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Universal Life (UL) Secondary Guarantees: What's the Real Risk?

Track: Product Development

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Summary: Low new money rates, new reserve requirements and the limited availability of reinsurance solutions have highlighted the risks associated with offering UL secondary guarantees. This session covers emerging practices in risk assessment and pricing of UL secondary guarantees. Panelists discuss current UL market landscape, recent developments in product, and risk assessment and pricing techniques. Attendees gain a better understanding of the UL secondary guarantee market, product structure and associated risks.

MS. ELINOR FRIEDMAN: I'm a consultant with Tillinghast in the St. Louis office. I've been with Tillinghast for three-and-a-half years. In that time, I've worked on a wide variety of projects, most involving UL secondary guarantees, including product development, pricing reviews, analysis of reinsurance solutions and most recently, looking at the feasibility of securitizing redundant statutory reserves.

Daragh O'Sullivan is vice president at Pacific Life in Newport Beach, Cal. His area is responsible for product development of variable universal life (VUL), UL, corporate-owned life insurance (COLI) and whole life products. Prior to joining Pacific Life in 1996, Daragh led up the pricing area at Transamerica.

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and all areas related to dividend scale. He has been with Northwestern for nine years and has rotated through a number of areas, including risk management, valuation and corporate modeling.

Mike LeBoeuf is a vice president and consulting actuary with Aon Consulting in Avon, Conn. Mike specializes in product development with strengths in UL, VUL, secondary guarantees, critical illness and long-term care. Prior to joining AON, Mike worked both in consulting and in insurance companies.

There has been dramatic growth in UL sales over the last several years, with premium sales of just over \$4 billion in 2003. That accounted for about 35 percent of the life market sales. This is almost double where we were in 2000, so that's very dramatic. Certainly, the downturn in the equity markets and continued volatility has caused a shift away from variable products, and UL has been the primary beneficiary of this shift. However, I think the popularity and competitiveness of the secondary guarantee products available today have also contributed a great deal to this. Unfortunately, we don't have sales broken down by policies sold with and without secondary guarantees, but I suspect that a significant part of that increase over the last three years is from policies sold with secondary guarantees.

Through this dramatic sales increase, we've also undergone some developments that have raised our awareness of the risks involved with offering these types of products. First, there have been a number of regulatory developments, with the adoption of Regulation XXX and subsequently AXXX. I imagine there will be future regulatory developments as well. As a result, product designs have evolved over time with the advent of shadow funds and ART designs, and they continue to evolve as well.

On the reinsurance front, we've also seen some big changes. In 2000, there were a number of reinsurers who offered solutions to deal with the reserve strain caused by the new reserve requirements. However, today, I'm aware of only one reinsurer who still offers this solution, and it's in a pretty limited way. Also, we're seeing a tightening of the markets. Even in mortality risk reinsurance, there seems to be a re-calibrating of rates and some increases there.

In addition, we've been in a period of low interest rates. Today, if you illustrated out most of these products under the current crediting rates, you would see that they do go into the money, meaning that the secondary guarantee does support the product in the future, assuming current crediting rates forever. Through this great growth and all these developments, the no-lapse guarantee premiums have remained low, very competitive and low relative to some other products. This has prompted us to discuss the risks involved with offering this type of product.

When we panelists spoke very early on, we identified six key risks: investment risk, persistency risk, capital risk, regulatory risk, mortality risk and design risk. Then we also realized that our panelists often had different perspectives on each of these

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risks. We thought it was very important to try to present to you all of their perspectives. However, to avoid duplication, we felt it best to assign one panelist to be the primary for each risk and then allow the other two panelists to provide additional points and, in some cases, counterpoints to the primary's comments. With that, I'm going to turn it over to Daragh, who's the primary on investment risk.

MR. DARAGH M. O'SULLIVAN: Before I get into the meat of the presentation, I want to make some initial general points. I'm speaking for myself here; I'm not trying to be an official spokesman for the company. The second point is that those examples I'll give have numbers in them, and those numbers are not intended to be recommendations of what anyone should use for pricing, nor are they what we used at my own company for pricing. They're intended to be illustrative only. Hopefully, they're realistic, but no more than that. Also, before we get into the specifics, I want to describe the perspective. I'm a product actuary, and I'm speaking primarily to other product actuaries. Hopefully, others will find some benefit in my remarks, but most of what I say is for other product actuaries who are pricing their next no-lapse product and are looking for some practical tips on what to look for, the choices and methods.

This is an emerging area for product actuaries. When you look at the analysis and the methods, it's going to be familiar to those of you who are experts in investment and asset-liability management. However, the methods that are used are actually fairly new to UL-pricing actuaries, and so for those actuaries it's an emerging area. Like any emerging area, the value of good advice is a little more than it is usually, so I would recommend looking for some expert advice on some of these issues.

The first topic, as Elinor said, is the investment risk. Managing the investment risk on these no-lapse products and pricing for the investment risk can usefully be divided into four steps. This is how I think of it. The first step is to determine expected future investment returns. It might be clearer if I say "model" future investment returns because by modeling I mean a stochastic process. There's not just one rate of return; that would obviously be no good for this. This is a stochastic process, and you need to develop a stochastic model. The key variables are the averages and the volatility.

The second step is the pricing of premiums for the risk of lower investment returns. Here what we have is essentially an option. We're selling the buyer of a no-lapse product an option. They buy lifetime coverage, and they have to pay the strike price, which is the no-lapse premium. We ask them to pay for this option whatever the risk charges are that are priced into the underlying product. That's the options structure.

Having done that, the analysis is not complete. The third step is that you need to also incorporate the no-lapse risk into the total company risk model. There are various ways to do this. One possibility is to set a maximum loss level and to set a

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confidence level that losses will not exceed that maximum loss level. That's a fairly common way to do it.

Finally, having done all that, there are still some other investment risks that should be looked at. This is the fourth step. These are basically the risks that are very hard to model or to control. The best way to tackle these is to deal with them in the design itself. Try to build a design so that these risks are taken care of up front.

The analysis of the future investment returns—modeling the future investment returns—can also be divided into four steps. It's no good modeling your investment returns unless you know what the asset class is, so the first step is to determine the asset class. Most people would agree that the no-lapse guarantee products generally have lower lapse rates. This means that you could consider investing in longer bonds. That might give a little extra yield. If you do that, bear in mind, though, that the risk of disintermediation is a little bit higher, so you may want to consider a slightly lower cash value in your product to compensate. Another factor to consider is that the reserves on these products exceed the cash value, sometimes by quite a bit, and you don't need the same liquidity on the excess. Also, you may be able to tolerate bigger fluctuations in value on the excess, so you could invest even longer on the excess. So there's potential source of extra yield.

The next step is to determine the mean reversion rate on the chosen asset classes. This is probably the most important single assumption. Because it's so important, it's a good idea to consider getting some third-party review of this assumption; it's really key. The most obvious choice for the long-term mean reversion assumption is based upon the current yield curve. If you choose anything different from that, you'll have to expend a little extra effort to justify your choice because that's the most obvious choice. Spreads over Treasuries and default experience tend to be cyclical, so you do have some room to justify differences from the current level. Again, though, you'll have to justify that carefully if you do. Finally, how strong is this mean reversion rate? It's all a part of a stochastic process. It doesn't mean anything unless you decide how strongly that mean reversion rate pulls the yearly investment yields back to it. Again, I think that this is a very technical area and an area where you probably should seek some expert advice. I say "you" meaning a product actuary. Obviously, if you're an expert at this already, that's okay.

The next step is to look at the investment yield volatility. This is where the stochastic modeling comes into play. Why is it necessary to price for the volatility? You only get losses when interest rates drop below a threshold, the no-lapse guarantee pricing level. That's the option that we talked about earlier. If you use a single interest rate projection, or only a few, you're not going to capture the expected value of that option very accurately. You need more sophisticated modeling. You also need to set an overall risk tolerance. The most common way to do that is to set a maximum tolerance for loss and a confidence level that goes with that. If you do that, you'll need to model a tail of the distribution very accurately. That's one of the hardest problems in this process.

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Where do you get the volatility assumptions? You can look at the interest rate history. If you do, you may want to, again, get some outside advice on that because it's somewhat subjective and it's useful to at least get a review from a third party.

The last step in modeling your investment yields is determining the initial earned rate. If you're a new money company, it's obvious what you do here. You start off with the day's investment yields. But for a portfolio rate company, the choice isn't as obvious. You have to decide whether or not the current, somewhat higher, portfolio yield is going to be used to subsidize these no-lapse premiums. You could decide to do that or decide not to do that; it's just something that needs to have some internal debate, go through a decision-making process and decide is the right thing to do for this product.

We're done with developing a model for the investment yields. What's the next step? We have to now price the premiums. That means the no-lapse premiums and the risk charges on the product, and that involves the running of the stochastic interest rate scenarios through a profit test model. I plan to go through the details of that.

We didn't always do stochastic modeling for UL no-lapse guarantees. A couple of years ago, that was pretty unusual. What we used to do was guess a nice, safe, low long-term interest rate and then use that to generate the no-lapse premiums. That was about it. You also had to increase your product loads to cover the cost of the higher reserves. That was usually the end of the story, but recent experience has changed the picture. We've learned that the worst can happen. It's no good just pricing using averages. That really hit with annuities a couple of years ago. Now, with interest rates dropping, we're seeing more of it on UL as well. There's a new awareness of the risks. Now we have to measure the risks a lot more precisely and manage them a lot better than we used to do.

How do you measure the risk? As I said, deterministic methods are pretty inadequate. If you project profits with a haircut taken off the best estimate future earned rate, that's not reliable for a large block of business. It might be acceptable for a small block, but it's just not reliable for any large blocks. If you rely upon the New York 7 cash-flow testing scenarios, you'll see when you do the stochastic testing that they are very unrepresentative. They tend to fall in the extreme end of the tail, and that's not representative of your tail risk.

To see exactly how that comes out, I did a chart based upon 10,000 scenarios with parameters of a mean reversion rate of 6.25 percent and an initial new money rate of 5.35 percent. The New York scenarios fall to the extreme left of the tail. The New York pop-down, with an average return of less than 3 percent, was worse than all of the 10,000 scenarios, and the New York decreasing scenario, with an average return of about 3 percent, was worse than all but three scenarios. It really is in the extreme tail end of the risk.

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The good news about the tail risk is that the average return was at least 3.5 percent in 99 percent of the scenarios. That's encouraging. The New York 7 scenarios were pretty unhelpful. Quantifying the tail risk is very unreliable if you rely on a few scenarios. If you look at the 1 percent tail with only 100 scenarios, you're essentially modeling the tail risk on one sample, and that's just not going to work.

How do you deal with the problem of running 10,000 scenarios? That's going to be very difficult. There are a couple of elements of that problem. There is too much output, too many scenarios, too many cells and the complexity of pricing, of building investment models into your pricing program.

There are a couple of solutions. Third-party modeling software can get rid of the problem of programming the investments into the pricing model. Using selection methods to choose fewer scenarios and get decent modeling of the tail risk is possible, and there are methods out there to help you do that.

I do want to make a few quick points on the choosing of the cells. Different ages and different premium patterns give you radically different results. I would recommend doing it very carefully. Do bear in mind that if you average your results over different premium patterns and ages, that does help to lower the risks, so do be careful of that. Pick one-number profit measures to summarize.

I want to take a look at incorporating the no-lapse risks into the total company risk. That's something that should be done if the no-lapse block is a large block. You may be able to skip this step if it represents a fairly small portion of your in-force business. The basic method is to set a maximum loss level and a confidence level, as we discussed before. What you have to do, though, is monitor the dollar risk as interest rates change. It's almost like pricing a single premium immediate annuity (SPIA). As interest rates change, you get radically different results. You need to watch that. This is not like your typical UL pricing. Also, if you start expending a lot of effort at interest rates below 4 percent or 3 percent, that may be wasted effort. You may have bigger problems on much bigger in-force blocks when the guaranteed rate is above that level.

Other investment risks are basically the risks that are difficult to model. Most of these come from the timing of premium payments, withdrawals and loans. These are best dealt with in the design itself. Since we're short on time, I'll leave it at that.

MR. SCOTT J. WITT: My background is in statistics, so I'm definitely a fan of incorporating stochastic models whenever possible. At the same time, though, I think it's easy to become enamored with those sophisticated models and underestimate the risks that are presented by a complex process. We need an assumption that's appropriate, in some cases, for as many as 50 years or more. Ideally we would like to have many independent 50-year periods from which to sample, but you'll see we really only have one, or at most two, data points to work

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with. The reason it's so important to focus on the downside risk is that a company has little or no ability to recover from a mistake on this assumption or any of these other implied guaranteed assumptions. I hear a lot about increasing the cost-of-insurance (COI) charge or reducing the credited interest rate if things don't work out. However, the fact of the matter is that unless you can somehow induce policyholders to lapse, reducing those non-guaranteed elements isn't going to lessen your financial burden at all. Why would a policyholder lapse his or her policy in an environment where the guarantee is increasingly valuable?

What's the appropriate mean for an interest rate generator? Your guess is as good as mine. I have seen a lot of generators that use a long-term mean reversion rate between 6 percent and 7 percent. My question would be, are we that confident that history won't repeat itself? When you look at the period from 1928 until 1965, long-term government bond rates averaged basically 3 percent. I think that speaks for itself.

MR. MICHAEL J. LEBOEUF: When it comes to modeling the investment risk, this is clearly one of the biggest concerns of management in these companies that sell secondary guarantees. You're looking at putting out a product that for most companies, with their level premium scenario, looks like it requires a company to earn somewhere around a 6 percent, or better, return on their investments and still be able to cover their underlying mortality and expenses in the product. Modeling the low-end becomes very important. Generally speaking, in our practice, we found that implementing a regime-switching model to generate your scenarios does a far better job of modeling out the tails, both the high-end and especially the low-end.

Basically what you do is set an assumption set where you can set two regimes. Instead of one regime at a 6.5 percent to 7 percent mean, you set two regimes, one with a 3 percent mean and one with a 7.8 percent mean. Then you're going to build the stochastic logic around it to generate a number of interest rate scenarios. Inside of that, there's a random number generator that allows you to bounce from regime to regime. This does a much better job modeling out the tails and matching the historical levels than a single regime, which, as Daragh pointed out earlier, keeps pulling you toward the mean. You want to try and stay away from that as long as possible. We found that very useful in a number of our product exercises.

MR. WITT: I'd like to talk about persistency risk. Let me start with an example that shows just how powerful the lapse assumption is. Say the joint life universal life secondary guarantee (ULSG) premium is \$19 per \$1000. This is competitive, but there are definitely some companies out in the marketplace that have even more competitive premiums than this. I know you don't price with life expectancies because it overstates the profits, but I'm ignoring that for this example. I used my company's best class mortality to arrive at a joint life expectancy of about 20 years, and I also ignored profit and expenses in this example. Even with those generous assumptions, the interest rate required to accumulate the premiums to the death

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benefit at life expectancy was over 8.5 percent. Keep in mind this is a guaranteed premium.

If you factor in expenses, profit and early deaths, the implied interest rate is much higher. The only way I could make this product work is lapse-supported pricing. What I mean by that is assuming a high number of lapsers and assuming that each of those lapsers receives a surrender value that is far below the economic value of the policy.

If you have a lapse-supported product, then obviously the assumed lapse rate is absolutely critical. I would venture a guess that 3 percent is probably on the low end of the range of pricing assumptions out there today. I wouldn't know for sure. We don't have a product, and I'm just an expert by investigation. Even with a 3 percent assumed lapse rate, over half of the policyholders on a block of 65-year-olds are assumed to lapse their policies prior to a death claim.

How would you go about setting a lapse assumption for ULSG products? There's no product exactly like this out there in the marketplace going back a number of years, obviously, so actuarial judgment is very critical. I do think you could define an upper bound by looking at the experience in similar markets with cash value products. If you're receiving a fair economic value upon surrender, the penalty to lapse your policy is a lot less, and, therefore, you're more likely to lapse. I took a look at our ultimate lapse experience in a similar cash value market, and we were less than 2 percent.

There are a couple of products out there with zero cash values in the insurance world that may or may not have taught our profession a lesson. Both Term 100 in Canada and long-term care here in the United States were grossly mispriced by many companies due to high lapse rate assumptions that didn't materialize. One could argue that ULSG would have an even lower lapse rate than these products since with ULSG you know that the lifetime guarantee is eventually going to pay out, barring company insolvency, of course.

Another thing to point out is that this is a very sophisticated needs-based market. The folks that are buying these policies have no intention of ever lapsing them. Because surrender values are less than the economic value, this situation is ripe for the development of a life settlement market. While this is a lapse from the original policy owner's viewpoint, it's important to recognize that this is not a lapse from the company's viewpoint. Another thing to consider is that if the general public catches wind of some sort of a mispricing, say, if premiums start to go up on new products, then it's hard to imagine many, if any, in-force policies lapsing.

Finally, we've seen a number of financial instruments spring up that are attempting to capitalize on a perceived arbitrage opportunity. Let me explain one of these financial instruments, a so-called "back-to-back" arrangement. A healthy 80-year-old dumps \$1 million into an immediate annuity. That spins off enough monthly

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income to buy a \$1 million ULSG policy and spin back a yield of 8.44 percent to the insured. Essentially this is a bond with a guaranteed yield of 8.44 percent and an unknown maturity. Now if you can get a guaranteed junk bond yield from a deal involving investment grade companies, something clearly seems amiss to me. My guess is that both companies are losing on the mortality assumption, and the ULSG company is losing on the lapse assumption, because these policies will have a 0 percent lapse rate, guaranteed.

We've seen a number of these deals. They usually involve some sort of charity, 15 to 20 very wealthy insureds, and a total premium of \$200 million to \$250 million. These plans are starting to get a lot of attention from the media.

There's another thing I want to talk about real quickly. This is fairly hot off the press. I just got this from one of our field force. This is another financial arrangement that's attempting to capitalize on a perceived arbitrage opportunity. Let me paraphrase a letter that the client of one of our field force received. This is a letter from an investment group that was approaching this client with an investment opportunity.

"Mr. Healthy 72-Year-Old, we have determined that you financially qualify for up to \$10 million of coverage. If you are willing to go through underwriting, if you qualify for a standard underwriting rate or better, and if you agree to transfer your policy to us after the policy is issued but before the first premium is paid, then we will give you a lump sum of \$300,000 with no future strings attached."

Obviously this is another situation where lapse rates will be zero.

What could drive lapse rates up? Early replacements. We probably have seen some switching from one ULSG product to another with the rapid decrease in premiums. However, if the lapses are early enough, those create financial losses, too, because you haven't recovered your acquisition expenses. If interest rates skyrocket or go up modestly, we definitely could see some policyholders jump ship in favor of an accumulation-type vehicle. Finally, if a company's back is against the wall, it will probably do everything in its power to drive in-force policyholders away, since it will be in its best financial interest to do so.

In summary, it's not hard to envision a scenario where you have lapse rates very close to zero when the market settles out. Again, I want to emphasize that reducing non-guaranteed elements is of little or no value if you can't induce lapses at the same time.

Finally, another important point is that we need to be very cautious about reserving techniques that rely on lapses. If those lapses don't materialize, you end up getting hit with a double whammy. Not only do you not have enough reserves set aside on a per unit basis, you have a lot more units in force than you originally anticipated.

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Even on a seemingly profitable product, you can construct a very plausible scenario where the amount of reserve strengthening could be very crippling to a company.

MR. O'SULLIVAN: I think, Scott, that some of the points that you made do apply, especially to the lower cash value, the lapse-supported no-lapse guaranteed products. However, not all the no-lapse products are low cash value and have lapse support. Some are high cash value and have adequate profits even in variable lapse situations. I just wanted to make that point.

MR. LEBOEUF: While I agree with Scott that there are a lot of companies who are pricing long-term lapse rates at 2 percent to 3 percent, certainly many more have begun to look at dropping those lapse rates down to 0 percent to 1 percent, triggered by age or duration.

Another thing companies are looking at as they're looking at the persistency risk is that they have entered into arrangements with their reinsurers. They are supporting their returns by sharing that risk with the reinsurers.

The other thing I wanted to point out is that this is a very powerful option that we give to policyholders. They do have to fully commit to fund to take advantage of that option. Over time, there are definitely segments—sometimes large segments—of the population that do not take advantage of that option, often because budgets get stressed out. There are other reasons, and that's also a good reason why the secondary market does exist in viaticals and life settlements.

I did want to make one final point about life settlements. In our practice we've had the opportunity to look at some closed blocks of life settlement business. Interestingly enough, we know there are secondary guaranteed products in there. We took a look at how these policies were being purchased and the plan for funding. We never did see a life settlement company ever plan to fund these to maturity. They're looking to fund it for the shortest time period that they feel they can get away with. In terms of the persistency impact, I'm not quite sure what the life settlement marketplace would have. I do know from a funding perspective that they have no interest in trying to fund these contracts to maturity. It appears to make the purchase of the policy not work very well in their financial models.

MR. LEBOEUF: Capital risk is a big issue with ULSGs. The additional reserve requirements that have been imposed on companies that write this business, either by XXX and/or by AXXX, have a significant impact. Of course, the amount of capital needs do very much tie into the investment risk because the amount of capital you need is very interest-sensitive on these products.

I have a few examples of how we might look at a deterministic environment for the examples. For the first example, I took a hypothetical product, an amalgamation of a lot of products we've worked on—an age-45 male, best non-tobacco risk \$500,000 policy. I took a look at earning a 6 percent level rate and funding at the

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level lifetime guaranteed premium. The graph compares the build-up to attained age 100 of the UL commissioners reserve valuation method (CRVM) reserves and the XXX and AXXX reserves.

So what do we have? At a 6 percent gross earned rate, the company would be looking at limited need for additional capital. For this particular example, it will only impact policy years 2 through to 35. The maximum additional reserve impact on this \$500,000 sale was \$42,000 and the average additional reserve impact was \$18,000. In this type of example, the company would look at this and in a deterministic approach would realize that they don't need any help, could offer this type of arrangement and earn a very good return.

What happens to our capital needs for this product if we cut our earned rate from 6 percent to 5 percent? We have a design that barely makes it to age 100 with positive value. Subsequently, our XXX and AXXX impact on this particular product is much greater than it was before. Now, all of a sudden, we would be looking at a situation where we need additional capital in every policy year to support our product. The maximum additional reserve impact happens at the very end, which is \$484,000. However, over time, the average additional reserve over the UL CRVM is \$73,000. In this case, a company would definitely want to be looking for an alternative source of capital to help out.

The last example is the most extreme, but not too far from environments we've been looking at over the last 12 months. What happens if we were looking at a long-term 4 percent level earned rate? This policy crashes at age 93, and we still have to meet our commitments. The total capital needs are unchanged scenario to scenario. The maximum additional reserve impact was \$500,000. The average additional reserve impact in this case was \$114,000. A company looking in this type of environment would need to find an alternative source of capital or find a new business.

What are companies doing today as they're looking at this and realizing they have a wide risk here on their capital? Using reinsurance companies has been very popular over the last few years. Unfortunately, there's a very limited supply, as Elinor already pointed out. I only know of one company where you can go and get it. I don't know how much longer they can stay in it because they have been the one-stop, and at some point they have to be looking at these types of economic environments and wondering what long-term impact that is going to have on their capital. It can be very significant. Also, the cost of these arrangements has been growing in terms of how much the capital cost is and, of course, we've seen some mortality rate increases also coming through in the reinsurance marketplace. This could be one of the reasons for it. We should have a long-term concern about the ability to continue to support those additional capital needs.

What else can we do? Some companies are starting to use captive companies. They're being set up either onshore or offshore, primarily being used as a cheaper

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source for the letters of credit (LOCs) than what you're able to get through a reinsurance company. Of course, over the long term, some of the same things that the reinsurance company would be facing would also face the captive company to make sure that you can always secure those LOCs. This may only be an option for larger carriers, although there are arrangements inside captives for smaller carriers to rent space on a captive. I don't know of any company that's currently doing that, but that's something that has been examined.

The other thing to think about with a captive is that often you're just getting LOC credit and you would also like to reinsure the secondary guarantee risk, so the direct writing company would have to make arrangements for the captive reinsurer to obtain coverage in a secondary market. They'd have to reinsure off the no-lapse risk and, of course, that would have to be built into the pricing arrangements of these reinsurance arrangements.

We talk about securitization a lot these days. To my knowledge, we've only had one successful securitization and that was done last summer on a block of term business to support the XXX reserve requirements. It was very successful. If I remember the details right, the arrangement set up using an onshore captive insurance company in South Carolina. Again, there are some of the same things to be concerned about, such as whether or not securitization is something only for the larger companies because they can generate the necessary economies to make securitization work.

MR. O'SULLIVAN: My next point is not about a solution, but rather to ask a question. We're talking about emerging capital market solutions, but one non-emerging capital market solution is reinsurance. I find it puzzling because reinsurers, I would think, have a unique advantage here. There are basically three things you need to provide these guarantees. One is capital. The second is the actual provision of the guarantees themselves. The third is expertise in the life insurance industry and in the products.

Who has all three? Reinsurers have all three. You have other parties out there now who are trying to put together all three. They take one of the elements, each from a different party, so you have three groups getting together trying to provide all these three ingredients. It doesn't seem very efficient. To the extent that securitizations today are raising capital, reinsurers could do that and then retail it to the direct writers. Reinsurers would be able to use their industry expertise to sell the concept of taking on the guarantees to other third parties as well. They have the knowledge to be able to convince third parties that it's a good risk. I guess this is more of a question mark in a way.

MR. WITT: One of the things that troubles me about this marketplace is that at times it seems like statutory reserves are being treated as a quantity to be minimized. The focus of statutory reserves is on long-term solvency, so I think conservative assumptions are appropriate.

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UL CRVM doesn't recognize the future liability of the secondary guarantee. The presence of that guarantee fundamentally changes the nature of that policy to the point where I think UL CRVM is no longer relevant. I think a proper comparison would be to the level of reserves intended by XXX. A creative shadow fund design actually can provide significant relief compared to a specified premium design. Does 60 cents on the dollar seem like a prudent reserve? At most that person probably has a two- or three-year life expectancy. If you figure a 5 percent or 6 percent interest rate, then it's hard to imagine less than \$900 per \$1000 at age 99 being an appropriate reserve.

MR. O'SULLIVAN: What exactly is regulatory risk? It's the risk that reserves in the future will be different from what we understand them to be today. That could apply to in-force business as well, so it's a substantial risk. The regulatory risk arises because of a couple of different things. One is because the new no-lapse designs are very complicated. The second reason is because the regulators, although they took a very intelligent, thoughtful approach to regulating in AXXX, also made it quite complicated. You get these two new, complicated features colliding and you inevitably end up with some confusion and some controversy. That's bound to happen.

What are the possible outcomes? I think the Life and Health Actuarial Task Force is looking at the actual situation. Hypothetical outcomes are now largely irrelevant since the regulators are actually looking at this.

How does product complexity arise? It arises because the buyers demand flexibility of the premium payment. A simple level premium design won't sell today. That's not what people want. They want to be able to pre-pay. They're used to buying UL. They're used to being able to have the flexibility.

The shadow account designs are the most popular solution to that flexibility. Increasing premium designs are also fairly popular with the pre-payment provisions. You can get from a shadow account design to a specified premium design. You can convert one to the other so that there's a one-to-one correspondence between those two classes; they're really equivalent.

The new designs have a lot of features: up to three shadow funds (I've seen a couple of those), two shadow cost of insurance rates and two sets of premium levels. I'm not sure how many there are with all three, but there are definitely quite a few with at least one, or maybe two, of those. Increasing premium designs are similar. There are fewer of them, but they have the same features.

Now let's take a look at the AXXX. Rather than go through the details of the formulas—I think it's too complicated to discuss—I want to quickly discuss the motivation behind it. The concern was that shadow accounts and other perceived abuses had violated the spirit of XXX. Regulators were not confident that they could enforce the broad statements of intent in XXX, especially against shadow accounts.

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Interpretations are discouraged under AXXX. It's very prescriptive. It gives you eight steps to calculate the reserve on a no-lapse guarantee on a shadow account product. Because of its emphasis on its formulas, the success of AXXX in achieving the regulators' goals for it will depend on whether the formulas are going to work or not.

Finally, regarding the confusion and controversy, I think the major sources of the controversy are the adequacy of the AXXX formula reserves on the newest designs and the uncertainty on AXXX's catch-all provisions (that's the general statement of intent at the beginning of AXXX). There are some open questions. Should you get any benefits? Should you get any risk reduction in your reserves if you've designed a product that reduces the risk? That should be a good thing. Then how will the regulators distinguish between the designs that are produced just to reduce the risk versus the ones that are there just to reduce the reserves? One of the questions that I have and maybe others have too, is: Will the regulators rely more on aggregate reserve adequacy requirements instead of on formula reserves? No one knows the answer to that yet. Maybe we'll find out pretty soon. Are formula reserves simply too difficult to set fairly? Or is it possible, by thinking about it a little more, that you can get the right answer? I don't think anyone knows the answer to that question either yet.

I sometimes have a question about the formulas for the right reserves. When are the reserves the right reserves? If the original level premium XXX reserve was the right reserve, then why were so many people ready to step in at that point to back the guarantees? I'm talking about reinsurers, banks issuing letters of credit, and the people who are investing in these securitizations. Obviously, they're taking on some risk, but they seem to discount the risk.

MR. WITT: Until recently, I think many folks were under the mistaken impression that AXXX effectively closed the loopholes in Regulation XXX. I think the creators of AXXX clearly underestimated the creativity of our profession, and I think they overestimated our ability to follow the intent of a regulation. By specifying a formula that ultimately proved to be subject to abuse, I believe they unintentionally created what some are dangerously viewing now as a formulaic safe harbor. Many think the XXX reserves are too high. However, the intent of AXXX is clear. Plans with similar premiums and similar guarantees are supposed to have similar reserves.

The introductory paragraph that Daragh alluded to states, "...common sense and professional responsibility are needed to assure compliance with both the spirit and the letter of the law. While the Model is a complex regulation, its intent is clear: reserves need to be established for the guarantees provided by a policy. Policy designs which are created to simply disguise those guarantees or exploit a perceived loophole must be reserved in a manner similar to more typical designs with typical guarantees."

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I'm not sure how much comfort I would take in the formulaic safe harbor. Regulators were clearly trying to prevent the industry from gaming the system, so I'm wondering how sympathetic these regulators will be if they have a perception that companies have done so.

I can't overstate the importance of Chart 1. Regardless of how you feel about the sufficiency of either one of these two lines, wouldn't you agree that these two designs should be holding essentially identical reserves? Whether it's the solid line coming down to the dotted line, or the dotted line going up to the solid line, I think we need to get to a place where we're on a level playing field.

Perhaps we need to get back to some basic actuarial principles. One alternative would be to use appropriately conservative assumptions for the benefit piece of this equation and substitute in the gross premium on the premium side of the equation. We could try to get back to some of the basic principles here and put a value on this policyholder option that can be so valuable in certain situations.

MR. LEBOEUF: When I look at the regulatory risk issue, I look at the wording of A.G. AXXX. Part of the problem with the guideline is the perception of it. I think that a lot of people had the perception for AXXX that once it was implemented, it would result in all secondary guarantee products holding about the same level of reserves over time. That would actually, in many people's minds, migrate up toward what a whole life product will hold for a reserve.

The reality is that the way AXXX is written and the way that they have you go through the formulaic steps forces the company to recognize additional reserve requirements as its liability emerges. The simplest way to look at what a company's liability is to look at the value of that shadow account. If it's a different type of a secondary guarantee design, instead of the shadow account, the company's liability is the excess premiums that the policyholder has paid in. That's how AXXX, in our opinion, is intended to operate. It's recognition of the liability as it emerges.

A shadow account product and other designs all have their own unique features within their designs. Sometimes companies will have different designs and they have different emergence in liability. They're not all going to hold the same reserve. They're all very different in the way they operate. They're all very different in the way the liability emerges for the company.

MR. WITT: Let's talk about the mortality risk. In my mind, there also needs to be some conservatism in this assumption because, again, there's very little or no ability to recover from a mistake through adjusting non-guaranteed elements. Many have taken some comfort in offloading the mortality risk to reinsurers, but as the reinsurance market has tightened, many companies are faced with the decision of whether or not to take on that risk themselves in order to maintain their competitiveness in the marketplace. In any event, the direct writer is ultimately on

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the hook if the reinsurer falls apart, so you still need to pay attention to this assumption.

There has been lots of talk recently about the appropriateness of the 2001 Valuation Basic Table (VBT) versus a flat percentage of the 75-80 Basic. I wanted to see if I could simply reconcile the differences between those two perspectives. The biggest criticism of the 2001 VBT is that the slope is too steep because it doesn't have homogeneous data across all durations. Clearly, blood testing and preferred underwriting are two items that are not consistently reflected by duration.

The simple example that I came up with is for a 65-year-old male. I assumed that 30 percent of the 75-80 Basic table is correct. Then I tried to answer the question, is there a way that I can reconcile going from the 2001 VBT table down to this percentage of the 75-80 Basic? The gap that we're trying to explain is shown in Chart 2.

The first adjustment that I made to the 2001 VBT was to make an adjustment as if 100 percent of the data was blood-tested. I needed to make some simplifying assumptions, which I've documented, but I'm not going to take the time to go into them. At the end of the day, the adjustment ends up being fairly immaterial anyway because if the impact of blood testing wears off over time, it doesn't really impact the later durations in the VBT.

The next thing I looked at was an adjustment for preferred underwriting. You may be able to shave off 40 percent, maybe even more, in the early durations due to preferred underwriting. While I don't believe this for a second, for the sake of argument, I assumed a 40 percent reduction across-the-board in each and every duration. That gets us roughly halfway there.

That leaves projected mortality improvement. I backed into the percentage needed in order to line those two lines up. Again, while I don't necessarily believe for a second that this will be an appropriate assumption, 2 percent was the number that I got. That happens to fit fairly well. Now, obviously, there are an infinite number of ways I could have gotten these two lines to line up, but I was trying to demonstrate that what is implicitly embedded in that flat percentage of the 75-80 Basic could be surprising to some.

In summary, 30 percent of 75-80 Basic may be appropriate if the 2001 VBT is adjusted to assume 100 percent blood testing; preferred underwriting lowers mortality 40 percent and the value lasts forever; and mortality is projected to improve 2 percent annually. If you buy into those three assumptions, then maybe 30 percent is an appropriate assumption, but I would ask whether or not the second and third assumptions seem reasonable in your experience. I think more and more people are coming to the conclusion that it's not appropriate to price using a flat percentage, in particular, of the 75-80 Basic table, but some are extending that to

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say that using a flat percentage with any table just introduces some distortions that you may want to avoid.

If this technique is questionable, at best, for pricing, then it goes without saying that it's a stretch to use it for illustration testing, since you can't incorporate projected mortality improvements in illustration testing. I would think that would apply to implicit mortality improvements as well as the obvious explicit mortality improvements. Without this assumption, I wonder whether or not people would be able to pass the lapse-support test.

I wouldn't be surprised if we see a market emerge down the road where non-guaranteed elements are stripped entirely out of the secondary guarantee marketplace because more attention is focused on passing the illustration test, in particular, the lapse-support test. Companies may just decide it's easier to not have to deal with the non-guaranteed elements and make everything fully guaranteed.

Let's take a look at the impact of being wrong on a couple of different assumptions. I wrapped in both some persistency analysis and mortality analysis. Obviously, you could also miss on the interest rate, but I ignored that for this example and assumed that 6 percent was appropriate for all the discounting and everything else I did in this example.

I set up the model such that if the assumptions pan out, we would get a zero gain in every single duration. I assumed only one year of business and the total first-year premium was \$150 million. I assumed the business was all best class non-smoker, issue age 65 males. I've already explained why I think the lapse rate will be close to zero when it's all said and done. For this I assumed that they emerge at 0.5 percent. If you had assumed the base lapse assumption of 4 percent, but it emerged at 0.5 percent instead, the net present value of that loss would be \$500 million.

What about missing on the mortality assumption? Instead of the flat percentage of the 75-80 Basic, I substituted a simple function of the 2001 VBT: 50 percent of 2001 VBT, grading up 2 percent a year for 25 years. That was a very rough proxy for my company's best class current mortality experience. That leads to another \$150 million present value loss. If both the lapse rate and the mortality assumptions are wrong at the same time, there's a synergistic effect and the total \$750 million present value loss is greater than the sum of the pieces.

The \$750 million loss is a slow bleed. What could be particularly troubling to some companies is if they find themselves in a situation where they're forced to strengthen reserves midstream. For this block of business (again, it was just one year of issues that had \$150 million of first-year premium), the required reserve strengthening in year 15 would be \$1.2 billion, which is a fairly impressive number considering the size of that first-year premium. If it took you 10 or 15 years of ongoing business to figure out your lapse assumption and these other things, and

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you just kept deferring the day of reckoning, then you can be talking about some serious dollars pretty quickly.

MR. O'SULLIVAN: My point basically is that the 2001 VBT has its own problems, and the 75-80 Basic Table has its problems, too. But I think that maybe they're not quite as unequally matched as portrayed.

On the reserve strengthening issue, the \$750 million number is pretty impressive. Two-thirds of it, though, came from lapses. That's \$500 million. The lapse assumption, 0.5 percent, is pretty low. I'd call that even extremely low.

The mortality assumption is also pretty severe. When you think about the pricing assumptions involved, they're not the kind that you would think of day-to-day, even year-to-year, or, hopefully, even decade-to-decade. I did a couple of calculations just to see what they would look like. The 50 percent of the VBT, the worsening of the table, averages—I used a simple arithmetic average here—34 percent more than 30 percent of the 75-80 table, the original pricing table. You're looking at a 34 percent increase in the average mortality going from one table to the other. Then you apply 2 percent increases for a number of years to the VBT, so that makes it higher and steeper. The 2001 VBT is already quite steep. I think that it's maybe a little extreme and not totally representative. It's not the kind of thing that I would necessarily wake up in the middle of the night worrying about.

MR. LEBOEUF: We've taken a look for a number of companies at the mortality risk because that has been a concern that has come up. Unfortunately, as we've gone through our stochastic models and tinkered with the mortality, ultimately, for many of these companies, it has very minimal impact. That's primarily because companies out there bought their mortality assumption from their reinsurers and they have very favorable treaty structures. So long as they don't raise their current COI charges, the reinsurer has agreed not to raise the reinsurance rates. Some companies feel pretty good that the mortality is "locked in." It hasn't been a big concern.

Although Scott and Daragh made some excellent points, I want to say that I've recently seen some quotes come across from reinsurers based on the 2001 VBT, and I've seen them lower than the percentages Scott and Daragh were using. I didn't see it being as large as a 34 percent increase. A lot of talk has gone around that reinsurers have been firming up. I'm seeing some of it, and then there are other instances where I'm not seeing that.

Now we're on to design risk. Design risk on these secondary guarantee products comes through in two forms. One is the mispricing risk. Many companies go through the exercise and design their shadow account parameters (or whatever) targeting to fit marketing's desired specific level premium that they want to put out in the marketplace. Sometimes you find that when you step outside of the level premium

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scenario, sales outside of that strategy, for example, the 1035 Exchange, may end up being underpriced.

The other part of design risk comes from policyholder misunderstanding. The designs today, as has already been pointed out, are very complex. Consequently, the slightest policyholder deviation from the plan can have very significant consequences down the road in their ability to fund the guarantee, unless it's immediately corrected. These errors and their funding do compound upon each other.

How does this mispricing happen? We have a very complex product that we're building. As we're trying to build it, we're trying to create a balance of the policyholder premium levels that marketing is beating down on us that we have to have; we're trying to manage the capital impact of XXX and AXXX through a variety of means. And, ultimately, we are trying to meet our corporate profit objectives as best as we can.

After we've gone through all of this, we have to do an analysis of possible consumer premium levels. As my first example, I took a look at a design that was done on a male, 45, best non-tobacco, \$500,000. We took a look at this hypothetical and hit our desired premium level of \$3,875 for the product that would make marketing happy and put them where they want to be. Capital strain under current assumptions was limited and the company could live with it. We met our corporate profit objectives of a 12 percent ROI and 2 percent-or-better profit margin.

Then we moved on and took a look at the amount of the single premium to fund that guarantee. It was about \$50,000. Using current assumptions, just on the base UL product alone without the guarantee rider, that was \$60,000. We're already looking at ourselves as being \$10,000 in the hole.

Complicating this was, of course, today's interest rate environment. We didn't even like the way the base product looked if somebody tried to fund it with a single premium of \$60,000, let alone provide the guarantee. Now we had to go through the exercise of making alterations in the design because we wanted to increase that single premium to \$60,000 or higher, and we had to do so without changing that level premium situation. We still had to meet that requirement.

The second area of design risk comes through from policyholder misunderstanding of the guarantee. I ran through a hypothetical example of the same type, providing a premium of \$3,800 annually. But what happens if the policyholder takes that illustration and then suddenly decides to set it up and just pay monthly out of the checking account? It was only \$317. That premium in the illustration was designed to be funded annually at the beginning of the year. Now they spread it out over a monthly basis. After 40 years, going out to attained age 85, if no corrections were made, the deficit in the funding was now over \$2 million. It was so large because the deficit was continually compounded with mortality and interest in the guarantee

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structure. So we have a policyholder with an original illustration. They can show that they actually funded the policy at that, but they didn't do it exactly right. I wouldn't want to go to trial 40 years later on lapse-in-coverage on this person when they could provide backup material saying that they actually did that.

How is it made clear? Policy illustrations are going to have to be a lot better indicating it. We will have to do a better job educating the policyholder. That communication with the policyholders is critical, whether it's done through annual statements or other periodic types of communication, in order to let them know how they're performing based upon their original plan of insurance. Short of that, I don't know how we can protect ourselves. Litigation risk is a long-term concern that I have for the industry.

MR. O'SULLIVAN: There are some other potential problems. Some of the designs out there have a high interest rate in the last 20 years, say ages 80 to 100. That may not be vulnerable to a single-pay mispricing problem, but it could be vulnerable to another type of mispricing problem if the policyholders that get to age 80 and who are planning to pay level premiums for their remaining 20 years suddenly decide, because it's a very low interest rate environment at the time, to pre-pay their remaining 20 years of premiums. If interest rates then are at 2 percent or some very low rate, then you have a pretty serious mispricing on your hands. You have to watch not only for the initial interest rates, or early duration interest rates, but also the interest rates at later periods. It's very difficult to get this right so that there's no mispricing, but those are some of the issues I think you should think about.

Also, I think if you price your shadow account with a very low shadow COI rate, you could end up with people funding it minimally and getting very cheap guarantee yearly renewable term (YRT) insurance. You have to watch out for that.

MR. WITT: This is a very sophisticated marketplace. If you make a mistake, the market will find you. We've seen that in the past, and I'm sure we'll see it in the future. Inevitably, your sales end up shifting toward your least profitable cells, and assumed subsidies, which may or may not be prevalent in this marketplace, may not materialize.

MR. HANK RAMSEY: I have a challenge to a comment that Mike LeBoeuf made on regulatory risk. You made a statement that the shadow account may effectively measure the guaranteed value. I wasn't sure whether you meant that entirely or whether that was to be colored by a comment. I have a challenge to that. I think the shadow account severely understates the value of the guarantee if the shadow account's COIs are structured in a way that's high in early durations and low in late durations. If you look to the shadow account as a representation of the value of the guarantees provided, it may be way off.

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MR. LEBOEUF: I'm not sure I agree with you. Part of my comments also implicitly take into account the flexible nature of the premium payments on the product. The policyholder is required and does not have to follow through with completing the funding for the plan of insurance. This is my interpretation, looking at the various steps of AXXX, of how it's designed to work. You're taking a snapshot in time of the shadow account and, of course, you're trying to calculate that pre-funding ratio. That's why I make the statement that the shadow account reflects the true liability to the company today. Of course, you always have to follow through the various mechanics of AXXX, but that's the source of my comments. Does that clarify?

MR. RAMSEY: I disagree with you because I think it's possible that the COIs embedded in the shadow account in the later durations may be materially beneath your best estimate mortality assumption. If you look at the shadow account as a prospective measure of the benefits guaranteed, even if they don't make another payment for another X years, the value of the shadow account understates the best estimate value of the death benefits you're going to provide.

MR. LEBOEUF: I understand, but I'm not sure that I agree with you. But I do absolutely understand your point.

MR. O'SULLIVAN: Hank, maybe I could make a comment here. You may have analyzed this a bit more than I have. But I think that you compare the shadow account value to the guaranteed premium to pay the coverage through the remaining period of the contract. If you have very low late duration COI rates, that means that the guaranteed premium to fund the remaining period is also low. So your ratio, the pre-funding ratio that Michael mentioned, is going to be high. I'm not sure that you get the answer that you were thinking.

MR. DENNIS MARTIN: I have a question on the securitization option with respect to capital relief. Last week's *National Underwriter* had an article highlighting asset-backed security transactions in the general marketplace using the retail insurance products. As I look at that, I wonder how we will securitize our reserve stream on a wholesale basis when we have the private equity market creating asset-backed securities with our retail products on the front side. Aren't you going to create a conflict in the marketplace that should be more efficient than we are in this scenario? I wonder how you view the front-end securitization of our retail products in that context.

The second question for comment is, in those situations you are going to have institutional-type investors purchasing our contracts, probably very lapse-immune, very close to zero. In those situations, they will be non-zero in other places. The philosophical question I have is, is it our intent to be building products for institutional investors that will have zero lapses that are going to be subsidized by general consumers, which are our typical market? These are just some philosophical questions that I think are underlying a lot of these things out there.

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MR. LEBOEUF: That's a good question. I don't see the two different levels of securitization you mentioned in conflict with each other because they are very different. The UL secondary guarantee, to my knowledge, at this point in time, has not gone through a securitization arrangement. The block that I'm aware of that went to do a securitization was a term block and is usually not subject to these pseudo-charitable investment financial arrangements.

I got a letter on that last week as well, but it was actually an article. It gave them a very nice marketing name. They were called "lilacs" (life insurance and life annuities-based certificates). If you hear about that, that's a combination of these life ULSGs with immediate annuities.

MR. MARTIN: My second question was more philosophical. If we have institutional investors purchasing what are intended to be retail insurance products and creating what they perceive to be arbitrage situations, is that the market we should be understanding or targeting because those will be highly persistent arrangements, whereas the more retail market, as you mentioned, probably isn't as efficient as we can model here? You can hypothesize, but you end up subsidizing an institutional-type transaction with a retail product.

MR. LEBOEUF: We definitely need to be very aware and pay attention to what's going on in the marketing literature outside of our own profession because these arrangements have been hyped up quite a bit. Certainly, there are a large number of banking institutions that are looking to help set these up. The materials I get on this usually come through a funnel gate, through the Association of Advanced Life Underwriting (AALU), for example.

In terms of designing products, I can't stress enough the importance for actuaries, particularly product development actuaries, to read literature outside of the actuarial arena. Make sure you understand what's going on in the marketplace and how products are being sold. It's very easy to find, but you do have to step outside the standard literature you might be reading. Pay attention to the marketing people because you never know what they're going to be up to.

MS. FRIEDMAN: I have another quick comment on securitization. Feasibility studies for securitization of redundant AXXX reserves require an enormous amount of analysis and stress testing. To the extent that that front-end selling to institutions does drive down the lapse rate, it becomes an additional sensitivity and risk that needs to be analyzed and accounted for in the securitization work.

MR. MARTIN: I have just one more question. With respect to shadow account designs, you showed a situation of annual versus a monthly pay. But a different situation is if I am paying monthly but miss one month and pay late. Your late charges, essentially your interest that you miss on the premium plus the COI on the premium itself because of net-amount-at-risk impact, are essentially a late charge that's increasing with age from the standpoint if you compare it to other products. I

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wonder if anyone has any comments on the discrimination aspects of having a late charge on a premium that increases with age.

MR. O'SULLIVAN: I maybe won't address that directly, but whenever you miss a premium payment on a UL product, whether it's no-lapse or shadow account or just a regular UL product, you get an increase in charge. That happens on the current performance side as well as on the no-lapse side. I think the real question is, are you disclosing it adequately? Are people aware of what's happening? That's the way I would see it.

MR. TOM KALMBACH: I found your discussions and viewpoints very helpful. I would be interested in the risks that you've laid out. I would be interested in each of the panelist's comment on, given the current price levels in the marketplace for secondary guarantees, which of those risks are most prevalent in making the products mispriced?

MR. O'SULLIVAN: I think no one knows what the investment yields will be, so, obviously, that's the most vulnerable to that.

MR. LEBOEUF: I would agree. I think that the investment risk is the biggest gamble that companies take over the long term on these products.

MR. WITT: My money is on the other two: persistency and mortality. I think the older-age marketplace is where we're seeing big-dollar transactions where companies are potentially hanging themselves out to dry if they're mispriced. I think people could be in for a surprise on the persistency rates. You take away that lapse support, and it can have a tremendous impact on your financial results. You combine that with being off on the mortality, and strange things start to happen at those higher attained ages if everybody sticks around and the mortality doesn't pan out like you assumed.

MR. KALMBACH: It seems like out of those, the regulatory risk and the capital risks are relatively low.

MR. WITT: I don't want to diminish the regulatory risk. It remains to be seen how that's going to play out. To the extent creativity has been used to drive reserves down to a lower level than other secondary guarantee products have, it seems like some kind of a risk to me.

FROM THE FLOOR: Mr. O'Sullivan, you mentioned that there was a difference in pure reserve reduction risk and then maybe having a design that really changed the guarantee. Maybe I took it wrong, but you sort of implied that a lot of things would actually be having a less valuable guarantee or a decreasing guarantee. Most of the shadow account designs that I know would result in a stronger guarantee for the policyholder in the sense that if they made a couple of level pay payments, their guarantee would be for maybe as long as 10 years. They have already pre-paid 10

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years to last for 10 years in the shadow account. On the premium test product, they would only get the two years for which they paid. Are you aware of any designs on the shadow account where you would be decreasing the guarantee as opposed to increasing it?

MR. O'SULLIVAN: Yes, there are designs that decrease the guarantee. Obviously, if you have a risk reduction feature in your product design, the only way that you can really achieve that is to somehow limit the guarantee to the policyholder. The idea is to limit the guarantee in a way that minimizes the damage to the policyholder, but minimizes the risk to the company. That's what's going on, and there are designs that do that.

MR. KERRY KRANTZ: I was struck by your talk about the 10,000 scenarios and the two New York 7 scenarios where they were at the far left end of the tail. If, instead of AXXX, we had something similar to what's going on with the variable annuities work group, where you had something with a conditional tail expectation (CTE) of 75 percent or whatever, you did your scenario testing and you did prudent best estimates as far as the assumptions (meaning you don't do best estimates, but you add some moderate amount of loading to them for conservatism), what would happen to that curve if you were to do that? Let's say that you did, again, 75 so that you do the average of the 25 worse scenarios and that was your reserve. How would that compare to the AXXX reserves that you have to do now?

MR. O'SULLIVAN: I think the AXXX reserves vary quite a bit by design, so it's a little hard to make a single comparison of those two. To be honest, I haven't calculated the CTE of UL design, so I don't know for sure how it would turn out. But I suspect that the CTE net would produce probably lower reserves for the majority of designs, but higher reserves for some. That's my guess. I'm not sure what the percentage would be between those two, but I think that's what will happen.

MR. KRANTZ: If a company does do secondary guarantees, should they be doing this kind of testing with the CTE and see what those 25 percent scenarios are?

MR. O'SULLIVAN: I don't know for sure, but it certainly seems prudent to at least look at those tail risks and to try to evaluate them. Which exact method you use isn't really known yet because there's no consensus. Obviously, there are developments in the annuity area that shine a light on what we should do for UL.

MR. KRANTZ: I think the American Academy of Actuaries is considering studying the issue. I don't know how far along they are. It would be interesting to see if people who are experts in the area would like to volunteer to participate in any study of it.

MS. FRIEDMAN: I would be very much in favor of moving toward that type of an approach. I know internally a lot of companies do that kind of an analysis now as part of their pricing work. The analysis done in pricing today has emerged quite a

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bit in bringing in this type of stochastic look. A true risk profile is becoming more common.

MR. KRANTZ: Just as an advertisement for those who are going to the annual meeting, the Financial Reporting Section is going to have a debate on the subject of formula reserves versus principal-driven reserves.

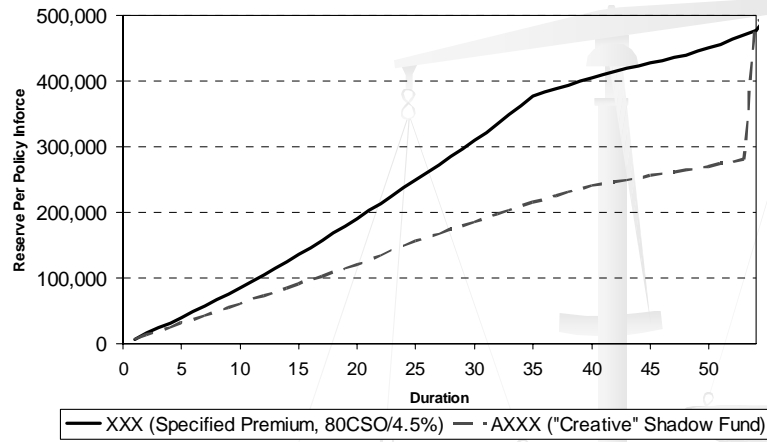
MR. KALMBACH: We also support a model-based approach for setting reserves because we think that it more accurately reflects the risks of the products that are taken with these secondary guarantees. It gets away from the design of the guarantee and focuses on what the guarantee is rather than how the guarantee was given. We think that's more appropriate in setting appropriate reserves.

MS. FRIEDMAN: Absolutely. I agree.

Chart 1

CAPITAL RISK - Witt

**Reserve Comparison – Level Premium Scenario
Issue Age 45, Best Class Male, \$500k**



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Chart 2

MORTALITY RISK - Witt

2001 VBT vs. 30% of 75-80 Basic

