1999 Valuation Actuary Symposium

Los Angeles, California

Session 44
Ask the Experts

Moderator: Daniel J. McCarthy
Panelists: Craig R. Raymond
Edward L. Robbins

During this session, experts with varying backgrounds discuss questions dealing with a variety of subjects. Time will be spent both on questions submitted in advance and questions from the floor. Readers will be better informed about issues affecting your specific areas of practice.

MR. DANIEL J. MCCARTHY: I would encourage each of the panelists to offer their own comments because some of these questions do not have a single answer, particularly some of the ones that raise questions about technological approaches and so forth. Many different views are possible. I see this panel as more of a catalyst. This is billed as an open forum. In an open forum, the audience, as well as the panel, has to work. We'll take up the questions submitted in advance.

The first question is, what type of testing should be done for secondary guarantees, such as a no-lapse guarantee on a universal life product, in a cash-flow testing/reserve adequacy context? I tend to think, by the way, that that is one part of what's really a two-part question. One, what should you be doing for basic formula reserving? Two, what should you be doing for cash-flow testing?

MR. CRAIG R. RAYMOND: I'll answer the second part about cash-flow testing. When doing cash-flow testing, the actuary needs to look at how the product was sold and expectations as to the utilization of the secondary guarantee. That secondary guarantee and the benefits from it need to be provided for in the cash-flow testing. Obviously, there are a lot of assumptions that'll go into the projection, and there's going to be a lot of sensitivity to these assumptions. Depending on the significance of the block of business, there should be some attempt to look at sensitivity to assumptions. I know a lot of the pricing on these products has been done based on the assumption that the secondary guarantees are not necessarily going to be maintained by the policyholders meeting their requirements. The actuary should definitely look at the sensitivity to this assumption because it can have a significant impact on the adequacy of reserves.

As far as the basic reserve piece of it, that's not as clear a question. Obviously, Regulation XXX resolves it somewhat, but the actuary needs to be stepping back and taking a look at the appropriateness of the application of the UL model regulation rules that could allow you to ignore the secondary guarantee. I've always felt it was inappropriate to ignore that secondary guarantee just because it fell through the cracks of the rules, but that's a judgment. I think each individual actuary has to determine how he or she feels about it. It's something that you shouldn't just ignore because you can read the rules.

MR. EDWARD L. ROBBINS: I'll speak to the basic formula reserves issues. As an actuary, you should really be thinking of whether you are going to have statutory losses in renewal years. If your reserving approach is such that you are front-ending profits and masking losses that you're going to have in years five, six and seven, that's probably inappropriate from a formula reserve perspective. It speaks to Craig's issue of what's an appropriate formula type reserve. There is a little bit of a mitigation. If you're overadequate in some areas and underadequate in other areas, you could possibly make the statutory assumption that if you used minimum reserves everywhere, that you'll be in good shape in aggregate. You're not going to have statutory losses, but certain states have kind of compartmentalized that issue. Larry Gorski has indicated to me, for example, that Exhibit 8, Part A, cannot be aggregated with Part B, in terms of overall adequacy testing. Each part of Exhibit 8 has to

stand on its own. New York has, I believe, similar rules, although I'm not that familiar with the New York rules.

MR. MCCARTHY: You can get permission in New York to combine. You can apply for permission, and I will say, based on experience, you can get it, but not always.

MR. ROBBINS: Craig, in terms of cash-flow testing, I'm agreeing with everything you're saying. I would add that there should be some kind of dynamic link on your different scenarios to the rates of utilization you use in your cash-flow testing of the secondary guarantee.

MR. MCCARTHY: If it kicks in more in the low interest environment, then you better assume that people will figure out that this is a good deal.

The second question is somewhat more specialized. This question was submitted by a company that has a large block of immediate annuity reserves. It's custom for cash-flow has been for all lines of business to run things out 30 years and typically look at the market value of assets minus the market value of liabilities. The company recognizes that for very long-tail liabilities like that, it should probably be doing something more than that. They have been running both the assets and the liabilities all the way out to the last annuity payment. Then you have only assets left. Then they are discounting those back at the spot rates to the 30th year to get the market value of surplus in the 30th year. The questioner was basically saying this is a pain. Is there an easier way?

MR. RAYMOND: I'm not sure there is an easier way to do it correctly, but does it really matter?

MR. MCCARTHY: Yeah.

MR. RAYMOND: You really have to look at the significance of that value out at the end of the 30 years and what you're doing with these numbers. One thing that I've often encouraged on asset adequacy analysis is to look at the significance of the number and at the significance of what you're trying to do with the result. One thing you can do is look at a worst-case scenario at the end of that 30 years. If a worst-case run-off after 30 years, within reason, is worse than the

difference between the market values, use that and discount it back. If this result impairs your opinion, then I'd be a little concerned, but you can then look at it closer. This method allows you to be comfortable that the result you're getting is not overstated. I'd be surprised if it really has much impact, but it's something that you can easily do a little testing on to verify whether it does or not.

MR. MCCARTHY: I think if you're using fixed scenarios like a New York 7 scenario or something, your assets will all have rolled over by then, and if everything is reinvested pretty much at a fixed rate, the market value of your assets is going to be its book value at that point. That doesn't spare you from having to run out the liability side, but computers do those things.

MR. RAYMOND: Even if you're doing the stochastic scenarios, you could probably find a way to plug in and just assume everything's flat from that point on.

MR. MCCARTHY: The next question is also about cash-flow testing. It says you're only supposed to use the asset valuation reserve (AVR) to the extent of covering the default risk, and not beyond that. The particular questioner said he had been doing the testing two ways: (1) putting the full AVR in and reflecting defaults, and (2) not putting the AVR in and not reflecting defaults and using the worst case. The question was in two parts. It said, is this too complicated or too conservative, and, if we're doing it right, why don't the regulators complain that nobody else does it that way? I don't think it's true that nobody else does it that way. I know of some companies that test that way. But the question that was brought out was, is there an easier way to reflect the spirit of the requirement that you're only supposed to use the AVR to the extent of the default risk?

MR. ROBBINS: I've seen two approaches to the default risk. One is using the default component of the AVR. I've seen that. The other way is to do the decrementing itself to get the AVR component. I don't know the answer to this person's question. I've seen those two approaches, but that's all I can add.

MR. RAYMOND: Rather than running the two scenarios fully, we have built in an anticipated cost of defaults in the projections and then we make a comparison of that back to the AVR at the beginning so that if the present value of those anticipated default costs exceeds your AVR, then you can just throw the AVR in and run it out. You can start with an assumption that you can match up against and limit the AVR based on that. I was surprised to hear that you've seen situations where they actually run it twice, with and without AVR.

MR. MCCARTHY: I think that the question is always, is it easier to think more or just let the machine run again? The next question is about Guideline XXX. Actually, I have two Guideline XXX questions.

This is one that Ed and I spent a fair amount of time talking about. I'll put it in front of you. The first one has to do with the comparison between the mortality rates implicit in the X factor that you select and your best-estimate mortality rates over the first five years. I think you tracked this to the regulation.

MR. ROBBINS: It looks as if each margin in the next five years does have to be positive. You can't have a negative in year three, for example, but you don't do this on a cell level or a policy level. It appears that it's appropriate, and it appears appropriate to aggregate your anticipated experience versus your X factored Q over your entire X factor class. The ASOP draft that John Brumbach was speaking of in Panel Discussion 10 gave some details of the draft ASOP on determination of the X factor and supported it by virtue of mortality studies. It gives a rather large, enabling breakdown of X factor classes among your business. It talks about issue age, plan code, issue year, and underwriting class, but when you finally determine an X factor for a block of business, it would appear appropriate to take that comparison of your anticipated mortality versus your final valuation mortality assumption at that level of aggregation, and if those are positive, you're in good shape.

MR. MCCARTHY: The presumption is that, within reason, you can aggregate more to avoid odd, isolated negatives.

MR. ROBBINS: In other words, you expand your X factor class?

MR. MCCARTHY: No, I don't mean expand. You've got to define it to begin with. Presumably it would seem that an underwriting class ought to be an X factor class. The question is, how fine do you get within that? Do you go to age breakdowns or not?

MR. ROBBINS: We just came back from a workshop on this issue, and companies are all over the lot in terms of very few classes versus a lot of classes.

MR. MCCARTHY: That was the point I was making. I would say, in terms of the draft, it seems to suggest you have some freedom to select a class. I would be very hesitant to put together very different underwriting classes, but once you get past that, it seems to me you have some freedom to slice finer or more coarsely.

MR. ROBBINS: We had a workshop on XXX, and the X factor issue was one of about ten issues listed in our written agenda. But it turned out that we spent 90% of our time on the X factor issue. It's a very big deal both in terms of the theoretical basis and in terms of the work involved. It's a major issue.

MR. MCCARTHY: Do you want to take the second part of that question? It was asked by the same questioner. Let's assume, for the sake of simplicity, that for this particular business you have a yearly renewable term (YRT) reinsurance arrangement, and you are reinsuring 50% of every risk. What is the impact of that on the way you calculate your reserves?

MR. ROBBINS: The ASOP draft says you do gross before reinsuring. You do your mortality study on a gross incoming basis. If you anticipate your mortality on a ceded business, business that is different from business you retain, then those could conceivably be two X factor classes from a direct perspective. Let me say this. Every ASOP has an end section that says, if you deviate from it, you must explain why you deviated. There are instances of complex reinsurance pools that make the

application of that issue very difficult. I suspect that's the place where the person might use a net retained basis and explain why.

MR. MCCARTHY: I think the questioner might have been thinking about straightforward YRT reinsurance. This person asked, if you had a zero first-year reinsurance premium, should you alter your mortality assumption? I think you and I had talked about it and felt the answer to that was no.

MR. ROBBINS: No. You just disregard reinsurance for these purposes.

MR. MCCARTHY: The question is, what's your offset? Presumably, if it's YRT, your offset is a $_{x}$. If it's co-insurance, you might get a very different answer. Let's assume that you and I agree that the answer the person was suggesting is incorrect. We established how you get your gross reserve. Let's not talk about how you get your net reserve.

MR. ROBBINS: Okay, sure.

MR. RAYMOND: I'm not sure where the question came from, but it didn't surprise me to see the question. I think this is a developing area, and the information that Ed is sharing (as far as what's in the draft ASOP) is very new information. I'm not sure when that came out, but I know I've been receiving marketing material all summer from reinsurers telling me that one of the benefits of working with them is that I can use their experience in my X factor. There's clearly confusion out there and different expectations in the market as to what can be done. It's very important to watch the development here. The actuarial standards are going to be a very important piece of how XXX is applied, and this is a key issue.

MR. ROBBINS: Craig, you raised an interesting point. To what extent is your own experience credible? To what extent can you use your own experience? If it's 40% credible for example, combining it in some form with reinsurer experience to help determine your X factor would seem to be an appropriate approach, if your own experience for the cell is not statistically credible. The draft used a threshold of 35 deaths for another purpose. If it's below 35, use a Poisson distribution, and above 35

deaths, use a normal distribution, if you are studying mortality by number of lives. That approach doesn't work well by amount of insurance.

The standard claimed that the proper basis was amount of insurance, rather than number of lives. In terms of the answer to your question, Dan, it would appear that what is most appropriate for the reserve credit is to mirror in its mortality assumption your incoming business on that policy. Dan and I were talking about this question, and he said it can either mirror it or it can be less than what you're holding directly.

MR. MCCARTHY: I suspect most people would mirror it. There has been a lot of discussion about Regulation XXX at this meeting. As Ed said, it came up in the session he was involved in. This is the only question that we got that was specifically on that point, although some others kind of touch it.

The next question is the only subject on which we got two questions. In one case, it was worded very succinctly. In each case, it had to do with universal life reserving. One questioner asked, what are the implications of having a guideline level premium for tax purposes that's less than the guaranteed minimum pensions (GMP)? Should you not be doing your reserve calculation with a GMP that is greater than the tax guideline premium? The implicit thinking is that that isn't what people would be paying.

The other question was much more specific and got at the same point and said that particular company for that particular product was not allowing its customers, in the early years, to pay more than the guideline level premium. A regulator had told them that in that case they should not treat their universal life as though it was a whole life policy matured by paying the GMP. Rather, you should assume that people will pay the guideline level premium, and that will give you a policy that provides guaranteed coverage for something less than the whole of life. What were the implications of that? You and I talked about that, Ed, in terms of the expense allowance. Do you want to pick it up?

MR. ROBBINS: This was sort of a blockbuster. In my former life, that ended with my retirement from KPMG about a year ago, I never saw a vendor system that took Section 7702 limitations into account. All vendor systems that I saw ignored it. The UL model regulation

came out in December 1983, just in time for Section 818(c) adjustments, for those of us who are old enough to remember that. It ignored the issue of 7702 completely. It's theoretically possible to take a position of ignoring 7702, although it's possibly a tough position to take. I don't know if you'd win that position. It gets extremely complicated.

I'll talk about the complications. The typical policy that runs into this issue is a policy with a 3% interest guarantee where the guideline level premium requires a 4% interest guarantee. Therefore, under the policy guarantees, and by paying the guideline level premium year by year, the policy will expire at age 68 without value. It'll be term to 68. Your guideline level premium is less than the premium that would be theoretically required to mature the policy at age 100 or 95. Therein lies the problem. If you were to use that interpretation, it makes the reserving calculation extremely complex.

Let me give an example. I'm going to contradict what I just said in this example. The policy doesn't really expire at age 68 because there's a provision in 7702 that enables you to pay YRT premiums if the policy would otherwise lapse. What kind of guaranteed maturity premiums do you use? For a person issued at age 20, the YRT premium at age 70 might be greater than that GNP, for example, when the policy would otherwise lapse. In addition, reserving at any future valuation date under this basis, just by extension of the concept, would cause you to look at, for example, if he has already paid a guideline single premium. You're in year four, so you can't start paying guideline levels until year 12. You get into all those kinds of issues.

When we were talking about tax issues in a workshop, someone said that there's no such thing as truth. It's a question of positions here. There is a long tradition of the fact that the UL model regulation came out before Section 7702. The concept of a guaranteed maturity premium being the annual level premium permitted to be paid by the company is a slightly tough one to get around. I would agree with that.

MR. MCCARTHY: That's if the company doesn't, in fact, allow you to pay that premium.

MR. ROBBINS: Yes. Typically the company will say it reserves the right to keep the policy in qualification under 7702. That's usually part of the contract. So, it does give you this difficult situation.

MR. RAYMOND: I guess I don't disagree with anything you said. I guess I see the issue a little differently. I like to separate the 7702 issue from the contractual words. There are very few contracts today sold that do not state contractually that they will maintain compliance with 7702. If the contract didn't state that, I don't see any reason why this would be an issue. The fact that the contracts do state that puts this into the same category as some of these secondary guarantee issues where the real problem is the UL model regulation doesn't fit here. It doesn't work. The model regulation has a structure that says you must go back to this level premium format. You're caught into this box where you've got a product that, when you go back to that format, it's an iteration of the product that can't exist. I'd have to go back and read the regulation to see what the technical answer to the question is.

In a lot of ways, it just seems like you must try to get under the intent of this. The intent is, if you're selling this thing as a level premium permanent product, there should be a way of dealing with that. I really think it's just again hitting another flaw and another hole in how the UL model regulation applies to the real world today.

MR. ROBBINS: The actual wording is, "the guaranteed maturity shall be that level gross premium paid at issue, and periodically, thereafter, over the period during which premiums are allowed to be paid, which will mature the policy on the latest maturity date, if any, permitted under the policy."

So it has two things that are sort of in conflict: "Allowed to be paid" and "which will mature the policy

MR. RAYMOND: It's hard to tell whether "permitted under the policy" only refers to the latest maturity date or if it refers to the premiums also.

MR. MCCARTHY: As Ed pointed out, this happened before 7702.

MR. RAYMOND: Nobody thought of these things back then.

FROM THE FLOOR: I just wanted to mention that some of us, a few years ago, quit including any difference between current and guaranteed expense charges into our guideline premium calculations, I believe on your advice.

MR. MCCARTHY: I didn't know she was going to do that.

FROM THE FLOOR: For recent issues that means that guideline premiums are always going to be less than guaranteed maturity premiums.

MR. ROBBINS: What you're saying is for guideline level premiums, you are now using current charges, expense charts, which was absolutely correct.

MR. ROBBINS: It was, in the words of Section 7702, "reasonably expected to be imposed."

FROM THE FLOOR: That was what brought it about. That put a whole lot of us in this position where guideline level is going to be less than guaranteed maturity on any recently issued product.

MR. MCCARTHY: As Ed pointed out, if people are going to lower guaranteed rates, that's going to happen, too.

FROM THE FLOOR: Right.

MR. MCCARTHY: I think it's more aggravated in a low interest environment where people are thinking about what those rates are.

MR. ROBBINS: Let me talk about some results of this abstruse interpretation. Many of you are probably aware that if your valuation assumptions equal your guarantees on a back-end loaded policy, your result is your net level reserve is going to be your accumulation value, no matter what you have. What if you were able to do that? Let's say you had a 4.5% guarantee and a 4.5% interest rate, and a 1980 Commissioners Standard Ordinary mortality. Let's also say you used that as your valuation basis. If you had a net level reserve on a back-end loaded policy with, say, level future charges, you'd end up with the accumulation value as your reserve. Then it's a question of what kind of commissioner's allowance do you get as a deduction from that? The answer is it's *r* times your unamortized commissioner's allowance on the basic underlying plan. If it's term to 68, it's a slightly smaller *r*, and the *r* issue can be very deceptive as to what it does. We certainly haven't gained all the insight we could gain from this interpretation, but that's kind of where you'd come out from a calculation point of view in that typical situation.

MR. MCCARTHY: As was pointed out, for a variety of reasons, this is coming up now more than it used to. Any further comment or question about this? A question was raised in a regulatory context, indicating that one regulator had suggested that the guideline premium be used, which has the effect of getting a smaller expense allowance, as you say.

The next question is totally different. How do you effectively model geographic concentration in mortgage and real estate assets in a cash-flow testing or ALM environment? Craig and I were talking about this. I don't know anybody that does that. I don't think the reasons are as much technological as figuring out what assumptions you would use and how you would actually go about doing it in a way that reflected some reality. There are presumably regional differences in default experience from time to time. I'm not sure anybody has the data to do that. I have seen some companies that operate regionally and invest regionally use their own experience. In that sense, they're doing it. This may be particularly topical since we're meeting in southern California. Should this question have been, what happens if all the real estate vanishes all of a sudden? That's a different question.

MR. RAYMOND: I thought about this after we talked. I can kind of see two directions this question can go in. How do I model the results? If you have a concentration in an area, you need to be looking at whatever data you have to try to make the best assumptions you can relative to that specific geographic area (if there is any reason to assume it's different than general data). The other question would be, if you do have a concentration of risk in a certain area, should you model it differently than if you were more diversified? I guess the reasonable answer there is you should be assuming greater volatility in your results if you don't have diversification in that portfolio. It would probably be reasonable to do some more sensitivity testing on the impacts of those assets performing adversely on your results.

MR. MCCARTHY: When you and I were talking, you pointed out that casualty companies make extensive use of models, (for an earthquake for example) aimed at gauging the effects of concentration. I think it's much more significant for them than it is here. Nonetheless, do you have any thoughts on that?

MR. ROBBINS: Yes. My brief and limited experience with the property/casualty side shows that companies will actually plot their properties on maps and take a look at their concentrations, which leads me to ask the somewhat naive question of whether we could get such data on our mortgages? Maybe we can. Maybe it's an easy thing to do. I don't know. How do you factor the data into assumptions? Is it done through cash-flow testing?

MR. MCCARTHY: I presume the answer to the first part is you could get the data if you worked hard enough. How you factor it into assumptions is the tough part. I don't know anybody who does it. I don't know anybody who makes distinctions of that type in their testing, and I don't think the problems are technological. I think the problems are developing credible assumptions at that level.

The next question is totally different. It said, (1) minimum reserves for health business and for proving health reserve adequacy often call for gross premium reserve valuations. For the past 25 years, these have been performed on a pre-tax basis. (2) Cash-flow testing and asset adequacy

testing, for the last ten years, has always been performed on an after-tax basis. The question is, Why? I'll start this one because I think I have a sense of it. I believe that in part it's just a question of level of sophistication. Back in the 1970s, for example, you were taxed on gains from operations. Back at a time when tax gain and statutory gain were closer together than they are today, it was probably okay to use a pre-tax basis and assume that if your answer was positive pre-tax, it was positive after-tax, and if it was negative pre-tax, it was negative after-tax. By the time cash-flow testing came along in 1990, we had a tax law that didn't line up nearly as well with statutory gains and losses, and it was appropriate to reflect it. I don't think that the difference is a conceptual difference. I just think it's reflecting something in more recent work that never was reflected in older work or never even was reflected. That is maybe too broad a statement. I know of some companies in the 1970s who were Phase 1 tax companies who would, in their investment income assumption, reflect tax based on the mechanics of the law as it applied to them. To me, this is just a matter of growing sophistication and a different tax law, but I may have missed something.

MR. RAYMOND: I'll buy that.

MR. MCCARTHY: The next question we have is one that was handed to us just before the session began. Ed has the advantage over Craig and me in that he understands the question.

MR. ROBBINS: Should tax reserves for foreign business written by U.S. taxpayers domiciled in foreign jurisdictions be based on the U.S. prescribed tables or foreign jurisdiction? A year ago, I could have answered this question with some authority. We're trying to hit a moving target when we talk about this tax area. Let me tell you what I know. There's a specific paragraph in Section 807 that deals with noncontiguous countries, with valid branches in those countries. You're able to use the reserves of those countries but not if they are greater than the net level reserves. That's my recollection. It's not something I've ever dealt with, but I know that paragraph is there. When it comes to subsidiaries of U.S. companies, up until about a year ago or so, the environment was specified in Section 953 of the code.

There was a very large and somewhat haphazard regulation that dealt with how you calculate U.S. tax-like reserves for those foreign subsidiaries to do what they call Subpart F income. I dealt with the actuarial part of that on several clients where I calculated the tax reserves, quasi-tax reserves, and quasi-807 type reserves, on those types of foreign jurisdictions. There is an approach to doing this, and what I understand is that the regulation may have passed in the last year on subpart F income whereby there's a new environment that I'm not familiar with, but for those who are interested, it's fairly easy information to find out. The point is, there's an applicable section to the code that deals with subsidiaries of U.S. parent companies.

MR. MCCARTHY: That is the last of the presubmitted questions. At this point, we will take questions orally or in writing from anybody.

The next question is, would it be possible to hold zero tax reserves for a small block of business to create taxable income to take advantage of a loss carryforward? I think you would have to hold the reserves.

MR. RAYMOND: No, you can't do that.

FROM THE FLOOR: My comment is not in response to that question. I'm going to set up a background for this question so that we understand it. It is not in response to any recent conditions or situations that have occurred, but we've had a lot of discussion lately about the so-called General American situation, for which I have some sympathy. There have been discussions at the LHATF about bail-out provisions in certain GIC contracts. I'm going to try to phrase the question more generally, but make it specific enough that you can comment on how you'd approach the situation.

Let's say that you're in a situation where you have a small likelihood of something bad occurring. You can put it in the fact pattern of General American or some other type of agreement that you have. I'll make the further assumption that your management understands the risk involved. It may involve a partner or a joint venture or a reinsurer in the arrangement.

What steps would you take as the valuation actuary to judge whether you need to set up additional reserves over the formula reserves? How would you approach a situation? I'm trying to make it a little bit specific by saying that management understands the risk, but basically that's what we haven't talked about. We've talked about whether there should be formula reserves? This is a real-life situation. It has happened. It's one of the situations that valuation actuaries will be facing this year. I'd like the

MR. MCCARTHY: It's an excellent question. I think you're going to get three answers. Go ahead.

MR. ROBBINS: I guess the first issue is a very serious one of product design. It is obviously a funding agreement with those kinds of put options. I guess General American was far and away, as a percentage of its assets, the largest holder of such funding agreements. I suspect that the valuation actuary, at least managerially, has some kind of risk analysis role in the product design process. What is it going to do to your cash-flow testing? I guess that's where I'd begin. You've got to be in on the product design process when you're doing elephant hunting like that, $200 million funding agreements that are coming in. Thereafter your interest scenarios are going to show that in a rather ugly way, I would suspect, your varying interest scenarios.

MR. MCCARTHY: I was with you right up until the end. Repeat that again. I'm not sure I bought the last part of what you said.

MR. ROBBINS: I'm not totally familiar with the details of the case, but is it time that they only had a put option in the case of a credit downgrade?

MR. RAYMOND: No, these were just seven-day puts.

FROM THE FLOOR: They had a seven-day put, and that was a product design feature. It would qualify for a money market account. Otherwise, it would not qualify as an appropriate money market.

MR. ROBBINS: In that case, I guess I was right.

In that case, if there is a large interest upswing, and if there is a seven-day put option, with the withdrawal of that stuff, you have some major problems.

FROM THE FLOOR: They hedged that risk with derivatives.

MR. MCCARTHY: Yes, that's right.

FROM THE FLOOR: The underlying investments may not have been liquid. The losses came in because the underlying investments were of lower quality and spreads widened so that the market value of those assets would have declined more than the market value of the derivatives would have risen.

MR. RAYMOND: Right. I think there are a couple of issues here. I definitely agree with Ed on one of them. It's very important that the actuary view his role as making sure that his management is aware of the risks that are being taken. I understand that the actuary is not always in the position to determine the company's decision, but it is the actuary's role to make sure the people around him or her understand the risks that they're taking. There's a range of possibilities here as to how much risk is being taken. However, when it gets to the point where there really is a "bet-the-company" risk, as small a likelihood as that risk might be, it becomes very important to make sure that the management is making an active decision on this risk. When you get to cash-flow testing, in a lot of ways, the specific situation is really akin to a policyholder behavior assumption. I'm sure your base assumption for policyholder behavior is these contracts are never going to be called. So, you can just run the contracts out and everything will look fine. What you need to do is make sure that you clearly disclose that you've made this active choice of assumptions. If this is a small block, and even if everything calls, it's not going to have a significant impact on overall results. If it is a large piece of your liabilities, and if a wrong assumption on the part of your policyholder could put you in a serious financial situation, then this is a significant assumption. Even though the likelihood is small, I think you should be looking at the impact of this assumption being wrong and documenting and communicating the result.

MR. MCCARTHY: I would focus on the last point that Craig made about the significance of that kind of a decision that's made by a company. As far as I'm concerned, it brings you up against the limitations of what you can and cannot accomplish through reserve setting, cash-flow testing, or whatever. If this had been 10% of the company's liabilities, presumably that would have weathered fine. It's going to crash at a very high percentage in that particular circumstance. I don't think that cash-flow testing or reserving is proof against that.

MR. RAYMOND: Unfortunately, I don't think it's something you can resolve with reserves.

MR. MCCARTHY: I agree with you.

MR. RAYMOND: You can't look at it and say there's a 2% chance that this could happen, so I'm going to set up an extra $10 of reserves.

MR. MCCARTHY: As Barry said, it's a question of what that risk is and whether it can be fully hedged or not and what you are left with by way of exposure.

FROM THE FLOOR: I think assuming that there's a small risk of a company failing is a good thing, first, because it's small, and, second, because there is, indeed, a risk that the company will fail. I really don't think we'd want to be in an environment where companies were sufficiently straightjacketed because there is no possibility of failure. I think taking risks is a natural consequence of getting out of bed in the morning. I think that's true for insurance companies as well as for individuals.

MR. MCCARTHY: I think the proposition that comes after that is, how do you assess degree of risk and that sort of thing?

FROM THE FLOOR: I think it's pointing out a different risk than we're used to looking at, namely a liquidity risk. Because I used to work as a reinsurer and as an appointed actuary, I'm actually instituting a new test for my cash-flow testing this year which is, frankly, assuming a run on the bank on one of my significant clients. It's something over which I have no control, but I want to make sure that I have some kind of liquidity, not necessarily reserved for but taking into account what I have with surplus just as a way of prudently managing the company.

MR. MCCARTHY: I think that's an excellent point, and we have worked with companies that are examining that. If you had to provide liquidity for 60% of your assets, that'd be a little tough.

FROM THE FLOOR: I was very glad to hear your comment. I know when we were in the early days of cash-flow testing, we were talking about Executive Life-type situations, just to be general. I'd like the conversation to be as general as it has been and not talk about a specific situation. We talked about whether you do tests? Do you set up additional reserves for a run-on-the-bank type scenario or liquidity? I think the thing that I'm hearing, and that is also consistent with my beliefs, is that you don't set up the reserves for the worst possible scenario. Your role is to disclose the risk, understand the nature of the risk, make people aware of it, and based on your judgment, decide whether or not reserves are adequate overall. But I was glad to hear the kind of conversation that you had. I think there might be more of a need for a stress test type situation, not a definitive type scenario. Do what-if tests and at least better understand what the risks are.

MR. MCCARTHY: I think that's what the prior speaker was getting at — reserves aren't the only issue. There are other things you need to be looking at in management.

FROM THE FLOOR: I think this is an excellent subject for us to talk about because it's becoming an issue for the industry. We're moving into new product lines. Let me see if I can explain the point I want to raise. It's just a clarification. When we were in the mortality business, we were functioning with a risk that was supposedly independent and random. If you had a block of x amount, and you could have four times that amount, your standard deviation from expected would be smaller as a percentage

of all your claims. You'd have some policies that are paying a charge. That's what pooling is about. It covers the claims. The bigger you get, the less risk, to some extent, that you had.

Now we're getting into businesses where we're not talking about random independent events; we're talking about catastrophic events under stress situations that are way beyond the 85th percentile for the expected. If you went from having x amount to four times x amount, you've ended up with four times the amount of risk, to some extent, because you don't have a pooling function there. It's almost like the problem that Lloyds of London got into when they were reinsuring the risk on a lease that IBM would come out with a new computer to replace the 370. If IBM, during that 18-month period, did not come out with a new computer (the 3090), the brokers in London would have basically eaten caviar and had a wonderful party, but IBM did release it, and they all ran for cover because it was not a pooling risk event. We're beginning to see this occur in some new products, and they may be perfectly good products for the industry to start discussing, as long as we know the amount of risk and concentration in the company.

In earlier sessions, people were talking about variable annuity guaranteed living benefits (VAGLBs). Most people don't know what VAGLBs are yet because they are relatively new, but they're growing very rapidly. That is not a pooled risk product; it is a catastrophic-risk product. Let's say you took a product that was simply principal paid at the end of ten years. Someone might ask if there has ever been a ten-year period that the stock market has been down? The consensus is that it has never happened. That's not a true view of the world. The Nikkei index in Japan went from 39,700 down to 13,800 before it turned around. That could be a catastrophe. You say you could hedge it. If you hedge it, you're hedging it with another financial entity. You have a new risk that is called counterparty risk, which we also have not yet learned to evaluate. How good is the reinsurance? These are new risks. It's new to us. We're not ready for it. I think the only answer for now, and I do this within my own company, is to look at how much risk you are taking on the books, and how much surplus you have. If that really bad thing happened, which might be the once-in-a-hundred-year-flood type scenario, do you have enough surplus to pay it off, lick your wounds, and move on to the next day?

This is a new area for actuaries, but you really have to work globally and not policy by policy in this new world.

MR. MCCARTHY: I'll note that our brethren on the property/casualty side of the business confront some of these quite a bit, but you're right. It's a very new framework with different ways of thinking about things.

FROM THE FLOOR: I just want to extend the last comment as it applies specifically to reinsurance because all of us use reinsurance. The General American situation was as much a concentration of reinsurer as it was a concentration of the underlying business. I believe it's common in cash-flow testing to essentially perform a net of reinsurance and assume that the reinsurer will pay its share of the claims. I wonder what the appropriate level of due diligence is that the appointed actuary ought to do to evaluate risks involved with its reinsurance.

MR. MCCARTHY: I will note that I know in the casualty business, they don't assume that reinsurance is routinely collectible, and, of course, there has been good reason for that. I think your point is we should not blindly assume, if reinsurance is really significant in the testing, that you can just take a net and go on.

MR. ROBBINS: There is an ASOP on reinsurance that does require a due diligence report on your reinsurers, and that is becoming more important in case there are people that are looking to reinsure their XXX business with unauthorized reinsurers and letters of credit. Letters of credit are becoming more expensive or it is anticipated to become more expensive. I'd like to hear from one of the reinsurers as to the validity of my comments. I think the due diligence process on reinsurers is going to become more important with the advent of XXX.

MR. RAYMOND: I have two comments that hit on a very tough issue. What we're talking about is nonpoolable risks. We spent a lot of time within my company talking about nondiversifiable risks. We go into the insurance business assuming what we do is pool diversifiable risks. However, we just can't ignore the fact that we're getting more and more into taking risks that aren't diversifiable. As actuaries,

we need to make sure that managers making decisions around us understand the impact of taking these nondiversifiable risks. You have to be sensitive to these types of risks. I find a lot of people within the industry are very comfortable with the fact that, as long as they have something reinsured, it's okay. The audience member mentioned variable annuity guaranteed living benefits. I've had consultants tell me that you can reinsure these, and it works fairly well. When you actually look at the market, there's a very small group of reinsurers that create the market for this benefit. Even though you can look at your exposure, and the reinsurer limits the exposure, they'll take on any individual company.

My question is, how are their risks diversified when they have similar risks from ten different companies? Essentially, they're taking a stock market risk. They don't have a diversified portfolio at risk here. There's that one-in-a-thousand chance that I do get a claim, but then everybody else in the industry is going to have a claim. You must worry about that. The other issues I'd like to raise relative to reinsurance is appropriate due diligence procedures. We have credit standards that we put on reinsurance internally. Be able to get yourself comfortable that it's appropriate to reflect reinsurance. You need to deal with some of these diversification issues.

Also, as you move into passing off significant pieces of risk to the reinsurers, you must make sure that there are no gaps in the chain. I've been working with one of our subsidiary companies over the last year, trying to clean up some problems we had there. I found that there were a lot of gaps in the chains where we had risks that were reinsured. The ability for the reinsurers to change rates didn't exactly match up with our ability to change rates, and the ability of the reinsurer to terminate the policy didn't quite match up with our abilities to terminate them. It's very easy to just look at the surface and say, I've reinsured this risk, and it's with a solid reinsurer, so I don't have to worry about it. You have to follow through the chain and make sure that you are truly on the same risk as the reinsurer, if you're going to make that assumption.

FROM THE FLOOR: How would you, as a valuation actuary or appointed actuary for a company that was in that situation at the end of 1998, have reported that to your regulator? Would you let him in

on the knowledge that you have this tremendous risk on the books, a real tail-end risk? You may or may not know how well your reinsurer, who has 50% of the risk, is handling it.

MR. MCCARTHY: Does anybody wish to answer that question? I guess I would point out that in the state in which you regulate, a detailed memorandum is required, and the regulator gets that. I'm not asserting off-hand what information would be in that memorandum in this particular case, but I think you've raised a good point. Maybe we focus in the wrong place when we say that the job is to describe to the regulator all the assumptions we've made in the cash-flow testing because, as we've said here, this is not necessarily a reserve issue. I hate to think of additional reports, but we've identified a dimension here that I think is probably not fully captured in even a completely fair and open reporting of the things we report now. I don't know where you go from there. It goes back to what the products are, what the policy forms are, what the guarantees are, and what kind of questions should be asked before those are approved. I don't know the answer beyond that. I don't think it's cash-flow testing reporting alone.

MR. RAYMOND: I agree with you. I don't think there is a clear-cut answer as to whether it is appropriate or there's a mechanism within the current structure that this has to be reported under. I go back to my previous comments. I think the real issue is that the actuary needs to make sure he's appropriately evaluating the risks and doing the testing. If it's not documented in the memorandum, it should at least be documented in the supporting documentation that this issue has been evaluated and that an active decision has been made as to the significance of it. If it is felt that it needs to be disclosed, and that it's significant enough, it should be disclosed as either a sensitivity or as a discussion of the significance of the assumptions within the memorandum.

FROM THE FLOOR: I have a comment on reinsurers. I've had the experience of being audited by a reinsurer. I guess some of the larger reinsurers will come out and examine your operation if you have a large block of business with them. It seems perfectly fair to me to go and audit a reinsurer if there's a significant risk. You can learn as much as you want. The other thing is when you're managing a concentration of risk, you have to go beyond the traditional actuarial approaches and really examine

what it is you're doing and manage your business so that those big risks go away. I know General American bought hedges and didn't quite cover that.

MR. MCCARTHY: I think your second point ties in very closely with the point made about evaluating very different kinds of risks.

FROM THE FLOOR: I just want to comment that the direction of the panelists' comments and the comments from the audience tend to support what has been occurring, at least in my observations, at many large companies. I think it has been understood that the role of the valuation actuary or somebody in the company should include the risk management function. I think it's a real positive move that there has been a formalized, acknowledged responsibility in many companies for the risk management function. It may be separate and apart from the appointed actuary or the valuation actuary, but there has been a growing trend in that. I think we're seeing the types of things that they need to be involved with. It's not just C-3 risk. There are other risks. There are other business risks that need to be addressed, and I think that this is a very positive thing and it sort of ties in with our discussion.

FROM THE FLOOR: A thought came to mind when Craig was talking about non-divers. I'm going to have trouble saying the word *diversification risk*. I was thinking about the guarantee funds and wondering whether or not the law of large numbers works. Today, you have one percentage of premium that you charge companies for their share of other companies' insolvencies. Should there be some review? Since the Society of Actuaries is a research body, should the Society look into the risks that companies are taking, and determine whether or not there should be some change to the risk-based capital formula or other things? I spoke at another session on the Unified Valuation System (UVS). I was asked what UVS could have done about the three big crises that occurred this year? I didn't have a very good answer for that because I thought, for example, in the General American case, that wasn't a reserve risk. It was a liquidity risk. If we had the UVS system, perhaps the vitality analysis report would have caught that. I wasn't able to come up with the best answers to what we would have done

about those three crises. I was thinking that the panel could think of what we would do about either RBC calculations or guarantee fund premiums.

MR. MCCARTHY: I'll offer one thought just to get it going, which is that the FDIC has looked at this issue, and other organizations have looked at it, and are trying to charge risk-based premiums for these risks. That only works if you have an advanced funding mechanism. You can't charge risk-based premiums with guaranteed funds funded in arrears because the people you want to charge them to aren't there anymore. I'm not necessarily advocating advanced premium funding, but I'm saying that the choices that are available to you are different if you have that kind of a mechanism

MR. ROBBINS: That's not the first time advanced funding has been mentioned. The concept of underwriting risk and charging appropriately for the risk the company is into does make a lot of conceptual sense, but I wanted to just respond to the issue of risk-based capital adjustment. I have a feeling that the forthcoming C-3 risk is going to capture a lot more than just interest rate fluctuations. It may capture some, but not all, of the types of situations you're talking about. The C-3 mechanism that's forthcoming is kind of a stochastic cash-flow testing mechanism. I would think that those risks that are not mitigated by the law of large numbers, the kind that we speak of, could give it a C-3 label but have it encompass a bit more than that perhaps.

MR. RAYMOND: As you start looking at these risks, you see that they can't be dealt with only through reserving. Depending on the significance of the risks, I think they can be better caught within RBC, but even the far end of the tail isn't appropriate to be reflected in RBC. The refinements that are currently going into the RBC calculations, and the extreme refinement of RBC that's effectively being discussed with the UVS system would help the process. However, when you get to the long tail of these liabilities, it's a lot more an issue of understanding and disclosure. I think the full UVS structure probably brings more of an answer to this through trying to ensure that there is disclosure, discussion and understanding at the management level of what risks are being taken. It's not going to stop it. You will continue to see bad things happen, and management saying, "I didn't even know we were taking

that risk." The first step is to make sure that they're aware that they're taking the risks. You can't