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REINSURANCE OF VARIABLE ANNUITIES

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This session will discuss variable annuities and how direct companies can use reinsurance to mitigate death and investment risk. The panel will provide a brief product overview and then focus on the enhanced death benefit feature, including:

- Pricing issues
- Reserves
- SEC issues
- Reinsurance mechanics

MR. RONALD L. KLEIN: We're very lucky to have a distinguished panel with a lot of knowledge about variable annuities. The first speaker will be Tom Norton. Tom has an extensive variable life and annuities background. He has experience with Mutual of New York, Golden Financial Group, where he served as chief actuary, Xerox Life, and most recently, Tillinghast. Currently, he is the president, founder, and developer for NDG Incorporated. Tom is consulting on his own, working with variable annuities, and helping people set up variable life and annuity products. Tom will be speaking about the development of variable annuities and how the enhanced death benefit developed.

The next speaker will be Rich Tucker. Rich has extensive product development experience with Mutual of New York, and now he's chief actuary at Paine Webber Life, where he does a number of things. He develops products, does all the actuarial work, does the financial work and the operations work, and basically everything because there are four people in that company right now. He developed two variable annuities for Paine Webber (PWL) from soup to nuts and reinsured the enhanced death benefit. He will look at the enhanced death benefit from his angle.

Finally, I am currently the marketing actuary at Life Reassurance (LifeRe). LifeRe reinsures Paine Webber's products, so I'll be looking at the reinsurance from the reinsurer's point of view. In this session, you will receive a history of the variable annuity and a perspective from the direct and reinsurance side.

There's been a lot of debate recently in the *National Underwriter*, *Lincoln Reporter* and other publications about whether this is a good risk. This session is going to be about the steps you would take to reinsure a variable annuity, given that you have decided to get into the market.

MR. THOMAS E. NORTON: As Ronnie said, I'm going to try to do a little more of the general material. Rich and Ronnie will get into more specifics. Ronnie as a reinsurer and Rich as a direct writer. I'll give an overview of how variable annuities reached the state they are in today, a little bit more in detail about the variable annuity death benefits that are present in products right now, some theory on how people look at the pricing process, some of the ways people are reserving for this benefit right now, and finally, some of the activity on getting Securities and Exchange

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Commission (SEC) exemptive relief for increased charges for a minimum death benefit guarantee.

The annuity is one of the last vehicles where you can make an unlimited payment that has tax deferral on the taxation of the gain. Further, you can liquidate on a systematic basis, so you get the favorable treatment of getting a return of premium and your gain partially on a LIFO basis. But that gives up a good deal of your control. People have done a lot to differentiate their products by means of partial withdrawal features, either on a single demand withdrawal or systematic withdrawals, which provide an income or meet IRA restrictions on withdrawals.

In a variable annuity, the big differentiator is the fact that you're passing through the experience of the underlying divisions of the separate account. Right now there's a tremendous range of options available to you to be more aggressive or be more conservative. It is really a way of fighting inflation. And to counteract some of the risk you take on, because you do take the risk of having the investment performance pass through (especially with the older-age market), you want to lock in some downside protection; and that's where the death benefit has become very powerful, especially as this has become more of a deferral vehicle than an income-paying vehicle.

If we trace the development of the annuity, you probably could go back to 1952, with the College Retirement Equity Fund (TIAA), which is before the separate account regulations but, in essence, was an annuity that passed through the underlying investment experience. In 1959, in the SEC versus VALIC Supreme Court case, it was ruled that variable annuities were a security, and hence were governed by SEC regulations.

During the 1960s, all the states came out with annuity regulations in the separate account statutes. But the product really didn't take off until the tax law changed, which greatly hurt single-premium whole life and variable life, and which brought in the modified endowment contract (MEC) and the seven pay rules.

From that point, we had tremendous sales growth. In 1988 there was roughly \$5 billion of sales, and last year it was up to about \$45 billion in sales. And this year, the growth is even greater than that.

So what do we have? Right now there are four kinds of death benefits out there. What I call the early benefit, which is really just a return of your premium, is a death benefit that gives you the greater of account value or premiums less withdrawals. We have reset and ratchet features, provisions for guaranteed interest amount in the death benefit, and combination benefits, which are really most recent.

Prior to 1988, the only type of death benefit was the return of the greater-of-fund value or premiums less withdrawals. There was much more of an emphasis at this point on annuitization as opposed to deferral, partly because the variable life and the single-premium whole life had better tax treatment, and the market just wasn't as crowded. It just hadn't developed to a great extent at that point. People had a mindset that this was variable product and the guarantees weren't as prevalent.

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As the late 1980s came, people were looking for ways to differentiate, and they were also trying to be a little proactive. People had seen the lapse activity with single-premium fixed annuities at the end of the surrender charge period. They could also see the logical argument that if you had a death benefit that was just return of premium, and you had a product in force for many years with good gain, it was very logical to sell them using a 1035 exchange and lock up the gain as your new death benefit.

People proactively built in a ratchet, which usually matched the surrender charge period. And at the end of the surrender charge period, which matched the ratchet period, you would set a new floor on your death benefit, equal to your account value at that point, if it had been greater than your premiums. Right now I think that outside of a career distribution system and the qualified market, that's the predominant benefit.

Table 1 is a simple example of how it works. We have a \$25,000 single premium; we assume no future premiums and no withdrawals; and that's a five-year ratchet benefit. During the first five-year period, the floor on the death benefit is the premium, the \$25,000. So in year three, even though the value has fallen below that point, the guaranteed death benefit is \$25,000.

Going a little further, you have \$29,000 at the end of year five, and that locks in your new minimum death benefit for the next five years. You will continue to get good performance and you get \$43,000 locked in at the end of year ten, and that's your new floor. It continues to grow in year 12, but then it falls below that point. So here's where you've got some real value. You have, in essence, \$4,000 of net amount of risk at that point, which the insurance company is protecting you against.

TABLE 1
"RATCHET" EXAMPLE:
\$25,000 SINGLE PREMIUM WITH A FIVE-YEAR RATCHET BENEFIT

	Contract Year						
	1	3	5	7	10	12	15
Cumulative Premiums	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000
Account Value	27,000	24,000	29,000	31,000	43,000	48,000	39,000
Ratchet Value	N/A	N/A	N/A	29,000	29,000	43,000	43,000
Death Benefit	27,000	25,000	29,000	31,000	43,000	48,000	43,000

Recently there was an article in the *National Underwriter* that Hartford's going to come out with a one-year ratchet, which is the shortest, by far, of anything out there. And it's clearly a much more expensive benefit, because in my example right here, if the Hartford one-year ratchet was in effect, you would have locked in the \$48,000 dollars as a maximum point as opposed to the \$43,000. So with very volatile funds that can be a costly benefit.

Also in the late 1980s, with a bit different motivation, people wanted to differentiate by moving out of more conservative investments by building in a guarantee of interest. So you would be guaranteed that your premiums would grow at 5% or 7%, and that would be the basis of your death benefit. So if you were in a CD that

guaranteed 5%, it would be a good selling vehicle that this product could give you the up side of being in equities or more aggressive investments. But you knew if you didn't make it through a market or several market cycles, you would be protected by this death benefit.

Now at higher ages, that's a very expensive benefit. So for the most part, people have built in caps on issue age or attained age. And they've also built in a cap where the benefit usually never grows beyond premiums less withdrawals times two. I'd say that's probably the fastest-growing benefit, either that or in combination with a ratchet. These have been more recent. People really want to give the best of both worlds. The ratchet really allows you to lock up past gains, where the interest guarantee makes sure that you always have an increasing benefit. Most people want to cut off the interest guarantee at some of the later ages, so you can still have an enhanced benefit through the ratchet portion through all ages that you're issuing the product. The products that have built this combination benefit have really set the path for getting larger exemptive relief to cover the extra risk with this benefit.

Now a bit about theoretical pricing. People look at it two ways: either using Black-Scholes option pricing or doing Monte Carlo analysis. I'll touch on some of the key assumptions. I haven't directly done a lot with Black-Scholes, but I'll try to give you a little feel for how it works. In essence what you're doing is pricing a series of put options, rights to sell at a particular point, where each option has a strike window of one year. So you're buying a series of put options, where one is exercisable in year 1, one is exercisable in year 2, etc.

In essence, you get to weigh these options because they only are exercised by those people who die, so you weight the price of the option by the probability of death. The price of the option is set using the Black-Scholes formula, which incorporates a lot with the risk-free rate and a lot with your variability expectation. It's really a direct method of getting to a price of the benefit. I don't think it's used nearly as often as the Monte Carlo technique.

With Monte Carlo analysis, what you're doing is a simulation method. You're creating a large number of trials. It may be numerous trials at a particular age cell with a particular fund division. And you create an investment performance distribution, based on what cell you're looking at and based on some random variables scenario, which usually is quarterly returns. Then plug those returns over a 10- or 20-year period back into your deterministic look at the cost of your death benefit guarantee. By doing numerous trials, you have a distribution of what your results are. You can look at means and you can look at 90th percentile, 95th percentile, in an effort to try to set a fair price, if you're comfortable with the return you're going to get on this benefit.

Key assumptions. Clearly this is not a mortality risk, but an investment risk. And one of the first issues is, with the large number of funds we have now, do you try to model every particular division? Or do you tend to take a more global look that says, maybe I think in aggregate over a particular age group. I'm going to have 70% of the money in equities, 30% in bonds, and 10% in money market, and maybe just selectively look at some of the more volatile funds. Just try to narrow the assignment of trying to put a price on this.

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Another key issue right now is that we're in somewhat of a bearish period. Do you look at more historical norms for the type of funds you have? Or do you reflect exactly today's conditions? That decision may be very different for a company that's up and running and selling at a fast rate, as opposed to a new entrant whose sales gross won't grow for a number of years, and may be in a much different situation by the time the company really gets a good sales growth.

The volatility, both the mean and standard deviation, are very important. The mean is especially important with the interest guarantee. If your expected mean return is very close to what you guarantee, you're going to have numerous scenarios in which you're in a loss position and you'll have a net amount at risk.

With standard deviation, the volatility becomes more important with the ratchet; the volatility after you've locked in at a high point is more important. As far as age distribution is concerned, you'll see everything under about age 55 is a very cheap benefit. As you go from 55 or 60 up through 80, the rate at which the cost expands is just astronomical. With mortality rates, I think people are pretty comfortable using either something along the lines of 80–90% of the 75/80 ultimate, or 100% of 1983 Individual Annuity Mortality. Lapse rates and withdrawal rates have to be in sync with your pricing of the rest of the product.

With terms, conceptually, people for the most part are looking at the results of their Monte Carlo analysis. And depending on how aggressive or conservative, they want to set a revenue item that makes it break even more than expected. Maybe it breaks somewhere from the 85th percentile to the 95th percentile. I think that's the way the majority of the people look at it. I like to close the loop and go back and then make the calculation. OK, I've set my price. I want to look at a reserve methodology that tracks what I think my expected cost is. And I want to be able to set up enough risk surplus, maybe at the 95th percentile, to prevent ruin. When I plug that level of risk surplus back in, run some of my standard expected scenarios against it, am I still making my internal rate of return (IRR) on that benefit?

For reserves, there's not a lot of guidance in the regulations. Basically what the reserve regulations for variable annuities say is you want to recognize that it's annuity and recognize the fact that it's variable. I think people are reserving on the low end at this point.

I think a majority are still using a one-year term reserve. And the way that term reserve is calculated is they're looking at the net amount at risk on evaluation date, and multiplying that net amount at risk on a serialim basis by a 1980 Commissioners Standard Ordinary (CSO) q_x or 1983 IAM q_x . And that's the whole reserve that's being held.

So it doesn't reflect the fact that this is a risk that stems far into the future, based on the volatility of the underlying funds. Some states are probably more comfortable with the next methodology, in which you reflect for at least a one-year period the effect that you could have a huge market correction, and piggy back you off the variable life regulation, assuming a one-third drop in the separate account assets, creating a net amount of risk from that, and then using a valuation mortality table.

What I'm more comfortable with is as follows: you've done your Monte Carlo analysis and you have a good feel for expected cost. That's not going to be incurred on a very levelized basis, so I think it's most appropriate to put away a number of basis points, as you go forward, to pre-fund the benefit, and to debit that account that you're holding with the actual claims that you experience over and above the account value. I think more companies are going to that type of approach. It will be interesting now that the benefit is coming full force to see how the regulators will react.

For the final item, I just want to touch on the SEC. With all variable annuities, you have to apply for what's called exemptive relief to charge the mortality expense risk charge within the product. The safe harbor has always been, for the last several years, 125 basis points. And it's really based on the representation that this is within the range of industry practice or consistent with the risks assumed.

There are four registration state exemptive reliefs that I'm aware of. There's an incremental benefit, which deserves an incremental risk charge. And that enhanced death benefit is measured over and above the early benefit, the return of account value or premium less withdrawal, and quantified in most part somewhere between the 85 and 95% level. And the detail representations are usually sent to the SEC.

There have been four granted that I'm aware of, and they range from 12 to 30 basis points. Two of them have been at 12 basis points for 4% interest guarantee, with a ratchet benefit also. One has been approved at 20 basis points at a 6% interest rate. And the final one that's been approved is at 30 basis points with a 7% guaranteed element.

MR. RICHARD J. TUCKER: I'm going to talk about variable annuities from a direct writer's perspective. I'm basically going to give you my experiences at Paine Webber Life. We ultimately entered into a reinsurance agreement with LifeRe for the reinsurance on the death benefit of our variable annuities. At the time, to my knowledge, it was the first treaty that shifted both market risk and mortality risk from the direct writer to the reinsurer. I'm going to walk you through what I went through.

Paine Webber had the goal of creating a pure, separate account company. To meet that goal, Paine Webber purchased an empty shell at the end of 1992 and renamed that company Paine Webber Life. The shell was purchased to create what I would call a nontraditional insurance company. Paine Webber did not have a desire to get into the traditional mortality risks that an insurance company normally does. The goal was to create an asset-spread business, like a mutual fund.

Paine Webber has excellent distribution of variable annuities today. We were looking to leverage that distribution capability. Paine Webber in total will sell more than \$2 billion of variable annuities in 1994. The Paine Webber brokers can sell more than 20 carriers of variable annuities. Paine Webber Life is just one of them. We also wanted to be able to achieve strong, third-party ratings, and as a result we also had to create as pure a separate-account company as possible.

Given these goals, what did we do? Our initial products were two variable annuities. They were very similar. They just varied in the way the expense structures were set

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up and how the enhanced death benefit worked, to minor degrees. There was no fixed account, which is unusual for a variable annuity, but was necessary in order to meet this pure-separate-account-company philosophy. We also had to minimize other general account risks, therefore we ended up reinsuring the death benefit.

Let me talk about the product development process that I went through. Given our goals and our distribution capabilities, we still had to overcome the fact that the marketplace is very crowded. Many people would say it's saturated. The mutual fund market, as well as the variable annuity market, is crowded. There are more mutual funds available today than there are stocks on the New York Stock Exchange, which leads me to wonder what they're investing in. But that is a fact. Paine Webber by itself offers 20 different carriers. So there's really not a lack of product out there. So the question becomes: how do you differentiate?

Well, when you're trying to differentiate against mutual funds, tax deferral is not enough. We'd like to think that it is, but the plain fact is that it's not. The variable annuity is more complicated. You have to deal with owners, annuitants, beneficiaries, issuing contracts, endorsements; there's paperwork, there's the age-59.5 penalty from the IRS, there are surrender charges, and it's a long-term commitment. Tax deferral just by itself just does not sell a variable annuity.

Variable annuity also has additional cost to it. I have an additional cost of 50–75 basis points. You'll note that I'm not saying that the additional cost is the extra mortality and expense (M&E) of a variable annuity. It's not 125–140 basis points.

How I came up with the 50–75 is that I looked at my products, and I compared the actual cost to the mutual funds that we cloned for the variable annuity. So I had a direct, one-to-one comparison. I was able to include all the distribution costs that are in the mutual fund, 12B1s or whatever they're called, and the cost disadvantage is only 50–75 basis points. Now, that obviously will vary from product to product.

The other thing this doesn't take into account is the fact that, in theory, variable annuities should get a superior gross return over time, because it's a more stable environment for the investment managers. They don't have to carry as much cash. They can invest for a longer term and that, in theory, should show up in better returns over time. What this all means is that the death benefit is a very powerful differentiating item for variable annuities, in general, against mutual funds.

How do you differentiate against other variable annuities. When you buy a house, the maxim is location, location, location. With variable annuities, I guess, it would be management, management, management. That is the crux of what you're buying in a variable annuity. But there are plenty of good managers out there. In fact, at this time, everybody who is anybody in the mutual fund industry is now also managing a variable annuity.

In fact, most of those agreements are not exclusive, so having a good manager does not necessarily differentiate you. So again, you get to the death benefit. You need a good manager, but you need more than just a good manager. So that makes the death benefit a tie-breaker. And it means not just any death benefit, it means having a strong death benefit.

You need to make many decisions when designing a strong death benefit. Tom touched on several of these, so I'll just go over them very briefly. You need to decide whether you're going to offer a ratchet or reset, as Tom called it, an interest accrual or both. Paine Webber had both the ratchet and the interest accrual, which, as Tom indicated, is common for this generation of product. If you're going to do the ratchet, you need to decide how often you're going to do the reset. We did five years, which corresponds to our surrender-charge period. As he said, there is a product soon to come to the market from the Hartford that does a one-year ratchet every year.

Can the death benefit decrease at point of ratchet? Our response was no, and that's common in the industry. And is there any maximum age on the ratchet? That is, will it continue forever or will it cut off at some point in time? We did not have a maximum age and, again, that's common in the industry.

If you're going to do the interest accrual, you need to decide the rate of accrual you're going to offer. Paine Webber offers between 4% and 8%. It varies, based on which of the two products you choose. Within our products, there are a couple of options, so you can get anywhere between 4% and 8%.

The maximum benefit for our product is two times initial premium, which is common in the industry. We did set a maximum age; we used attained age 75. Again, as Tom mentioned, having the maximum is common. There is no standard age. Do you use 70, 75, 80? And do you cut it off by issue age or by attained age? There is a range of practice out there today.

You need to decide which of your portfolios is eligible for the interest accrual. In our products, we excluded the money market account. Basically what you see in the industry today is at low-interest accrual rates, say 4% or maybe 5%. The money market is often included in the death benefit. As you get to the higher rates like 6% and 7%, they're often excluded. In theory, you could also exclude any portfolio that was expected to be very volatile and would, hence, have a very high cost to the death benefit. But I have not seen that in practice yet in the industry.

Your design and your cost are obviously intertwined. The first thing you need to do when pricing your benefit is build a separate model in addition to your asset share. Tom talked about the Black-Scholes and the Monte Carlo techniques. We used Monte Carlo. I'm not smart enough to figure out how to use Black-Scholes.

The assumptions you choose in your model are critical. Ronnie will talk about that. Then from your model you need to determine your price or your cost. That's going to vary to a large degree on the confidence level you choose in your pricing and also how you deal with risk surplus. Ronnie's also going to talk more about those. When you come up with your price, typically it's going to be expressed as basis points of account value. Or I've also seen it expressed as a dollar amount for the waiver of the surrender-charge portion of the death benefit, with a basis point expression for the balance of the death benefit.

Once you determine your price, then you have to figure out how to fund the cost. I break funding down into two categories, which can be either implicit or explicit. Implicit would mean that the cost you come up with is just an expense in your asset

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share, and you have revenues in your asset share from your general asset based charges, which are your overwhelming revenues. Whether they're called M&E, administration, or distribution charges. Whatever they are, they're all asset-based.

Explicit is the one that Paine Webber Life chose. Paine Webber Life had two of those four exemptive orders that Tom talked about. That's where you earmark part of your asset charges to specifically pay for the enhanced death benefit. As Tom alluded to, it is a charge that the SEC will review. You have to make it part of your exemptive application. You have to prepare an actual memorandum, and by the way, the SEC did ask to look at the actual memorandum. But the SEC is not trying to regulate rates for the enhanced death benefit at this point. The SEC is relying on the actuaries' opinions on whether the charge is reasonable in relationship to the risk assumed.

Now that you have a benefit, you have to decide whether you're going to reinsure it. There are two structures in the marketplace today for reinsuring this death benefit. The traditional structure was a yearly renewable term (YRT) basis, in which you would pay a YRT rate per thousand net amount at risk. This only shifts the mortality risk; it does not shift the market risk from the direct writer to the reinsurer. The disadvantage to the direct writer is that, at the exact time that your reinsurance costs are increasing, your revenues are decreasing. Your net amount of risk goes up as your asset level goes down. You're going to pay more to the reinsurer, but since all your revenues are asset-based, that's the exact time that you're going to be collecting fewer revenues from the policyholders.

The newer basis is a charge expressed as basis points. This will shift both the mortality risk and the market risk from the direct writer to the reinsurer. And for the ceding company, it has the advantage of matching expenses to revenues.

The last thing you need to decide is: are you going to retain it? Are you going to reinsure it? Or maybe you'll do a little bit of both. As I started off saying, Paine Webber Life chose to reinsure it with LifeRe. The reason we chose to reinsure it is that we had a low-risk philosophy, I mean, very low risk. I should change that to a no-risk philosophy. We are a very small company. We are literally a start-up, because the shell we bought had nothing in it. So all we have is a start-up business of variable annuity. For the exact same reason, we have no product diversification. This is an important point. In my opinion, this death benefit is a risk that's manageable; it can be an acceptable risk; and it's a risk that you can make money on. Paine Webber Life, however, was just not in a situation to take advantage of that.

It goes without saying that we needed to get an acceptable price on the reinsurance. And we needed to get an acceptable structure, which for us involved the matching of revenues and expenses. Once we decided to do the reinsurance, we did disclose our treaty to both the SEC and to our state of domicile, and that was a non-event. We got no comments from either party on the treaty. At this point, I'll turn it over to Ronnie. He's going to talk about pricing issues, particularly from a reinsurer's perspective.

MR. KLEIN: I'm sitting in my office and Rich gives me a call and says, "I have a proposal for you to reinsure a variable annuity death benefit. And by the way, it's

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basis points off the asset value." I sat there for a couple of seconds and I said, "That means as my premiums get lower, my risk gets higher." Just what Rich wanted to pass on. It was an interesting concept.

What made it really interesting is in a day of the canned pricing programs from a reinsurer's perspective, it was really nice to say, hey there's no real canned pricing program for this. I have to do some work and price it myself and brush off the old APL (A Programming Language) keys. It was really a lot of fun to work on it.

So I said, "All right, thanks for the offer, Rich. First, let me set up a pricing model and see if I can get my arms around the risk and how much it would cost. Then I'll go off to senior management and see if they'll buy into it."

When I set up my pricing model, I had my choice between Monte Carlo and Black-Scholes. And as you see, we chose the Monte Carlo technique. Tom discussed both techniques. The only thing I was worried about was that I was dealing with a short time frame. Rich wanted the answer as soon as possible, so I had to look for something that was practical and understandable. And as Rich said, I don't think I'm smart enough to use the Black-Scholes either. It gets a little complicated, and when you're under time pressure, it's a lot easier to just run 1000, 2000, 5000 scenarios under Monte Carlo.

So then we had to check the fund parameters. The mean and standard deviation were the key for me. Now how do you figure out the mean and standard deviation of some of these funds? There are a couple of periodicals around that you could look into. *Morningstar* everybody knows, and *Panorama*. It also helps to have a couple of friends who are analysts at some of the investment houses to help walk you through different risks, some of the past philosophy, and different fund managers, if they're good or not good. That really helped a lot.

Then you have to look at the maintenance and expense charges (M&E), because when you run your model, the M&E that the direct company is charging directly hits your return. Even though you have your mean and standard deviation, these expenses come out of the return, so it actually lowers your return.

Age distribution is very important. First, from a mortality standpoint, because if you have an average age of 60, but half the people are age 50 and half the people are age 70, I'm not sure that you're hitting the right mortality if you choose a 60-year-old's mortality. Besides that, there's usually a maximum annuitization age, and if you have everybody at age 60, you run it for 20 years and the maximum annuitization age is age 80 or 85, you don't get that into your pricing. It's much better to distribute your ages more according to what's actually going on. So you have some 75-year-olds, and in 10 years, if the maximum annuitization age is 85, you'll be off that risk at age 85. That part of your model falls off. And I think it's a better snapshot of what's going on.

Second, there's usually the guaranteed interest growth that Tom and Rich were talking about, the 5%, 6%. That usually quits at a certain age, where they won't allow it to increase, and usually that's your last issue age. Thus, if you have the age distribution correct, you can cut those annuity holders off right at the point where

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they won't have any increases. We also had to look at the ratchet benefit. Paine Webber Life had one. And also the fund distribution: how much money is going to be in a different fund?

And then we looked at the profit criteria. First, for the profit criteria, I had to throw in an expense loading. It was a minor charge per thousand that we wanted to cover our expenses. And profit measures obviously are a lot different than you're used to. You're used to a percentage of premium or internal rate of return. When you're looking at this, basically you're running your random variable and you're saying: what's the probability that the model will beat 80%, 85%, 90% of the outcomes? And that's how you check it.

So what is the profit measure? I guess you could look at the 50th percentile and say, how much profit am I going to make there? But that's not really what we are interested in. We are more interested in when are we going to start to lose money, as opposed to how much money we're going to make.

Next was my sale to senior management. I priced it out, called Rich, and gave him some preliminary numbers. He says, "That's interesting. It matches what I've done also." So we were on the same wavelength. And now we had to sell it to senior management.

Reinsurance of annuities is not a normal thing for our company. Usually when you talk about reinsurance of annuities, you're talking about cash or surplus strain and big blocks of business. When you talk about the mortality on annuities, there's no underwriting. I say there's no underwriting, but these are usually higher-income earners that are putting money into variable annuities, so we'll have better mortality.

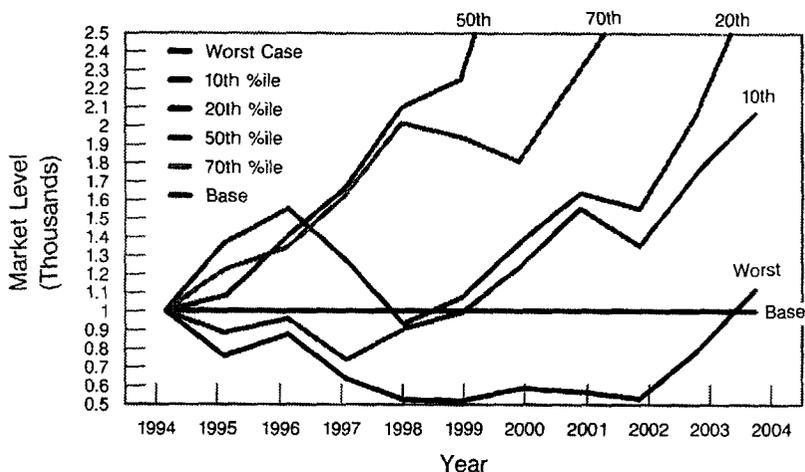
For example, what Tom was saying, using 90% of the 1975-80 ultimate table is better than some group mortality that you might use when you have no underwriting. This was an important characteristic of the model, that is, which mortality to use and trying to explain to senior management that even though there's no underwriting, it's not as risky as it appears.

Then we were talking to senior management about the investment risk. Again, it's not a typical risk that the reinsurers will take. Usually in a poor market, your investments won't do too well; this compounds that risk. And with this product, you're going to have more death benefits during that time, and larger death benefits. It's difficult to predict the investment risk. Even though I run my 1000 scenarios, senior management would come back and say, "What would happen if the market dropped 10% per year for 15 years?" I said, "The country would go out of business; I don't know." That's not a good one. Senior management wanted to get their arms around it, and it was tough to explain the mean and standard deviation and the variability of the funds. When you run 1000 different scenarios, you have the most likely scenarios in each case.

Chart 1 shows a fund I worked up for senior management. It is an international equity fund similar to Paine Webber's, which is relatively risky. And then senior management said, how much would you lose in the worst-case scenario? And I said, I don't know maybe \$60 or \$70 million over 20 years. So it's a lot of money. But if

you look at the return, you see that the market, after about two or three years, is dropping to about a 50% level for five years, and that's highly unlikely. It has never happened. But that is one of the scenarios that kicked out of my 1000.

CHART 1
MARKET RETURN ANALYSIS
INTERNATIONAL EQUITY

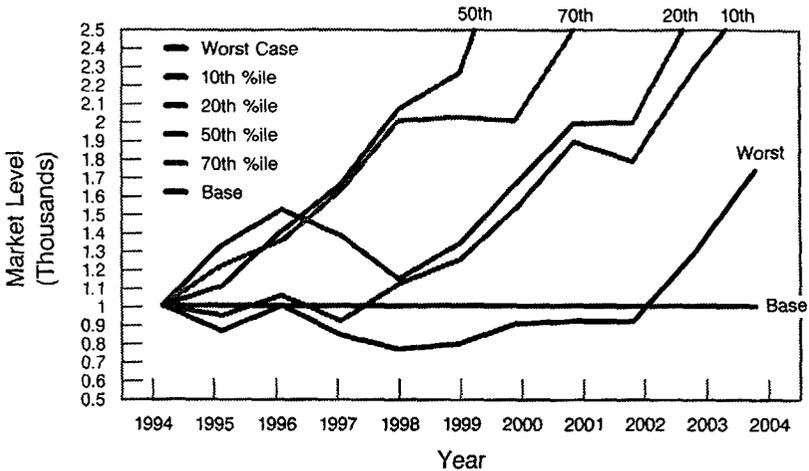


Look more at a 70th percentile, 50th percentile, and if you map what the market's done or the international equity funds have done, those are more reasonable expectations. Chart 2 shows an average of all the different funds that you can usually invest in. And you'll see that the graph looks very similar, except it's more squooshed together. That's a technical term. This is what you'd expect when people have money in different funds.

And finally, an explanation of profit goals. This was a fun one. That's really difficult to explain. We are a publicly traded company, and you want to explain to the stockholders that you usually get a 12%-15% return on investment, depending on your target surplus. And here, except for the reserve issue, which at first we didn't look into when we were initially pricing it, there's no investment. So it's really hard to get any return on investment. Percent of premium is hard to look at also. You have to explain the way you're doing it, that you're beating 85% of the chances. And it was a very difficult explanation both for senior management and to the stockholders.

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CHART 2
MARKET RETURN ANALYSIS
AVERAGE OF ALL FUNDS



Now some retention issues, such as net amount at risk. I'll just quickly give you an example here. Let's say you have a \$1 million retention, as we do. And then you write a \$2 million variable annuity. At first, you have no risk. The only risk you have is maybe the surrender charge, 6% of premium. It's basically nothing. If the fund grows from \$2 million to \$4 million over 15 years and then drops to \$1.5 million, we would have a \$2.5 million net amount at risk. This is in excess of my retention.

So it's a difficult thing to cap; do you talk about net amount at risk? That we're only going to take \$1 million of net amount at risk? Do you talk about a maximum fund that you're going to take? It was a difficult process to walk through.

We discussed retroceding it. It's difficult to get retros to buy into this because most annuities are small, about \$50,000 on average. So if you're just going to give the retros the larger annuities, they're going to get a poor spread of risk.

You may want to give them a first-dollar quota share. And then you're giving away some profitability for maybe very little coverage. Also, there's no underwriting, which typically retros are not too interested in doing. And there's a slow reaction time. The direct companies want to move fast and the retros like to analyze it. I'm not saying that's wrong or right, but it is a big problem for the reinsurers.

Then there's hedging. Every person that I've spoken to when you describe this says, why don't you just hedge? That's a great idea. The thing is, this is not an easy thing to hedge. Basically what I've looked into on the hedging is you can hedge for a

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short time, but this is a long-term benefit, and you can't hedge for the long term. Even if you could set up a series of one-year hedges, it's going to be fairly expensive. You're probably going to eat up these small basis points that you collect.

Maybe you could hedge just for the large cases, not for the total block of business. But again, that gets difficult. After researching it fairly extensively, I found that hedging was not an option here. I'd be interested in knowing if anybody else had more luck with some hedging ideas. People will ask, why don't you just hedge it? But when you look more into it, I found this is really not an easy way to do it.

Finally we're setting up the treaty. So we priced it, got comfortable with Paine Webber, and made the sale to senior management, and now we're going to set up the treaty. Recapture was the first thing that came to mind for me. I said, recapture, how are we going to do this? I don't want to get caught in a market cycle. So we'll have our ten-year-minimum recapture, which is fairly standard in the industry. But I want to grade the recapture over five years. Maybe you can recapture 20% per year.

What I was afraid of was that after ten years, the market would be at a low level for a couple of years. I got hit with a bunch of death claims. It's on its way up. Rich says, OK Ron, I'm going to recapture it in this nice, bull market. He's got no risk, and I was in a poor cycle, so I wanted to just lengthen it out. And I think that's reasonable. I think that's what I've seen in the industry. That's what we wanted to do, and that is what we did.

Some of the limitations to reduce risk that have to be clearly stated in the treaty were the age at annuitization. Obviously the earlier age will give you less risk. For example, if it's a qualified market and people have to pull the annuity out at 70.5, there is less chance of death and less chance you're going to have a death claim, and that will help you out.

Age at issue is important. Annuity size for retention issues is important. I'd rather have lots of little ones than a couple of big ones. The type of funds is obviously important. You want to have a good mix of funds, so you don't get caught with most of the money with one fund manager or in one type of fund. That was important to us, and we discussed that with Rich. And you want to make sure the calculation of the benefit matches what the direct company is doing or how they're charging you.

It's important to have some sort of "out" if you can with fund changes. If something changes—risk of funds, number of funds, fund managers, something materially changes—you need a chance to reprice. We were concerned about that.

Finally there is administration. How do you collect premiums? What I found very interesting here is that, from dealing with the direct side on traditional reinsurance, many times, the administration is not very good. And that is because senior management at direct companies doesn't consider reinsurance all that important that they want to fund nice systems for reinsurance. What I found, though, with the variable annuities is the systems are amazing. They can give you daily balances and so we calculate premium daily. We collect it, I think, quarterly.

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Reporting monthly or quarterly, you can get all the information you want. For example, I called Paine Webber and I said, "Can you give me the top ten largest annuities that you have." And it was faxed to me within an hour. That information is easy to get.

Again, it's important to calculate your death claim as the direct company is calculating it in your treaty. And finally netting, which I think is very easy here, where you can just net the death claims against premium and just do one calculation, because there might be a lot of small claims for small amounts. I'd like to open it up for questions.

MR. DAVID SCHERR: I'm from North American Re. I wonder what the tax reserve might be on this type of reinsurance?

MR. NORTON: I think the guidance you have to look to is some of the history on the variable life side. My best recollection of that is that there were some private letter rulings that spoke to the fact that they were not comfortable with the one-third drop that's built into the variable life minimum death benefit guarantee (MDBG) reserve as being a good tax reserve. (But they were comfortable with any piece that was a direct result of the actual point you were at. That is, they were comfortable with the net amount at risk in relation to the face amount of the death benefit guarantee.)

So I would think if we go back to my three methods, I would think that the 1980 CSO times the net amount at risk would clearly be a good tax reserve. The one-third drop part of that seems to be unlikely. And the Monte Carlo would also be somewhat risky, because you're really looking at future drops that aren't present right now. I would think that would be somewhat aggressive.

MR. KLEIN: Just to go one step further, what you're asking is, if you use that one-third drop for the statutory reserve, which created a fairly large reserve, and your tax reserve is very small, you're going to get killed on taxes, which is going to hurt your return over a long period. Yes, that is a concern that we are looking into and I'm sure that others are also.

MR. SHERR: For one-year term premium or half the year?

MR. NORTON: I'm very comfortable with a full year, although I know some people only hold a half.

MR. SHERR: A second question. I was wondering how you would show this in your annual statement, under what line of business. If you have a mortality risk, do you show it under the annuity line?

MR. KLEIN: You're talking about for the reinsurer?

MR. SHERR: Yes, the reinsurer.

MR. KLEIN: I think I'll back off that question. I'm not really sure where we would show that in the annual statement. But I would guess that I would not show it in the annuity line. Considering that it is a mortality risk, a regular mortality risk, the individual life line is where I might show it.

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MR. SHERR: I was just curious about how you would wall off the fund.

MR. KLEIN: I'm not sure I understand the question.

MR. SHERR: Well, it was mentioned earlier, I think by Mr. Tucker, that if you were having an automatic interest growth, you might want to separate the money market. How would you go about doing that?

MR. TUCKER: What we do is we would wall off the money market. We'd track it on a day-by-day basis. We know which funds are in the participating divisions, excluding the money market. We do a daily interest accrual on that amount. The part that is in the money market is accrued at a rate equal to the money market return in the money market for that day. And if you are doing it in something other than the money market, you could use the same concept. You would apply the net investment factor, and then it would actually go down if it was a division that had market risk.

MR. MATTHEW J. SHERWOOD: I'm from Met Life. I have a two-part question. First, how expensive are the reinsurance premiums for these various death benefits? Second, when you go for an SEC administration exemption, would you have to show your reinsurance premium costs? And would there have to be a relative mapping between what the reinsurer is charging you and what you propose to charge the annuitant for an M&E charge?

MR. TUCKER: In my experience, no, there was no mapping of the reinsurance charge to what I was charging the policyholder. Well, I gave them the treaty, so I guess I did. They could have looked in the treaty at what I was being charged, but we did not make a point of disclosing it to them.

MR. SHERWOOD: How expensive should this benefit be?

MR. KLEIN: It really depends on the benefit. I've priced some benefits that were as low as 4-5 basis points, because there was a 2% guarantee and no ratchet benefit. But these typical ones that we're talking about, as Tom had written in there, go between 12 and 30 basis points.

MR. SHERWOOD: Just one more. How valuable is the basic ratchet death benefit, like a few basis points? But not from a reinsurance point of view, from a policyholder's point of view, just your traditional, not interest guarantee or anything, just the ratchet death benefit.

MR. KLEIN: It's hard to give a range because it would depend on the maximum annuitization age. And you know the average age of the fund. There are many variables that are very key to that, such as the type of funds that it's going to be in, so it's really hard to get your arms around specifically how much that would be.

MR. NORTON: There's a tremendous ratio based on age. If you look at a 45-year-old versus a 75-year-old, there's a tremendous multiple; that's one of the big areas of volatility. The volatility of the individual funds that are being offered is another.

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MR. LARRY J. BRUNING: I'm from Security Benefit. I've got a couple of questions. One is about your increase each year, your guaranteed interest increase. I assume that was annual, but I thought I'd seen some companies that also had a ratchet. They would use the increase, only measured at the end of each ratchet period. So if you were ratcheting up at the end of five years, it would be the new, high watermark, or 5% or 8%. Have you seen anything like that? Or is everything that you see annual?

MR. TUCKER: I have not seen the latter that you described. I've seen them work independently. If the market evolves to a point where you're doing interest on the ratchet amount, that's going to be significantly more expensive than the benefits that are there today.

MR. BRUNING: Right. And then the second question; I was kind of surprised that, at least in your Paine Webber product, you didn't have any cap on the ratchet, that the ratchet keeps going on forever, if I understood that right.

MR. TUCKER: That's correct. And it is, to my knowledge, fairly common in the industry. It's a result mostly of the way the ratchet evolved, as a persistency measure. They wanted to make sure that people didn't 1035 on their own ratchet, their death benefit up. So that's just what the competition is calling for in the market today.

MR. BRUNING: OK. But that also would get pretty expensive, I'd assume, the older the age.

MR. TUCKER: Yeah. At the older age, everything is expensive here.

MR. BRUNING: And the last question I have, I hope there aren't any fund managers in here, and if there are, I hope they don't take this negatively. But in all your assumptions in which you were trying to analyze the risk, I didn't see any assumption on competence of fund managers, that is, if they're following some kind of theory or philosophy of investing that turns out generating negative returns for several years in a row. I didn't see you model that.

MR. KLEIN: It's a good point, and I did have a couple of slides on the funds, the type of funds and all that. The thing is, you don't want to get tied into a fund manager, because fund managers come and go. The normal life span on a fund manager is, what, two years, or maybe three? So if I start saying let's look at Paine Webber funds (which happen to perform very well in these series of funds that I looked at) and their managers, I'm going to get burned. So what I do is I say, Paine Webber has the Paine Webber International Equity Fund, but I look at the average of international equity funds for all Bear Stearns, Sherson, all the different funds. I like to do that and hope that it's somewhere in the average. But yes, I did take that into account.

MR. TUCKER: But remember, past performance is no guarantee of the future.

MR. MICHAEL W. PADO: I'm from North American Re. It's a question for Tom Norton. You alluded to differences between qualified and nonqualified variable

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annuities. In terms of your stochastic modeling, can you, for the benefit of all of us, just discuss some of the differences in premium flows and age distribution as well as mortality and lapse?

MR. NORTON: I guess you ought to separate qualified plans also between IRA rollover and 401(k). When you talk to the qualified with 401(k), 403(b), I think you've got to pattern much smaller premiums and recurring premiums, which gives you a little different dynamic. With those markets I think you tend to see annuitization. You have to see annuitization to a point. So I think it really cuts your high-age scenarios off, which makes it a lot cheaper. With the IRA rollovers, I think you get the same dynamic where, with the nonqualified business, I see a trend of everyone trying to push that age where you have to annuitize further and further out. So that was always a tax issue of whether you really had a bank account, which was earning variable runs, or an annuity, which was going to pay out benefits.

I think that's the big difference. In the qualified markets you have a knowledge that they're going to start paying out at some point and limit your risk. For the nonqualified, it's becoming almost unbounded in that respect.