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## **Session 27TS**

### **Introduction to Life Reinsurance 201**

**Track:** Reinsurance

**Key words:** Reinsurance, Valuation Actuary, Pricing

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*Summary: This session is designed to give an overview as to the who, what, why, and how of life reinsurance.*

**Mr. Jeremy Starr:** The objectives of these sessions are to provide the actuary who has no prior knowledge of life reinsurance with a background in the fundamentals of the business. An earlier session started this teaching session and covered the basic forms of life reinsurance, the characteristics of the marketplace, the regulatory environment, and it gave a brief overview of life reinsurance accounting. We will wrap up the teaching session by covering the actuarial aspects of life reinsurance. This will include how a reinsurance product is priced and how valuation actuaries should factor reinsurance into their thinking.

Mike Stein will cover how a reinsurer prices its business. Mike is a second vice president with Transamerica where he is in charge of pricing. I work for Guardian Life Insurance Company of America where I am in charge of the reinsurance profit center. My responsibilities include running mergers and acquisitions and financial reinsurance operations. I am also past chairperson of the Reinsurance Section.

**Mr. Michael S. Stein:** As Jeremy mentioned, this session will be a continuation of a presentation that covered some of the basics of reinsurance contracts and gave an overview of the reinsurance industry. My part of the presentation will cover reinsurance pricing. I won't get into much detail, but I hope that you'll at least come away with a broad understanding of reinsurance pricing and how it differs from the direct side. I'll cover pricing reinsurance for noninterest-sensitive

products, specifically yearly renewable term (YRT) reinsurance pricing and pricing coinsurance on term products. Then later in the overview I'll discuss coinsurance and modified coinsurance on interest-sensitive products. I think that will prove interesting as well.

### **REINSURANCE PRICING VERSUS DIRECT PRICING**

Before I begin discussing YRT reinsurance pricing, I thought I'd try to contrast it with direct insurance pricing. The mortality risk is the most significant risk being transferred in YRT reinsurance, and on the direct side all the risks vary in importance, depending upon the product. For example, on the direct side the mortality risk is paramount on term products but is much less significant than the investment risk on permanent products.

The initial capital strain in YRT reinsurance is, in general, less significant than it is in direct insurance. Even though reinsurance terms frequently have first-year premiums that are zero, the direct side will have initial acquisition expenses that well exceed the first-year premium.

Also, relative to direct insurance, the expenses for reinsurance are minimal. Today most reinsurance is negotiated under bulk processing, leaving the reinsurer with much less administrative duties. But on the direct side, the expenses are much more significant, particularly policyholder administration, underwriting, and marketing and sales. Another contrast between reinsurance and direct insurance is the degree that marketing is involved in the pricing process. On the direct side, in addition to rate pressure, competition plays a role in dictating product design features and field compensation. In reinsurance, the product design is decided by the ceding company and all reinsurers must generally follow it. Sales compensation does not play as material a role in the competitiveness of the product as it does in direct insurance.

The regulatory environment is less onerous on the reinsurance side as well. The direct side must go through the process of policy filing and fulfilling all policyholder compliance requirements, but the reinsurers have much less regulatory requirements to fulfill; and preapproval on a reinsurance treaty is very rare.

Finally, the time frame involved in reinsurance pricing is much shorter. Frequently, the reinsurance quotes are prepared within a week, but on the direct side the process involved in product development takes a much longer period of time.

My discussion will begin with some of the considerations involved in all YRT reinsurance pricing. Then I'll focus on some of the additional considerations that

are involved in coinsurance on term products and then on YRT on permanent products, including second-to-die products.

### **YRT REINSURANCE PREMIUMS**

Historically, YRT reinsurance premiums were structured based on the premium scale of the reinsurer, and most reinsurers had different YRT premium scales. This made the rates difficult to compare with other reinsurance quotes, but because reinsurers were usually administering the business themselves, it made life much easier for them. Today, however, the YRT premium scales are frequently set by the ceding company. They ask for a certain scale, and the reinsurer is responsible for developing rates as a function of that scale. This allows the ceding company to readily compare quotes and administer the business consistently.

Many YRT reinsurance premiums are expressed as a function of the 1975–80 SOA table. That seems to be helpful for many of our clients who are looking for standardized quotes to compare and contrast. Also, many companies develop their experience and pricing assumptions as a function of that table. We see other YRT rate scales out there as well. Some companies ask for the scale to be a function of their pricing assumptions or their dividend mortality.

From the reinsurer's perspective, whatever best serves its client, the ceding company, is acceptable. I can understand how the direct companies may want the reinsurance premiums as a function of their pricing mortality to better understand the source of gains or losses on reinsurance. From a reinsurer's perspective, ideally, the premiums should be a good match with the expected claims, but that doesn't always occur. Many times the ceding company wants rate scales based on something that may not match the expected mortality curve. For example, some companies ask for YRT rates based on attained-age rates, or they may ask for YRT rates on some other slope that doesn't match well with expected claims. The reinsurer in those situations will attempt to vary the rates by duration.

The reinsurer will often vary the rates as a function of the YRT table by risk class. For example, you'll see YRT rates as x% of the SOA 1975–80 table for the preferred risk class, a larger percentage for the standard risk class, and a still larger percentage for the smoker class.

Occasionally, if the underlying mortality table used for developing rates is not consistent with expected mortality for certain issue ages, the factors may be varied by age. Generally speaking, however, the ceding company wants a simple structure for easier administration.

YRT premiums are developed as a "current" scale. The guaranteed rates are usually equal to the 1980 Commissioners Standard Ordinary (CSO) table. This is so the reinsurer can avoid the need for deficiency reserves. Nevertheless, it's generally accepted that the reinsurer doesn't expect to increase the current YRT rates in the future.

YRT premiums are usually paid on an annual mode, and an annual premium is paid for each policy with an anniversary in that month. In those situations when YRT premiums are paid on a monthly mode, the reinsurer must compare the savings from holding less reserves with the cost of lost interest on the premiums.

It's becoming more common to provide reinsurance rates with first-year discounts of 100%. As I indicated, direct companies have significant strain at issue, and a first-year discount of 100% will usually help relieve some of that strain.

While staying with the discussion of YRT premiums, in certain situations the ceding company will ask for a different scale for facultative and automatic rates. Because of the additional expense of providing facultative cover, automatic rates frequently subsidize the facultative rates. Some ceding companies ask to remove the subsidy to obtain the most competitive automatic rates possible.

### **SETTING THE MORTALITY ASSUMPTIONS**

When getting into the nuts and bolts of pricing reinsurance, much of it boils down to the mortality assumptions involved. The direct side will have access to the experience such as it is. Sometimes it's not necessarily credible, but there is also a good understanding of the underwriting procedures and practices. A reinsurer may not have that opportunity, particularly if it is a new reinsurer that hasn't had a relationship with that customer. When no reinsurance relationship exists, the first thing a reinsurer will do is ask for any recent mortality studies. If they're available, great, they can be factored into the pricing. Otherwise, the reinsurer must use other techniques to predict the expected mortality. The first thing the reinsurer will do is take a look at the ceding company's underwriting guidelines, philosophy, and manuals. Here's where the reinsurance underwriter plays an active role in the pricing. The underwriter will usually have a discussion with the ceding company's underwriter to gain an understanding of the practices and the level of experience and expertise that the ceding company employs. That should be enough to give the underwriter some comfort, but in addition to that, a request for previous underwriting audits is usually made to gain some understanding of how it has performed in the past.

Another factor to consider when trying to evaluate a company's mortality without available experience is its distribution channel. It's increasingly clear for companies

that participate in the brokerage marketplace to expect some antiselection, because brokers will often send their best business to their preferred carriers. Clearly, companies that have a more loyal agency force can expect to see better mortality.

The marketplace in which the ceding company is distributing its product will also play a role in expected mortality. Those companies that market to more affluent individuals can probably expect better mortality than those that are accepting smaller face amounts. Another factor to consider in mortality is the antiselection from excessive lapses. This can apply to any permanent or term product, but it particularly applies to term products where the lapse rates are high.

Another factor to consider when setting the company's mortality assumption for excess arrangements is the company's retention. Companies with higher retentions will cede fewer policies, but those policies that are ceded will have higher face amounts. Generally, applicants for higher face amounts will be more thoroughly underwritten. However, if reinsurance terms are first-dollar quota share, the reinsurer will enjoy a better spread of risk and more lives to cover its expenses, but it will also expect to see less rigorous underwriting. This might mean the difference between paramedical and full medical underwriting, or it might mean that the reinsurer will be accepting nonmedically underwritten risks. That will have an impact on the pricing mortality.

Average size also will have an impact on expected mortality. The reinsurer needs to look at the mix of business, because it generally won't be pricing every band available. Because of time constraints, it doesn't have the opportunity to price in that detail. It needs to make some simplifying assumptions on where much of the business comes in. If the ceding company markets to lower-than-average-sized businesses, then it will need to examine the guidelines and reflect that in the mortality assumptions.

Risk classifications are also important. Most companies have developed preferred guidelines and even superpreferred programs. Here's one area where reinsurers can provide a valuable service. As companies develop preferred programs themselves, they can go to the reinsurer and ask for advice on it. Reinsurance actuaries and underwriters have developed experience in evaluating these programs and can offer valuable insight regarding preferred mortality.

Some companies are aggressive players in the substandard marketplace. Frequently, to be competitive in that marketplace they have to make certain adjustments to their underwriting. Reinsurers must understand how those adjustments are made and price accordingly.

The reinsurer must also consider how much facultative business to expect from its client. Here, again, a number of companies are actively involved in shopping their impaired lives. They choose not to retain it, and they shop it to many reinsurers. Reinsurers can logically expect in that situation to win those cases where they offer the best quote. Now that might mean that they're the ones on which the mistakes are made as well. Companies that cede more business facultatively probably should expect to see some loads in their automatic rates.

### **SETTING THE PERSISTENCY ASSUMPTIONS**

Reinsurance persistency plays a very critical role in pricing reinsurance for two reasons. One is the way it impacts the mortality, and the other is assessing the recovery of the initial acquisition expenses.

Term renewal lapse rates are very difficult to predict, particularly with respect to what happens to persistency after the level period. The industry does not have much experience on persistency after the level period, nor does it have experience on what happens to the mortality after that period as well. A lot of judgment is involved. The distribution channel plays a big role in the persistency of the product. It certainly has the capacity to move business around. It's important for the reinsurer to understand how the company is monitoring the business and what it is doing to control it.

Quota share versus excess business, again, plays a role in persistency as it does in mortality. Larger face amounts may actually exhibit higher lapse rates, because the insureds are more sophisticated and are prone to shop their business. However, the lower face amounts may have been missold in the first place and may also lapse their policies.

Regarding the geographic and demographic markets of the business, is the business sold in a farm community? Is the business sold in the business marketplace? All these things will have an impact on the persistency of the product.

Again, the reinsurer frequently doesn't have access to the ceding company's experience, particularly if it is a new account. It needs to make its own adjustments and try to understand what market the ceding company is in in order to evaluate these risks.

Some products are lapse-supported and may exhibit very good persistency. The reinsurer needs to look at how they are exposed toward better persistency. Reinsurance terms may create a situation where the reinsurance is lapse-supported. If the reinsurance terms are based on attained-age rates, for example, there may be

mortality losses in later duration, and assuming better persistency may hurt the profits.

### **OTHER REINSURANCE PRICING CONSIDERATIONS**

The reinsurance pricing actuary must factor in the cost of administering the reinsurance. First, most reinsurance today is administered on a bulk basis by the ceding company. Certain companies still are asking their reinsurers to administer the individual cessions for them, and that would be factored in the cost. Reinsurers will have separate expenses, factors for self-administered business versus an individual cession, so you can expect different rates.

Also affecting the expense structure is the amount of facultative business the reinsurer will receive. As mentioned previously, a significant cost is involved with facultative underwriting. Companies that expect to submit more facultative business can expect higher reinsurance premiums.

The reinsurer must also factor in its reinsurance or retrocession costs. Occasionally, companies will cede a large percentage of high face amount business that will exceed the reinsurer's retention. If those costs are significant, it may be worthwhile for the reinsurer to obtain special retrocession terms for that account.

Some companies may ask the reinsurer to reimburse for premium taxes. Again, a geographic concentration may expose the reinsurer to additional costs. At that point it needs to analyze the stated mix of business to determine if the average tax rate is unusually high. The reinsurer needs to examine its renewal profits and acquisition expenses to make sure that it has been recovered prior to the option to recapture. If the break-even period is abnormally long, it may want to extend the recaptured period.

Profit measures used by reinsurers are much the same as they are on the direct side. The statutory return on investment (ROI) or GAAP return on equity are very common. However, because the investment is less on reinsurance than it is on the direct side, the ROI may at times be misleading and could be artificially high. For that reason, reinsurers often look at other measures, including present value of statutory profits or the present value of the contributions to surplus on a per-thousand basis or as a percentage of premium.

Reinsurers also may look at measures such as present value of cash flows relative to the premium. These measures are useful when generating losses in the future, and returns on investments and discounted profits are not meaningful. Finally, the break-even period is important, particularly if the ceding company has the option to recapture.

Reserves have an impact on pricing. Reinsurance reserves are less significant when premiums are paid on a monthly mode or on a calendar-year basis. The level of required surplus the reinsurer must hold also will impact pricing.

Binding and jumbo limits are considered in pricing because they impact the amount of business at high face amounts that will exceed the reinsurer's retention and drive up retrocession costs. The binding and jumbo limits are generally based on the retention of the ceding company but are also based on the reinsurance underwriter's opinion of the ceding company's underwriters.

Riders may have a role in reinsurance pricing. Again, the reinsurance pricing actuary frequently does not have the opportunity to price the riders as closely perhaps as the direct company. The reinsurer will generally assume the rates are sufficient and simply offer allowances that are intended to reimburse the expenses of the ceding company.

Some riders, however, allow for increasing face amounts in later durations. It's important that the reinsurer understand how these work so as to consider anti-selection. The reinsurer must review the provisions of the increasing riders and determine that they are acceptable. Generally, the rates on those increases will be paid at the point-in-scale YRT rates.

Federal income tax plays the same role on reinsurance pricing that it does on the direct side and should be considered in pricing. As in direct pricing, other considerations are involved in the development of the final price. It's more than just simply an actuarial cost-plus exercise. Client relationships play a significant role here. The reinsurer will evaluate the length and strength of its mutual relationship. Reinsurers will often compromise their profit targets to maintain valuable relationships.

Competition plays a role in setting the price. The reinsurer is often not informed of the rates of the competition, but it needs to consider, particularly on accounts that it has not been involved with, that the competition may know more about the account than it does. That may impact price, particularly if it continually loses the quote.

### **TERM COINSURANCE PRICING**

Most companies have chosen coinsurance instead of YRT on their term products. A couple advantages are provided to ceding companies that opt for coinsurance terms. If a coinsurance treaty is structured properly and the premium scales are the same, the ceding company will be allowed to take a proportionate reserve credit. On YRT reinsurance, the reserve credit will generally be a half of Cx. That difference is often not material, however, on term products that are priced with unitary reserves that

typically default to a half Cx. But it comes into play more with New York companies looking for a full reserve credit for both the base and the deficiency reserve.

With coinsurance the premium scales are the same for the ceding company and the reinsurer. For example, on level term products the reinsurer will have the same exposure to the cash flows and the same exposure to losses on cash flows in the later part of the level term period. The ceding company may find this to be a value to better match cash flows and gain a better understanding of the advantages of reinsurance. The allowances can be considered an expense reimbursement and the ceding company can readily determine how well it is covering its actual costs in later durations.

The premiums on coinsurance match the direct company's premium excluding policy fees. Often the coinsurance premiums are banded by face amount. The reinsurer will need to price each band separately to verify that the allowances for each band are appropriate. That adds a little bit more work and may add some more time to the pricing process.

The high lapses in renewal durations on select and ultimate term products or in ultimate durations on level term products will impact mortality and persistency and must be reflected in the coinsurance pricing. This can be particularly dramatic when a large annual rate increase occurs, or when the healthy insured has an opportunity to re-enter with new terms.

Finally, term conversions must be considered when pricing coinsurance on term products. Some ceding companies choose to recapture term conversions to permanent products, and that must be reflected in the persistency assumptions. Some companies offer particularly attractive conversion privileges in later durations, and the reinsurer may need to develop a new rate scale for the conversions.

### **PERMANENT YRT REINSURANCE PRICING**

A unique characteristic about pricing YRT reinsurance for permanent products is reducing net amounts at risk. If the permanent product is highly funded, the cash value will start low initially and increase quickly. In that case, the net amount at risk falls quickly, and the policy essentially terminates from a reinsurance perspective as the net amount at risk falls below the company's retention. If this funding type represents a significant part of the ceding company's business, the reinsurer may consider not providing first-year discounts if the break-even period occurs after the reinsurance is expected to terminate.

Frequently, the YRT premium structure follows the cost of insurance (COI) for the product. Unfortunately, the COI may not match the expected mortality, and the problems I described earlier occur. There could be losses in later duration. This may happen particularly in situations if the company has a reverse select and ultimate or attained-age cost-of-insurance scale.

The marketplace that permanent products are sold in will have an impact in pricing. Particularly in corporate-owned insurance used in deferred compensation plans, underwriting concessions may be made and the reinsurer must be made aware of the impact on expected mortality.

Frequently, for universal life products, the YRT premiums are paid on a monthly mode as opposed to an annual mode. In that situation the reinsurer loses the interest on the premium, but it may pick up some benefit by not having to hold the reserve.

The permanent products also offer the riders, including cost-of-living increases or guaranteed insurability options. Again, those options must be examined to make sure that there's no exposure for antiselection and that the point-in-scale rates are sufficient.

Another item to consider when pricing permanent YRT reinsurance is that the face amounts are generally smaller. This means less potential reinsurance volume, and it also perhaps might mean less underwriting involved. Frequently, you'll see permanent YRT rates higher than term rates as a result of the lower face amounts.

Pricing reinsurance for second-to-die products can be particularly tricky. After frasierizing two lives, the initial premium for the reinsurer is quite small, often less than a penny or two per thousand. The reinsurer may require an initial minimum premium to help compensate for the expenses in the early durations.

The frasierization process assumes the two lives are independent, but we've seen plenty of studies to indicate there is a dependency between the two lives, such as the joint accident risk and the broken heart syndrome. The reinsurer must factor that in and reflect that in the price. Exact-age frasierization is becoming more and more common in the marketplace, but many companies still use a joint-equal-age formula to facilitate administration. The reinsurer must acquaint itself with the formula being used for calculating the joint equal age and assure itself that the formula doesn't have any material problems.

Riders on second-to-die policies, such as the policy-split options and the four-year term riders, create a unique problem particularly if the reinsurers may be exposed

only for the four-year term riders. Also, the policy-split options when one life is uninsurable, causes additional risk and must be considered.

Substandard rules on second-to-die products are often more generous than on single life products. The reinsurer must acquaint itself with the substandard criteria used in evaluating these risks and make sure that it's adequately priced.

For second-to-die business, because of higher issue ages, higher face amounts and because more substandard lives are involved, more facultative business is submitted to the reinsurer than on single-life business. Also, much of that business is not placed because it is heavily shopped. Those expenses need to be loaded into the second-to-die pricing. That's why you'll often see second-to-die rates that are a fair bit higher than the frasierized single-life rates.

### **PRICING INTEREST-SENSITIVE COINSURANCE**

Regarding impact on the financial ratios examined by rating agencies, reinsurance can also improve the marginal profitability on coinsurance. If a reinsurer is pricing with more optimistic assumptions, or perhaps a lower profit target, the reinsurance allowances may be better than the ceding company's underlying expenses and may allow the ceding company to improve its profitability.

Another reason for reinsuring interest-sensitive products is to access the expertise of the reinsurer. Frequently, a company is interested in entering into a new product line such as deferred annuities. The reinsurer may have expertise in this area and as a result, the ceding company can gain the value of that expertise. The reinsurer offers manufacturing expertise into the partnership, and the ceding company offers distribution.

Coinsuring interest-sensitive products allows the ceding company to transfer a share of all its risks. Under the risk-transfer guidelines for coinsurance, all risks must be proportionately shared, including mortality, persistency, and investment risk. The default C-1 risk must be managed as well as the asset/liability mismatch C-3 risk. This is accomplished by making sure that the assets are properly identified or transferred and that the investment income is properly shared.

Another risk transferred, as I mentioned before, is the concentration in a single product or distribution. Exposing the company to a single distribution channel may be imprudent, particularly if that distribution channel controls the persistency of the business. Reinsurance helps minimize their overall exposure.

Because coinsuring interest-sensitive products creates a partnership, both the reinsurer and the ceding company must be satisfied with the product design up

front. This means that the reinsurer and the ceding company are comfortable with their product features, that they're not exposed to the antiselection in renewal year, and that they can get the competitive edge that they desire.

It's also critical that before the transaction is complete, both the reinsurer and the ceding company have the same views on the profitability of the product. These terms need to be negotiated and understood before the transaction occurs to avoid disagreements later. This applies particularly to investment strategies and crediting strategies. It's important that ahead of time, when the product is being designed and developed, and before it's rolled out, both companies know what their crediting strategies are and under what scenarios profitability may be compromised to retain the business.

The decisions regarding investment management should be resolved early. Several options for investment management apply. The ceding company, the reinsurer, an outside manager or any combination of the above may be the investment manager. It really doesn't matter as long as the investment risk is properly and proportionately dispersed. The transaction should not move ahead until both parties have agreed to the investment management issues.

The assets must be transferred or segregated. If the treaty provides for the funds to be withheld, the assets must be identified for this block of business so that it is properly maintained and the risks are transferred.

Jeremy will now talk about some of the financial and valuation issues related to reinsurance.

**Mr. Starr:** Let me just, before I get started, take a brief survey. How many here are involved in pricing products, product development, that kind of thing? OK. How many people are involved in valuation? All right, that gives me a sense. It's a good mix. I'm going to talk about the valuation side of the house. I'm going to try to get a broad spectrum of different aspects of reinsurance and how these different aspects of the environment that we live in are handled from a reinsurance perspective.

As with any valuation assignment, the reinsurance actuary has to take into consideration accounting, actuarial science, asset-liability-type matching, regulations, and tax items. My presentation will cover a little bit of all those items. My main emphasis as far as regulation goes is to cover the reinsurance aspect of the codification process that the NAIC is going through right now. I'll explain exactly what codification is for those of you who are unfamiliar with that. I'll then go into the actual Standards of Practice (SOPs) that relate to cash-flow testing and how reinsurance needs to be factored into those standards. Once we have an

understanding of how the standards are to be applied, we can then go ahead and do some cash-flow testing and see how reinsurance is factored into cash-flow testing. Once we've finished the world of statutory accounting and statutory reporting, I'll talk briefly about the GAAP world and what pronouncements you need to consider when studying GAAP in reinsurance. Finally, I'll talk a little bit about taxes.

### **CODIFICATION**

What is codification? Currently, the NAIC is going through a process whereby the principles of statutory accounting are being codified into a set of approximately 100 papers. Once complete, these principles of statutory accounting can be used by independent public accountants to certify a company's statutory annual statement as being in compliance with these principles. The process to develop these principles was envisioned as being a multistage process. Papers on various topics were drafted and released for public comment. Hearings were held on the individual papers, and the regulators decided which industry changes they would adopt. After all the papers were reviewed the first time, the papers were all re-reviewed by the regulators and re-released as a complete package. Three sets of hearings were then scheduled to discuss the package in total. Each session would be allocated to cover certain papers. The first hearing was on June 5, 1997. They will have two more meetings, one in July and one in August. After those hearings, the regulators will make further adjustments to the papers in response to comments made at the hearings. The plan is to then re-expose the papers for a three-month period and then finalize the papers by December 1996, with the idea that sometime before the next millennium we will be in this new world of statutory codification.

The original intent of this process was to document current statutory accounting principles and supplement them with GAAP principles where there are missing pieces in current practice, but some unique changes to both have come out of this process. For those who are not aware of codification I highly recommend that you become familiar with its implications.

Within the codification package there is a paper on property and casualty reinsurance and one on life reinsurance. Statement of Statutory Accounting Principles (SSAP) Number 74 is the life reinsurance paper. The paper begins with a description of the different types of reinsurance agreements. This includes a discussion of facultative-versus-automatic reinsurance, coinsurance versus modified coinsurance versus YRT and catastrophe covers. With this as background, the paper addresses the proper accounting treatment for reinsurance premiums, reinsurance benefits, experienced refunds, etc. This includes where these items should be reflected in the statutory statement and when they are to be booked on the statement.

The body of the paper then proceeds to discuss risk transfer criteria. The criteria used in the paper are those used in the Model Life and Health Reinsurance Agreement Regulation. This regulation does not discuss risk-transfer criteria for YRT. SSAP 74 defines the risk-transfer requirements for YRT as seven of the 11 risk-transfer factors that the model dictates for coinsurance and modified coinsurance agreements. The seven chosen were ones that the regulators thought adequately described the risk characteristics of a YRT reinsurance agreement. The risk transfer requirements for stop loss and catastrophe coverage emphasize that the payments the ceding company receives must depend on and directly vary with the amount and timing of the claims. If an agreement does not pass risk, or if the policy being reinsured, as defined by SSAP 50, is defined as a deposited contract, then deposit accounting is used for the reinsurance agreement. Deposit accounting does not allow reserve credit, but rather sets up an account where the net cash transferred is deposited into an account. This account is an asset on the ceding company's books and a liability on the reinsurer's books. As renewal transfers occur, they are netted against this account. When the account is used up, the net transfers are booked as miscellaneous income or miscellaneous loss, depending on how experience develops. The most controversial portion of the paper is in Appendix C.

The Model Life and Health Reinsurance Agreement Regulation is a complex regulation. Many regulators who are not reinsurance-literate were having difficulty interpreting what portions of the regulations meant. To help these regulators, a group of regulators who helped draft the model developed a document that took questions they were being asked and developed answers they thought were correct. The document's preamble specifically states that the opinions expressed were not intended to be expansive of the regulations and were meant as insights and not necessarily the only correct answers to the questions posed. This document has been made Appendix C to SSAP 74. The appendix is controversial because its interpretations will now become part of the standards by which a company's reinsurance programs will be judged. This then would take much leeway out of the accountants' hands when trying to access the true economics of a company's reinsurance program.

### **ACTUARIAL STANDARDS OF PRACTICE**

When an actuary takes on a new assignment, a good place to gain a better understanding of the demands of the new situation is to review the ASOP related to that particular field of interest. *ASOP 11* is called the Treatment of Reinsurance Transactions in Life and Health Insurance Company Financial Statements. One of the key points of this statement is that the insurer's legal liability to its policyholders is not impacted by the presence or absence of reinsurance. Legally this means that the reinsurance agreement merely provides for the reimbursement of liabilities and does not relieve the direct writer from its liability to its policyholders. This leads the

rest of the paper to focus on the review of liabilities net of reinsurance. It states that a review of a reinsurance agreement should encompass a study of exactly what risks are transferred to use as input to calculating a company's net liability.

As part of this review, an actuary must be mindful to factor in all liabilities, not just classical mortality and morbidity reserves, but also receivables and payables generated by the reinsurance agreement. A full understanding of all agreement terms would also include a review of any of the provisions relating to recapture fees. When calculating a company's net liability, a full consideration for meeting its legal, accounting, and valuation requirements should be done such that the unmatured obligations are covered on a best-guess basis. It should be noted that the amount of liabilities that a reinsurer establishes and the amount of liabilities that the ceding company takes credit for do not necessarily have to match. The two companies can be in different positions due to the way they invest or whether the companies are holding minimum or stronger reserves. Thus there can be a mismatch in the reserve credit versus the reserves held by the reinsurer.

Some miscellaneous items that a review of a reinsurance arrangement needs to consider is that there is actually the possibility that additional liabilities are created because of the reinsurance agreement. An example of this is in the risk transfer regulation. There is a specific provision that the reinsurer must reimburse all allocated marginal expenses on the block of business reinsured. If the reinsurance agreement is not reimbursing the anticipated allocable expenses, then a reserve must be established by the direct writing company for the difference between the reimbursed and nonreimbursed expenses. The collectibility of reimbursements owed by a reinsurer must also be reviewed. To assess the ability of the reinsurer to pay all claims, several factors need to be considered. First is a study of the reinsurer's financials and the quality of any assets that are pledged supporting the underlying agreement. Second, the actuary must be assured that the agreements comply with all regulatory requirements. With all these items in mind, the actuary is now ready to start considering cash-flow testing.

Three SOPs surround cash-flow testing and valuation. *ASOP 14* discusses when cash-flow testing should be performed. *ASOP 7* tells how to perform cash-flow testing. *ASOP 22* is related to Section 8 guidance. A Section 8 opinion requires that certain reserve adequacy testing be performed by actuaries of companies with certain size characteristics. Typically, this adequacy testing involves cash-flow testing but can involve other methods such as a gross premium valuation. A gross premium valuation entails the projection of cash flows without reflecting the asset side of the balance sheet. Typically this form of testing entails testing of the business sensitivity to factors other than interest rate fluctuations.

## CASH-FLOW TESTING

To determine when to perform cash-flow testing, an actuary should consult *ASOP 14*. A product that is sensitive to changes in economic conditions should be cash-flow-tested. A company that holds assets with market-sensitive call provisions can result in cash flows that are not matched to the liabilities. Cash-flow testing to assess the impact of these call provisions would aid in determining if a mismatch is significant. Products that contain provisions that are subject to antiselection by the policyholders would also call for the need for cash-flow testing. An example of such a product is the certificate of deposit (CD) annuity. CD annuities automatically renew periodically. At the end of each renewal period, the policyholder has an option to surrender the annuity without penalty. This window of opportunity in which policyholders can surrender provides a serious asset-liability matching issue that cash-flow testing could aid in analyzing. These are just a few examples of situations in which cash-flow testing would be beneficial.

How does this factor into reinsurance? To determine whether reinsurance should be considered in a company's cash-flow testing, an actuary must first review the materiality of the reinsurance agreement. To the extent that a reinsurance agreement covers a very small piece of the business or does not have a significant impact on the overall risk profile of the company, then you may not want to do any modeling on the reinsurance agreement at all.

A reinsurer is in a different position than a direct writer when it comes to cash-flow testing. Reinsurance actuaries typically do not have access to the level of detail that direct company actuaries have at their fingertips. Thus, the reinsurance actuary puts a very high reliance on the ceding company's actuary for the completeness, accuracy, and even to some degree the sufficiency of the reserves and the reserve information that the ceding company sends to the reinsurer. This does not, however, relieve the reinsurance actuaries from their responsibility to assure themselves that the reserves are adequate. To assure adequacy, the reinsurer's actuary needs to look at the same kinds of things that we just talked about. This would include review of the economic sensitivity of the risks assumed to determine whether the reinsurance actuary wants to do cash-flow testing. Note that the key here is not necessarily the underlying business, but rather the actual risks assumed by the reinsurance company. Thus, if the reinsurer is providing pure mortality cover on nonvariable universal life policies, no cash-flow testing would probably be needed. However, if pure mortality coverage was provided on the guaranteed minimum death benefit on a variable product, cash-flow testing would probably be indicated. This is because the size of the death benefit in this product is typically tied to the economy.

From a direct writing company's point of view, if the reinsurance agreement raises issues relating to timing of interest and cash flows or interest, then cash-flow testing should be considered. For example, if the reinsurer has an impact on how crediting rates are set, then cash-flow testing should probably be considered.

How do you do cash-flow testing? The how of cash-flow testing can be thought of as following a road map. Decide which items need cash-flow testing. Develop a model, a subset, if you will, of the business that will be tested. That subset needs to be validated so that it will reproduce the behavior of the whole block. This behavior ranges from mortality and persistency results to age distribution and premium flows. Once the model is validated, an analysis of the product, the regulatory requirements for the products, company practices with respect to how the product is managed, etc., all will go into developing the various scenarios in the study. Reinsurance needs to be factored into the picture by making sure that the variations in the scenarios properly reflect the cash flows under the treaty terms. For example, under a modified coinsurance agreement, are the modified coinsurance reserve interest rates calculated similarly to the way your interest rates are calculated, or are they calculated based on some outside index? Another example could involve the cost of insurance rates. If the reinsurer has the right to charge a rate different from the one you are collecting, this fact needs to be put into your tests.

### **SECTION 8 OPINION**

The method used to determine reserve adequacy under a Section 8 opinion goes back to deciding whether cash-flow testing is important or whether some other method of testing is more appropriate. As we discussed before under cash-flow testing, if it's an economic-related situation cash-flow testing is probably appropriate. However, if you have redundant reserves, using a gross-premium-type valuation would suffice. For example, accidental-death-and-dismemberment-type reserves usually are redundant, and so creating basic pricing type models but using more conservative valuation-style assumptions would be adequate. Other forms of testing, such as a loss-ratio test, are appropriate in given situations. So before deciding what type of testing is needed, consider the features of the product.

As part of the reinsurance actuary's work, there's a high degree of reliance on the work of the ceding company actuaries. Inputs as to anticipated behavior of the block and insights into the company's anticipated performance can play a key role in setting the cash-flow-testing assumptions by the reinsurance actuary. Once the input from the ceding company actuary has been received, the reinsurance actuary must also factor in the same anticipated performance factors under the reinsurance company's control that a direct writing actuary must consider. For example, if business is reinsured on a coinsurance basis and the business being converted has

interest-sensitive elements to it, the reinsurance actuary must factor in the relationship of the way crediting rates are computed and the investment strategy of the reinsurer.

## **GAAP**

The next part of the session relates to GAAP and reinsurance. This presentation will act as merely an introduction to the facets of GAAP that become part of the reinsurance picture.

Financial Accounting Standard (*FAS*) 60 covers products such as term, whole life, disability income and annuities in payout. *FAS 60* product GAAP reserves are determined by the reinsurer in the same manner that a direct writer would determine GAAP reserves. For YRT reinsurance, irrespective of whether the reinsurance coverage is being provided for a *FAS 60* or *FAS 97* product, because of the term nature of YRT reinsurance, *FAS 60* applies.

If *FAS 97* products that are interest-sensitive products or paid-up products are reinsured on a coinsurance or a modified coinsurance basis, then GAAP guidance for the reinsurance transaction is found in *FAS 97*. The GAAP treatment mirrors, to a significant degree, the direct writing company GAAP methodology.

*FAS 91* discusses accounting for contracts with no mortality or morbidity risk. The accounting treatment is somewhat akin to banking deposits. If either the product being reinsured or the nature of the reinsurance is such that no mortality and morbidity risks have passed, then *FAS 91* should be considered.

*FAS 109* talks about deferred taxes. The underlying principle in this pronouncement is the matching of revenue and expenses based on the behavior of the reinsurance agreement.

*FAS 115* discusses how assets are to be valued in a GAAP statement. Assets must be allocated into one of three categories: held to maturity, available for sale, or available for trading. An important reinsurance aspect to consider here is if the reinsurer is holding assets in trust, the reinsurer and ceding company must agree upon which category to put the trusted assets.

*FAS 120* is related to mutual company GAAP. This FAS focuses primarily on how to account for all aspects of participating policyholder dividends under the framework of GAAP. If there's reinsurance on a coinsurance or a modified coinsurance basis with the reinsurer participating in the dividend scales as declared by the direct writing company, then *FAS 120* should be considered.

*FAS 113* is dedicated to reinsurance. It was originally written for property/casualty insurance. The life reinsurance treatment in this FAS was originally not as in-depth as for property/casualty reinsurance. It is my understanding that the Accounting Standards Board (ASB) is reexamining this FAS now with an eye toward giving the proper in-depth review to life reinsurance matters.

*FAS 113*'s key principle, as on the statutory accounting side, is risk transfer. The FAS definition of risk transfer is whether there is a reasonable possibility of a significant loss by the reinsurer. If that occurs, then *FAS 113* allows for reinsurance accounting. If the agreement fails this test, *FAS 113* calls for deposit accounting. The missing link here is, what does this definition of risk transfer mean? Some say that if there is a 10% possibility of a 10% loss, then risk has been transferred. This type of analysis, however, does not work well in situations in which high-loss, low-incidence risks are covered (e.g., life insurance). In those situations, the first step is an analysis to ensure that the underlying policy being reinsured is considered an insurance product for GAAP purposes. Next, if a review of the reinsurance agreement finds that all risks have been transferred, then reinsurance accounting should apply.

*ASOP 11* focused on policy liabilities still being the direct writing company's responsibility even if reinsurance existed and that reinsurance is just a reimbursement. GAAP takes that to heart and actually puts the concept into its accounting. What does that mean? It means that there is no reserve credit in GAAP. Instead, an asset is established for the reinsurance recoverable. The other aspect of GAAP accounting for reinsurance is a matching of earnings to revenues. What that means is that a large up-front allowance in statutory accounting is recognized right away. Because there have been no earnings in GAAP accounting, all up-front allowances are spread out over a period of time. That concept applies with all the aspects of the reinsurance agreement.

## TAXES

My last topic is taxes. Mike talked a little bit about premium taxes. Generally, premium taxes are the responsibility of the direct writing company. They are typically reimbursed by the reinsurer. There are situations such as if the direct writing company is not licensed in a state but has policyholders in a state, a reinsurer may be asked to pay the premium taxes. Guarantee fund assessment is a function of the direct company's assets and premiums. The reinsurer typically does not get involved in these assessments.

From a federal perspective, one of the sections of the tax code is 845. In general, Section 845 is a part of the tax code that allows the IRS to unwind a reinsurance agreement that was done primarily for tax effect. The unwinding is done in a rather

draconian manner. In a typical reinsurance agreement, one side of the reinsurance transaction has a tax benefit and the other side has a tax detriment. Often these effects mirror each other (i.e., are equal but with opposite signs). This portion of the tax code says that if the IRS thinks that the agreements involve some kind of tax play, it will unwind the side that had the tax benefit and leave the other side alone. Thus it is a win, win for the IRS (an increase in taxes by the disallowance and an increase in taxes on the other party to the reinsurance agreement). There are two portions to Section 845. Section 845(a) has to do with related parties' transactions. This has a slightly lower criteria for IRS disallowance (i.e., if there is just a tax-avoidance effect, the agreement can be disallowed). In unrelated party transactions (845(b)), the IRS has a slightly higher threshold of pain. Here the tax-avoidance effect has to be significant before the agreement can be disallowed.

Mike also mentioned the deferred acquisition cost (DAC) tax. Here the two parties have to mirror each others' DAC income. The absolute value of the amount of DAC income that the ceding company is taking for the reinsurance agreement equals the absolute value of the DAC income the reinsurer is setting up (the amounts are of opposite sign—one has income and the other an expense). Differences can occur because of the size of the companies; small companies amortize DAC over five years and large over ten years. For DAC purposes the reinsurer always amortizes over ten years. Reinsurance premiums are defined as the net cash flow between the parties. This means factoring in all premiums, modified coinsurance reserve adjustments, experience refunds, and benefit payments made under the agreement and calculating the net result as the "reinsurance premium" for DAC purposes.

I haven't talked at all about assumption reinsurance, but I thought I would sweep in the last remaining portion of the tax code that relates to reinsurance. Section 197 has to do with assumption reinsurance and amortization of goodwill. This portion of the code requires amortization of the excess of the purchase price of a block of business acquired over the DAC-able income. That excess is capitalized and amortized over 15 years. Prior to the passage of Section 197 this excess was immediately deductible, but now no portion of the purchase price is currently deductible.

**From the Floor:** Has SSAP 74 been finalized, and can you give me some idea of the controversial sections of the paper?

**Mr. Starr:** None of the SSAPs have been finalized. Start from there. As I said before, three hearings were scheduled. The first one took place June 5, 1997. Each hearing will have a set number of papers to be discussed. About 100 papers are part of the total codification process. The reinsurance paper hearing isn't until August. As far as the kinds of things that the question and answer appendix to the

paper covers, there are nine different parts of the Model Life and Health Reinsurance Agreement Regulation that have questions in the appendix.

The first question deals with risk transfer in a YRT agreement. What risk transfer criteria should be applied if a YRT agreement behaves more like a coinsurance agreement? Another question is, if you have coinsurance with a funds-held agreement or a modified coinsurance agreement and the level of risk transfer provided in that agreement is inadequate, what is disallowed because in modified coinsurance no reserve credit is taken?

Another has to do with cost-of-insurance rates. If a reinsurer is coinsuring a block of business with cost-of-insurance rates and those cost-of-insurance rates vary over time, what right does the reinsurer have to participate in the decision as to when those cost-of-insurance rates are to be changed and by how much?

There is a question on segregation versus segmentation of assets backing the modified co insurance reserves. Under an interest-sensitive block of business, the regulation calls for the assets to be segregated into a separate account. All the cash flows related to the business reinsured are supposed to come out of this segregated pool of funds. What happens if instead of segregating assets you just segment assets? Is that acceptable? The appendix opines that it is not acceptable, but industry thinks that there are times when it should be allowed. Certain reinsurance agreements provide limitations on what the ceding company can do, how the company can run its business. The reinsurer thinks that certain business-related behaviors have a material impact on how the reinsured block will behave. Is that acceptable?

Those are the kinds of things that are involved in the Q&A appendix. Currently, the industry is trying to lobby to get either the Q&A appendix removed in its entirety or at the very least to have the answers made more acceptable.

**From the Floor:** How does the reinsurer price for rate increases by the ceding company?

**Mr. Stein:** That's a good question. If the ceding company is raising its rates to reflect poor past experience, it would seem to me that the reinsurer should participate in some of the rate increase as well. The reinsurance treaties I'm familiar with don't really get into that in detail except to say that the reinsurer reserves the right to increase the rates. So it could probably go ahead and raise the rates proportionately to the ceding company. Does that get at the gist of what you're asking?

**From the Floor:** My question is, how do you, the reinsurer, price the probability that you may choose to raise rates?

**Mr. Stein:** Mostly products are priced under the supposition that rates will stay the same from issue. On the life side that's typical. So we're not really pricing and anticipating any rate increases.