiums.

Turning finally to reinsurance, the vast majority of the smaller players have limited or no access to capital markets. For them reinsurance provides a useful alternative to the more traditional methods of raising capital or enhancing surplus. Examples of how reinsurance can be used to enhance surplus

include, and these are some examples, reducing new business strain for a rapidly growing direct company; coinsuring a newly acquired block of business to reduce the net purchase price to an affordable value, while still achieving the administrative economies of scale or other strategic goals of the direct company; arbitraging different inside limits, size factors, or covariance in the RBC formula; or equivalently the tier two or negative reserve components in the Canadian MCCSR formula. Another example is creating tax synergies by recovering refundable tax credits that would otherwise be lost or expire.

Finally, consider taking advantage of cross-border differences in reserve and surplus requirements. One example may be a U.S. insurer entering into a transaction with a Canadian company, whose ultimate consolidated reporting will be on Canadian GAAP and MCCSR, rather then U.S. Statutory and RBC. The advantages of using reinsurance include flexibility of terms and enhanced marketing or underwriting functions, no minimum size, favorable cost of capital, and lower required capital. The disadvantages of reinsurance include the need to demonstrate a meaningful transfer of risk, the added policy administration burden, the loss of future profit potential and possibly negative opinions by rating agencies. This is especially likely if, as sometimes happens with financial reinsurance deals, the beneficial statutory effect of the treaty reverses over time or is not recognized under GAAP accounting.

In conclusion, the life insurance industry is facing increasing challenges and opportunities. Adequate capitalization and the ability to raise additional capital will increasingly become a factor in securing favorable ratings and maintaining a competitive advantage. For some companies, the ability to raise capital or make effective use of its existing capital base will spell the difference between success and failure.

MR. JOHN SAFF: My question is for Mr. Nelson regarding the calculation of cost of capital. He talked earlier about how he allocated or determined the required surplus for the different lines. My question is, how do you calculate your cost of capital for the capital you currently have, not for the marginal cost of capital, though it has a cost for additional borrowing? How do you calculate your current cost, and please allocate your answer to equity and debt.

MR. NELSON: The cost of equity capital varies over time because you can take a look at price/earnings ratios for other companies that are in your line of business. It's also going to be related to the growth rate of your industry. But by and large, a 15% return is going to be expected for the average investor to be interested in buying your stock. As far as the cost of debt, try to categorize the debt as one of two places. Either the debt is the function of policyholder deposits or a vehicle like Mr. Lombardi was talking about, a public debt offering or private financing through a bank.

Let's talk about the first one. For policyholders, we go through a calculation at our company for all the annuity and life lines. What we calculate is the cost of funds. So when I sell a $1,000 annuity, I actually only collect $950 because I pay the commission, and I have an interest rate or a coupon that I have to pay on that that will accumulate if the person doesn't take the money out or it becomes due when the person asks for his or her money back. Now I've sort of issued a bond. The annuity is a bond; I sold it for $95 and it has a coupon and a maturity. I can solve for the yield on that bond. Now I'm looking at this from a policyholder's point of view. What do they get? With your price of $95, we typically find that the cost of raising funds through annuities is probably in the neighborhood of Treasuries plus about 100 base points.

I work at a holding company. Fortis is a publicly traded company in Europe. It raises debt through public offerings at about the London Interbank Offered Rate (LIBOR) plus ten, Treasuries plus about 40 or 50. So my cost of capital is fairly straightforward. The equity piece is generally 15%, and it really doesn't matter what happens to interest rates, unless things get crazy. For the debt portion, that moves as interest rates move. Typical AA firms are going to be at about 40 or 50 over Treasuries. The exact yield will have to do with how long the note is for. If you borrowed it for five years, you're going to get one cost. If you borrowed it for one year, you'll get another. I'm able to take a look at what the total assets are, and I determine how much of that is borrowed money from policyholders or from corporate financial activity and how much of it is equity. That's pretty straightforward to assess the cost that way. Did I answer your question?

MR SAFF: I think you got it.

MR. HEBEL: Any other questions?

MR. JAMES F. REISKYTL: I have another couple of questions for Mr. Nelson. One, you suggested that you were looking out for your shareholders; that's very commendable. What risks do you believe are not recognized in the current formulas that you recognize when you consider the shareholder interest? Are you suggesting that there are some risks there that are not related to investments, products or anything else?

MR. NELSON: The question is to what extent are there blind spots in some of the formulas and risk not accounted for.

MR. REISKYTL: You seemed to be implying that the current formula may be inadequate for a stock company. The formula may be inadequate because of the level, but I was asking are the formulas inadequate because of the features?

MR. NELSON: I don't think there's anything that's missing in the features. Those four categorizations of risk are fairly well encompassed. There certainly are some elements that are not, that I'm not too sure exactly how to deal with. I guess I can lump them all into business risk. I'll give you an example. The insurance industry is the beneficiary of a franchise in the tax law. I think we would all agree with that. The tax law is a very political process. I'm not too sure what risk element went up in the last general election, but something did. I didn't see any change in RBC factors or in the Standard & Poor's factors. Now they may be applying them to the right values, the asset categories. All I suggest to you is that, well if we had to honestly say, hey, there's some jeopardy to that franchise, does that increase the risk? I would think so. It's at the core of the operations of a lot of the business we're in. Margins that you thought were going to be there may not exist. I don't see anything explicit in the formulas that differentiate between high operating margins and low operating margins. Yet intuitively, I think it's clear that, if we were involved in a business that had very high operating margins, we would have need for less capital to weather through bad times.

But the property & casualty people actually have done a little better job of trying to identify those types of things. I don't know how many people are familiar with those formulas, but they try to take into account, actual company experience, compared to average industry experience. How are your loss reserves? What is your underwriting ratio on these kind of lines? Once again I guess that would be the only blind spot that I can say not enough attention is paid to the underlying profitability at your firm or in the industry in total.

MR. REISKYTL: You also said that the variance for a well-run company is less than that of a non-well-run company. Do you have studies to support that?

MR. NELSON: I think what you end up finding is, if you do look at the work from the capital markets areas, having to do with stock price volatilities, one of the things that they're going to routinely point to is this concept called Beta and how closely you align with the industry. In the end those are traced back to the volatility of the cash flows of the underlying companies and its stock.

MR. REISKYTL: You're talking broad concepts. You're not necessarily dealing with the mortality factor or morbidity factor, or if I own or you own common stock, versus someone else. I guess this is difficult for me to see on the surface, the difference resulting from the variability on a common stock portfolio. Granted you can have different Betas, but if you're beyond Beta and assume we have the same Beta and I'm well-run and you're not well-run or vice versa, I still don't see the importance. I suspect the risk variation is the same in those two companies. You're just suggesting you have to look at the Beta.

MR. NELSON: I think you just need different capital is all I'm saying. For instance, sometimes I like to use noninsurance examples, but we can stay with an insurance company that has earned but not received premiums. If I look down at your company and over the past three years that's varied between 22 and 25 days, I'm going to convert it back into days, and you look down at my company and it's varied between ten days and 50, well the point is we have a very similar average; but I might have to suffer the vicissitudes of having cash that's disappeared for 50 days and then oh, I tightened

everything up and I'm back down to ten. All I'm suggesting is I have a greater need for working capital and surplus than your better run organization.

MR. REISKYTL: I have no quarrel on that. Regarding debt and equity, in the curve as you go down, you should borrow more and more until you reach the point where you should move into equity phase. Do you have any practical guidance as to where those points are for a typical well-run company?

MR. NELSON: One of the ways you can approach that problem is to try to gauge the cost of funds from your policyholders. If we're running an annuity company, whenever we interview everyone else in the firm, ask, "What if we weren't A.M. Best, and we pick A+, but if we were only A?" The immediate response is, "We'd be out of business." This is probably not true. Let me give you the way I see it. Let's play a little game. Everybody who has a checking account or a savings account with a bank, stand up. Alright, now you may sit down if you know the answer to the next two questions. Sit down if you know what the Standard & Poor's credit rating is of your bank and is that up or down from the last rating? How are we doing?

MR. HEBEL: Well, we had one or two sit down.

MR. NELSON: At the personal level these ratings don't influence the decisions. Now if I had a group of asset managers who were doing credit swaps, they'd be up and down in a second, because they would know, but they're dealing with much larger amounts. I appreciate the cost of selling the policies when you have a lower rated company. You may have to have a higher commission. Higher commission just raises the cost of funds. Or you may have to offer a higher interest rate or a bonus or whatever, and that'll raise the cost of funds. But what needs to be done is you have to purchase these ratings, and it has to be thought of as a purchase. My own instincts tell me that most firms in the insurance industry probably want to run around an A type credit, maybe an AA. You will not find an AAA bank. There's no such thing as an AAA bank. You can't make money being an AAA bank. Banks are AA.

It gets hard in our industry, though, because evaluating the cost of funds for a competitor can be very difficult. You have to make all kinds of assumptions about what their expense structure is; about what their commission rate is; what do they have for an annuity; how are they going to credit rates, not just today, but in the future. So it's a little more opaque. But the practical guideline will be, start with your own group; try to answer questions about, if I had this higher capital ratio, would I be able to pass along a higher price and lower my distribution costs? What increased earning capacity would result from this better credit rating? Once again I'm playing fast and loose with credit rating, meaning an A.M. Best or a Standard & Poor's or Moody's. I think generally what I have found the answer to be is not much.

MR. BARRY L. SHEMIN: I have a question on the distinction between cash and regulatory capital. It seems to me that regulatory capital is really what drives the insurance industry much more than cash. Specifically my question is on the example of raising funds by issuing annuities. It doesn't seem to me that that's really capital raising because the shareholders can't really use the capital or the mutual company. The company itself can't really use that $95 in your example for anything. It's got to set up reserves that are going to be similar to $95. So could you clarify that distinction of cash versus capital and what matters in which instance?

MR. NELSON: The question is how do I differentiate between cash and capital in the insurance setting. I guess it does blur quite a bit in my mind, and I think it is in fact. All I'm saying is that, a typical annuity company, for every $100 worth of assets, will have $95 worth of liabilities, reserves we've established, and five dollars worth of surplus or owners equity. Maybe I'm using a dirty word, but it's a big hedge fund. You borrowed $95 at some interest rate; you put up five dollars of your own, and now you're going to go out and buy $100 worth of assets. Well, anything beyond what's required to pay off the loan, you're going to put in your pocket. It's the same type of transaction with buying a home and you put 20% down. It's the magical leverage. If the house goes up 5%, you're leveraged five by one; you've made 25%. Now the bad news is, if the value of the house goes down 5%, you just lost way more than 5%of your investment, right? You've lost a quarter of your investment. So I tend to look at it from the point of view of the total assets and what is the derivation of those assets. Some of it's been borrowed, and some of it is equity capital. The more leverage,

whether it come from public finance or public policyholders that I put into that firm, inherently it becomes more risky. Ask Orange County.