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## **Session 59PD**

### **Recognizing Reinsurance Costs in Direct Pricing**

**Track:** Reinsurance/Product Development

**Moderator:** W. HOWELL PUGH

**Panelists:** DALE E. FILSINGER  
PAUL R. MYERS

*Summary: Panelists discuss incorporating reinsurance costs into the pricing of their retail products. Panelists also discuss the different effects of various reinsurance arrangements.*

**MR. W. HOWELL PUGH:** This is Session 59, "Recognizing Reinsurance Costs in Direct Pricing." The reinsurance section presents it, and as you might have noticed coming in, the title is wrong. It should read, "Recognizing Reinsurance Benefits in Direct Pricing," and the panel we've assembled this morning is aiming to prove that to you.

We're here to talk about reinsurance costs in direct pricing, and there are two panel members I'd like to introduce to you. First is Paul Myers, who's with Canada Life Assurance—the U.S. branch in Atlanta, Georgia. He's director of life and health product development for the U.S. and primarily is responsible for product development for variable life, universal life, whole life, term, and critical illness. Paul is a Fellow in the Society and received a B.S. in Mathematics from Penn State University.

The second panelist is Dale Filsinger from ERC. He's vice president and actuary of ERC Reinsurance in Overland Park, Kansas. He is involved in some new international ventures; but he helps reinsurance clients and structures agreements to use their

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**Note:** The chart(s) referred to in the text can be found at the end of the manuscript.

capital for new business growth. Dale graduated from the University of Nebraska with degrees in math and statistics.

I'm second vice president and director of client product innovation for Lincoln Reinsurance and have been there for three years; I worked previously at First Penn Pacific in Chicago. One of the things that I'm most involved in is helping companies do product development work. I have worked on several Internet terms and have worked on several kinds of e-commerce kinds of ventures in that regard.

Today we're going to be talking about several ideas that you can use in your direct pricing. I'd like to start off with a nice picture for you, and I think this says it all from my standpoint, because it shows an amazingly unbroken trend pattern in the past 10 years (Chart 1). We took new business sales in the United States and broke it down between retained by the direct company and ceded to reinsurance company. That unbroken trend over the past 10 years shows an increasing gain by the reinsurers of market share, if you will. This is based on the Society of Actuaries survey.

The year 2000 data will be out, I think, in August, but it probably will show an increased function, an even increased share by the reinsurers in that regard. What's driving a lot of new business today is reinsurance; so it's important that you recognize the reinsurance benefits in your direct pricing.

The reason for the shift primarily is quota share, and I'm sure you've heard a lot of these reasons before from the ceding company. They are able to lock in underwriting profit. They do not have to have a fluctuation in profit because of mortality; so that is of great benefit if you're trying to explain things from a financial standpoint.

As an assuming company from the reinsurer's standpoint, we get a much larger share of risk with a quota share arrangement. We also, no surprise here, get a sustained growth in new business. It's helped to draw out of the reinsurer's growth in your business.

The other reason for that graph is that there has been an increase in in-force blocks as companies have demutualized. They find the demutualization easier to use if you create a closed block with essentially fixed reinsurance costs instead of fluctuating mortality, so that's been of some importance in that trend also.

For the future, we're going to see more of the same. The analysts' estimations vary, but reinsurance growth is 14 percent. I've seen estimates as high as 20 percent growth; so for this next three- to five-year outlook, there still is going to be more of this kind of trend pattern going on, whereas the industry growth is of a lesser number in that regard.

I have heard many people claim that reinsurers have this competitive advantage because of their information—their larger block of business and their better way of analyzing and studying the business. That gives us a competitive information hedge on mortality, basically.

Now, I would throw out a few flags. There are some wild cards as we look further beyond three to five years. Certainly there are going to be new financial entrants to the business. We've already seen some interest for activity by investment banks into reinsurance activities and with Gramm-Leach-Bliley having come into effect, banks and investment banks are probably going to be more active in certain regards.

There is a lot of talk about securitization of insurance risk; that's been more predominant on the property and casualty side. Oddly enough, the risk of hurricanes and earthquakes has seen more securitization than the steady risk of mortality.

But the other wild card is the whole idea of e-commerce and concomitant erosion in the number of agents in the United States and Canada. That may drive the business into a different fashion than what we are currently set up to handle. I offer those as kind of visions of the future.

**MR. PAUL MYERS:** I am a little bit unique on this panel today; I'm the only member from the direct part of the business—my counterparts are from the reinsurance part of the business—and also I work for a Canadian company. Since we're in Canada, I guess that makes it kind of unique, but I do work in the U.S. division, which makes it very independent from the company right around the corner.

However, we do report our pricing on both a Canadian and U.S. basis; so I hope that today I can at least give a point or two of how recognizing the reinsurance costs or benefits in direct pricing could impact your U.S. and your Canadian financials.

Our learning objectives are simple—they're right here. Nothing is more frustrating for me than to go to a meeting and people don't talk about this; so I'm going to talk about incorporating costs into pricing your product and the effects on various reinsurance arrangements. In particular I'm going to talk about yearly renewable term, coinsurance and modified coinsurance. At the end, I'm sure you'll all have a better understanding of the impact of these arrangements on your product development pricing.

How do I plan to achieve those objectives? First, I want to talk about why you'd want to recommend these costs.

Second, which products should you be thinking about in the meeting today? Where can you apply this back at your home office? The meat of what we're going to talk about today is how do you reflect the cost?

Finally, I'd like to set an action plan. There's nothing better than to leave with some action and some things to do when you walk out of here with today; so the first thing we'll look into is the why.

### **The Why**

There are several reasons why you would recognize these benefits or costs, whatever you would call them. The four we're going to talk about today are enhanced profitability and competitiveness, completing your financial picture, and helping you to negotiate your treaty.

**Enhanced Profitability and Competitiveness.** These first two are pretty obvious: If you could enhance your profitability, if you could enhance your competitiveness, this is something you would definitely want to look into.

It's tougher each day in this industry to compete. I'll mention the products that I work on at Canada Life, and each product line is just getting more and more aggressive every single day.

If you need to enhance your ROI, you have strain issues. Whatever your profitability issues are, reinsurance can help. It's a tool that can help you reach your profitability objectives and at the same time, help your competitiveness. Now, we work in the U.S. (I'd say we're more of a mid-size company). For smaller to mid-size companies, we have less credible experience than our big competitors, and therefore, we have potentially more conservative assumptions with less credibility.

If you turn to a reinsurer that has all the experience and has the whole industry in front of it, it could really help you get more aggressive, more thoughtful and more competitive when you lock in that underwriting profit.

Also, how much is in demutualization? When we demutualized and became a stock company, our target profit objectives went up, and we had to find the tools needed to get there. Reinsurance is one way to help enhance your profitability.

For example, if we're looking at a universal life product with the first-dollar quota share of yearly renewable term, for your initial net amount at risk, you're ceding a percentage of that amount of risk to the reinsurer, right from the first dollar. In your first bar, this is the profitability with nothing ceded to the reinsurer, and ROI here is coming in a little under 10 percent (Chart 2).

Now if I move over and cede 25 percent to the reinsurer under the assumptions and the pricing of this product, the ROI jumps up, and it continues to as I cede more and more to the reinsurer until the extreme, which wouldn't happen in practice. But

just to show you the range of what could happen, let's say you cede the entire piece of business to the reinsurer—you could enhance your profitability more than 15 percent. Of course, that depends on assumptions. Why reflect the reinsurance? Obviously, enhanced profitability and competitiveness.

**Completing Your Financial Picture.** A third reason is completing your financial picture. When we file our pricing memos, our CFO is pretty tough, and he really puts us through the grind. If we don't have everything in our pricing memo, if we're not showing a complete financial picture, if we have reinsurance and we're not reflecting it in our pricing, it comes back.

To get the complete picture and to recognize everything going on in your product, you need to reflect the reinsurance in your pricing.

**Negotiating Your Treaty.** Also, it helps when you want to negotiate your treaty. If it's a YRT treaty, you want to negotiate those premiums. Want a coinsurance treaty? You're negotiating your expense allowances.

What percentage do you want to cede to the reinsurer? That's almost a negotiation among you. If you work it into your pricing, you can figure and you can solve for which percent is ideal for you to cede to the reinsurer.

I want everybody to step out of this meeting scenario and go back to the home office and think about the products you have that are currently reinsured. If they are reinsured, and they are reflected, maybe think if you have a point or two that you're not reflecting. You're not showing a true financial picture if you're not reflecting it.

There is a second set of products I'd like you to think about—those that are not reinsured, and you need to enhance their profitability and their competitiveness. If you're wondering, "What can we do with this product?," take a second and write down these products, for the ones currently reinsured, you can note if it's YRT or coinsurance or modified coinsurance. Get that to the front of your mind so we can really get something out of the next 20 minutes today, so we can talk about how you reflect reinsurance in your pricing.

What I would like to go through as you're thinking about your product is how we're going to reflect YRT and how we will reflect coinsurance, and I'm going to talk a little bit about the impact on target surplus.

### **Reflecting YRT Reinsurance in Pricing**

A good example for YRT is a universal life product. With a universal life product, you want to enhance the possibility of competitiveness. Let's say we have that first-dollar quota share that we mentioned earlier, where you're going to see a random amount at risk right at the start. How would you reflect it in your pricing model?

**Reinsurance Premium.** The first thing you need to reflect is the premium. You're going to be paying a premium for this reinsurance. If you ask for it, a reinsurer could provide you a quote as a percentage of the 75-80 table. For example, let's say the reinsurance premium is 50 percent of the 75-80 table for your certain risk class. In your pricing, you would have a premium going out to the reinsurer at 50 percent of the 75-80 table.

**Reinsured Death Benefit.** Now, on the death benefit, the reinsurer is going to reimburse you in your pricing for its quota share portion of the death benefit. Now, your death benefits and pricing are based on your pricing assumption. If my pricing assumption is 60 percent of the 75-80 table, I'm assuming that's the rate at which we're going to pay death claims. The reinsurer is going to reimburse me on their portion at 60 percent of the 75-80 table, but if I'm only paying 50 percent on the premium side, then I've got a 10 percent gain. You lock in that underwriting profit when you get this reinsurance treaty; there's no risk anymore. You know you're paying 50 percent. In your pricing, if you're assuming now, the death claims will come in at 60 percent—you've got a 10 percent margin.

**Reinsured Admin Expenses.** The cost of reinsurance is admin expenses—something you need to think about. Most reinsurance is put on a separate system on your reinsurance system. If the costs of running that admin system are not included in your overall admin pricing assumptions, you need to set up a separate assumption for the reinsurance admin system.

**Target Surplus.** You need to evaluate your target surplus. Anytime you look at reinsurance, you need to evaluate all your different pieces of target surplus, but C2 is the biggest one you want to look at, where you're holding a percentage of your net amount at risk. You'll need to work with your corporate actuaries on this about how you can get credit, but you can get credit. You can get partial credit all the way up to full credit for the next amount of risk that you're ceding to your reinsurer. You will not have to hold target surplus on that net amount at risk. If you want to reflect that in the pricing, that's a good thing. It will help on your piece of business. Make sure to take a look at surplus.

**Canadian Reserves.** Let's talk about Canadian reserve, for those who are interested. The policy premium method (PPM) reserve is pretty much like a GAAP reserving method, based on best estimates. You recognize cash flows in Canadian reserves.

Now, we have a cash flow. We have a reinsurance premium coming out. We've got death benefits coming in. We've got some extra expenses with the admin. You recognize that in your Canadian reserves.

I mentioned the difference between the reinsurance and the death benefit with the 10 percent gain. If you look at your reserves now, basically the reinsurance premium changes your best estimate valuation assumption to whatever that

reinsurance premium is. If your valuation assumption was 60 percent of the 75-80 table, now your cash flow on a portion of your business is 50 percent of the 75-80 table. It can really impact your reserves. You get pretty much twofold on the Canadian side. You get the initial cash flows we talked about, and then you get reduced reserve, which enhances your profitability.

### **Coinsurance in Pricing**

Let's look at coinsurance in pricing now. For coinsurance, let's think of a term product. I know a lot of the term products on the market today are reinsured. Companies are ceding 50 percent, 60 percent, up to 90 percent of their term products, and they're getting reinsured on a coinsurance basis.

**Reinsurance Premium.** With the reinsurance premium for coinsurance, you sign off 50 percent of the gross premium to the reinsurer instead of a percentage of your net amount at risk. If you've got a \$1,000 premium, \$500 goes out the door right away to reinsurance. Recognize the difference from the YRTs.

**Death Benefits.** The death benefits are similar to the YRT in that you get the quota share percentage of the net amount at risk coming back. But in coinsurance, you also have assets involved. The reinsurer covers its quota share percentage—50 percent of the death benefit and you want to match that in your pricing.

**Expense Allowances.** It's the same story with admin expenses we talked about earlier, but coinsurance adds in another piece—expense allowances.

An example of coinsurance is if I have my first year premium, and it's \$1,000, I'm going to pay out a commission, say we pay 100 percent first-year commission. As the direct company, I take the \$1,000 premium, I pay out my \$1,000 commission; I've got my underwriting expenses, whatever they might be—another couple of hundred dollars. Then out of that \$1,000 premium, I have to send \$500 to the reinsurer. I really only have a \$500 net premium, but I paid the full commission. I paid the full underwriting expenses. With the expense allowance, the reinsurer is sending the money back to reimburse you for your costs, so now they'll send you 100 percent of the premium you send them if you're paying 100 percent commission on your premium. If I send them \$500, they send me \$500 back to pay my commissions. They'll also help reimburse you for your underwriting expenses and any other up-front costs, so that's an important thing.

**Target Surplus.** As for target surplus, we mentioned C2 earlier. You also have C1 and C3 risks involved in the coinsurance. But now that you're ceding assets, you can get some credit for your assets on your C1 and your C3 risk.

**DAC Tax.** DAC tax also is an important piece. If you're not reflecting the DAC tax in your pricing, you cannot cede it off to your reinsurer. In that example, your DAC tax liability is based on that \$1,000 premium, not on the net of \$500; so you're really getting hit in that example double with the DAC tax liability. You're going to want to

negotiate an expense allowance or a way for the reinsurer to make up for its piece of that liability.

**Reasons to Increase Ceded Portion**

**Differing Assumptions.** Should I increase the ceded percentage? I was giving examples at 50 percent. We’re going to go through this a little bit and show why increasing the percentage increases your profitability. I’ll show you some differing reinsurers' assumptions that make that happen.

**Volume Efficiencies.** Another thing is volume efficiencies. If you go to Sam’s Club or Costco, you get a discount. If you send more up to the reinsurer, you probably have a little more ability, especially on the first-dollar quota share basis, to negotiate a little tougher with them. It’s a competitive market. They’re competing just as we are as a direct company, so the reinsurers will get tough with each other and eventually reduce premiums.

**Direct-Reinsurer Differences**

A couple of differences between the direct company and the reinsurer are shown in table 1. The reinsurer has very extensive experience. There are reinsurers that may reinsure parts from every single one of us in this room, with all of our companies. They have our experience data. We each have our one little box; our one set of distribution. They can look at their business as a whole. They have very credible data where a direct company could have credible data, but it would be less credible than a reinsurer’s.

Table 1

<b>Direct Company</b>	<b>Reinsurer</b>
<ul style="list-style-type: none"> <li>• Limited Experience Data</li> <li>• Less Credible Data</li> <li>• Focused Risk Pool</li> <li>• Higher Expenses</li> <li>• Higher Profit Requirements</li> </ul>	<ul style="list-style-type: none"> <li>• Extensive Experience Data</li> <li>• Credible Data</li> <li>• Diverse Risk Pool</li> <li>• Aggressive Mortality</li> <li>• Lower Expenses</li> <li>• Possibly Lower Profit Requirements</li> </ul>

They’re looking at the diverse risk pool where we are very focused on the direct. That allowance allows them to get aggressive with their mortality. They’ve got the large numbers very much on their side, as opposed to a direct company, which could potentially have more conservative mortality.

If you want to look at a per-policy expense, spreading over many more policies can lower expenses. Something to consider is that a reinsurer could have a lower profit requirement than a direct company. I mentioned that as a stock company and our demutualization, our requirement has gone up just as a lot of companies’ have.

If the reinsurer's is lower, I'll show you how you can use that in your pricing to get more aggressive. To do that, we'll take a look at an example (Chart 3). On the left is my target—the premium I want to get to be competitive. Right now, my actual pricing is quite a bit higher. If I go over to the direct company—if we say ROI is our profit target, I'm hitting my target—my actual is equal to my target right now.

As for the reinsurer, they're hitting their target now. In this example, they do have a lower target ROI than the direct company. What happens if I increase that 20 percent for the reinsurer? You can see I've moved a piece of my profitable business over to the reinsurer, which potentially has a more aggressive mortality assumption, lower expenses, and some of the surplus advantages that we talked about earlier. Their profitability goes up; and they don't need that extra profitability, because it's exceeding their target. They need to hit their target, so they pass it back to the direct company through an expense allowance to increase their expense allowance and enhance our profitability.

The direct company doesn't need that profitability. We mentioned that reinsurance could enhance your profitability or enhance your competitiveness. We only need our profitability to go to where the left line was, so we could pass that on to the policyholder and get more competitive by reducing the premium.

Now, that's 20 percent ceded. If I go to 30 percent ceded, I can lower that premium a little bit more; if I go to 40 percent, it's working down. And finally, at 50, I've got my optimal solution. I'm hitting my ROI; the reinsurer is happy—they're hitting ROI. And for the clients, we've got the premium where we need it to be to be competitive.

I mentioned negotiating expense allowances, and I could also find the quota share percentage. This is almost a negotiation among you. What percentage do you need to see? If you price this, you can figure it out. Where do you need to be? How much do you need to cede to the reinsurer to get competitive and to get the profitability that you need at your company?

### **Age Distribution Risk**

You can use reinsurance for many other risks. Direct companies send them the risk and lock in their profits. Some of us like more risks than others, but I use distribution risk (Chart 4).

This is a typical profit pattern in the middle-preferred, nontobacco risk class. This could be a term product that was very aggressive in the age 35 to 55 range where your profitability suffers. This is probably a picture a lot of you have seen. Some companies are making up some profitability on the tail ends—maybe the lower age or the older ages where you don't want to be as competitive.

In the coinsurance field, the reinsured is paying you an expense allowance, and these expense allowances are the same for all ages. Basically your profitability at the ages will move in the same fashion up or down once you bring in reinsurers.

At age 25, we become very profitable there, and you've got to make sure your admin system can handle this. But if you negotiate with a reinsurer and say, "You know, at age 25, don't pay me your normal expense allowance; just pay me a little bit less, because I've got my profitability there." So they pay you a little bit less, and your profitability drops. But then you tell them, "Well, cede these other ages: 35, 45, and 55. I need you to pay me a little higher expense allowance where I need to improve my profitability. At 65 and 75, you can pay me a little bit less."

What happens at the end of the day? You've eliminated or minimized your age distribution rate. You pass risk onto the reinsurer, and that's what reinsurers do—they take on risk. Through the expense allowance negotiations, you can eliminate the risks in your product that, unless they're recognized in your pricing, you would not even know about. A few last items worth considering are product specific.

**Commissions.** One that comes to mind is commission offers. We have a couple of products in which we offer commission trailers where the agent has the option to trade up-front, first-year commission for a trail; so we have a commission option A with no trail. Then with B, where they dip a little bit first year, and we pay a trail. And then our C pays an even higher trail for a little more trade-off.

The problem with that is, the reinsurer system can't handle that. It can't track the assets trailer with the expense allowance. When we negotiate that treaty, we basically need to get the expense allowance based on that first commission option all up front. What happens there? Those three commission options ideally would have the same profitability, but based on your assumptions, there could be different profits between those three assumptions.

Now, if you have the reinsurer reimbursing you only for one of those different options, then in all three pricing scenarios, it's not a complete sharing of that commission. You've got to recognize that the reimbursement comes from the reinsurers based on that first option and the profitability of that first option. As for the other two, depending on more profitable or less profitable, you need to recognize those in your pricing. It's not going to be a complete wash; on a 50/50 it would not be a complete wash.

**DAC Tax (Again).** I mentioned the DAC tax. I mentioned that you have to hold your DAC tax liability based on the gross premium.

One thing you can do, and have your tax people work on, is negotiation. You can put wording into your treaty to have an expense allowance come back to help the reinsurer cover that DAC tax liability. The reinsurer probably has the language; so that's something that you can negotiate into it.

Are there any product-specific items? I just gave a couple, but you need to really think specifically: What about our product? How would the reinsurance treaty impact that? How can I get a true financial picture from this product in my pricing?

**Surplus.** I talked about YRT coinsurance. You can get a big break there—C1 and C3.

One additional comment I would like to make is about a modified coinsurance agreement. That is where you're in a coinsurance agreement, but the direct company is holding all of the assets. Now, the reinsurer is not holding the assets. Do you need to hold the surplus on the entire block of business even if you're ceding 90 percent out?

In a modified coinsurance agreement, you might want to think again about an expense allowance to get reimbursed for the additional cost to capital you have for putting up the reinsurer's portion of the surplus. On a C4 business risk, you can't cede that up—it's based on your gross premium. Again, this all has to be reflected in your pricing to give you a true before-and-after reinsurance of the effect on pricing.

### **Action Steps**

Everybody should walk out of here with something to do. Please just take a second and write down any products that you thought of when I went through this. If there's a particular product for which you want to enhance the profitability of competitiveness, maybe there's a point or two you will recognize on reinsurance, and you want to take another look at it. Are there any key items to consider?

Finally, I'm sure you have a lot of messages to deliver to your coworkers, but if you can think of one highlight that you want to send back to them, please take that time now to make sure we get as much as we can out of our time.

**MR. DALE FILSINGER:** Following Paul is pretty tough to do. He told you how we're going to make money off of the reinsurance side. I'm going to sit up here and take a little different tack to it, though.

I'm going to cover a lot of basics here. This is an introductory class. What is reinsurance? How long has it been around? Why should we use it? Why do we like it? Why should you like it from a ceding company?

I spent six or seven years working for GE Capital in its mergers and acquisitions (M&A) Division, and I visited a lot of companies in that time. The interesting thing is, a lot of companies don't take into account reinsurance in their pricing. They don't look at it. They just issue it because they want to issue it.

**History.** What's the history of reinsurance? Reinsurance started back in the 1900s in Germany, and it carried over to the U.S. World War II happened, and reinsurers sprung up.

The reality is, reinsurance is going global. If you look at the top reinsurers in the world today, most of them are global players. The rest is history. The offshores now are starting. We're seeing other competitors come into the market—investment banks, other ways to look at this business that we haven't seen in the past.

**What Is It?**

Reinsurance really is a transfer of risk. I tell people what reinsurers have been doing since the 1900s is securitizing the liability strain for people.

You know, the buzzword today is "securitized." Today, investment banks can usually issue CAT bonds in the open market. Can we issue mortality bonds? Not yet. Reinsurers have been issuing mortality bonds to you for a long time but are then buying your mortality cover, paying your price today, and securitizing that profit stream to you. This allows you to recognize the profits today or lock in the profits.

**Players.** The ceding company is the one transferring the risk; the reinsurer is taking the risk. The chain works from there. Many people heard about the Unicover exposure and everything else. There were many retro-layers inside of that. Reinsurers moved the business from there on.

**Types.** What are the types of business that you use? Proportional involves a fixed amount being transferred. Nonproportional has a variable limit. It may not be a fixed amount that's going to be paid out. You don't know what the benefits are.

**YRT.** What is YRT reinsurance, really? You're transferring the mortality risk to the reinsurer. The rates don't necessarily have to be tied to the direct policy rates. The reinsurer is going to develop its own rates based on the data and information you give it, and the primary company is really purchasing the term on a block of business.

You're selling term life to someone; you turn around, and you're reselling the term life to the reinsurer on a different net amount of risk from what you've retained or even on in-force blocks, which are very common today.

**Coinsurance and Modified Coinsurance.** Coinsurance and modified coinsurance transfer all the risk off your balance sheet. People typically use this to exit lines of business, to redeploy capital into more strategic growth lines, and to explore other alternatives.

**Assumption/Novation.** And the last is assumption/novation, which means to transfer all the business. This typically is not a cost-effective method to use, and I won't talk much about it, but going direct company to direct company, it's a

common form to use. It's not used very much by the reinsurers, because most reinsurers don't have the back office and don't want to work with the administration. That's one of the reasons why our price is more competitive.

### **Working Definitions**

**Automatic.** Automatic on YRT is probably the most common—you're binding this reinsurer to your limits today. You write the policy, it automatically cedes. The first-dollar quarter share is probably the best example of that.

**Facultative, Facultative Obligatory.** Facultative is when you have a case that's raised for some reason. Your underwriters need to get this placed, they need the rate to get it placed. They send it out to the reinsurer to get it underwritten and come back. Then you've got the facultative obligatory.

**Automatic Binding Limits.** – I won't spend a lot of time talking about automatic binding limits, but the reality is, you really have our underwriting. . The direct writers are writing it on the reinsurance paper today; they write the policy. We turn around, we take the risk, we're comfortable with the underwriting guidelines, the profitability you put up, and jumbo limits. Its base amount has grown, and policies are getting bigger. People concentrate on niche areas. They really want maximum amounts, and we as the reinsurers need to be able to provide them.

**Retrocessionaires.** As I said, the business flows not only from the reinsurer, but the reinsurer most typically flows the business on direct to retrocessionaires. And retrocessionaires really are the reinsurer's reinsurer—that is another way to think of it.

So the business is retained for a portion, and we move a portion on. There are different ways to do that. It allows us to manage the capital. It allows us to manage our risk and to make sure we're not being overexposed to any line of business, as well.

### **Recent Developments**

What are the recent developments in the industry? I guess the reinsurance industry is the one business in which prices have declined over the past 10 to 15 years. People will say it's being more aggressive. People will say we're going out, we're giving away profits, and we don't have as high profit margins. I'd argue that there's information to back it up. We're better capital managers. We know what to do; we know how to manage the capital. We want to do arbitrages on certain things that the direct writers won't do.

Blood testing and more risk classifications represent a big driver for why prices have gone where they've gone. You've gone from having two or four classes to some people having 10 or 15 risk underwriting classes now today. They slice and dice the risk so finely that you're looking at it and saying, "What is the probability that

someone actually is going to die or pass away?" I think the advances in medical technology have increased longevity, and it keeps moving up.

**Ceding: Advantages and Disadvantages**

What are the advantages, disadvantages to a ceding company here? The big one on coinsurance is that you get the liability off your books. When we talk to people about coinsurance, we tell them, "This allows you to redeploy your capital and your resources to go after lines of business you want to do. It's not necessarily good for all transactions, but it works very well."

What are the biggest disadvantages? You're giving up that profit. When you look at it and ask, "What am I giving up," you are securitizing a profit stream, bringing it forward today. But you have given up the upside of that profit stream.

Why do the reinsurers do it? Because it's a permanent transaction. We have earnings growth. We have earnings pressure just like all the direct writers do. We're going to sit there. We want to do as many permanent transactions as we can. You don't want to only do temporary transactions; otherwise, you're back out in the market every year trying to redeploy.

What are the disadvantages? It ties up our capital. It's a zero-sum game, just like anything else. At the end of the day, there's \$100 of capital. There has to be \$100 of capital somewhere else from an economic perspective.

**Co/Modco Advantages: Ceding Co.**

In co/modco, what's the advantage to a ceding company? The advantage is, you get minimal cash transfer. This is a plus—you can retain your ownership. You can improve your internal rate of return (IRR) and your return on equity (ROE), and it helps you. You're going to get some flexibility. You can control the movement of your assets on and off your balance sheet using this.

The biggest disadvantage is that it's very highly scrutinized because you've got more flexibility in the contract. It means the rating agencies, the regulators, are going to take a look at this and say, "What are you really doing?" But this does give you that flexibility.

**Co/Modco Advantages: Reinsurer**

From the reinsurer's perspective, there are the counterpoints. There is minimal cash transfer for us. The administration is much easier, and we like the flexibility. I think reinsurers enjoy the challenge. When someone comes in and says, "Gee, I want to solve this problem—I have a capital problem I need to solve, and I want to solve my pricing problem," we want to know what we can do to get your return down to where you need it to be and get your premium where you need to be and help all of us meet our return hurdles. What's the big disadvantage here? It's temporary. And again, it's usually a lower return for us.

**Modco and the Ceding Co.**

One of the things Paul said in his speech was that with modified coinsurance, you hold the assets and the RBC. That recently changed.

The RBC does transfer in a modco transaction now, as part of, I believe, the C1 risk. That just changed last year. So if the risk transfers in a modco transaction, the RBC now moves to the reinsurer's books; so there is an advantage to doing modco from the standpoint that the assets still stay on the books. But the disadvantage is that the reinsurer is going to want some type of control over those assets.

The reality is that we now have rented your assets to support the profits, if you want to look at it from that standpoint. What are the advantages for us? It's a higher return. It's getting some flexibility. Again, it's usually temporary—that's our big disadvantage. Plus there's a prepayment risk with modco.

Modco is like a mortgage-backed security, for any of you who deal also in the assets. You have an extension risk—it can pay shorter, it can pay faster. It's really driven by the underlying profits of the business you've got sitting there securitizing that modified coinsurance transaction.

**Modco and Reinsurers**

Why use reinsurance? Reinsurance really is a form of capital, and if you think about where you're at today and what you can do, what forms of capital are available to you?

**Forms of Capital**

**Capital Contribution.** The first one is a capital contribution. It would be wonderful if everybody's parent had a lot of money and was always willing to give them capital. However, I work for GE and even GE says that we're not always going to give you the capital all the time; you've got to find other alternative sources.

**Internal Funds.** Another source of capital is internal funds. Retaining business earnings is great, but statutory accounting as we all know, causes a problem. If you're growing your business, you're eating into your retained earnings, which then reduces the amount of precapital you have to spend on new business; therefore, retained earnings, unless you're a very mature company, are not an alternative source you can use.

**Capital Markets.** I spent a few minutes talking about capital markets. You're seeing a lot of demutualizations. Stock companies are the only ones that can use this, and the capital markets aren't there yet. They don't want to take a mortality risk for some reason. They're willing to take catastrophic risks; they're willing to take on off events. They price them very high.

The amount of volatility I believe you get from the capital markets when you try to do mortality bonds isn't there. A few examples have been tried in the U.K.; I do not know the results of it, but I know another one hasn't been tried since. There has to

be a reason for it. Right now the market isn't to the point that it's willing to take the risks that come out of a life insurance company.

The last one is debt to leverage ratios. Debt capacity and such are the things you have to consider as you're doing that. The toughest thing with debt is that when you're in a regulated business, you have a position where your capital may be restrained to pay upstream, yet the debt requirements are still there, and somehow you have to fund that interest cost on the debt. So you need to be very careful working with a regulated business to make sure that you can fund the debt, because you typically can't push the debt down into the regulated company only to certain limits because the regulators will avoid that.

### **Reinsurance Capital Management Applications**

**M&A.** What applications can you use? The biggest one we try to push to people is acquisition and divestiture support. When you go in and you're looking and saying, "I would like to exit a line of business or move this line of business off my balance sheet," at that point, you've made a conscious management decision to say, "I don't know if I want to be in this business anymore." The reality is, that business will take time for your management team to do. You should look at an opportunity at that point to divest it, reinsure it, and let the reinsurer take the responsibility for running it off for you.

If you're in the M&A market, when you're going out and buying companies, there are always blocks of business. You look at a company, and there's strategic value to that company; but there are always blocks of business within those companies about which you say, "I don't need that block of business." Then bring the reinsurer along; let them buy the block of business from you. That way it doesn't take away from the reason why you're doing the M&A, and you don't end up spending time trying to integrate something that's not going to help you down the road.

**New Business Surplus Strain.** It can improve your capital. I think Paul gave you some examples showing how you can get RBC relief from new business strain. You can move those things to a reinsurer to help improve your capital position, keep your RBC where you need it to be, and also improve your returns from both a statutory and a GAAP perspective.

### **Benefits**

What are the benefits to using reinsurance to manage the capital? Well, I think most people in this room won't disagree that the statutory reserves are highly redundant. Reinsurance allows you to release some of that redundancy in the reserve today. You don't have to allocate that portion of capital to set up those reserves. It allows you to establish capital levels that are truer to the economic capital.

If you go offshore, where you don't have the requirement of U.S. RBC, you can use more economic capital in your pricing than using actual RBC requirements. It gives

you more favorable IRRs and ROEs. It keeps up your investment flexibility. That is a big one.

A lot of people stay away from asset classes in the U.S. today because of the high RBC charges and the problems they have. This allows you to put in alternative asset classes and things like that, if you use reinsurance to manage your asset pool and your liability pool.

In addition, you can free up liquidity for acquisitions or to lower the cost of capital on a deal. Like I said, if you can sell off a block of business, that capital is supporting that business; it effectively lowers the price that you're paying for that overall transaction, which maybe can improve the return you're getting on your transaction. It also gives you the statutory earnings management. It allows you to ask, "How much strain can I afford to bring to my balance sheet? How much strain can I afford up front and move some of that off to a reinsurer."

Table 2 is a block of business that we just pulled in. It's \$2 billion worth of liabilities. Use the 5 percent rule of thumb for capital and surplus, so you have \$100 million of capital.

Table 2

**Recognizing Reinsurance Costs In Direct Pricing**

Basics	Developments	Pricing	Structures	<b>Examples</b>	Offshore	Summary
<b>Hypothetical Reinsure Block of Business</b>						
<b>Current Block</b>		<b>RBC Calculation</b>		 		
Liabilities	2,000	Category	Amount			
C&S and AVR	100	C-1	21			
		C-2	3			
		C-3	19			
		C-4	4			
		<b>Company Action Level RBC</b>	<b>44</b>			
		<b>RBC%</b>	<b>227%</b>			
<b>Free Capital If 200% RBC Is Targeted 12</b>						
<small>Dale Filsinger VP, Global Pricing &amp; Product Management ERC Life</small>				<small>SOA Spring Meeting June 23, 2001 Toronto</small>		

You'll see the breakup of the C1 through C4 risks over on the side. We didn't go into detail to put all the new C3 and C0s and C4Cs or whatever they're up to now with the RBC.

The company action level is about \$44 million, and you’ve got a 227 percent RBC on this block. If you say, "My company targets 200; I have about \$12 million of free capital." I turn around and now I coinsure 50 percent of that business, so now I have \$1 billion of liability sitting on my balance sheet. The reinsurer is willing to pay me an after-tax ceding commission of \$20 million; my capital and surplus is now 120.

One thing I will warn you about: When you’re doing this, be careful— sometimes it comes through the capital account, sometimes it comes through the income statement. It will get to your capital account, but if you’re ceding in-force blocks of business, the gain will hit your capital account and come slowly through your income statement; so it may not all show up instantly in your income statement. Make sure your accountants work with you so you understand that.

The C1 risk went from 21 down to 16; the C3 risk went from 19 to 10—it basically was cut in half (Table 3). And my RBC is now 30. Well, if I still target that same 200 percent RBC, I only have 60 target capital; but I have three available. I went from 12 to 60. I just freed up \$48 million of target capital for me to redeploy other lines of business, dividend out, or do other things with.

Table 3

**Recognizing Reinsurance Costs In Direct Pricing**

Basics	Developments	Pricing	Structures	<b>Examples</b>	Offshore	Summary
<b>Hypothetical Reinsure Block of Business</b>						
<b>Coinsure A Portion of the Block</b>			<b>RBC Calculation</b>		 	
Coinsurance Percentage	50%	Category	Amount			
Liabilities	1,000	C-1	16			
C&S and AVR	120	C-2	2			
Ceding Commission After Tax	20*	C-3	10			
		C-4	4			
*Does not take into account capital gains/losses of market value transfer			Company Action Level	<b>RBC</b>	<b>30</b>	
<b>Free Capital If 200% RBC Is Targeted 60</b>			RBC%	<b>400%</b>		
<b>Free Capital If 200% RBC Is Targeted 40</b>			If No Ceding Commission Is Paid			
			RBC%	<b>333%</b>		
Dale Filsinger VP, Global Pricing & Product Management ERC Life				SOA Spring Meeting June 23, 2001 Toronto		

And if there’s no ceding commission paid, I’m saying, "This block of business is a very old block of business. It’s not very profitable at all for me; I’m not making anything on it today." I still free up \$40 million of RBC, so it is a very powerful tool.

The other thing I would suggest is that you can use it to manage your C1 through your C3 and your C2 covariance components. There are many debates on whether that's right or it's wrong, but it's what the RBC and the regulators have allowed us to do. The perfect balance would be to have 10, 10, and 10 in your C1 and C3 and C2 combination, because then you're in balance. At least you've maximized the covariance that's available to you in the RBC, so you can see mortality blocks of business or reinsure in mortality blocks of business or asset-intensive blocks of business as you need to juggle your RBC.

Here's a product (Table 4) for which the IRR over a 20-year pricing horizon is 12.6 percent, and you use a 40 percent quota share up front, saying, "We'll take 40 percent, and pay you a ceding commission of what looks like \$4 million with some trailers on it." You've raised the IRR on your business from 12.6 percent to 14 percent. All of a sudden, you're meeting targets that you need to meet, but you've used reinsurance to get to those pricing targets.

Table 4

**Recognizing Reinsurance Costs In Direct Pricing**

Basics	Developments	Pricing	Structures	<b>Examples</b>	Offshore	Summary
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<b>Improve New Product IRR</b>							
STAT Projection for Hypothetical Single Premium Product					40% Quota Share Reinsurance		
		Net Statutory Gain		Distributable Profits		Net Statutory Benefit	
Year	Premium	Allocated Surplus	Unamort Ceding Comm	Distributable Profits after Reins			
0	100,000	(7,500)	5,640	(13,140)	4,000	2,688	(10,452)
1	0	1,200	3,786	3,054	3,600	(385)	2,670
5	0	1,500	4,514	1,306	2,000	(338)	967
10	0	2,000	5,626	1,758	0	0	1,758
15	0	2,800	7,011	2,498	0	0	2,498
20	0	3,800	0	11,800	0	0	11,800
<b>IRR</b>				12.6%			14.0%

<p><i>Dale Filsinger</i>                  VP, Global Pricing &amp; Product Management                  ERC Life</p>	<p>SOA Spring Meeting                  June 23, 2001                  Toronto</p>
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**Offshore Reinsurance**

The next thing is offshore. There has been a large start-up of offshore companies; why has there been a growth in offshore? The first reason most people cite is regulatory—they have lower capital requirements than we have in the U.S. They don't necessarily have RBC requirements. They have alternative asset classes that are allowed to them that carry too-high RBC charges in the U.S., and they're willing to price some of that back to you.

They have tax advantages. A lot of the offshores have started up as being not taxed as U.S. taxpayers; therefore, they aren't incurring 35 cents on every dollar like most of the U.S. companies do; go to the bottom line, and you lose that. They get to defer that. That's a powerful tool. Just think of anybody in the single premium deferred annuity (SPDA) business, how powerful it is to defer the savings vehicle of an SPDA versus a CD. That's one of the reasons why SPDAs have grown the way they have. Then you have their price. They're willing to pass on the capital and the tax advantages on to you as a direct writer.

### **Why Use Reinsurance?**

Why use reinsurance? Well, the reality is, it's a benefit to your assets and liabilities. You can use reinsurance to help your asset-liability matching and to help control your RBC. It's a bit like cost with what we call equity-like benefits. It helps to improve the equity position of your company, improve your IRRs, free up your capital, and put you in a position where you want to be. It's easy to put in place. It's been around since the 1900s; so it's easy to put in place.

It's flexible. Reinsurers love to structure. They love to get in there. They want to structure it and come up with alternative ways: new risk classes, new ways to move money to and from your company and our company.

It helps you so you don't have to sell assets prematurely. You can use coinsurance, modified coinsurance, combinations thereof, and YRT to allow assets to stay on your books today about which you say, "If we sell them, there's going to be a market value here." So you restructure the transaction and it protects your statutory earnings.

**MR. PUGH:** I wanted to turn back to some pricing examples, and I'm going to be talking more about XXX kinds of considerations that a pricing actuary might have. I'm also going to put on the valuation actuary hat and discuss the kinds of tools that reinsurers can bring to help them in their job.

### **XXX's Impact**

Just to show you what's involved with some of the impact of reinsurance in XXX, I'm going to talk about the offshore treatment but also mention alternative kind of designs; then I'm going to give some examples of X-factors and how reinsurance can come into play in that regard.

Let's talk about direct reserves that you have to put up on your statutory sheet. In this example we have an 80 percent coinsurance; so for a term plan in which you're doing 80 percent quota share, you would get credit for 80 percent of those reserves, and that would offset your statutory amount.

The reinsurer, in turn, would take that \$800 in reserve and cede it entirely offshore. The offshore party would turn around and set up \$200 in its reserves, and that would be based on more of a GAAP kind of accounting, perhaps. Then, to take

reinsurance credit, you have to have a letter of credit backing up the other missing \$600. The actual translation that we've done is to change \$800 of statutory reserves into \$200 of reserves plus \$600 worth of letter of credit; and then we would apply the letter of credit cost to that \$600.

If on the letter of credit that you pay the bank, the bank fee is 1 percent, you would add a \$6 charge per year. It's almost a rental cost of that \$600. In most cases, the assuming company guarantees that letter of credit charge; so there's not a problem there with future fluctuations. But I think you can see the power of how that happens.

This is probably important to realize as a pricing actuary, because the predominant way that the American insurance industry is dealing with the XXX regulation is offshore reinsurance. Again XXX has helped drive that shift to quota share that we're talking about.

For UL plans, you're going to have shadow cash values, and that is another way of avoiding XXX reserves. There have been reentry-term kinds of products out there; so you might have a 10-year reentry kind of pattern, and that helps lessen some reserves.

For those who have a property and casualty parent, they've come up with a way of guaranteeing the premium guarantees inherent in term products or UL products in the P&C side, which is now subject to XXX regulations.

The fourth one is very similar to that. You institute in your policy guarantees that are out of the money calls so that you have current premiums. You switch only to guaranteed premiums if a Treasury curve drops to 2 percent or something—if a five-year Treasury drops to 2 percent. Those are some of the innovative product designs that people have come up with. Not all of them are regulator-approved, and that's why the offshore reinsurance option is the most common way of doing it.

### **Setting X-factor Assumption**

For those of you who are product actuaries and sometimes wear a valuation actuary hat, one of the biggest problems with term insurance and XXX is going to be setting the X-factor assumption and then resetting the X-factor assumption as you go.

Basically, regulators want you to come up with a statistically grounded method of setting your X-factors and also validating your X-factors as you do it year by year. They would like to see a consistent methodology used by valuation actuaries year to year. Reinsurers can use their larger experience base. They can offer the statistical test and have a consistent treatment on your product year by year. I wanted to show just how that might be done and talk about some of that involved.

First of all, the XXX requirements require that you look at your emerging mortality experience for each class and all classes combined. You want to apply statistical

analysis, and you're going to refine that, if necessary. You have to prepare the actuarial opinion and then report on that. That's what the regulation is requiring us to do.

The statistical analysis that we would normally do is to say that our X-factor mortality is consistent with what we have as emerging experience in each class and for all X-factors combined. You set that up as a null hypothesis and reject it if there's evidence to the contrary.

So we're going to set up an H0, H1 test. You use three methods to define your claim distribution: the Monte Carlo method, the Panjer distribution, and the normal distribution of claims.

You can use whichever method you want, but define a 90 percent, 95 percent confidence interval. You take your existing block, run an expected claims distribution, and then compare your actual to the expected. At the 95 percent, if the actual is less than the rejection limit, then the hypothesis is validated. If you can repeat this for each class and all classes in the aggregate, you can test for each one of those.

Here's an example of how that test might fall out: What you're seeing here is a 90 percent confidence interval at each issue age (Chart 5). The lower 5 percent and above is the 95th percent percentile. The actual value in this case, your actual mortality, is falling into those bands, so we say that the hypothesis is proved at the 90 percent confidence interval. This is something that reinsurers are equipped to do and certainly can help with in terms of where you might stand at non-year/year-end work involved.

Finally, I'd like to offer an example of what might happen if you were to use a different approach to pricing term insurance and how reinsurance might impact that. I want to talk about dynamic pricing, which is something that I think we're seeing involved in other areas. It may evolve in life insurance, too.

I'm going to talk about dynamic pricing in other industries and where it might be needed for life insurance and just talk about some of the mechanics and the problems involved in that.

### **Dynamic Pricing**

First of all, what is dynamic pricing? The real definition I'm talking about here is a mechanism of setting prices in real time due to supply or demand or time or other factors. So that is one element that is involved—you're talking about a real-time kind of price setting. Both buyers and sellers on a transaction basis generally set the prices; so you're talking about some kind of auction system. It generally involves a practice of selling similar products to different customers at different prices.

Most of the examples of what we talk about in terms of dynamic pricing are aided or implemented by Internet exchanges. The most common and the most frequent example of dynamic pricing is the airlines, and they've been doing it basically since the mid-'80s. Their objective is to maximize the overall yield and profit for that. They want to sell the most seats they can at the best price.

All of you are familiar with calling airlines and getting a price quote. Then they say, "You've got to lock this in now; we'll hold it for a day," but you decide not to lock in, so you call back the next day, and, lo and behold, the price has changed. That's what we're talking about with dynamic pricing.

If you go out to some of the sites—Travelocity, Expedia, and now Orbitz—you can find that price changes very readily within the hour. In addition, the airlines have been doing this since the mid-'80s, so they have these incredibly powerful software tools that can set dynamic pricing based on congestion pricing. If you're flying into Logan Airport on a Monday morning or O'Hare Airport on a Monday morning, your price is going to be higher than if you're flying in on Tuesday morning. They generally can use historical data to drive their pricing mechanisms.

There are other examples that are happening more on the Internet, namely mortgages. In the mortgage industry in the United States, you once essentially had two prices for mortgages—prime and sub-prime. The prime was almost everybody, and the sub-prime was only those few who might have had an impaired credit history in some fashion.

But now mortgage companies are using much more data to come up with their pricing strategy. They're using geography. They know that people in the Midwest tend to stay in their houses longer than people on the East Coast and West Coast, so you're going to have a longer payback period to cover your cost. Therefore, you can lower the price for Midwest house buyers.

Obviously there's value in looking at loan-to-value ratios in mortgages. You have better experience with higher equity in houses, so they're starting to reflect that in pricing. And if you go out particularly to some companies—GMAC Mortgage Corp., G.E. Mortgage Insurance, IndyMAC Bank—all of them are starting to use their own kind of dynamic pricing software to start to drive some of these other variables through their mortgage quotas. Mortgage.com is another example of a company really starting to zero in on those kinds of things. I think we're just starting to see the inklings in them. Then the obvious example is eBay, on which prices are normally set in continuous auctions.

For term insurance in the United States—and increasingly in Canada—we have a proliferation of preferred criteria that drive preferred underwriting classes.

The problem with that is, you have these preferred criteria that are based on ranges—blood pressure from 145/80 up to 155/100—and you have all of these

ranges that people are doing, and it causes underwriters to have to deal with game-playing by agents and prospects ("Oh, I didn't mean to have that paramed visit today, because I knew I was going to have a problem with my blood pressure on Tuesday!" You need to have the paramed come back and revisit and recheck my blood pressure!") It lends itself to those kinds of things where agents know that if they just push one criteria down, they can get their person a better rate; so they actually force underwriters to have to deal with extra kinds of things.

In addition, the underwriter has to spend time going through the preferred underwriting checklist to answer questions like: Is this person's cholesterol OK? Is their blood pressure OK? What about the HDL ratio? But with the dynamic pricing, you would instead use a full continuum—you would not have ranges, and you would essentially end up with a pricing surface rather than pricing points. You can think of this as millions of term prices coming through.

I guess I'm talking about the fact that for life insurance, we always have to justify those preferred criteria cut points—what makes somebody a preferred plus versus a preferred. It varies by company, so it's a difficult process to explain to a policyholder, who may not really understand why. Then you have extra testing and extra underwriting time involved in that.

I wanted to give you some examples of what economists who study dynamic pricing talk about in terms of certain market conditions and then product conditions. This may help if you think in terms of airline pricing, in particular. First of all, you can see that the economists have come up with various lists of things that would drive that would best work—for a dynamic pricing condition.

You have imperfect price information. In other words, there is not necessarily a way for somebody to find out what all of the rates are on all of the kinds of conditions that somebody might be pricing on. A person may only want to go into O'Hare on Monday morning and they may not want to check the prices on Tuesday morning.

A lot of other things are involved, but particularly important are a critical mass of bidders and the fine-grain market segmentation. You need to have a lot of granularity involved in any kind of dynamic pricing, because otherwise you really are allowing people to jump from one condition to the other and improve their price and introduce anti-selection. Some of these might only apply in an airline situation, and that would probably be true for a variation in supply and demand, but I think other conditions of price elasticity are evident in the term market. There's a lot of price elasticity going on.

From a product standpoint, economists have identified several things for which it makes sense to have dynamic pricing. You want to have a product that's very simple and widely understood. It's important that you have this so-called auction kind of mentality going on, so it has to be what we think of as a commodity-type product—simple and widely understood—for people to be able to compare rates

quickly, because they're not going to be able to compare rates and other conditions in order to determine which is the best buy.

That's what we mean by simple and commodity kind of things. Dynamic pricing is used most often when the product is perishable or has a depreciating value over time. That certainly is true for airlines, and that's probably what has driven them the most in this regard. Once a seat flies off unsold, it's taken off forever.

In an insurance environment, dynamic pricing might only make sense if you are able to somehow quantify a so-called product surplus. In other words, you're able to look at the unutilized capacity of the life insurance company and say, "All right, what extra surplus do I have that I'm not using? What extra kinds of other resources or constraints do I have that I'm not using? And how can I, through the mechanism of direct dynamic pricing, lower my price enough to bring in the extra business that will use those resources?"

Essentially, you would have to have pretty sophisticated kinds of information to get all of that administrative cost and financial cost out of how much value your business is really worth to you.

From a price standpoint, the normal dynamic pricing is always going to be looking at the characteristics of the buyer. What you have to have there is a way to capture all of the information about that buyer that you can. You somehow need to capture information that we ordinarily would get in the underwriting process that we use to quote a rate and have that ready and able for your pricing. Obviously, you've got to have some kind of dynamic pricing engine. You've got to have a software mechanism, a piece of black box somewhere that can translate all of the underwriting characteristics that you've captured into a gross premium.

**Regulatory Concerns.** I think it's pretty easy to see that there are some concerns or considerations that would be involved in any kind of dynamic pricing. No. 1 is regulatory: The best example there is what's happened to the mortgage companies that are out there right now. They are increasingly concerned about the impact of their dynamic pricing on how they would appear to react with the Community Reinvestment Act, which relates to banks and whether or not they are investing in all areas of the community in an equal fashion. So the dynamic pricing software that you use has to address those regulatory kind of concerns, which I believe are discrimination concerns.

Normally you'd give regulators a set of gross premiums that you're going to use. Even though they don't really set the rate for you, they at least have a rate card somewhere. In this case, you're giving them a rate surface; you're giving them a rate formula and not a rate card.

**Validation.** Second, let's address the validation of different prices and the technical and administrative systems.

Right now we are used to dealing in ranges and in points, so I know that if I have everyone who has blood pressure of less than 140/80, I know what the mortality constraint is for those people as opposed to those who are between 140/80 and 150/90. I can pretty much make those adjustments, but 140/80 versus 141/81—can I make that change? That's what we're talking about in terms of validating the different prices.

Now, it is technically possible today to do that kind of fine graining. We ordinarily don't do it, because nobody has the systems to do it; but the information and technical knowledge is there to start looking at all of these different variables and to come up with a rate.

**Technical Administration.** Finally we have technical administrative systems. How do you build a system that would have all of these rates in it? How do you set that up? There are going to be many, many ways of doing it, but the main problem is, how are you going to make sure you're quoting the right number?

A few months ago, United Airlines was selling round-trip tickets from Chicago to Paris at \$19.99—that's not \$1,999, that's \$19.99. You could go out to the ual.com Web site and buy a round-trip ticket to Paris for \$19.99. One hundred people did it. United found out; out it popped on their computer screens somewhere, and they were able to go back in and correct the price on the Web site.

If you have these millions of prices, you have to have an administrative way of setting up your guidance so that you're not selling \$500,000 of term insurance for \$19.99—and that's not \$1,999. So that's obviously something that we're going to have to be doing.

### **Mortality Generator**

How to get a mortality generator? Well, we already have that. The mortality generator is there, and that's really the least of the problems.

### **Examples in Insurance**

I want to close with some examples in insurance. I don't know if you ever looked at P&C pricing or anything else, but if you talk to an automobile pricing guy and ask him how many rates he puts out there, the answer is close to two million rates. They have type of model, geography, age of the driver, how much you drive per day or per week, your distance driving, how long you've been a customer of the company, what other kinds of policies you have, whether you have a homeowner's policy, and on and on. You put all of those variables out there, and you're really talking about two million rates. The average term series that we do is probably a half million rates; so we're really not that far behind right now.

There was a speaker here yesterday presenting this new model in which you bring underwriting information into an e-commerce site. The purpose there is to stop the kind of process in which you're always quoting your best preferred rate on the

Internet, or the agents always are quoting their best preferred rates. This particular model tries to drive out as much information from an underwriting basis as they can to make the quoting process as accurate as possible so that they're not always quoting just the best preferred rate—they're actually quoting the underwriting class that the person has. That's an example of where we are already bringing the information to the computer and letting it derive the rates.

How many people know and can accurately determine their blood pressure and their cholesterol? There are some very rudimentary auction models involving insurance out there, and, I think that those remain to be seen for now.

**MR. PAUL SERAFINI:** I have a question about the DAC tax that you talked about earlier. This issue has come up recently with the company that I work at. When you talk about the arrangement you have between the direct company and the reinsurer, is the basis that you use for calculating the tax something that can be negotiated between the two parties, or is it something that's dictated in the Tax Code?

**MR. MYERS:** Our tax area wrote up the language that I've seen used, and it's pretty much right out of the Tax Code. It's defined in different terms, and it's just a formula where you could put the percentage of your ceding to the reinsurer. You have the standard language, and you put the percentage in the numerator, and it just figures out the amount to be reimbursed for the DAC tax liability. I believe they talk about the net consideration in the Tax Code, so we're looking at how the net consideration is defined and just how to define that net consideration to make sure you get that reimbursement.

**MR. SERAFINI:** Are there specific comments in the Code for what these net considerations are?

**MR. MYERS:** Yes. You guys might know a little more about this beyond the reinsurance side, but if you look through that section on the Code, the net consideration is defined. It says what can be considered and what cannot. Then you've just got to look at your specific treaty, at your specific product, and create your wording so that you're using that net consideration and you're getting the credit you need.

**PANELIST:** The net consideration is typically the cash flow that goes back and forth between the ceding company and the reinsurer and the way tax goes to tax—it's the amount of cash going back and forth, so in situations of YRT, it's typically the premium, less any benefits paid at the end of the year. It's a very small amount at the end of the day, but it is important to take into account. Because you are paying on all the premiums you receive, you should get the benefit for the portion of the cash that you're not retaining.

**FROM THE FLOOR:** We were looking at using the net cash flow.

**PANELIST:** That's typically what most companies will default to—the net cash flow perspective.

**FROM THE FLOOR:** Was I correct in hearing you say that with the modco arrangement, the RBC requirements pass to the reinsurer?

**MR. FILSINGER:** Yes. It should be in the recent announcement of the RBC. If you go through the detail, the modified coinsurance transactions now pass the RBC requirement to the reinsurer. Now, there's debate on how that's done—whether they have to set up the exact same C1, C3 risk. Whether you do or whether you use theirs, it's still a little vague. In the December or November version, when they put it out, it was a recent change from modified coinsurance transactions.

Chart 1

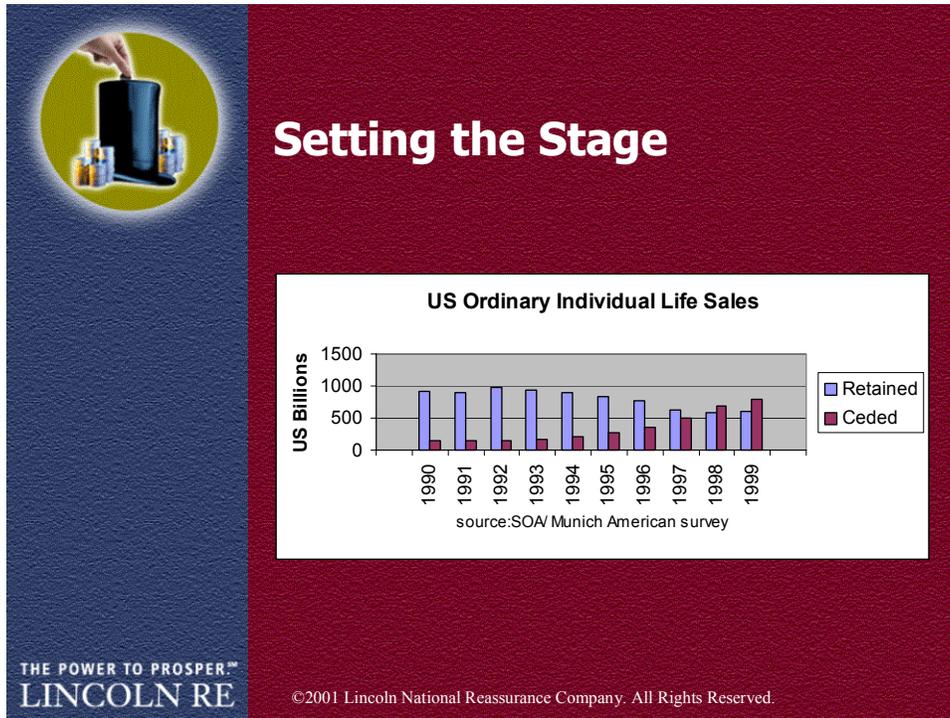


Chart 2

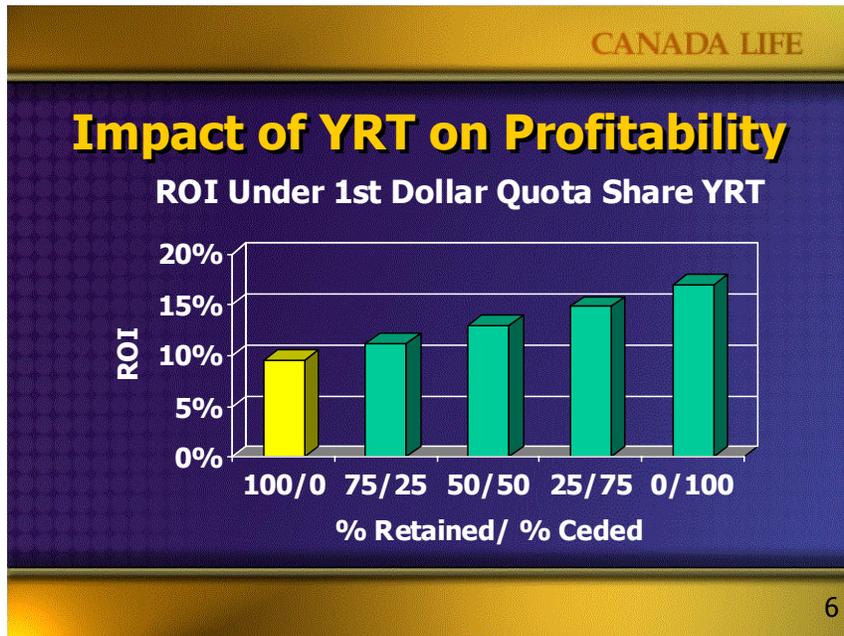


Chart 3

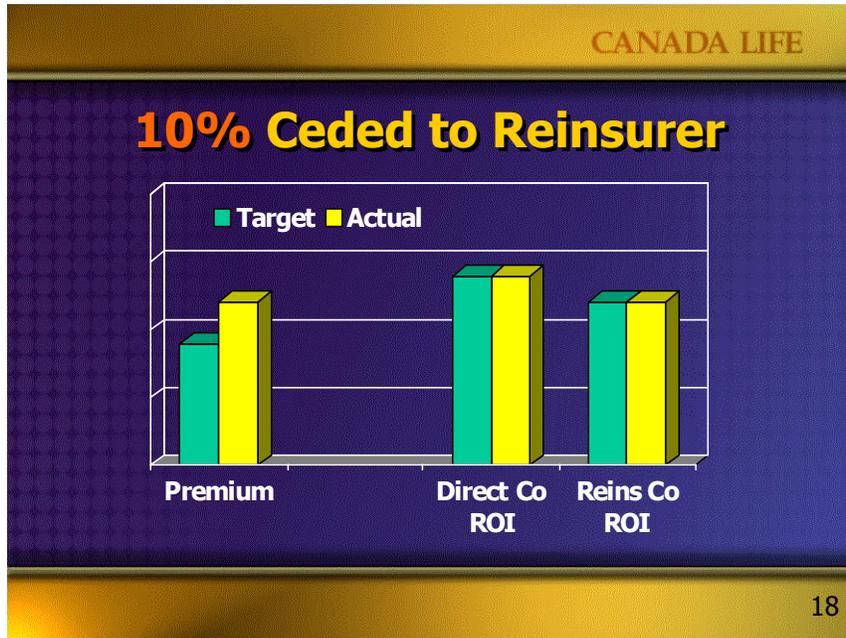


Chart 4

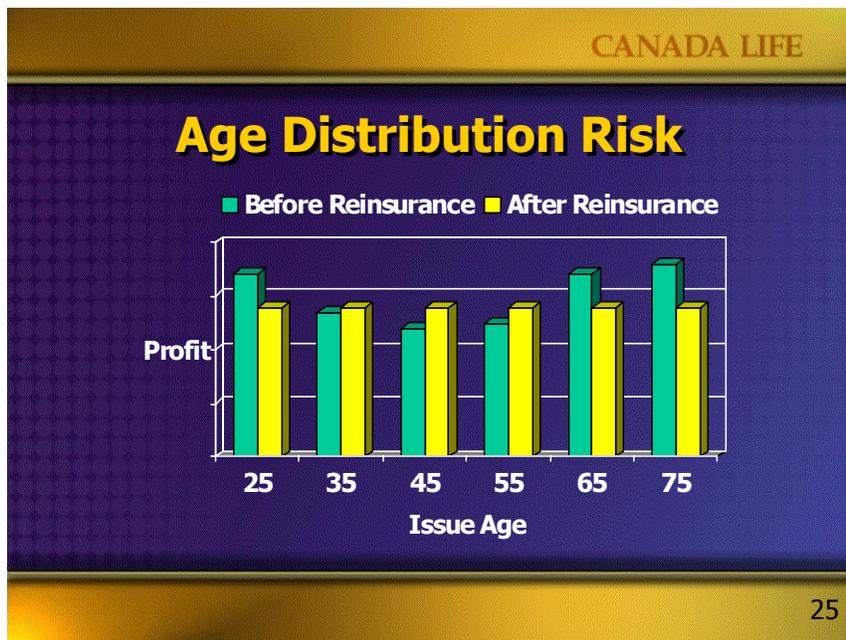


Chart 5

