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Practitioner's Forum

Panelists: Armand M. de Palo
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Summary: This interactive forum addresses the major financial reporting issues and concerns of senior actuaries in life insurance companies.

The facilitators identify topical issues from their own experience, as well as from audience participation. These include interpretation and uses of cash-flow testing, resource and technical issues, compliance with multiple state requirements, reconciling statutory and Generally Accepted Accounting Principles (GAAP) or economic values for management, and so on.

MR. ARMAND M. DE PALO: We will have a discussion of the management of the reserves of the company. Because of the informal nature of the session, we don't want to wait for questions at the end. As we deal with a topic, which will include our own opinions about how we deal with day-to-day issues as they come up, we want the audience to ask questions.

MR. STEPHEN N. STEINIG: I just want to modify one thing Armand said. We don't want just questions. We really want your observations and comments on these topics.

MR. DE PALO: What we call caveats really aren't caveats. It is more a matter of distinguishing between what the actuary must do when setting reserves and what the actuary must do when telling his company about the risks it has. As many of you know, reserves only deal with

expected and slightly adverse measures of risk. However, the answer is a valuation position, and it also must appraise the upper risks that the company has. Let's say there's some unique liquidity risk or some other risk that has a very low probability of occurring. If it occurs, it could have a very large effect on the company, and this effect might not be reflected in the reserves. It's also your job to make your company aware of these risks.

The reason I'm raising that topic is because, in the past, when you dealt with reserves and mortality, you dealt with a very sensitive group. Pooled risk has a statistical relationship; that is you wrote more business, and your deviation from expected is reduced. What has happened recently in the industry is we're taking on more property and casualty (P&C) risks, way out on the tail, where there is a low frequency. We're also coming up with what I call nonstatistically random risks. All the policies would probably, at the same time, move the things that are tied to these economic measures, like the stock market or something like that. The Variable Annuity Guaranteed Living Benefits (VAGLB) product is a good example of why we're guaranteeing that you will not perform less than some rate or you'll get the Standard and Poor's return; whichever is greatest. These are new risks to the industry, and it's very likely that the reserves that are held either prove to be too large or that the event didn't occur or they are not large enough because the event did occur but the expected doesn't represent either of the two. When you file your cash-flow testing, those risks are really not appraised adequately because they don't fall into that category of expected to slightly adverse. They are someplace further up the curve. The actuary must address how best to manage them in his discussion with management; inform management staff with respect to the categories of how much business should be on the books versus how much surplus exists. The surplus discussion is not something that you do with your regulators. In making that distinction, that's the caveat and that's why we make a distinction between reserves and the level of surplus.

MR. STEINIG: One of our chief concerns over the years has been making sense of our results on a line-of-business basis or by any product grouping we think of as a single run or single testing.

For the most part, the only time we at New York Life are working with these present values of future surplus is primarily when we're doing our Regulation 126 valuation actuary testing. This is in contrast to a lot of other numbers like gains from operation or company surplus. From these numbers, we have an instinctive feel (from all that we've done, over the years), of the magnitude of a particular number and a particular result and the kind of change that might be reasonable from one year to the next. When we're doing our valuation actuary testing and working with present values of future surplus coming off of current reserves, we find that the numbers are enormous. They're much larger than anything we deal with in a normal way. We also find that there's much less feel for what is an obviously correct result and what is an obviously incorrect result.

For example, we've had the experience in the past where we assumed, in advance of seeing a run's outcome, that our results should be a little bit better than the prior year. We got the run and found it was significantly worse than the prior year. We then spent time trying to figure out, by general reasoning, why that has happened. We'd really be pretty pleased with ourselves with all the insights we developed into understanding why. Even though our first instinct was to think the result would be better than the prior year, it turned out to be worse. The next morning, one of the actuarial students came in and said, "Bad news. The run I gave you yesterday has a mistake. We input a wrong item. Here's the corrected results." The correct results were slightly better than the prior year; all that brilliant analysis we had done to understand why this year was worse than the prior year proved not to be so brilliant.

As a result of experiences like this, over the last couple of years we have worked at building some tools to make better sense of the results. There's nothing brilliant about any of these tools. They're not necessarily sophisticated mathematically. Much of it is just plain old reconciliation work, but when literally every part is moving, reconciliations aren't always easy. The assets, the liabilities, all of the assumptions, and the interest rate curves are moving. It is very worthwhile to go through a structured analysis to understand how much each factor has moved the results from the prior year to the current year. We must then be able to determine whether this is a sensible result? Going piece by piece you get a much better handle on things. I mean that sounds so simple. It has really taken us a couple of years to make that a fairly decent tool in

some of the business units. Some of the other business units have not really begun the process of doing that kind of reconciliation.

Another thing we've done is develop a history of our testing results. Again, it is a very simple thing, but we don't and haven't in the past looked at this work as history. Every year we practically start from scratch. We simply built a history of the last ten years worth of our margins as a percentage of our reserves. There's a lot of fluctuation, but it helps you know when a new year's result is within the range of prior years. That helps you provide some comfort about what's just fluctuation and what's the beginning of a trend. Do your results have less margin or more margin than they've had in the past?

One other thing we've done, particularly in our annuity business, is measure all of the relevant interest rates in each scenario. There are new money rates, the portfolio rate, and the interest crediting rates. There's not a straightforward relationship from one to the other. The crediting rates can be higher than the portfolio rates, depending on the strategy you defined for yourself. It can be below the portfolio rates. The new money rates are sometimes above the portfolio and sometimes below the portfolio. When you focus on that in each scenario and in each calendar year, you get a much better understanding of what's really going on in the business. You find out why some of the outcomes are what they are.

Although the label we put on our agenda is "Making Sense of CFT Results," perhaps a more elegant title would be, "Developing Analytical Tools to Help Analyze the Results and Understand the Results."

One of the speakers at another session mentioned how so much effort goes into doing our cash-flow testing and making the run. You just have to get to the point where you have a result. There's not enough time for analysis. So some of these tools I've mentioned are just designed to do some of the analysis on a mechanical basis and give you a big head start at looking at stuff. I'd love to hear from the audience as to what they do above and beyond just getting a result out of your modeling system in order to know it's a valid result and understand what it's telling you.

FROM THE FLOOR: It's sort of comforting to know that we're not alone as we look at these results. The experience you described, Steve, is exactly the type of thing we've gone through. The number tends to come out so large. There is a 5%, 10% or even 20% fluctuation or sort of lack of reconciliation. The result doesn't cause too much concern because, even if you take the worst of those, everything still pretty much looks okay. We've tried to do step-by-step reconciliation, which is probably one of the things that you described, because so many things change. We don't try to go through all the items but we understand the major items that have changed, and we would do it working with or without that change and just see if that particular change makes sense. So that's most of what we do. The point you made about tracking historically and seeing where the margins are make senses as these things evolve at the time. We don't do that but that's quite an interesting idea.

MR. DE PALO: The next piece we ran into was that some of the software vendors we dealt with, particularly PTS vendors, were giving us changes too late in the year, and if you try making changes near the end of the year, you don't always understand the software. You're constantly re-running the run when you figure out that you didn't know exactly how to run the change they did. At some point, you have to freeze your software in the summer and say you're not going to accept any more changes during the year until you get some letter from the regulator in October, December, or early January saying they want something special run. That does happen. If some of you aren't aware, we have some regulators who send letters—it got started out as the Labor Day letter, and then it became the Halloween letter and then the Thanksgiving letter and then the Christmas letter and in recent years it has been the New Year's letter. It is really a nuisance when you have to change your software at the last moment to accommodate the change on your executive summary that needs some additional work. You're doing it on the fly, and you really don't have past experience or any time to really think of how bad your results are. It takes a lot of work to say that if you really do this right, we have to do such and such. So that's a disruption. We're not really convinced the regulators have the right to give us last minute changes; in any case, it really is a nuisance.

MR. KENNETH JAMES HAMMOND: We recently demutualized and had to bring out GAAP statements, and we had some problems. We learned a lot from it, but we were developing home-grown software to do our GAAP reserves on our current block. We had difficulty because the auditors were reviewing our results. They said, "Let's go back and see what you filed last year when you were partially demutualized," but it wasn't really public, and we couldn't produce the exact numbers. I had questions about what the modeling changes were and what the improvements were. We've moved to a much stronger basis now. What we really achieve are software, the program, the input data as well as the output data for analysis, because sometimes you just really want to have the detailed output to compare; you don't really want to re-run everything again. That will really save you from a lot of scrutiny. They said, "You made these assumption changes. Can you go back and re-run last year's data so we can see what the effect would have been?" If you don't have your exact code in the data source, you can't make the assumption changes. I would really recommend that you keep old versions of software.

MR. DE PALO: We are relatively consistent on that. We tell the staff actuaries to do it and they do it because they think it's sort of like numbers to file to get it to work. Getting it done precisely is hard, but we do that. We save the old versions, and we try to save the old data cell. It can be ordered up seven years later. It will happen.

MR. STEINIG: We do an excellent job of distinguishing all our preliminary runs and all the work we do leading up to the final run. We just run into problems when the final run is rarely the final run. Then you have a final run and a final, final run and a really final run. When we start to try to figure this out a year later, we find out we're not as good as we should be.

MR. DE PALO: Okay, I have responsibility for the subject of reinsurance, and reinsurance is probably a more complicated subject than most people think. Once again, if you go back in time, reinsurance is relatively simple. You either have a co-insurance, yearly renewable term (YRT) treaty or a modified co-insurance reinsurance treaty. Much of the reinsurance was really just reinsurance of the mortality risk. Your attention was limited to bigger companies that didn't amount to very much, but reinsurance has become more entwined in the industry as a fundamental part of pricing. There are actually many questions now that are developing as to the

proper way to handle reinsurance. One of the ways you can look at it is that you had a co-insurance type reinsurance agreement with its terms (the terms that the reinsurer had following your terms), and you reinsured a percentage of the case with that reinsurer. You could say that your reserves were only on your remaining part. You didn't have to worry very much about the terms of the reinsurer because they were the same as yours.

What has happened over the years is there are many different pieces of the business that are reinsured in different ways. There are mortality guarantees on variables and other stop-loss guarantees. There really is a question as to how you reflect reinsurance in your cash-flow testing? Like I say, you have to look at the reinsurance agreement to see if it's okay to just do what you traditionally did, which was exclude that amount. Or, on YRT reinsurance, it is just an amount at risk. It's not much of an issue, but on these other more sophisticated deals, you really have to start modeling the reinsurance if it's treated as part of your contract as an expense. You have all the terms running through the cash-flow testing. They figure that they have reinsurance and it's something ancillary that they can ignore. That probably was fine when it was a small piece of your business. Let's say you're dealing with YRT reinsurance on a level premium contract. The reinsurer has the right to change rates. You're dealing with a mortality guarantee or an account balance and you're paying amounts to the reinsurer. You really have to bring the expenses and the terms of that agreement through your cash-flow testing. It is important to know who the reinsurer is. You have to be careful, especially if you go offshore, that your reinsurance is real. If that big event does occur, it needs to be collectable.

People say that they have reinsurance, and you're obligated to look at the reinsurer. Is it a credible reinsurer? What is the rating of the reinsurer? Do they have enough surplus for you to be fully comfortable that this is a recoverable? Guardian, for example, on cash-value insurance would never consider having our assets on the reinsurer's books. I mean we would either do YRT or we would do modified co-insurance so we would have possession of the asset. If we don't do that, we do consider at least co-insurance cash funds withheld or we'd use a trust. This becomes particularly true if you're dealing with offshore reinsurance. You really have to have access to possession of the reserves if they're off your balance sheet. If the company is too small for the risk, you'll probably have a problem here. But doing more than just looking at the terms

of the treaty is not the way most people think about reinsurance. They think they can just do the reserves or the percentage of the case that they're still retaining.

FROM THE FLOOR: How would you propose modeling the contingency of the reinsurer's inability to pay? Would you come out with a distribution of results that would reflect some sort of likelihood that the reinsurer would not be able to pay, and then get a distributional result that you'd use in the determining reserves?

MR. DE PALO: No, I think I'm saying something different. What I'm saying is that you have to look at the size of the potential liability that could happen with that reinsurer and appraise it. Does that reinsurer, either through itself or its parent, have enough financial resources to be able to back that type of liability? Right now, you have a lot of things, especially with the variable products, that can trigger a stock market turndown. If you just look at your own company, you can say, if this event has occurred, they'd have to pay us this large sum of money. If they're writing that business with your company, then they're writing with other companies. So you do have to be very concerned about the big risk outside the range of expected as opposed to off-loading that type of risk, which is different than mortality risk.

For mortality risk, the claim comes in that year, and you get the money soon. So the one you really have to worry about is in the case when you're paying a lot of money each year, and there's no claim in general. Then, if the event occurs, they've collected a lot of money, but the money they've collected is much smaller than the risk if the claim occurs. That's when you have to worry about the wherewithal of the insurer paying. While this might go offshore, you have to worry about the letter of credit that's really collectable under the letter of credit.

FROM THE FLOOR: There has to be some way to quantify it. Why can't you model it in a similar way that you would model the asset default risk in your bonds or mortgage portfolio?

MR. DE PALO: I think you are seeing what I'm saying. In other words, you can't just leave it out. You have to model it in your cash-flow testing. What I'm trying to say is that the cash-flow testing is only going to test the reinsurance agreement to see if it is reasonable and slightly

adverse. You want to make sure you don't have a disproportionate amount of liability backed by somebody where you have a concern about collecting. That's just a concern for management of the company. You have to be watching what you have and make sure that your business is distributed well enough; everything should not be in one event. If you do have this type of reinsurance you're dealing with relatively large reinsurers that are relatively solvent and not someone that you have a concern with. It's really hard to truly reflect that big event in the reserve because it is past expected, and it is past one or two deviations from expected but still possible to occur. I'm just saying that you have to be concerned about how much of that you have on your books.

MR. STEINIG: I can describe what New York Life does in this area. It is not as sophisticated as some others, but at least there's a qualitative judge. In some ways, it's a delegation to the rating agency, which is not always as secure a process. But we just monitor the ratings of all of our reinsurers. Before we establish a relationship with a new reinsurer, we do some financial analysis and some review of our own. After we have a relationship, we monitor the ratings; we want to do business with reinsurers who have strong ratings. We don't have a clear fixed set of guidelines as to what would happen if a reinsurer's rating started to slip. We would want to do our own thinking as to what that meant and what it was all about and what exposure we really had. In the one instance, where we had a big exposure to a reinsurer whose ratings were deteriorating, we just recaptured the business. We just didn't want the risk of the event happening. It was a low probability event, but we didn't want the risk of it happening and to be unable to collect.

FROM THE FLOOR: How did you recapture? Did you have the right?

MR. STEINIG: It was unilateral and within the contract's terms.

MR. ROBERT L. BUCKNER: I appreciate your comments about modeling the cost of reinsurance in your cash-flow testing. I was wondering if there was an off chance that anyone in the audience has reinsurance as a profit center. As a reinsurer, I never price anything where we lose money, but I know some of our competitors occasionally have. I was wondering if anybody

in the audience used the profits from reinsurance. Has a deal gone particularly sour for a reinsurer so that it has incorporated those profits in the cash-flow testing?

MR. DE PALO: Guardian is in the reinsurance business but not as a traditional reinsurer. We're more of a block reinsurer. We do acquisitions, and we do financial reinsurance to other companies. To some extent, you can view us as a reinsurer for other reinsurers. So we're not selling directly to any company. When we do the cash-flow testing on these reinsurance agreements, they generate enormous margins coming back. I don't bring those margins into any of my other cash-flow testing. I really do them separately. There is an enormous positive surplus coming back. I don't let other actuaries take that into consideration in their cash-flow testing.

I do want to bring up another topic related to reinsurance just because it was a topic about a year-and-a-half ago. How many of you know what Unicovert is? This issue of Unicovert brings about two issues. One is so few people in the company knew that company was taking the Unicovert risk on their books. Two is that so few people who knew they were taking the risk onto their books understood the risk that they were taking.

That agreement was supposed to be a pool that had coverage of \$100 million dollars worth of premiums. That's what they told the managing General Agent (GA) authorities they're binding for. Somehow the managing GA bound the company in a pool for what amounted to \$8 billion dollars worth of premiums. That is slightly different than \$100 million dollars worth of premiums. It's basically workmens' compensation. They were doing a piece of it. Workmens' compensation is not normally a life insurance coverage; it's a PC product. They carved out the medical part and said that medical is allowed to be written by life insurers. Was this legitimate to do or not? Some of the states have come back and said workmens' compensation can't be reinsured by a life company but that's a side issue. The real issue here is who was watching the switching in your reinsurance pool area to realize that a low amount of premium flow started to suddenly grow very, very rapidly. The end result is this wasn't a mismatched risk. Anything more than the premium that was being collected was 75% of the expected claims problem. It was a pure underpricing problem with a three-year rate guarantee.

I think that when you're dealing in a reinsurance pool market, you have to worry about your small percentages of each pool that you distribute among a large number of pools. If one of the pools start triggering more revenue than you anticipated, some flags should be going up in your organization. There is not much point in doing cash-flow testing after the bad event occurs and then telling management, "We just lost \$275 million dollars this year, but we really didn't realize we bound ourselves to this risk." The cash-flow testing will prove out the event. There's also some upfront monitoring of this risk. You have to pay attention to the maximum risk your company assumes.

MR. STEINIG: I just want to comment on the last question about modeling reinsurance profits. If you go through the process that Armand described of modeling on a gross basis but reflecting all of the payments due the reinsurer and benefits coming back from the reinsurer, you are, in effect, building in reinsurance profits if any are emerging. It might be unusual to have reinsurance profits of that type on your standard set of assumptions. If you're doing sensitivity testing, and if you did test some exceedingly large potential mortality experience, the "reinsurance profits" become automatic because you have those flows back from the reinsurer in the model. So you might not measure that profit per se, but it's implicit in the results as one of the benefits.

The next item concerns aggregation of results. In New York State, companies can only combine life business with life business and annuity business with annuity business. Under the standard valuation laws, in most states, and under the Academy standards, you can aggregate everything. The issue becomes, what do you want to aggregate? Just because you can aggregate doesn't mean that you should. This gets into issues beyond this being a regulatory test.

Unfortunately, I think we sometimes start thinking about our year-end cash-flow testing work as a contest to figure out how to set up the models so that, on one hand, the testing is responsible. On the other hand, testing guarantees that you don't have to put up extra reserves. It can become, in some circumstances, a little bit of a game.

But it is healthy to step back and just say, “No, let’s ignore the regulatory aspects of this. Let’s just look at what reserves I really need.” The question of whether you have to be adequate only on an aggregate company basis or only for an aggregate annuity basis is not a straightforward question. It certainly depends on your company, its circumstances, how each line of business is managed, and how you go about making measurements. I certainly have a concern because New York Life’s business units are fairly independent. They make their own decisions about pricing. They’re all evaluated separately. If a business unit is underreserved, it has consequences for all that it’s doing.

Suppose the aggregating is a combination of negative results and positive results or inadequate reserves and adequate reserves. When you’re aggregating and you’re relying on that aggregation, it’s almost an implicit assumption that the mix of business is going to stay the same over time. It might not.

There might be a place where you definitely want to aggregate. You have a negative in one particular product and in one particular business unit; you know why it’s negative; you know it’s going to self-correct. You don’t want to put up extra reserves only to bring them back down. You can aggregate if you pass all the tests on an aggregate basis.

It’s stickier if you know a particular result is going to remain negative or if you know you have some fundamentally inadequate reserves in a particular line. You can pass the test by aggregating; you can sign the statement with good conscience. Whether you want to or not or whether you want to insist that that line set up some additional reserves and, over time, make sure its reserves are adequate, even without the aggregation, is a tough decision.

MR. DE PALO: I think what Stephen was saying is that you can’t be comfortable if it only passed the test in the current year or one or two years out. It can come back to haunt you if there’s a trend where what you’re aggregating is not going away and the margins that you need to offset that loss aren’t going to be there in the future. Aggregation can haunt you.

MR. FRANKLIN C. CLAPPER, JR.: This is a management issue. If you look at it from a purely technical basis, every reserve is either too high or too low. It's never exactly right. It doesn't bother me that the reserves on a particular block of business might be too low. The question is whether that is going to be a problem in the future and whether that problem can be managed.

I'll give you an example from my own experience. I happened to work for a company that had a block of structured settlements that I knew was underreserved, but I also knew that it was a closed block in my understanding of the way business was going. Outside of New York, we didn't need to hold an extra reserve on that block, but in New York we did because of the rules. So it was that simple. It's a value judgment. It's not an exact science, so I would submit that you need to look at it separately, but you don't necessarily need to hold an extra reserve unless you have good reason to think it's going to be a problem.

MR. STEINIG: I think we're echoing one another. It is a judgment item. There are no rulebooks for it, but the important thing is you look at it and you consider it. You decide what you need to do as opposed to just saying I can add these together.

FROM THE FLOOR: I have a similar problem right now. It just happens that some of our business has flat rates on it so I already have a distribution problem when I do the statutory reserves, and I'm trying to figure out how to handle that.

MR. STEINIG: There is a good example of your comment that some reserve is too low or too high. In some cases, I'd always be comfortable with aggregation. For example, you might have a block of deferred annuity business that's still open; your reserves cover business that's on the books since the mid-1980s. Your valuation interest rates from these earlier years are almost certainly higher than the current portfolio rate or than the assets that support those reserves. If you look at that one year of issue, you might say, the reserves are too low. But, I think that would be overkill to say the reserve has to be adequate by year of issue. You certainly want to do some aggregation. So all I'm saying is think about what the right aggregate level of reserves is for your company and your circumstance, for a specified block of business.

FROM THE FLOOR: There is a subset of what you're talking about, and it has to do with what sort of confidence level you're looking for in your reserves and aggregate. We have certain confidence level statements for aggregate reserves by line of business that apply to most of our blocks of business but not to all.

So we expect a slightly lower level for several blocks of business, and on that basis, we're comfortable. We have situations where we have negatives. There would be other implications that we would evaluate.

Let's go back to one of our earlier agenda items that has to do with reserves versus surplus. It is the issue of trying to deal with expected and possible adverse scenarios versus tail-end scenarios.

MR. DE PALO: A leading topic that we're going to get to very soon is low probability and high amount risks. The point I was making is, if you consider the margin in reserves, it has a limited scope statement that the reserves are adequate for moderate adverse events. The actuary has a responsibility to report to management on the liquidity review and other reviews of the company. Do they have enough surplus for the distribution of business that they are taking on? There's probably a little example we can make on this. Any of you who are in New York State or licensed in New York State will see that there's a Draft Circular Letter 35 (1999). That was actually something that was done by my reserve committee out of LICONY, with the help of Martin Claire and other actuaries in New York, to identify risks that could affect the liquidity of the company. So the Liquidity Bureau of the Department doesn't view that as a reserve issue; they view that as a management issue. Management puts reasonable steps in place so that they can deal with liquidity issues of a company. What I'm trying to say is that these liquidity and surplus issues are different than cash-flow testing issues. They take a whole different mind set.

You're not going to be able to run a model and say, "This is the right amount to put up." You have to say things like, "This is the right amount of business we have," or "We've limited the agreement," or "We know we have this risk. Management made the decision, and they know if it's going to occur. It's going to be a big risk, and it's not a surprise to them." A good example of this is bank-owned life insurance (BOLI) insurance. If you have a block of this type of

business, the persistency on it is excellent, even though it's often individual policies owned by either a bank or corporation. Oftentimes that bank or corporation was sold by a national sales organization that controls multiple banks or multiple corporate sales, so you have an enormous concentration risk.

Now the risk of the concentration is that, as you run these out as expected, they will prove to be extremely profitable blocks of business. But there could be a problem if, for some reason, there's a trigger to sell out. Most of those products have no restriction about access to their cash values. It's a serious problem beyond six months, and there is a delay on payment of cash value. You don't have much protection if you have a billion dollars worth of surplus. Are you comfortable having a billion, \$2 billion, \$5 billion, or \$10 billion worth of BOLI business on your books?

It's not that you're expecting it to happen. You're dealing with the issue of, if it happens, can you deal with it, and when would it be likely to go? The MBAs at banks look at the rate you're crediting. The agents selling the business will say the block will never move because they can't move all of it through 1,035 exchanges because the employee is no longer with the bank. Even if they can move 70% of it, it can still be a large amount. Let's say you're crediting 6% but current market rates change and somebody else can credit 8%.

Someone is going to look at that because, in the last six or seven years, most interest rates either have been level or declining, so the existing blocks still have very competitive rates. How much cash could your company come up with if there was a call for the full cash values of \$5 billion dollars? Could you come up with \$5 billion dollars of cash values (while the book value is above the market value of some of the assets) without a material effect on your surplus, which would leave you impaired after that event? That is not a reserve analysis. That's the point I'm making. That is an equity outside the range of probability analysis.

I think the actuary is obligated to do this. As you know, no one wants to give surplus analysis to the state, but if you are the senior actuary of the company, it's your obligation to have these types of discussions with your management. That's the risk I'm talking about.

MR. ISADORE JERMYN: I agree with what you say Armand. I was actually postulating a different situation. I was maybe not so clearly postulating a situation where maybe you were in the throws of a liquidity crunch as you were doing your cash-flow testing. In other words, the event had started unfolding. Does that move it into the possibly adverse scenario or maybe severe scenario? Do you then have to reflect it in that way?

MR. DE PALO: Risk has to be measured from where you're at. If you're in a cash-flow crisis, your expected future scenarios are variations from that current condition.

MR. JERMYN: I agree with that. If you accept that, then you have the gray area between the situation that you've described and the one that I postulated. On the one side, you're saying it's a surplus position. On the other side, it's clearly a cash-flow testing issue. At some point in between you have to make the judgment as to where it falls.

MR. STEINIG: If you're in the middle of the crisis, work on your resume rather than your cash-flow testing.

MR. JERMYN: I guess I should clarify that this is not a personal question.

MR. DE PALO: I know it's not. It is like a black hole from which no light escapes. You'll have another set of problems on your hands.

Let me give you one other example. How many in the audience know what value would be gone? A good number. There are products out there that say, we're going to credit you a rate of return. It is something related to the Standard & Poor's (S&P) 500. Instead of that, they'll guarantee that they're going to give you a guaranteed rate over the next ten years of 4%, 5%, or 7%. The following wrong perceptions exists: (1) if you go through an annuity calculation, you are not that concerned about the market value on one rate; (2) over a ten-year period, many people believe the S&P cannot have less than 7% cumulative returns. People will tell me that it's just an Asian market and not the U.S. market. At its height, the Japanese market, almost hit 40,000. I think it was 39,700 at the peak, and ten years later, it bottomed out around 14,000.

Could a stock market be down over a ten-year period? Japan, as an example, set the market that did not go up over a ten-year period. There are people out there selling these types of guarantees and they often think they don't have to worry about the guarantee. I have reinsurance or other protection. You can either buy options or you can buy reinsurance. There are a lot of discussions on how to reserve for it; however, if the bad event occurs, whatever you put upfront, as you start going down, that bad scenario will prove not to be enough, and you'll continue to need additional reserve strengthening. Hopefully, you're triggering it early enough that you're buying into liability so you can protect yourself before the option cost or the price of protection becomes prohibitive. If you have a lot of this type of business on the books, it can be costly. It's an event that you never want to happen, or, if it happens, it could be a whole block of policies that's going to pay out on all of them.

An example on the P&C side that I like pertains to Lloyds of London selling insurance. This has to do with leases on computers. It is guaranteeing the lease price on IBM 370 computers. If IBM came out with a new computer, the value of the 370's would drastically drop. What happened is IBM came out with a new computer so all of the contracts were triggered, and all the underwriters at Lloyds went screaming. The money they collected was a lot smaller than the payment because it wasn't a random event that some would trigger. As for the premium, on average, either you collected all the money and you were rich or you collected the money they gave you and then you had to pay everybody. You didn't have enough money to come up with it.

It's different than the risk we dealt with before. I think the answer lies in the developmental stage. We do not fully understand this tail risk event, and we don't understand these nonpool risk events that are developing in this industry; however, the products the industry is moving into have these risks, we need to do more and more analysis on it. Tom Campbell did excellent work pertaining to VAGLBs, but he'll even tell you that he was constrained by the restraints of the standard valuation as to what options he could have brought into the testing that he wanted to do. These are new risks, and I'm just saying that we don't know everything that we need to know to do an analysis of them. The point that I'm making is if your company starts taking on these risks, you have to tell management about the possible but improbable event. Then, you will not be

caught up if it occurs. Management will not be able to say that no one ever said that this big event could occur.

Do you think anyone at General American understood the risk they were taking on when they basically backed the assets of an outside management company? They thought it was just that plan participants can get access to cash values at book value. They were basically taking the book value risk on normal transactions. That little subtlety that they had in the agreement caused them to lose their ratings, which went down by two rating classes. The fact that all the money could be called within seven days was an enormous risk. Their view is how could our rating ever go down? They couldn't come up with \$7 billion dollars in cash. If they did, the difference between the market value of the assets and the book value of the assets would be close to \$1 billion dollars. They actually had more surplus than a billion dollars. They could have paid the money, but they would have been seriously impaired from that point on. The whole company was affected by what best could be described as six people in the company who knew they had these agreements. It is probable that none of those six truly appreciated that this event could occur and what the magnitude of that event would be.

I'm not saying that you model this in the reserve. I don't think you can, but you can quantify it. If this event occurs, what's the amount of money that your company is liable for. How does that amount compare against the surplus your company has? Could you weather that event? If they only had \$2 billion instead of \$7 billion dollars worth of this type of agreement, it would have been a bump in the road. They wouldn't have liked it, but they could have survived it. That's the last thing I want to say about low probability and high-risk events.

MR. STEINIG: I want to say a few words about criteria for asset adequacy. There was some discussion at the general session about reliance on actuarial professionalism versus the cookbook kind of stuff. It's a fascinating aspect of the Standard Valuation Law. When you get down to the bottom line, there's nothing defined in the law or in the regulations or in the professional standards as to how the actuaries decide whether the reserves are adequate or not. This represents enormous reliance on actuarial professionalism.

The actuarial memorandum requires that you state your criteria for adequacy. At New York Life, we state our criteria as passing six out of seven of the New York Seven. In some ways, we say six out of seven and we're comfortable with that. We actually feel that we're giving ourselves some wiggle room in not saying seven out of seven because our expectation is that we will pass seven out of seven in aggregate. We also build into our criteria that in areas where you are failing scenarios, you want to understand where and how and why you're failing. It's one thing if results go sour in years 28, 29 and 30 and end up with a negative surplus way out there. It's quite different if the loss emerges almost right away and stays level through the whole period. So I'd be very interested in hearing what other people do in this area and how you think of your own criteria.

FROM THE FLOOR: I have a quick question. Do you do any stochastic scenarios to form your opinions?

MR. STEINIG: I'd like to hear more discussion from the group on that. At New York Life, in our official testing, we don't. We do some over the course of any year. We generally do stochastic testing in at least one or two product lines or lines of business. When we do have stochastic testing, we are likely to start with assets equal to reserves plus surplus. We do that work for various management purposes.

You've got to understand the business, the risk to the business and, in a broad way, we regard that as validation of what we're doing at year-end. When we do that we'll almost always run the New York Seven along with it and inevitably we find that the New York Seven is picking up between 80% and 90% of a much larger number of stochastic runs.

MR. DE PALO: I think you have to ask the question, what is your product and do you need to do stochastic runs? Guardian's main products are annual premium whole life insurance. The New York Seven is pretty good for that. You can't find many scenarios where that type of product would get into a lot of problems. You're going to deal with variable products with mortality guarantees or guarantees of principal. Those New York Seven aren't adequate and you probably are going to have to think of stochastic testing for that type of product. The industry

hasn't made it a requirement, but I think you have to decide on this testing versus the product. You can't say everyone should do stochastic testing. With some products, just doing a preset seven or preset seven plus another four different runs with inverted yield curves might not be adequate because these products are much more asset-linked. The more asset linked the product is, the greater the need in the future for the industry to develop stochastic testing tools or some other type of testing tools. So you're going to look at it product by product. Who among you does stochastic testing? What kind of criteria do you use in evaluating the adequacy of the reserve?

MR. HAL B. PHILLIPS, JR.: We have routinely done stochastic testing in addition to using the New York Seven. We decided on a 200 stochastic testing base set as the practical limit back in 1992, and we have kind of stuck with it. So we also set ourselves as a criteria basically passing 95% of those.

MR. DE PALO: I think that it is a pretty reasonable standard.

FROM THE FLOOR: We have done 200 to 1,000 stochastic scenarios. You can't do 1,000; there's not enough time. You do that off season. Always do 200 to 400. If we had more of the variable guarantees, we would do more. That's clearly where the New York Seven and the regular stuff doesn't make it. We have criteria of about 95%. What happens when you get into stochastic scenarios is you start looking at a large number of scenarios. Plus or minus a hundred is not important. There really is no difference. Don't fool yourself into thinking that if you're at 95, and you had four of them at plus one, that's the same as not making it in a sense. So you start looking at the scenario and why it failed or why it was weak. Then you start doing some other testing in those particular areas to learn more. We find that very beneficial. So far, 95% out of 200 to 400 proved to be pretty good.

We don't do the stochastic testing. We do a lot more than the New York Seven. We select the additional ones, based on our judgment. That would include looking at some of the historical patterns. For product groups, we have certain selected ones that we think might create formabilities on those. On the investment side, we do a lot of sensitivity testing in the cash flow.

We are looking at all the other assumptions. We sort of do the sequence where we would combine the worst of the worst (almost like a stress test), just to see how bad the combination could get before we would have issues that we would have to deal with.

MR. DE PALO: I think you also have to worry about whether your company has any extra contractual guarantees that restrict what you do. Many companies will have products that have nonguaranteed premiums. If your company comes up with some restrictions on the ability to raise the premiums or you've entered into some sort of an agreement that affects your products in the contracted cell, then the actuary is obligated to investigate those issues and determine what the restrictions are on the contracts.

This doesn't happen in a lot of companies, but, in some companies, this might be an issue. If it is, you have to be concerned with it. As an example, some companies, because of class action suits, have said that they will make up the shortfall in dividends to keep a policy that was said to vanish, or you've entered into some sort of court settlement of the class action. How you reflect it and how you value it needs to be brought into consideration.

This doesn't happen in every company, but you have to be careful that you know all the risks that your company has. I think that's just a query. That's part of your due diligence of relying on other people. You do have to ask people. As an example, I send out a letter and make the people in the administrative area identify anything that they're aware of that looks like a guarantee. It's hard to say. If you're remote from some of the areas, you don't know the data of the operation. You do have to ask questions. I think this comes under the guise of well-written reliances and you put in the reliances to hope that none of these types of extracontractual guarantees exist. This is just a side issue.

Variable products have become important to the industry recently. Many people figure that variable products aren't much of a risk because the surrender charge—or the surrender value is tied to the market. There are products in which you have a surrender charge that you take into account in reserves. In these cases, you might not be able to get all your money back. It's more of a profitability problem than a reserve problem, but if the cash values run on you, you're not

going to be able to cover the acquisition expense and charge them. As you run up through the surrender charge period, you can't fund the increase. Now this is relatively subtle, but if you're not holding reserves equal to full fund value, there still is a lapse risk associated with this business that needs to be modeled, and it can affect you. If you only have a little bit of it fine, but if you have a lot of variable annuities or something and you're taking the surrender charge into account in calculating reserves, there are concerns that you have to identify during that surrender charge period.

If you have the cover guarantees I mentioned earlier, where you start dealing with minimum death benefits tied to indexing and death benefits tied to guaranteed increases, ratcheted minimum death benefits in particular, they really do need a lot of modeling. Simply saying that you have reinsurance on them is not enough. Once again, you have to deal with the reinsurance issues. A variable product, as you start seeing these guarantees coming through, isn't a simple product, and if you're simply saying, "Go buy reinsurance and you walk away from the questions, I think you haven't done as much as you should. I think you really need to ask, what would the risk from this product look like if I didn't have reinsurance? What does it look like if I have reinsurance and reinsurance works? Can I tolerate the risk if the reinsurance doesn't work and it comes back on my books? There's a lot more risk being developed into variable products than people realize or had a couple of years ago. That's all I want to say on variable needs.

MR. STEINIG: I want to add something to that from the perspective of New York Life. We know that we haven't developed our modeling as rapidly as our products and sales have developed. Although we try to make improvements over the years, the sophistication of what we do on the variable side is nowhere near what we do on the fixed side. I think there are a lot of reasons for that. I think it's true in the profession and in the industry as a whole. Armand has said it's not perceiving that the risks are as great as they are.

On the professional level, there has been much more said at valuation actuary seminars about generating interest rates than there has been about generating equity scenarios. I'd just be interested to know if anyone believes that it's much more important to your company. Would anyone like to share how you go about generating random scenarios, and how you look at all the

cash flows? Guarantees only add a whole new measure of risk, but Armand has said there's risk even without guarantees. It's just a matter of whether you're going to recover your expenses and make a profit.

MR. CLAPPER: Armand, you don't dismiss the risk by reinsuring and I agree with you. There was a session at this meeting on current usages of reinsurance. The talk was about credit risk on reinsurance. I would recommend you read the comments if you are interested in that subject. The speaker was very good. The session dealt with all kinds of reinsurance, whether it's offshore or onshore. It really didn't matter what kind of product it was. In fact, he was emphasizing financial reinsurance more than reinsurance of risk.

Second, as to modeling of a variable, my company specializes in that, and we do run 1,000 scenarios on every single treaty before we even price it, let alone value it. So it does take much more sophisticated models. There are the equity models as well as all the other assumptions that are important. It gives us a pretty clear picture of the risk. Nothing is guaranteed but I think it's pretty good. We also use the same sort of models to manage the risk after the business is in place.

MR. DE PALO: Frank, a lot of these products that have these risks are really a problem on the risk curve. At issue, they have no reserve value at all, but they'd be starting down one of the scenarios that make it a problem. You should start putting up reserves long before you get to the point that the probability is very high. You can't wait for the event; that's why these types of products need ongoing monitoring.

This is an issue with which everybody, including the VAGLB Committee, is struggling. I think some regulators wanted to slip in this guideline at the last minute. The idea is that no matter what happens, we will retain 100% of the premium as a reserve, just in case. That's basically what they wanted; they were just not comfortable with having no reserve regardless of scenarios or regardless of modeling. It's still sort of up in the air, and I agree with you. I've done a lot of studies on how this product should be reserved for. The basic question is, what should be prefunded? If experience was bad in a year, then obviously you can't reserve for that. But you

should reserve for something three, four or even ten years down the road. Second, where does the reserve stop and where does capital start? That's the other issue. Of course, the VAGLB Committee wasn't really dealing with that. They're only supposed to set reserves under very strict existing reserve standards. Now the C-3 Committee is supposed to pick up and figure out how to do the capital, which is really a lot more complex. So I guess that's all I would say.

MR. DE PALO: Another issue that I deal with, and it has nothing to do with variable products, concerns investing in common stock. Guardian is a company that holds relatively high common stock as a company in general. Currently, about 20% of our assets are made up of our common stock holdings in the general account. Common stock adds a unique additional complexity to your cash-flow testing. None of the software that you can buy commercially models common stock correctly. You might think common stock only goes up; but it doesn't. I've dealt with it, and I've never found an adequate solution for handling common stock. I stock my assets and I model everything other than common stock first. Then, if I bring common stock into the model, I run two scenarios on it.

One stays level and it has no capital appreciation. The only return I'm going to get from it is the dividend rate. I can tell you right now that dividend rates on common stock are under 1%. In another scenario that I run, I knock it down 30% and then have a recovery. I study whether I can live with those two events. I don't have a better answer to handling common stock. If you have it in, it's backing with variable liabilities. You see variable liabilities with guarantees. If you have variable assets backing guaranteed liability, you must worry about how you model it? I've never found a better solution than this. I don't know if anyone else deals with it differently. It is material for my company, so I have to deal with it. After I allocate everything else out, I have to consider common stock in the testing of book-value liability. Any comments from the audience on this?

MR. STEINIG: I'd like to go back to Methods other than cash-flow testing (even though it's cash-flow testing, we tend to emphasize whenever we meet). At New York Life, cash-flow testing accounts for about 80% or 85% of our reserve and 15% of the reserves use other asset adequacy techniques. Primarily gross premium valuation is used for disability income business.

In general, we always conclude that the reserves tested by any method other than cash-flow testing always turns out to be adequate.

One thing we've tried to do is make sure we pay some attention to those reserves. We just don't go to automatic pilot and classify them as adequate. We have some success when we at least make ourselves think through the issues on these reserves. We've also tried to nibble away at developing more adequacy testing of some of those categories, either cash-flow testing or gross premium valuation, which is, in some ways, simplified cash-flow testing. At least it's a projection of some of the cash-flow streams, and especially the liability stream.

MR. DE PALO: Let's move on to communicating with management. When you do your reserve and report to the state, management will often say its reserves are okay. I think you're obligated to have an internal report to management. I actually give a two-page report, and I make the full memorandum available to members of the board. Most of them are perfectly glad to ask me five or six questions, but I'm not sure everybody reports their reserves to the board like I do.

We meet once a year at the board level. I present the cash-flow testing and give the board a two-page report. I answer any questions it has after everyone reads that two-page report. Sometimes they only report to the president of the company. It's important that you have a dialog. This is not something done in isolation where no one is paying attention. If there's some dynamic in your company that's important, you know it is important to report. For example, we have no long-term interest rate guarantees higher than 4.5%. That's a pet peeve of mine because I believe that interest rates can go down to very low levels.

In the early 1980s, people were saying interest rates will never get into the single digits again. I always laugh at that statement. I think interest rates can move in any particular direction, so you do need these dialogues to tell management what type of liabilities you have on your books. I think it's healthy for your career if you're having these dialogues. If you don't have a forum to talk to the management of your company, then you're really not at the table with the rest of management. It's important that you go through that process. Does anyone have any comment

on that? I'm glad to hear you do, but if they're not giving you a forum, you really have to knock on the door and ask for one.

MR. STEINIG: I just want to endorse that although we don't report to the board on a set schedule, we do report once every two, three, four, and five years. We have two levels of reporting. The main thing I want to endorse is the idea of telling the management about what you have learned from this. There's so much time, effort, and work that goes into doing the cash-flow testing; there is such a rich amount of information and data that emerge. It would be a shame to just treat it as a regulatory exercise even if it's being done because the requirement to do it is regulatory in nature. There's an enormous amount of management information there. We actually have about seven memorandum written by the actuaries in the lines of business. Each of them writes his or her own management memo to each of his or her business unit's management. This memo includes a lot of detail about that business on a product-level basis. Whatever it is they want to say, it would be beyond the level of detail that would be of interest to the chairman of the board. They do their memos, and then I do an overall summary memo that tries to come to some conclusions about the financial strength of the company as evidenced by the quality and strength of the reserve and some of the trends. In both the business unit memo and the overall company memo, a lot of emphasis is given to turning it into a management communication and not a technical communication. It is not about how we develop the interest rates or any of the technical things that concern us that we've been pulling our hair out over for the month or six weeks in which we were getting the work done. But after it's all done, what does management need to know about it. The management memos look nothing like the official actuarial memorandum or opinion, but they try to, in effect, get value out of all the work that's gone into it. How many of you do get to present to your boards or your CEOs on a regular basis? It looks like a minority of you do this.

MR. DE PALO: Let's move into state variations and related issues. Like Steve, I have multiple profit centers in the company, and I have an actuary for each profit center to do their own memorandum and provide their own opinions. I consolidate this and I write a master opinion to the states. I've shown this to Steve and some other actuaries. I have a relatively large memo, which I call my dumb, stupid internal evaluation checklist. It's a mechanical process

consolidating all the issues that you need to consider among different actuarial guidelines, regulations, and whatever comes from the different state insurance departments and the things they want reflected. I force each of these actuaries to read this each year. Each year we go through a process of gathering all the letters and all the variations from each state and we consolidate them into one place.

We only file one annual statement. Guardian has never filed multiple annual statements in different states, even though that's possible to do, because we do hold relatively strong reserves. If some state has a reserve requirement that's different than New York, do we have enough margin in our overall reserve? In the aggregate, we pass all the state variations. It's really difficult to get good information by state. The material that the ACLI has is not timely and probably not complete. I tried sending letters to different states to find out if there's anything else that they have. The best that I can say about my conclusions is you gather what you can. Make sure you've identified everything that's in the public domain. If the state chooses to have requirements that it is sending out to the state of domicile companies, and not sending them out to all licenses, then you just ignore that. If they're not sending it to you, you really don't have any way of finding out about it. There's a point at which you just give up. So they can't come back and say this is outstanding in the state of XYZ, but we haven't told you about it.

That is a problem that is out there, but we probably do it better than most. We go through this annual review in which we look at everything we can find in the state variations and put it in one document. We then circulate it to all the valuation actuaries in the company and make sure that they didn't know of anything that's not on that list. This document is about 15 pages long. Once you do it, it's easy to update each year. They all grumble and ask why we make them read it again, but the process of reading it again is important; it takes you through all the things you should have thought about. You are reminded to consider Actuarial Guideline 34. Did you? It forces the triggers in people's minds. Did you consider that this state requires this and not that? Having it all in one place and being required to read it each year is valuable. Then, I make them sign it. Perhaps making them sign it is as important as making them read it. I go through that process each year.