1998 VALUATION ACTUARY SYMPOSIUM PROCEEDINGS

SESSION 10PD

ACTUARIAL GUIDELINE XXXIV/MINIMUM GUARANTEED BENEFITS FOR VARIABLE ANNUITIES

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I'm an AVP and corporate actuary for Hartford Life in Simsbury, Connecticut. I, too, have been with The Hartford for 15 years, and I've also worked on some of the Academy committees that Tim has worked on. I also worked on the revised Actuarial Guideline XXXIII, and I'm currently co-chairing the Guaranteed Living Benefits Work Group.

We're going to discuss minimum guaranteed benefits for variable annuities, which has been a pretty hot topic these days in what is probably the fastest growing segment in the industry. Here are some statistics. According to VARDs, variable annuity assets were $10 billion in 1989 and they have increased to more than $730 billion industry-wide as of the end of June 1998. Sales through June are over $50 billion and are keeping pace with 1997 record total of $87 billion. Of course, that's barring any drops in the stock market in the second-half of the year and any volatility. Tim and I are going to discuss the environment of growth in which these minimum guaranteed benefits have come about.

Many believe that companies will just get more and more aggressive as the variable annuity marketplace continues to grow. I'd say to those that believe this is true, the only constraint just seems to be the risks that companies and the reinsurance markets are willing to manage. It's also in this environment that it's very important for actuaries to do a good job of assessing the risks that companies are taking with these benefits and to make sure that they're holding the appropriate statutory reserves. Many state regulators, particularly through the NAIC, are dealing with these

issues and, as we'll discuss, they've developed Guideline XXXIV for minimum guaranteed death benefits (MGDBs) and are currently working on guaranteed living benefits.

So that's what we're going to talk about. I'm going to start with minimum guaranteed death benefits, and then Tim is going to talk about guaranteed living benefits.

Regarding minimum guaranteed death benefits, I'm going to start by giving you an overview of these products and go through some of the benefit types. Then I'll discuss the risks that are inherent with these benefits. We'll look at things like how the benefit types and how the benefit features impact these risks, which I think ties into some of the things that you might want to look at when you perform asset adequacy analysis on these benefits. Finally, we'll review Guideline XXXIV.

Let's start the overview with a definition of minimum guaranteed death benefits. These are benefits offered with a variable annuity that guarantees that the death benefit will never fall below a given level regardless of how the underlying funds perform. I think that fund performance is a key word. It's really fund performance that stands out as a key part of these benefits and a key part of both reserving and analyzing these benefits.

Variable annuity account values can go up and down, and lately, they've been very volatile. The death benefit is designed to stay constant, over a period of time so that they protect the contractholder from the risk of fund volatility by reducing the downside loss on the death of the contractholder.

There are, at this point, five types (if you count ratchets and resets as two), and combinations. I'll briefly go through some of these. The first two are the simpler benefits. First, the return of premium guarantees that at least the contractholder's contribution is paid at death. Second, the waiver of surrender charge benefits pays full account value on death. Those two types have been around The next three are more what I call the enhanced type of death benefits; one of which is the roll-up where the death benefit will increase at a given rate each year. Originally, these were 1–3% rates to tie into inflation. But lately, it has been more common to see a much higher rate.

The second and third type of the enhanced benefits are the reset and the ratchet where the death benefit is linked to what the actual account value is at the end of a given period. The difference between a reset and a ratchet is that the reset can actually go down, but the ratchet will only go up. If the account value drops and you hit a ratchet period, the death benefit stays right where it is. It doesn't go down. For the one-year ratchets, they're often called maximum anniversary values. You look back and you take the greatest account value at all the anniversary dates.

Initially, these ratchets and resets were in the six or seven-year range and would correspond to the surrender charge period, but now I think it's more and more common to see a one-year ratchet or reset. And I think the trend has been for companies to get more and more aggressive with minimum guaranteed death benefits. It's very common to see 5%, 6%, and even 7% roll-ups, and it is very common to see one-year ratchets. Finally, we're seeing combinations; we not only see waiver surrender charge or return-of-premium benefits with ratchets, but things like the greater of say a one-year ratchet and a 5% roll-up.

What are some of the reasons why a company would offer these benefits? The first and biggest reason is to address customers' needs. It's a very competitive marketplace and it demands these benefits. Because the marketplace is growing so much, companies are going to offer them. I defined these benefits as protecting the contractholder from the risk of losing money in the event of death during a down turn in fund performance. This risk is one of the things that concerns people about purchasing variable annuities, and these benefits are meant to address those concerns.

The second reason is to enhance persistency, which I think is more of a company-focused issue. I think this death benefit becomes part of the contractholder's decision on whether or not they're going to surrender the variable annuity. One reason why the ratchet benefits were originally linked to the end of the surrender charge period was because that's when variable annuities are most likely to be surrendered. Having a minimum guaranteed death benefit gives them our additional benefit that enters into this decision.

The third reason is that insurers can differentiate their product. If I have a one-year ratchet and you have a seven-year ratchet and everything else is equal, my variable annuity is going to look much better. Product differentiation also applies to noninsurance such as mutual funds. Mutual funds are starting to offer minimum guaranteed death benefits. Whenever you read about discussions on variable annuities versus mutual funds, one of the reasons for buying a variable annuity is because of the death benefits. With the capital gains tax rate changing and making the differential between mutual funds and variable annuities much smaller, minimum guaranteed death benefits are one of the things that put variable annuities over the top.

Finally, the trend to richer death benefits has really been aided by the availability of a competitive reinsurance market. I'm not sure whether this is a cause or an effect, but either way, companies can write these benefits and either limit their exposure or just fix their costs.

Now that I've given you an overview of these benefits, I'd like to turn to the risks that are involved. Because the nature of these benefits is to pay death benefits when the funds underperform, the risks can be categorized as either mortality risk or investment risk. A key question is how these elements impact the risks that are inherent in these benefits. I think the answer is a very clear: it depends. That's because the risk that you take on is a function of not only the benefit type, but also the underlying features. I'd like to talk a little bit about each of these risks and give you an understanding of how these features and benefit types impact the risks. This will hopefully give you some things to think about when you're performing asset adequacy analysis on these benefits.

Let's start with investment risk. A key characteristic of variable annuities is that they pass on all of the investment risk to the contractholder. When companies offer minimum guaranteed death benefits, what they're doing is taking back some of that investment risk. It is clear that the investment risks that they're taking back becomes a combination of the level and volatility of fund performance.

More specifically, the investment risk is going to vary based on several factors. The first is the benefit type. If you have a ratchet or a reset benefit, the investment risk tends to be more sensitive

to the fund volatility in the short-term, in particular, short-term around the reset periods. This is especially true with a one-year ratchet or reset. In addition, ratchets are going to be a little more risky than resets because, with a ratchet, the death benefit never goes down.

With a roll-up benefit, the investment risk tends to be sensitive not only to the short-term volatility, but also to longer-term volatility. For instance, if I have a 5% roll-up and my funds only return 3% over an extended period, then the death benefit will more likely be in the money and the costs will be higher.

A second factor is the actual mix of funds in the underlying variable annuity contract. A mix that's skewed more towards the volatile funds, like equity funds, tends to increase your risk. Of course, it can also work the other way. If you have a mix that's skewed to less volatile but lower performing funds, you're going to significantly increase your risk if you have say, a 5% or a 7% roll-up. There are many interacting factors here.

Overall, the best mix of funds tends to be when the money is spread over all the funds, especially if it's spread that way on a contract-by-contract basis.

Looking at the benefit features, investment risk is going to be impacted by things such as the reset or the ratchet time frame. Obviously, a one-year reset is going to be riskier than a seven year reset. The roll-up rate is used if you have a roll-up benefit. Also benefit caps, for example, a 200% of account value cap, will obviously reduce your risk.

The second category of risk is the mortality risk, and there are a couple of issues here. One is whether life mortality or annuitant mortality is going to apply to these benefits. In other words, are companies not being selected because of the richness of these benefits? Remember, there's no underwriting like you have with a life insurance policy. Should you expect the same experience you had when you offered a waiver-of-surrender-charge benefit?

At this point, there's not really any conclusive evidence either way. Many companies are looking at using group annuitant mortality because it's a little more conservative than individual annuitant mortality, but not as conservative as life mortality. When we talk about Guideline XXXIV, we know that a group annuitant mortality table is exactly what is used.

In addition, the Society of Actuaries is taking on a study of deferred annuitant mortality. So if you haven't already been contacted to participate in this study and you're interested, you can contact the Society.

Regarding mortality selection, my belief is that you should expect to see at least some addition in mortality due to the impact that the benefits are going to have on your surrender experience. You could argue that it is a lapse risk instead of a mortality risk, but if you have a death benefit that's in the money and you're in poor health, you may be less likely to surrender the annuity. Whether or not this is a substantial risk is anyone's guess. It's certainly something to be aware of and something you may want to consider in determining both your lapse and your mortality assumptions that you use in asset adequacy analysis.

Another selection issue is whether companies can expect selection at issue. There have been some arguments that someone who is uninsurable from a life insurance point of view is going to buy an annuity with a rich minimum guaranteed death benefit. I don't see much merit in this argument, but it is something that you might want to consider in your analysis, especially in your sensitivity tests.

Let's discuss some of the things that impact your mortality risk. The first is going to be the age distribution. When you price the product, you made some age distribution assumption. If your actual age distribution varies from that assumption, you could be taking on more risk. The reason is the revenues that reimburse you for the minimum guaranteed death benefit come from mortality and expense (M&E) charges, and typically are not going to vary by age like a life insurance premium.

The second sensitivity is benefit features such as age limits, which are simply going to restrict the age at which you provide a death benefit in excess of the account value. Obviously, this type of feature will lower your cost and your mortality risk, especially at the older ages.

The third benefit feature is who the death benefit covers. Some companies pay a death benefit only upon the death of the contractholder. Some pay only on the death of the annuitant, and some will pay on either. Since it is possible for the annuitant and the contractowner to be different, those that are going to pay on either are obviously taking on more mortality risk.

The fourth sensitivity is how the death benefit is offset for partial withdrawals. There has been a lot of discussion about this in the past, and I think Tim wrote an article that was in the *National Underwriter* on this. Some companies do a dollar-for-dollar offset, which means for every dollar of partial withdrawal, there's a dollar of minimum guaranteed death benefit reduction. Others use a pro rata approach that looks at the percentage of decline in the account value and applies that same percentage to reduce the death benefit. I believe that companies that offer a dollar-for-dollar offset have more mortality risk.

Before I get into Guideline XXXIV, I want to talk about some of the things that you may want to consider when you're performing asset adequacy analysis. I've already touched on some of these things, but I think it might be worthwhile to summarize some of my comments.

The first consideration is the mortality assumption that we just talked about. I did mention it's probably appropriate to use something more conservative than individual annuitant mortality. We talked about many of these uncertainty issues, and whenever I hear talk about uncertainty with assumptions, it tells me that we need to do sensitivity testing. So, obviously, that is something that you need to consider for your mortality assumption.

Second is the lapse assumption that I mentioned earlier. The existence of the minimum guaranteed death benefit might impact the surrender experience. One of the reasons companies offer this is to

increase persistency. That's an assumption that you need to look at more closely, and you need to reflect that improved persistency in your assumptions.

A third consideration is the mix of funds and movement between funds. To the extent that you're going to include this in your modeling, there are several things you may want to consider. First, consider varying the assumption with age. Younger people tend to invest in funds that are a little bit more risky.

Second, the presence of the death benefit could impact the mix to more volatile funds. Remember, one of the concerns with variable annuities is the risk of investing in volatile funds. By having a minimum guaranteed death benefit, the contractholder may end up being a little bit more aggressive in the funds that they choose.

Third, the assumption for the percentage of assets in the fixed account, if you have a fixed account option, is very important since there's no minimum guaranteed death benefit risk above the account value in the fixed account.

Fourth, it's important to look at the mix of funds from both the contract-by-contract and a book-of-business point of view. Thus, a diverse mix within the contract will further dilute the MGDB investment risk.

Fifth, assumptions that may make sense to you regarding movement of funds may not necessarily work. In other words, the old saying that people like to buy high and sell low may apply here. I talked to some of our customer service people at The Hartford a couple of weeks ago when the market dropped, and a lot of people were selling their equity funds. People do react emotionally in those situations and they do sell low.

The sixth consideration is fund performance, which I think is a key assumption in asset adequacy analysis. Stochastic scenarios would probably work best. But in some situations, running deterministic scenarios may work just as well, especially for asset adequacy analysis. If you do

choose to do deterministic ones, you need to carefully choose your scenarios. Don't just pick a constant positive return or you'll miss out on a lot of the fund volatility risk. You need to look at both short-term volatility and long-term underperformance, especially if you have a roll-up benefit. If you do stochastic, it's probably best for asset adequacy analysis to err on the side of conservatism when you pick both the mean and the standard distribution.

Finally, it's important to do sensitivity testing as much as possible when you're analyzing these benefits. You need to look at the bad scenarios. You need to get a feel for the distribution of risk. That's key when you're pricing this product. I think it's also key to look at when you're doing your asset adequacy analysis. You also need to see the impact of different assumptions like mortality and lapses, and even the interaction of assumptions, like the lapse in the mortality that I talked about earlier. You need to stress test a lot of these assumptions and, again, you need to look at the details.

Moving on to Guideline XXXIV. As was mentioned, this was a guideline that was developed by the Life and Health Actuarial Task Force of the NAIC with input from the minimum guaranteed death benefit reserve work group of the AAA. The guideline has a December 31, 1998 effective date, so it's live this year-end. There is a three-year phase-in, and companies have to obtain the appropriate regulatory approval to use the three-year phasing.

Guideline XXXIV is an interpretation of the Commissioner's Annuity Reserve Valuation Method (CARVM) as defined in the NAIC model standard valuation law. As such, it's not considered a change in the required statutory reserve standard. It applies to all contracts issued beginning in 1981 when the model standard valuation law became effective. Finally, states aren't required to accept Guideline XXXIV. However, based on discussions I've been involved in, all but a few small states are planning to accept Guideline XXXIV. There are a couple of exceptions however.

Steve Preston mentioned that New York is putting a version of Guideline XXXIV in its Contract 151. My understanding is they are making a minor change to the assumed return levels that are in the Guideline. It hasn't been officially released, so there is kind of a wait-and-see on that one.

I want to briefly go through the development of the guideline. It actually started with the NAIC separate account working group, which is a different work group within the NAIC structure. Back in 1994, they were beginning to see a lot of movement in the marketplace where more and more companies were offering these benefits. Those companies were offering them richer and richer benefits. This translated into a concern that the additional risks that companies were taking with these benefits weren't being properly reserved for. The fact that there was no uniform reserve standard for this pointed to the need for a guideline.

So they asked the Academy to get involved. They also got the NAIC Life and Health Actuarial Task Force involved. Towards the end of 1996, Guideline MMM was developed. In 1997, it was adopted as Guideline XXXIV by the NAIC.

The scope of the guideline applies to minimum guaranteed death benefits that are offered with variable annuities where the minimum guaranteed death benefit has potential to exceed the account value. That's true whether or not the death benefit exceeds the account value (in other words, whether it's in the money) on the valuation date. If it's out of the money on the valuation date, you still need to apply the guideline. This is applied to roll-ups, ratchets and resets and, yes, it does apply to return-of-premium benefits.

If you look at those benefits, the return-of-premium benefit is actually a 0% roll-up. Because there's no guarantee of principal on a variable annuity, the death benefit does have the potential to exceed the account value. Of course with return-of-premium benefits issued in the last couple of years, you're probably not going to get a lot of additional reserve, but you still have to apply the guideline.

The scope, also mentioned in the guideline, does not apply to group variable annuities not subject to CARVM. The standard valuation is very specific as to what CARVM does and does not apply to. It also requires the valuation actuary to exercise judgment in determining the applicability of the guideline. When the guideline was put together, everyone involved recognized that it covered all guaranteed death benefits that were available. But it was also recognized that death benefits could

conceivably be designed in such a way that applying Guideline XXXIV would actually lower reserves, so the NAIC added this part of the scope.

The guideline's general methodology is to look at two CARVM reserve calculations: one that ignores the death benefit and one that includes it. This whole two-reserve framework is really a mechanism for determining how much of the reserve ends up in the general account and how much ends up in a separate account because of the desire to have the reserve for the guaranteed benefits in the general account.

The first of the two reserves is the separate account reserve, which, again, is the reserve in absence of the death benefit. That's about all it says. It purposely does not go into any guidance because the NAIC was concerned about having the scope of this guideline being broadened to include reserving for variable annuities. They felt that that would drag the process out, and they were really concerned with getting something out there for minimum guaranteed death benefits.

Many companies calculate this reserve by projecting the account value assuming a projection rate equal to the valuation rate less contractual asset base charges. This is the same terminology that's used in the integrated reserve. If the separate account reserve is calculated this way, it results in components that have both the separate account reserve and the integrated reserve being comparable, which cuts down a bit on the complexity of the total reserve calculation.

The integrated reserve (the CARVM reserve) should reflect all contractual benefits including the minimum guaranteed death benefit. It's intended to use the principles of revised Guideline XXXIII. The death benefit is included in the reserve by projecting what the guideline refers to as the Net Amount of Risk. This is the excess of the projected minimum guaranteed death benefit over the projected account value—where both are determined assuming an immediate drop in the assets that support the variable annuity followed by a net assumed return, which we'll get into later.

If you've looked at Guideline XXXIV, and I hope you have, you see a lot of terms using the word *reduce*, such as "*reduced account value* and *projected reduced account value*." Whenever you see

the word reduced, it means you're projecting benefits using an immediate drop followed by a net assumed return—and this applies to the Net Amount at Risk. For other benefits, you see the term unreduced where you're not using the immediate drops and the assumed returns to project benefits, but rather, the valuation interest rate less contractual asset-based charges. Other benefits include the death benefit up to the account value, withdrawals, annuitizations, disability benefits, and anything else that's in there.

The projection assumptions used to determine the net amount at risk (the amount above the account value), are going to be different than those used to determine all the other benefits, including the death benefit up to the account value. I'll get into more specifics in a minute.

Once you calculate the separate account reserve and the integrated reserve, you take the difference and the excess of the integrated reserve over the separate account, and that is what you hold in the general account. And again, the two-reserve framework gives you a mechanism for figuring out how much you hold in the general account.

The integrated reserve is defined as the greatest present value of integrated benefit streams which, again, is a Guideline XXXIII term, and it's made up of three separate benefit streams: A, B and C Stream A is the stream of projected net amounts at risk for death using the projected reduced account value. The B is the stream of the death benefit up to the account value using the projected unreduced account values. For B, you're using the valuation rate less asset charges. C is all the other benefits, (everything but the death benefits), and that also uses the projected unreduced account value.

So Guideline XXXIV is really a method that uses a revised Guideline XXXIII framework, the so-called integrated CARVM approach. It gives you guidance on how to bring the minimum guaranteed death benefits within that framework.

One more thing I want to note on those benefit streams is that it's the intent of the Guideline to measure the death benefit from stream A and stream B over the course of the policy year rather than at a point in time. If you're doing curtate CARVM and you're supposed to look at benefits at the end

of the year, this is meant to look at it over the whole course of the year. Otherwise, the drop wouldn't have been immediate if you're applying curtate CARVM. It probably would have moved the drop towards the end of the year. But they want the impact of that drop into the reserves, and that's what's important.

There is more detail for some terms. For example, *reduced* means immediate drop. This is an example of how to calculate the projected net amount at risk. Further, *projected unreduced* refers to unreduced valuation rate less asset-base charges. We can look further into these and other definitions at the Q&A session.

The guideline goes into some detail on how to determine the yield drops and assumed returns that you're going to use in the integrated reserve calculation. It requires that the separate account funds supporting the annuity on the valuation date be allocated to five asset classes. It has descriptions of those asset classes, and notes that the ultimate determination is up to the valuation actuary. In other words, the valuation actuary has to opine that they're allocating the asset classes correctly. Appendix One of the guideline shows the drops and returns that are used.

Note that the returns that are shown are gross returns so they're before the deduction of asset charges. We found that the data used average charges, and there's so much variation between companies that it was easier to work with gross and have companies deduct their own charges. It also notes that if you have a fixed account, you use a 0% drop on a return equal to the guarantee rate for purposes of projecting the net amount of risk.

The guideline also discusses the valuation mortality to be applied to the integrated benefit streams, and it says to apply the variable annuity minimum guaranteed death benefit table. It's the 1994 Group Annuity Mortality (GAM) basic table where a 10% margin was added. The qx's were increased by a margin. It also stipulates that you can't use a projected mortality improvement. The Society is in the process of putting a study together that is meant to really verify the appropriateness of this table.

Valuation interest rates. The guideline requires that you use annuity valuation rates for both the separate account and the integrated reserve calculation. The application of these rates should then be based on Guideline XXXIV requirements, which, as was mentioned, an integrated benefit stream could conceivably be discounted with more than one rate. But I think what happens with variable annuities is that your valuation interest rate typically ends up being a type A because of the definition of withdrawals. Also, your annuitization benefits for the most part get discounted using the plan type A. Lastly, all the nonelected benefits under Guideline XXXIII get discounted using an A plan type

In addition, the guideline goes into how to handle reinsurance reserves. What's required is to modify the integrated reserve by treating future projected reinsurance premiums as an additional benefit and reducing the projected minimum guaranteed death benefit in the benefit stream by the future projected reinsurance recoveries. You calculate what's called a net integrated reserve, which is the greatest present value of the integrated benefit streams with those two adjustments. When you get that reserve, you compare it to the gross. If the gross is greater, then that's your reserve credit or the difference.

If the net happens to be greater than the gross, and this can happen, you actually have to increase your gross reserve. So, you can theoretically either take a negative reserve credit or you can increase your gross reserve and take a zero reserve credit.

Regarding the assuming company—the reserve is required to be the maximum difference of each duration of the present value of reinsured death benefits less the present value of reinsured gross premiums, using the same two adjustments that the ceding company made to the integrated benefit streams. The intent is for the assuming company to use the same benefit and reinsurance premium streams and actually get them from a ceding company. Because the greatest present value for the assuming company might not be the same duration as the greatest present value for the ceding company, it's possible that the total reserve between the two companies after reinsurance can be greater than the total reserve before reinsurance. It's actually a greater than or equal to total reserve before insurance. That was done to address some of the concerns from the regulators for having more reserves. In essence, this is a mirror reserving requirement.

That's an overview of the guideline. There's a great deal of things to absorb. If you haven't already done so, there's a few places you can get material. Obviously, one is the guideline itself. Second, I understand one of the Academy reports is on one of the actuarial exams. Third, there are the Academy Reports—the September 1995 and the June 1996 reports. The June 1996 issue includes an example which I think was in the exam. Finally, there are a couple of good articles in *The Financial Reporter*, the newsletter of the Society's Financial Reporting Section. They were written by Jim Lamson, who has been very much involved in this whole process from the Academy side.

Tim is going to talk about guaranteed living benefits.

MR. TIMOTHY J. RUARK: First, we are going to talk about some of the product descriptions and the products that have living benefits. Second, we're going to spend time on the risks in these living benefits. Next, we'll discuss the approach that the Academy is pursuing to living benefits. And then we'll wrap up with the results and progress the Academy has made so far.

Product descriptions. Living benefits in variable annuities could encompass quite a few things. But we'll focus on products that definitely have unusual risk characteristics. The three products are: guaranteed minimum accumulation benefits (GMAB), guaranteed minimum income benefits (GMIB), and the guaranteed payout annuity floor (GPAF). I'm going to talk about each of these individually.

Guaranteed minimum accumulation benefit. There's a waiting period, and there is usually a guaranteed return, which is some annual percentage rate (X%). X could certainly be zero for this type of program. The idea is that this is a maturity benefit. As Tom indicated, the investment risk on a variable annuity is transferred to the investor or the owner of the annuity. The GMAB is meant to be kind of a safety net for people, like those that might be uncomfortable with the risk of investment. You could move them into a plan like this and let them know that, even in the worst case, they're still going to get a return of premium.

I was pretty close to this situation, but it was unclear to me whether this product was a direct result of equity-indexed annuities, or whether this was going to surface on its own anyway. There's a clear connection here with equity-indexed annuities (EIA). In an EIA, the product provides some level of guarantee and some upside on the stock market. The equity index tends to provide stock market upside by purchasing a call option. The GMAB gets at it in the opposite way; you give people the stock market performance directly by their choice of investing in funds, while the guarantee is a minimum amount. The insurer secures the downside by purchasing a put option.

Equity-indexed products work through use of participation rates, which tend to reduce the amount of credit you'll provide on the stock market. The reduced participation rate helps to lower the product's cost. With the GMAB, you're going to charge people extra for this benefit.

It is possible to provide a GMAB on just one fund or all your funds in your variable annuity. If you were to do it on one fund and that was an S&P 500 fund, then it's really starting to feel a lot like an equity-indexed annuity. There are several important differences, and the primary one relates to market conduct. You do not have much market conduct risk with the variable annuity GMAB approach, because you have full disclosure via the prospectus. Whereas, with most equity-indexed products, there is no prospectus, and market conduct has been perceived as a potential issue.

Another difference is dividends. You get dividends with the GMAB, but you don't with the equity-indexed annuity. It comes with a cost, which for variable annuities is high. There are examples of GMABs that are in the market. There's a plan that has an eight-year waiting period. In this case, X equals zero, a little less, or a little more. This product has a choice of three benefits. At the end of the waiting period, the product will guarantee you 90%, 100% or 115% of your initial premium. That product is limited to an S&P 500 fund.

There's another product that's a ten-year version where all of the variable annuity subaccounts are available for you to invest in. I think there may be one or two unusual ones that are excluded, but, for the most part, you have freedom to invest in any of them.

FROM THE FLOOR: What do you have to do to collect the benefit? Also what do these things cost?

MR. RUARK: In the GMAB it's automatic. Let's say the waiting period is eight years. At the end of eight years, if the guarantee was a return of a premium, and if your account value is less than initial premium, you automatically get the shortfall credited to your account.

Remember, these items are extra cost. Variable annuities already have total fees of at least 200–250 basis points. That's the basic program. You also have this extra cost on top of it. It's an elective benefit normally, and you are going to pay extra for the privilege of having this protection. The cost structures vary, but they're quite expensive, usually over 100 basis points annually. So these have not sold well.

Next, let's discuss the GMIB, which is the income benefit. This is a very different animal. There's a waiting period and a guarantee. There is either a roll-up or a ratchet-type of guarantee, much like the death benefit that Tom was just describing. There are products out there that use roll-ups and products that use ratchets.

The key distinction here, is that this benefit is only available when one annuitizes. So this guaranteed minimum income benefit really is a guarantee of a certain monthly income that you will provide to the owner if they choose to annuitize. There are examples in the market. The most notable product is a 6% roll-up product. So the net contribution rolls up at 6% per year. You have a waiting period of at least seven years.

There are other products out there that use ratchet designs where you don't necessarily roll up at 6% or any percent. You just say that it will ratchet upwards to the current account value at certain intervals.

Guaranteed payout annuity floor. This is a payout item, not a deferred item. This is for people who have moved into the more traditional aspect of an annuity. Even in payout, it remains a variable contract.

This market has people that are retired with either no or very few other sources of income. The GPAF guarantees a percent of monthly income.

In a variable contract, all the annuitant knows is how much that first check is going to be. Otherwise, they have invested in variable subaccounts, and their next check will depend on how the variable subaccounts perform. We actuaries know that it is fairly important, even for somebody that's 70 years old, to maintain some inflation protection in their investments, because that person could be one of the lucky ones that lives to be 105, and 35 more years is a long time horizon. But how do you get somebody 70 years old to want to put their money in a variable contract when next month they don't even know how much their monthly check will be? If this product is done correctly, and if you pay an extra 100 basis points—many people might consider this a pretty good security blanket. An important item here though is the fund application—which funds are you allowed to invest in?

The GPAF is an option that, down the road, some company may decide to offer at a reduced rate because they're going to collect money for it in the deferred phase.

I'm going to talk now about some of the risks in these three products. The first set of risk items are risks that I would say are common to each of the three products that I tried to describe. Then, we'll get into some risks that are specific to each one.

Underperformance is the primary risk that's here. Go back to Tom's presentation talking about the death benefit. Volatility of funds is fairly important there, but not as important here. That's because of the waiting periods that go with these products. So underperformance is probably more important to you in these types of programs than it would be on the death benefit.

Fund allocations are important. Where do people invest their money? You have to be careful with these types of programs because all your discussions in the product development phase, and in the phase of talking to regulators or reinsurers, often pertain to treating all your funds as if they act like the S&P 500. And it's often not the case.

As an example, with a GMAB and a ten-year waiting period, it may be that the S&P 500 has gone up. So had everybody been invested in the S&P 500, you would not pay any claims after ten years. Everybody is not invested in the S&P 500. There are funds that lag the S&P 500. There are people who, through no fault of their own or who are at fault, have not made wise choices. These are products where you are making commitments for every contract. You can't take money from those with extra to pay for those with a shortfall.

Allocation behavior is also important for all these products. To the extent these products are true ancillary benefits, on something with an eight to ten-year waiting period, the existence of the benefit will have little impact on fund allocations. They're not investing so that this extra benefit will be in the money ten years from now. They're investing for something much better than that.

You should face the fact that if you have a ten-year GMAB where you're guaranteeing a return of premium and you're seven years in, and the account value is 80% of premium, you're going to see some fund allocation changes at that point. Thus, that person has nothing to lose. They can reallocate to the riskiest fund knowing that over the next two or three years they are guaranteed a decent return. So all of these products may have some allocation behavior risk. It may not be the case when time equals zero, but it might happen later.

How do you treat subsequent contributions with respect to these benefits? If it's a single-premium contract—somebody puts in their money, you start the clock ticking, and at the end of the waiting period, you're done. But a lot of contracts today are flexible premium.

Does the waiting period start only initially, or does it start for every new contribution so you have multiple waiting periods? If you decide to combine all the waiting periods, does that change your

risk profile much? It certainly can. The waiting period serves a few specific purposes, and if it is effectively shortened by subsequent contributions, it can have an impact on risk.

I want to discuss some of the specific risks for each benefit. First, consider the treatment of GMAB withdrawals. Tom touched on dollar-for-dollar versus proportional. I assure you that if you think it's important for a mortality-based product, where maybe 1% of your exposure will file a claim every year, it's really important for GMAB.

I know some of you are not involved in product development. If the product people come to you and say that they need dollar-for-dollar language, remember that this is not a gray area. This is a black and white area. You need to have proportional reduction language in your contract. Without it, you're taking a lot of risk and you're not getting paid for it.

Let's look at GMAB terminations. Assume you own the contract and you pay an extra 100 basis points a year for the GMAB. Two years in, the account value is 50% higher than where it started. You can continue to pay your 100 basis points for the GMAB, but clearly, it's not as valuable to you two years in as it was initially. You may just want to drop the GMAB.

What's critical with the GMAB is to have a very clear understanding of how you're going to handle the risk because it affects the termination treatment. If you believe that the best way to handle this risk is to purchase put options on the S&P 500, or some other combination that will give you a good proxy for the funds, then the termination risk is deadly. Here's why. If you buy put options and you do it well, you're protected. You no longer care what happens ten years from now because you have put options that are going to pay off if you need to fund the GMAB. So you've changed the nature of the game.

You're no longer concerned about what happens ten years from now. You're now concerned with what happens between today and ten years from today because you bought the put option with money that you didn't have.

You pay for the puts from the 100 basis points that you collect every year. If everybody decides that they're going to terminate the rider when things go well, you lose big. You no longer have this stream of income to help you pay for something that you've already purchased. It's true that the puts are tradable securities, so you can just trade them back, but you'll find the puts are nearly worthless. You try to get a good price for a put option after the underlying account has gone up 50%. You can sell it, but you're not going to get anything for it. It's almost worthless.

Another approach is to retain this risk. You acknowledge that you could lose in some cases, but you're in this business for the long haul and you can't lose forever. You're just going to retain risk, or we're going to find others to share it with, like reinsurers. The terminations don't really hurt you too much. You pocket the premium that people gave you, and you use that premium to help pay for ultimate claims on other ones. You have much more flexibility with respect to designing your product if you don't have to purchase put options up front.

Let's turn to the GMIB. It is more complicated than the GMAB. I already talked about proportional withdrawals, which is very important for any guarantee. With the GMIB, annuitization is important. Everybody knows that hardly anybody annuitizes today, but that can change when all of a sudden they have a guarantee that has economic value. So annuitization incidence is a key assumption.

Guaranteed versus current purchase rates are very important in the GMIB, and I have an example. Assume your net contribution is $1,000 and your year X GMIB base is 1,500. That's at the end of the waiting period. At the same time, your account value is $1,200. What's your claim going to be? If the GMIB base is like the death benefit and this person dies, you're going to pay $300, but it's not like the death benefit. You have to factor in the purchase rates for annuitization, because you're not giving this person a lump sum. The guaranteed income benefit means you're guaranteeing a monthly payment amount.

Guaranteed purchase rates are the ones that are in your annuity contract and are usually very conservative. Current or year X purchase rates are based on more realistic assumptions. The X interest rate is going to be higher than the guaranteed rate.

To determine whether you pay a claim in our example, take the GMIB base and adjust that for the current environment and subtract out the account value. If you do the math here, you see that we're taking three-quarters of $1,500 and that's going to drop it below $1,200. There's not going to be any claim here. It suggests that the true cost at that time to fund these monthly amounts was actually less than the account value, even though the account value was lower than the GMIB base. The ratio of current-to-guaranteed purchase rates can make a huge difference.

The other item that I would throw in here as a risk for GMIB is government intervention. Most of us think of an annuity as a deferred product, but then it can transition at the will of the owner into this monthly payment stream.

The reason I talk about government intervention is because there could be a change in the federal tax structure that has little impact on the deferral phase, but there could be a big impact on the election rates for annuitization. That is something to watch with any product that can transform itself the way an annuity can.

Last is the GPAF risk. This is a trickier one. We won't go into as much detail. Keep in mind that if your guarantee to somebody is a first monthly check of $1,000, but you can't guarantee what next month's check will be, that's not too reassuring to the customer. With the GPAF, subsequent checks will never be less than $900, for example. Your assumed interest rate (AIR) in this immediate variable annuity is very important with this risk. You have to assume an interest rate to decide how much the monthly benefits are. In essence, the assumed interest rate ends up being a hurdle rate, along with other annuity charges that you have to overcome, to grow the monthly amount that's being paid. That's going to be a key risk factor here. It's riskier to guarantee the monthly amount if the AIR is 7%, rather than 3%.

Demographics are key too. If you're going to collect money from people for this benefit as a charge on assets—for the same amount of assets, depending on your age, you get a very different amount of monthly benefit. The risk you take is an amount of money—the dollar amount that's going to be

paid every month to make up for any shortfall. So the demographics that you're looking at are very important, not only initially, but also in the future.

The next topic is the approach of the Academy group. This is a group that was formed in January of this year. Our March report raised the issues. It also split the committee into two groups: the product development group and the valuation group. The goal was to work very closely with the NAIC, providing quarterly updates and other discussions. Our work would be completed by the end of 1998.

The product development section was what was discussed in the March report. The group would work on an inventory of products in the market right now. They would work on filing issues, disclosure, and nonforfeiture issues. The valuation group said they were going to work on formula reserves, accounting, issues for the valuation actuary and other financial reporting issues. That's the March report. It's a small report, but there's a lot of good material in it.

Let's get into the June report where we start talking about some of the results. The product inventory has been done, and that is part of the June report. It lists (without listing company names), all the living benefit products that are currently in the market.

After including a living benefit, does the product remain a variable annuity? The recommendation of the group is yes. This is not a fixed annuity. Based on the letter of the law, nonforfeiture is not an issue, but the group did say that we're going to continue to do some work around that to get closer to the spirit of the law or to make sure that our work met the spirit of the law.

Disclosure of living benefits also seems adequate, but there was a concession that we need to make sure of that. In the GMIB, it's required that you have to annuitize to get the benefit, so we must make sure that's disclosed.

The valuation results were not quite as dramatic, but that's where a lot of the really hard work is, so it takes longer. The recommendation was that we would use a CARVM-type of framework, and that

we would apply Guideline XXXIV methods, with some significant revisions. The idea was that the integrated approach that Guideline XXXIV provides probably has the most merit for these benefits. Remember that Guideline XXXIV covers death benefits, and fund volatility is very important. This is not so with a living benefit. More important here is underperformance over time. So that's clearly going to be a change from Guideline XXXIV. Living benefits are currently listed in one of the documents for the equity-indexed product, and that has been dropped.

The September report just went out. The focus was on the analysis of the GMAB only. That's the easiest one, and that one is hard. What that showed was that there's little cost historically for this type of benefit. That is, of course, if you're using a return of premium as your benefit. There is little or no reserve at the 85th percentile. The product is very sensitive to some of the assumptions that you make. It is very much like catastrophe cover.

Next, the September report begins to model the GMIB. The model displays what the implications are for death and income. The group is also committed to look at shorter durations. It makes sense right now that these waiting periods are long—eight, nine, or ten years. Some are even 20 years. But that doesn't mean that we should not anticipate shorter duration in the future.

MR. CAMPBELL: There was a discussion about the fact that Guideline ZZZ had reference to guaranteed living benefits, and that the Academy had recommended that that be removed. Ultimately, the Life/Health Actuarial Task Force took that reference out of Guideline ZZZ They wanted to make sure that people knew that they are looking for companies that write these benefits to come to the regulators and discuss the reserve methodologies that they're going to use at the time of product filing. They were very emphatic about this. They said they were going to make sure it was in the minutes. They made sure that Steve Preston, Donna Claire, and I, and any one else who was talking about this topic, mention it at the symposium. They're actually thinking about putting that into a guideline that just says for products in general, you need to discuss the reserving risk to regulators at the time of signing. I just complied with their request. Obviously, it's something you could think about.

MS. CINDY D. BARNARD: I heard rumors that the state of Connecticut wasn't too excited about Guideline XXXIV. Can you speak to that at all?

MR. CAMPBELL: Actually, Connecticut is one of the states that has not yet accepted Guideline XXXIV. The rationale they use is that the guideline interprets the standard valuation law, and Connecticut's version of the variable annuity regulation has more general language than the model. According to Connecticut, their version of the standard valuation law does not apply to variable annuities; rather, they require the reserve to be based on actuarial principles that take into consideration the variable nature of the benefits. Because of their dislike of the guideline, they're using that language to say that CARVM is not applied to variable annuities and, therefore, Guideline XXXIV doesn't apply.

They're in the process of putting together a regulation that deals with reserving for variable annuities in general, and death benefits in particular. There's a group of Connecticut companies that are working with them to make recommendations of how to approach this. We would certainly like to see their regulation consistent with the rest of the country and with the NAIC. Obviously, varying from the NAIC method is within their legal rights.