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REGULATION XXX: A COMPREHENSIVE OVERVIEW

Track: Financial Reporting

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Summary: Panelists representing regulatory, product development, and valuation actuaries provide a triptych representation of Regulation XXX. Information on the requirements of Regulation XXX, as it relates to the American Academy of Actuaries and to the practices of companies, is discussed.

MR. SPENCER: Our first presenter is Mary Bahna-Nolan. Mary is vice president, product development for North American Company for Life and Health Insurance in Chicago. Mary serves as the chief product actuary, and her responsibilities include the oversight of all product initiatives and implementation activities.

She also serves as vice chairperson of the SOA Product Development Section Council, is a member of the SOA Mortality and Underwriting Survey Committee, and has served previously as a member of the SOA Task Force on Preferred Underwriting. Mary will be addressing topics related to the impact of XXX on product design and will provide us with a crystal ball vision of what the remainder of 2001 will bring with respect to XXX issues.

Our second presenter will be Jeff Beckley. Jeff is a director with Deloitte and Touche in Indianapolis. His primary areas of practice include product development, financial reporting, management consulting, and coaching junior high basketball. Jeff will provide an update on valuation issues,

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

including work on the proposed actuarial guideline related to XXX, as well as the 2001 CSO Mortality Table.

As the final presenter, I'll be covering topics related to current issues surrounding X-factor analysis, and will touch briefly on reinsurance topics. I serve as assistant vice president and director of life product development for Lincoln Re. I'm responsible for management of Lincoln Re's individual life pricing assumptions and systems, including the Lincoln Mortality System.

I also monitor regulatory developments for Lincoln Re. I'm a member of the American Academy of Actuaries and have previously served as a member of the Committee on Life Insurance Financial Reporting (COLIFR) at the academy, and as a member of the Working Group responsible for drafting the XXX Practice which is currently available at the Academy Web site (www.actuary.org).

MS. BAHNA-NOLAN: I'm going to touch on the products that we've seen since XXX actually came into effect, as well as the regulatory response that has emerged with respect to some of the more innovative designs that have been introduced. This includes the proposed Actuarial Guideline addressing innovative XXX-related product designs, also known as AXXX, which is currently being worked on and will be exposed by the NAIC later this summer.

With respect to term products, we continue to see full and partially guaranteed portfolios offered by many companies.

I will say that the fully guaranteed portfolios are definitely outselling the partially guaranteed. I know for our company, more than 90 percent of our sales are from the fully guaranteed portfolio. Full guarantees up to 30 years are available, but the biggest sellers are probably on the 10- and 20-year level premium term designs. I think this is a slight shift from in the pre-XXX environment in which the predominant product that was sold was really the 30-year plan.

For companies that do offer partially guaranteed plans, the most common partial guarantees are 10 and 15 years. We do see some 5-year guarantees, but the majority are at the 10-year level.

We are seeing a reduction in the number of companies that are offering partially guaranteed plans. We've seen a couple of companies actually just withdraw their partially guaranteed portfolios from the marketplace. I attribute this to two things. The first is just the lackluster sales and the cost of maintaining that second portfolio. And the second reason, which is probably the more predominant reason, is that the level of fully guaranteed rates has dropped dramatically since XXX first came into effect at the beginning of 2000.

But right now, those fully guaranteed rates are really pushing at the same

level as the partially guaranteed rates. And the partially guaranteed products have the onus of having to comply with the Illustration Actuary Regulation. I think it's becoming more and more difficult to keep that relationship between partial guarantees and full guarantees reasonable.

How Rates Have (and Haven't) Changed

Chart 1 demonstrates just how rates have changed following the introduction of XXX. These are the actual rates my company charges for our fully guaranteed term plans for a male age 45, $250,000 face amount, at the best non-tobacco underwriting class. The rates for 1997, 1998, and 1999 are the rates that were in effect at the end of each calendar year.

I also show where rates were in the first quarter of 2000 right after XXX came into effect, where they were toward the end of 2000, and where we are today. The graph highlights rates for 10-, 15-, and 20-year terms.

Rates have become more and more competitive. You can see that in today's world—the post-XXX environment—rates are at or below the levels that they were at in the pre-XXX environment both in 1997 and 1998 when we were really at the height of the term wars.

Rates at or Below 1998 Levels

- Additional cost for holding reserves and/or ceding off to reinsurers
  - Not offset by mortality improvements, expense reductions, or reinsurance solutions
- With:
  - Focus on fully guaranteed products,
  - The prevalence of longer
  - Reserves for most plans are significantly higher in 2001 than 1998
- Companies are paying the price for these higher reserves by
  - Holding the reserve
  - Paying a reinsurer to secure the reserve
  - Paying for LOCs either directly or indirectly
- For $20 billion in new term sales with competitive premium, the difference in *total* statutory reserves between 1998 and 2001 roughly $65M in 2001; $158M in 2010

Now we're not yet at 1999 levels, and I'm not sure that we're actually going to get there. But you can see that there's been a tremendous shift in the industry with respect to a competitive rate level.

Now, the 30-year market has been a little bit more rational and sane. While rates have dropped dramatically since XXX first came into effect for the 30-year design, they certainly are nowhere near their pre-XXX levels; nor do I expect them to get to get there any time soon. So I think we all would understand that under XXX, there's definitely an additional cost for holding XXX reserves. And that cost is either ceding XXX reserves to a reinsurer or retaining those reserves.

In my opinion, the level of the rate reduction we've seen cannot be justified by mortality improvements, expense reductions, or reinsurance solutions, and I think that this is probably an issue for companies going forward.

With the focus being on our fully guaranteed products rather than on partially guaranteed ones—coupled with the prevalence of the sales in the longer guaranteed portfolio—I think we could safely say that reserves for most term portfolios (the 10-, 15-, 20-, and 30-year products combined) are significantly higher in 2001 than they would have been in a pre-XXX environment. That's not a statement that any of you would question.

Reserves

To give you a perspective of what that means, for a carrier that sells a lot of level-premium term insurance—say $20 billion of annual face—with a competitive premium that is not the most aggressive premium rate available in the market, the difference in the reserves that we are required to hold today, versus what we would have held in 1998, is roughly $65 million in the year of issue alone. And remember, the premium rates available today are pretty close to those available in 1998. You can proportion this based on what your company's sales look like.

This is a statutory reserve. That includes the basic and the deficiency reserve. But by 2010, due to the humpback nature of the XXX reserve, this increases to $158 million of additional reserves. That's a big difference in expense that we have to cover, and I don't think that we've been able to recover that extra expense through other offsetting factors. Companies have to support these reserves, either by holding that full reserve themselves, paying a reinsurer to secure the reserve, or paying for letters of credit, either directly or indirectly, to take care of them.

Some Innovations

Now we have seen some innovative term designs, or product designs, come out in the term marketplace. Most of these have been associated with the 30-year plan, but we have seen them in other plans as well. The majority of the innovations have been to introduce partially guaranteed products and sort of mask them as a pseudo-guaranteed or fully guaranteed plan. I have seen some innovation on the fully guaranteed side as well.

One of the more innovative designs I've seen is the refund of premium on both a partially guaranteed and a fully guaranteed chassis, with a premium increase that is tied to an external trigger or event. Another innovative design is based on re-entry term with an affiliated company guarantee, with little or no underwriting, or evidence of insurability, and current level re-entry rates.

We have seen the introduction of some of these new, more innovative designs slow a little bit. I think some of this has just been attributable to the heightened regulatory awareness and the work that's currently being done in Actuarial Guideline AXXX.

With respect to the refund of premium for the partially guaranteed form, these really look like they're products that are partially guaranteed. And if the premium increases after a specific point in time, the policy refunds the premium at the policyholder's option.

Generally, policyholders have a limited window of time to exercise their options. For example, the policy might have rates that are guaranteed for 10 years. If the company increases its premium rates in the 11th year, policyholders generally have a 30- or 60-day window to say that they don't want to accept that premium increase and they get a full refund of the premiums that they've paid to date.

Generally, the contract cancels after that point, so they're trading continued coverage at a higher premium rate for the full refund of premium and cancellation of the policy.

The Regulatory Viewpoint

Now from the regulatory viewpoint, the fact that the insurer would have to pay this large refund is interesting. It prohibits the insurer from just increasing the premiums if experience necessitates.

The regulators view the insurers' rights to increase the premium as not unrestricted. Therefore, because it's not unrestricted, they're saying that companies that have this type of design need to reserve over the entire level premium period for the return of premium. This is addressed in AXXX.

The fully guaranteed form is a little bit different. These products typically have very high gross premiums relative to other products on the street. In a 30-year, refund-of-premium design, the premium might be an extra $100 or $200 a year versus a non-refund of premium type design.

These products also develop cash values (or dividends or premium refunds) after a certain period of time, and it's usually done on a grading scale. A 30-year plan may have no refund of premium or dividend option for the first five or 10 years, but then it pays back a portion of cumulative premiums paid to date if the policy is surrendered or lapsed. That percentage increases steadily each year until the end of the level premium period, at which time it's usually 100 percent of the cumulative premiums paid in the contract to date.

Often times the policy ends after the level premium period, although sometimes there are continuation options available.

This also is addressed in AXXX, which states that companies need to use the net premiums in their reserve calculation. So, basically, they use the gross premium, but then they need to net out the amount of the dividend or the refund that's available and use that net premium in the calculation. You can see that would significantly increase deficiency reserves for a company that's using just a flat level premium type plan.

Rate Increases and External Triggers

Now let's address premium rate increases tied to an external trigger.

We did see at least one company with a product like this. The external trigger for at least one plan was a treasury rate.

Basically, premiums were guaranteed for about 10 years, and then after that time, the only way premiums could be increased was if the treasury rate dropped below a certain level. That level was set pretty much well below any of the historical levels that the treasury rate had ever hit.

The one company that was offering this has ceased selling this product, and I think that's in light of the regulatory reaction to it. I think there are other products out there, although this is the one that probably received the most press.

Again, the insurer, from the regulatory viewpoint, does not have an unrestricted right to increase the premiums because they can only change the premium if that trigger event happened. As a result, AXXX addresses this product and says that companies need to reserve as if the premium guarantee is a full-level premium, as if that trigger event happened.

Affiliated Company Guarantees

This is one that's a little harder to get our hands around, and it takes many different forms. Generally, the policyholder is protected against future premium increases after an initial guaranteed level-premium period. The protection is often provided by a second company, which can be either an affiliated company or reinsurer. It can be provided through a second policy issued to the consumer or an agreement between the two affiliated companies.

Originally, the regulators were trying to say that overall, the total reserve held between the two companies needed to be the reserve for the full level-premium period. But that became a little bit challenging because in some instances, the life insurance and reinsurance regulations really did not bear on some of the companies providing these guarantees or this protection.

Sometimes, they're a property and casualty (P&C) affiliate. That's one common product out there. Sometimes, the protection is not a life risk that's being covered, but really a business risk for which (the life insurance company's experience will warrant) they'll have to increase the premium. So it's not really a reinsurance transaction, it's the ceding off of a business risk. So it was very difficult to actually find a method to regulate both companies with respect to XXX.

As a result, the onus is now placed on the direct writing company in AXXX, and the direct company has to hold the reserve for the entire level-premium period. If this is a reinsurance transaction, they are certainly eligible for reserve credit if appropriate risks are transferred. But if it doesn't meet the

reinsurance regulations for taking reserve credit, then none can be taken.

Re-entry Plans

We do see re-entry plans on the term as well as the universal life (UL) side.

These are plans that have an initial guarantee period with loose or nonexistent underwriting on a second plan for an additional level-premium period at specified favorable rates. So it basically says that our rates are level and guaranteed for. I'll just use 10 years as an example. They might increase beginning in year 11.

If they do increase, the policyholder has the right to move to, or re-enter, another term plan, basically at the same rates that they were paying before at the original issue age for another 10 or 20 years.

AXXX does address this design as well, saying that re-entry periods and premiums need to be treated as a continuation of the initial guarantee, as if the coverage had been issued at the issue age and issue date of the original policy. So basically, the reserve for the combination of the policies needs to be for the full level premium. That's what we've seen so far on the term side.

Universal Life Changes

With respect to universal life, we saw few product changes throughout most of 2000. The initial focus on the development side was really on the term marketplace.

Many companies ignored universal life with secondary guarantees even though they were definitely subject to XXX. Beginning late in 2000 and starting in 2001, we're beginning to see new UL plans introduced. We've definitely seen more focus on the individual life side than on the survivorship side. I think that that will change.

I think some of the slowing on the survivorship side happened just because there's a new valuation table coming out. There is a lot of development time and effort that goes into survivorship, as well as the uncertainty of the tax situation and the estate marketplace. I think when this situation becomes more clearly defined, we will probably see some more activity on both sides with respect to UL.

Secondary Guarantees—Accumulated Premiums

Secondary guarantees, just like in a pre-XXX environment, are very prevalent with UL. They generally take two forms, either an accumulation of the premiums paid or a shadow account. AXXX does address each of these designs separately.

With respect to accumulation of premium, I think these are probably the most prevalent designs that we've seen so far, and they're probably the most typical. They're very similar to what we had in a pre-XXX environment. Basically, the guarantee is: As long as the cumulative sum of the premiums

that a policyholder has paid to date is equal to or greater than the cumulative sum of these secondary guarantee premiums—or no-lapse guarantee premiums—the contract will not lapse, regardless of what the account or cash surrender value is.

The most common guarantees that we're seeing in the marketplace now are five, 10, and 20-years, although guarantees of 30, 40, or 50-years and even to age 100 still are available. Unlike in the pre-XXX environment, where these guarantees were available at very little additional cost, companies are charging a price for them. This price is levied either through higher fees (such as administrative or percent of premium fees), higher premiums, or higher cost-of-insurance charges for the additional guarantee. Sometimes it's a combination of these.

Many of these accumulation or premium designs also offer a catch-up provision, which is addressed separately under AXXX. Regulation XXX does address secondary guarantees of this nature, although AXXX does add a clarifying situation for policies that prepay.

I believe this is direct wording from the AXXX draft that I've seen. It says that, "Any amounts that are already paid by the valuation date, which may reduce the amount of future premiums necessary to satisfy the secondary requirements, shall increase the reserve, capped by the net single premium for the coverage at the valuation date."

Now, in my opinion, this AXXX statement appears illogical. If policyholders prepay, they generally have a higher cash surrender value. And what we're saying is, since they have a higher cash surrender value, the likelihood that their policy is going to lapse, and that the secondary guarantee is going to have any value whatsoever, is reduced. Yet the reserve that a company needs to hold is greater than if a policy had not been prefunded and had paid premiums annually. And, again, the probability that the guarantee has any value is reduced.

I'm hoping that when this draft is exposed for a comment that this section will receive some attention, because, in my opinion, it doesn't make a lot of sense and it prohibits some of the 1035 exchanges and other things that go on with permanent products. That will make it a little bit more prohibitive for companies to offer.

Catch-up Provisions

Now catch-up provisions also are prevalent in the marketplace and can take one of two forms. Either form operates with a guaranteed period.

As an example of the first form, consider a UL policy that has a 10-year no-lapse period. The catch-up provision says, "at any time during that period, as long as the underlying policy still stays in force, you can miss one of those premium payments and then just make it up at a later time."

Let's say I paid eight years, and I'm in a 10-year contract. My cash surrender value was positive, so the guarantee really didn't have much of an effect. I missed my year nine payment. Well, I could catch up in year 10 by paying the year nine and 10 premium, and still have that secondary guarantee in effect.

There also are catch-up provisions that allow a policyholder to move between guarantees on one policy.

For a policy that might offer a 20- and 30-year no-lapse guarantee, the policyholder can start funding at the 20-year level, and then at any point in time, make up back premiums and move out of the 20-year guarantee into the 30-year guarantee. Some of these require policyholders to pay back premiums with interest, but the majority of them just require the premium payment.

AXXX does address these provisions. Basically, it says that you compute the reserve assuming the longest guarantee period is met. Then you get to offset that reserve by any amount of catch-up premium that would need to be paid as of the valuation date.

Shadow Accounts

The other kind of secondary guarantee that we've seen out in the marketplace is shadow accounts.

We have seen more and more companies introduce products with shadow accounts, and these guarantees have been the subject of much discussion both within the industry, and at the regulatory level. They are defined in AXXX, but they I think that definition still needs a lot of clarification.

A shadow account is generated in a similar manner to the account value, using charges and/or credits that are more favorable than the guarantees in the basic policy. This allows the policy to stay in force even if the calculated account value or cash value, depending on the design, becomes negative.

There were two different drafts of AXXX that were being circulated. I think the favored handling of shadow accounts really is reverting back to the original draft that was put together and dated March 1, as opposed to the more recent draft that was discussed at the June NAIC Life/Health Actuarial Task Force (LHATF) meeting.

The latest draft required incorporating UL Model Regulation reserves with the shadow account guarantees. Basically, it required calculating four separate reserves to determine the XXX reserve. This was the subject of a lot of controversy within the industry, with some people arguing that you couldn't apply the UL model regulation approach to a shadow account guarantee. This approach really only worked for UL policies that had level-premiums, and some of these shadow accounts don't have level-premium designs. So, basically, the UL Model Regulation portion was pulled out of AXXX, although

it is still being looked at and worked on. So I'm not sure that it's completely gone away. But at least it was pulled out of the initial draft, which I believe will be circulated soon for discussion and exposure.

I think the most likely approach that we will see regarding AXXX for shadow accounts is that companies will need to determine the smallest gross premium that will need to be paid to take a shadow account that starts the year at zero, and ends the year with a zero shadow account value.

Other Innovations

On the innovation side I'd say shadow accounts were somewhat innovative, but I don't think their original purpose was to get around XXX. One design that we have seen that does appear to be a way around XXX is this re-entry plan design. It basically is kind of similar to the one that I discussed earlier on the term side. But it says that the policyholder pays a specified premium and that he or she is guaranteed to receive a substitute policy if the account value or cash value goes to zero before a certain policy anniversary.

Another one that I've seen is, I believe, designed to basically have value, and then the account value is designed to go to zero by year 10. Then a substitute policy is issued, and it's issued as a term plan. In addition, it's issued for the same level premium that was put into the UL contract that was guaranteed for only 10 years, and it's issued for a specified level-premium time. In this case, it's 20 years. It is issued at the original age and duration of the contract, and there's little to no underwriting that needs to take place.

The regulators saw this as a true way to try to get around XXX by having a 30-year product with only a 10-year guarantee, and are thus addressing it in AXXX, saying that their entry periods in the premiums are treated as a continuation of the initial guarantees.

Basically, you need to reserve as if it's a fully guaranteed plan. If the substitute policy is issued, the guarantee periods and premiums are treated as if the contract was entered into at the original issue age and issue date. So with the re-entry term plan, if that does go into effect, you are entering that reserve at whatever period of time that policy duration is.

Whole and Variable Life

With respect to whole life, the product does become more competitive as a result of XXX, because deficiency reserves are lower. Unfortunately, you need all states to approve XXX or adopt XXX before that type of design can be sold nationwide, because you're reducing reserves, not increasing reserves. And I guess there's a question in the industry as to whether codification has actually accomplished this, even though some states haven't formally adopted XXX. So we may see more activity with respect to whole life designs here.

We have seen a few companies try to take advantage of this and lower their whole-life rates, but we haven't seen many. I think there was a question

whether whole life would become popular and replace the UL to-age-100 guarantees. I don't think that's likely to happen.

We are seeing the UL to-age-100 guarantees out there at fairly competitive and attractive rates relative to whole-life designs. There is another guideline that's being developed at the regulatory level—Actuarial Guideline XYZ—which addresses non-forfeiture values. That regulation may put a damper on the UL no-lapse guarantees, at least to age 100. So we may see some activity here, but that won't be for a few years.

Variable life in the NAIC version, and most state versions, is currently exempt from the regulation. However, New York did include it in its regulation. We really haven't seen any companies try to use this as a loophole, and I don't expect that we will.

What's in Store?

For the remainder of the year, I think we'll see competition continue in the term market as carriers continue to compete for market share,although I'd say that the downward spiral in premium rates has to end at some point.

It's very costly, due to current reserve requirements, to keep lowering premium. I think we'll see additional UL and survivorship plans introduced. I do think the new valuation basic table and the work that's being done on the new CSO table will shake up the marketplace. I've heard of carriers saying that they're relying on retroactivity and/or substantial relief from this new valuation table to justify their competitiveness.

But I would caution that this is probably a very risky approach to take. I know some of the work that we've done has not demonstrated any substantial relief from the new valuation table, at least as it applies to term products and the UL designs that are out there today. I've actually heard of one carrier stating that it is anticipating the reserve relief the new valuation table will allow, and offering very competitive rates today with the hope that within the next few years, those policies will lapse and be replaced with new, lower-priced plans. I'd say that's probably a pretty risky proposition.

I'm really going out on a limb here, but I don't see that happening. And those companies might be stuck with some very high reserves for a much longer period of time than they ever anticipated.

I do think the retroactivity of AXXX, which currently proposes to be made retroactive to when XXX went into effect, is going to create difficulty for some organizations. The one company that was offering the term plan, in which the premium guarantee was tied to an external trigger, did withdraw their product from the marketplace because of this retroactivity issue.

MR. BECKLEY: I'm going to cover Actuarial Guideline AXXX briefly. As Mary qualified a couple times, this is my opinion of what the philosophy behind AXXX is. Basically, if it's term coverage and the option to increase the

premiums is conditional in any way, you should reserve it as though you can increase the premiums.

For UL shadow funds, XXX, in my opinion, already addresses these designs when you look at the premiums that are necessary to go from zero-to-zero each year and use those premiums in setting your reserves. I think the guideline is trying to clarify that. And the guideline, at least the latest draft, which is in the process of being redrafted, incorporates applying the requirements of the UL Model Regulation to the shadow fund. It could be an interesting exercise to try to do that to the way some of the shadow funds are designed.

As a result of that, at the NAIC Summer Meeting in New Orleans, I believe it was decided to take a part one and a part two, and part one is going to be split out and put into a separate guideline. That's what addresses the shadow funds.

The regulators have taken the position that the guideline will be retroactive and applied to products that have been issued since XXX went into effect. The ACLI, I believe, has taken the position that it should not be retroactive. That eventually will be decided, but I think it's also a risky position to assume that it won't be retroactive.

I received a draft of actuarial guideline AXXX from Mark Peavy, an actuary with the NAIC. He said it could be years before this is adopted, which I thought was interesting. The first actuarial meeting I went to, in 1980 or 1981, was the first time I ever heard XXX being talked about. This was 20 years before that actually was adopted. So I doubt whether AXXX will take that long, but if it does, and it's retroactive…

2001 CSO Table

I'm going to spend most of my time talking about the 2001 CSO Table.

Just to give you a little history: In November 1998, the NAIC came to the actuarial profession (the Society of Actuaries and the American Academy of Actuaries) and requested the development of a new valuation mortality table. A task force was formed in July 1999, and the SOA published a report in March 2001, which included the 2001 valuation basic table.

The Academy produced a report in June 2001, which took the valuation basic table and added margins for valuation conservatism. This loaded table is now the proposed 2001 CSO Table. The valuation basic table was based on the 1990-95 SOA basic table, which was published a year ago or so. Because there was not a lot of data at the older ages, and limited data at the younger ages, other data was brought in to supplement the '90-'95 basic table, including the Bragg tables, information from the Railroad Retirement System, and also from the Veteran's Administration.

The valuation basic tables took the form of male/female and non-

smoker/smoker tables, as well as composite tables. One of the things that I think is interesting is there is no reflection of preferred classes, primarily because there's no real uniformity in the definition of what preferred or super-preferred means. Mortality was projected from 1992 (the midpoint of the '90-'95 table) to 2001, with no mortality projection past 2001. The basic tables took the form of a 25-year select table, with a terminal age of 120.

Notable Anomalies

There were some anomalies in the valuation basic table. Some of the female mortality didn't necessarily make sense related to the male mortality. Also, as a result of select factors, from year 11 through year 25, there were some anomalies.

Adjustments were made to the valuation basic tables for these anomalies as a result of the exposure of the tables for comment. And some adjustments were made between the Society of Actuaries report in March and the development of the CSO tables by the Academy in June of this year.

Table 1
RATIO OF 2001 VALUATION BASIC TABLE MORTALITY TO 1980 CSO ULTIMATE MORTALITY
MALE NONSMOKER, ISSUE AGE 45

Duration	Ratio of 2001 VBT to 1980 CSO Ultimate
1	18%
5	33%
10	46%
15	53%
20	58%
25	56%

Table 1 presents ratios between the valuation basic tables, not the CSO tables that are proposed, and the 1980 CSO.

There are a couple of things to point out. This is a comparison to the ultimate table, not the select and ultimate 1980 CSO table. But it's being compared with the basic table, which has a 25-year select period, so keep that in mind. Even so, you can see in duration 25, which would be attained age 70, when the select period is done, it's still at 56 percent of the 1980 CSO table. That's before any margins are added for valuation purposes.

The CSO table was loaded in a manner similar to the 1980 table. The targeted load was about 15 percent. The relative loads decreased as the ages increased, but the absolute loads increased, which is what you would expect. So there is nothing unusual there.

The result is 12 tables. There's a male and female. There's select and

ultimate. There's no separate ultimate table. Ultimate is defined as taking the ultimate of the select and the ultimate table.

For ages under age 25, you start at zero and you just go across the select period. So for an age zero issue, it's the same thing whether it's select or ultimate.

Then there's non-smoker/smoker and composite tables. So two multiplied by two multiplied by three gives you 12 tables. Only age-nearest-birthday tables were produced. There is no age-last-birthday table that is going to be published. There is a methodology in the transactions that was used for the 1980 table to go from age-nearest to age-last birthday

Table 2
BASIC MEAN STATUTORY RESERVE COMPARISON: 20-YEAR, LEVEL-PREMIUM TERM
MALE NONSMOKER, ISSUE AGE 45

Duration	2001 CSO	1980 CSO (XXX Select)
1	0.48	1.59
3	7.11	10.09
5	13.35	18.20
10	25.28	34.57
15	26.48	37.14
20	5.99	9.10

Table 2 highlights the differences in basic mean statutory reserve factors between the 2001 CSO and 1980 CSO Tables (with XXX select factors) for a 20-year, level-premium term plan issued to a male nonsmoker, age 45.

The level of 2001 CSO reserves is roughly two-thirds of what you would get with the 1980 CSO using XXX select factors. The other thing to point out here is that a lot of times, with an ultimate table, you get lower reserves than you do with a select table. Probably for a 20-year term with a 25-year select period, you actually will get lower reserves using the select table. If you've got a very new term plan, that might not be true.

Pertinent Issues

What are some of the current issues surrounding the 2001 CSO Table? Let's consider tax reserves, deficiency reserves and the use of X-factors, effective dates, and retroactivity.

Tax Reserves

Currently, the 1980 CSO ultimate table is the proper table to use for calculating tax reserves. This is based on the fact that the tax law says you're supposed to use the table that, in the aggregate, results in the lowest tax reserves for the industry as a whole. And because it's an ultimate table, it will result in higher reserves on whole life policies and that sort of thing.

By the time you've aggregated across everything, the position taken by the industry is that we should be using the ultimate table. One of the reasons that there won't be as much relief with the adoption of this table for, say, term products, is there are going to be additional tax costs involved that certainly need to be factored into the product pricing.

Deficiency Reserves

Will X-factors be allowed with the 2001 CSO table? Using the same 20-year level-premium term plan issued to a male, age 45, and assuming no super select rate structure, you can justify a 30 percent X-factor. Your gross premium is equal to the net premium under that basis, and with XXX, you would end up with no deficiency reserves.

With the 2001 CSO table without X-factors, considering the deficiency reserves you'd end up with, the ability to use X-factors is critical. I think for the first time, at the most recent LHATF meeting, it became fairly clear that the intent is to allow the use of X-factors. The regulation that's been drafted does include the use of X-factors. And, initially, at least it has the same guidelines with the same floors, even though the underlying mortality is substantially lower in the 2001 CSO table.

Effective Dates

The legislation could be effective as early as January 1, 2002 in some states, if states act very rapidly and the whole exposure process goes quickly. The legislation that's being drafted would require it to be effective by January 1, 2008.

Assuming that some states start to adopt it with an effective date of 2002, I think it's reasonable to guess that it will become the prevailing table in 2004. And, at that point, that triggers a three-year transition period in the Internal Revenue Code, during which time companies can still use the 1980 CSO table prior to having to use the 2001 table for tax purposes.

One of the things I was thinking about is that you can produce some tax planning opportunities if you're selling the product with the 2001 table as your valuation basis, but you can still set up tax reserves using the 1980 table. Perhaps for a three-year period, you won't have to pay for the additional tax reserve.

There's also an issue with IRC Section 7702 for universal life, because Section 7702 says that in calculating guideline premiums, you should be using the prevailing table. So if it became the prevailing table in 2004, but the company didn't have to start issuing new products until 2008, if you had a 1980 CSO product out there, would you have to use the 2001 table to calculate your guideline premiums during 2005 through 2008 or 2007?

I think what the law says, except as provided by guidelines adopted by the IRS, the mortality charges can't exceed the prevailing table, even if you have a higher valuation basis. My understanding is that the ACLI is trying to work

with the IRS to develop some guidance there before adoption of the 2001 CSO table.

Retroactivity

As Mary said, some pricing assumes that there's going to be relief for retroactivity. That's not allowed for in the draft as it's stated.

MR. SPENCER: As I had indicated at the outset, I'd like to highlight several topics related to X-factor analysis and just a few topics related to reinsurance. My list of X-factor topics includes: thinking about X-factor analysis as addressing the six tests of Regulation XXX (Chart 2); definition of X-factor classes; evaluating your X-factor mortality in light of experience that emerges over time; issues surrounding credibility; the X-factor opinion and report; and a few miscellaneous issues.

X-factor Analysis

I want to give you a quick overview of the X-factor analysis process and have you think about evaluating the schedule of X-factor mortality against the six tests. Those six tests are familiar to those of you who have worked through the process of setting X factors.

The implications of each of these tests include the suggestion that X-factor classes vary by the distinguishing characteristics of your policies that might give rise to varying mortality experience. X-factors have a floor of 20 percent, and are non-decreasing.

As you review the six tests, other issues emerge: How will I measure emerging mortality experience for each X-factor class and for all classes combined? What about the statistical analysis of actual-to-expected mortality as it emerges over time?

Prospectively, you've set your schedule of X-factors with a great degree of confidence that actual experience will support your assumptions. As experience plays out, the question is, "Statistically speaking, does your experience support the X-factor schedule that you've set at the outset?"

Certainly, a refinement of X-factor mortality may be needed through time. Such refinement could arise from failing one of the six tests. It also could involve rejection of a hypothesis test as part of the statistical analysis. It could result from the preparation an annual X-factor opinion and report. It could be a reduction in X-factors, based on favorable emerging mortality experience.

It's worth noting that these refinements don't have to happen sequentially, nor do such refinements need to occur prior to a February 28 or March 1 statutory filing deadline. You could, as a result of your statistical analysis, uncover some problems in selected X-factor classes and still file an opinion and report to support your current assumptions over the course of the next calendar year. In my view, you have a little bit of time to think about how

you're going to adjust your schedule of X-factors if problems do emerge.

The Six Tests

Let's jump into a discussion of X-factor issues. First, let's consider the six tests. These tests need to be met prospectively, using your anticipated mix of business when you set your initial schedule of X-factors.

You'll probably have mortality experience available that you used to develop your initial X-factor schedule. You'll likely have some historical sales pattern information to help you develop an anticipated mix of business. You'll have a pretty good sense for where you think your distribution of business will fall. The tests also are to be applied annually and retrospectively, looking back through emerging experience and your actual distribution of business by underwriting class, gender, issue age, etc. To the extent that your actual distributions vary from those you anticipated when you constructed the schedule, such variation could be good news, bad news, or a mixed bag.

Tests are to be applied at the X-factor class level independently and then for all X-factor classes in aggregate. Those tests need to be evaluated each year and commented on in the *Actuarial Opinion and Report*.

Through the process of constructing X-factor schedules dictated by meeting the six tests, there's a certain amount of implicit conservatism that emerges. Think about the test that does not allow X-factors to decrease after the valuation date. Slope differences between the slope of the valuation mortality and the slope of your expected mortality could result in some conservatism being built in.

And the process is not two-sided, allowing for both conservative and aggressive assumptions. It's strictly one-sided conservatism built into the process, so be aware of that. Some companies have built explicit margins for conservatism into their schedules of X-factors, as well.

An oft-cited example of slope mismatch is male issue age 65, where the slope of the 1980 CSO is adjusted by the 19-year XXX select factors. The XXX select factors run off very quickly over the first five durations, more quickly than many companies would have assumed when developing their premium rates. The application of the six tests to this example, and the non-decreasing test in particular, results in an overly conservative valuation mortality assumption and extra deficiency reserves. Many of our client companies have come to us and asked if we can help them solve this particular problem.

Definition of Classes

Issue number two is the definition of X-factor classes. Briefly defining a couple of terms, I'll define grouping as "the process of prospectively combining similar policies together using your anticipated mix of business to form one or more X-factor classes."

When you construct your initial schedule of X-factors, you go through the process of grouping policies together that are expected to have similar experience and similar underwriting. You then develop just one X-factor class for that group of policies.

I want to differentiate this from the process of aggregation, which I'm defining as "a retrospective process of combining X-factor classes together using your actual mix of business written to assess the adequacy of your X-factor schedule in aggregate".

The first of the six tests specified by XXX is that the X-factors should vary according to policy characteristics that might produce different mortality experience. Combine this with the Actuarial Standard Practice Number 40 (ASOP No. 40), Section 3.4, which talks about the proper construction of X-factor classes, it seemed to indicate that policies comprising an X-factor class generally should have similar underwriting or experience characteristics. There's some debate as to what this means.

During development of the Life Practice Note on XXX, this topic was discussed, and a comment was included in question number 18 that addresses this point. Specifically, the practice note indicates that many actuaries would interpret XXX and ASOP No. 40 as disallowing the grouping of policies into one or just a few X-factor classes.

Consider a case in which an X-factor class is defined to be all durations, all issue ages, super-preferred, male. Think about the variation in mortality experience you might expect between a 25-year-old super-preferred and a 75-year-old super-preferred. The slope of mortality for these two individuals would not be consistent. You will have different actual-to-expected results.

Many actuaries believe that the available actuarial guidance would dictate the need to have separate X-factor classes in this situation.

At what level do you set your X-factor classes? You can go all the way down to the cell level, varying X-factor classes by underwriting class, gender, issue age, and duration; or you can set them at the 10,000-foot level, as we've previously discussed.

Think about the motivation a company may have for setting X-factor classes at a lower or higher level. Certainly, setting X-factor classes at a higher level might facilitate some administrative ease in getting them into your valuation systems. The subsidization, though, that is introduced into the process any time you're combining classes together with differing mortality expectations, is based on a reliance upon a certain anticipated mix of business. The process of grouping introduces some mix of business risk into the process as you evaluate your X-factors on an ongoing basis.

I'm going to toss out one other item here: What if one decides to be conservative and simply set X-factors to be level by duration—at 30 percent,

for example? Thirty percent could be conservative in the first 10 durations of the product for younger ages, but for a 20-year, level-premium term product, a 30 percent factor might not be sufficient in later durations. So it depends on which factor you choose to be your level factor.

If you choose the highest X-factor over the level-premium period, then, yes, I think everybody would agree that's very conservative. But if you really expect mortality as a percent of the valuation table to increase—which I think most of us do over time for a given issue age—then you can safely anticipate that a relatively low, level X-factor might have problems with one of the six tests on down the road.

Evaluating X-factor Mortality

Issue number three is retrospective X-factor analysis and looking at your X-factor mortality versus emerging experience.

Think about this as an annual statistical assessment. One way you could tackle this would be through hypothesis testing. Larry Gorski of the Illinois Department of Insurance has been promoting the notion of a Bayesian approach as an alternative to traditional hypothesis testing and assessing the statistically significant experience that's emerging for your business annually.

Focusing on hypothesis testing, think about how you're using that process. You need to develop a distribution of aggregate claims. You have an expectation for mortality in your X-factor schedule. You then need to take a look at the experience that's emerging and decide whether experience supports your expectation. Three methods are available to help you make this determination.

The age-old favorite, convolutions, is outlined in the *Life Contingencies* or *Actuarial Mathematics* textbooks. This method is viewed as a gold standard but a very cumbersome and time-intensive process to implement.

Monte Carlo analysis is very familiar to actuaries in a number of settings, but again, it could be construed as somewhat time-intensive, depending on the number of scenarios, the kind of computing power you have, etc.

A third alternative would be the recursive method developed by Harry Panjer, published in a 1980 *Transactions* article.

ASOP No. 40, Section 3.8, confirms that when you're looking at emerging experience, by-amount experience is the most financially significant to the company. You certainly can take a look at your experience by number; in practice, a by-number analysis is by definition more conservative than a by-amount study. But the ASOP does indicate that you should start with a by-amount analysis.

At Lincoln Re, we've used all three of these methods—Monte Carlo, convolutions, and Panjer—in developing X-factor studies for clients. We've

also used analyses on by-number and by-amount bases to help us understand mortality trends as they are emerging.

Let's consider the normal approximation at this point as well.
Some of our clients have indicated that they would prefer to use a simpler method. Can't we just assume that deaths are normally distributed and work from an approximation? That would be appropriate for a relatively large group of policies, say, more than 100 policies. And it would be appropriate when you're looking at the number of deaths. The dollar amount of claims is not distributed normally, so we caution our clients to use this approximation with great care.

Feedback we've received from the regulatory community also indicates that normal approximation is viewed as an accommodation and a holdover from an earlier time, before we had significant computing power at our disposal. Why wouldn't we go ahead and calculate the aggregate distribution of claims directly rather than using an approximation?

As the issue age and the corresponding absolute level of mortality increase, confidence intervals tighten (Charts 3 and 4). Chart 3 presents a by-amount test, and Chart 4 presents a by-number test. This is one graphical way for you to present a hypothesis test of your emerging experience.

Consider the significance level of your hypothesis test. Regulation XXX and ASOP No. 40 are silent on this point. And the regulators haven't been forthcoming with direct guidance on what level of significance you should be using.

At Lincoln Re, we have used both one-sided and two-sided tests at confidence intervals 90 and 95, respectively. The motivation for that is really twofold. Thinking about testing convention in the area of statistics, the 90^{th} or 95^{th} percentile on a one- or two-sided test is selected to minimize the probability of rejecting the null hypothesis (that your X-factor mortality is incorrect) when it actually is true. That's a Type I error. Those percentiles also are selected to minimize the probability of failing to reject an incorrect null hypothesis (a Type II error).

So we feel very confident in recommending those levels. I've heard regulators discuss using percentiles much lower than the 90^{th}. And, in fact, for the analyses that we've prepared for a number of our clients this past year, and with the way we graphically presented the information, you'd be able to look at the entire range of confidence intervals and the regulator could dial into their appropriate points of comfort. But it is worth having this discussion with your regulators up-front and making sure you understand what the ground rules are as they develop over time.

Another point to consider is the assumption of independence of lives. So often in our work we dismiss the notion of independence and take it for granted. Whether your company issues joint and last-survivor policies or a

number of policies to the same individual, you're violating the independence assumption and need to take that into account as you set and evaluate your expected mortality.

Credibility

One request we've had from a number of regulators is a prediction of when X-factor mortality experience will be credible. That's a great question.

X-Factor mortality studies are not unlike traditional mortality studies. One rule of thumb we've used at Lincoln Re over the past several years is that you'd need at least 100 claims to have a credible amount of mortality experience in your study.

How long is it going to take you to reach 100 claims with super-preferred term products? Consider 25,000 super-preferred, non-tobacco term policies issued to men ages 40 to 49, each with an average size of $400,000. In just one year you would have issued $10 billion worth of business. It seems like a fairly large amount. Your expected number of duration-1 claims is seven and your expected dollar amount of claims is a modest $2.8 million. So the very, very low expected mortality is simply going to push the issue of achieving credibility much further out into the future.

What procedures can one follow to hasten the arrival of credibility? Certainly, you can think about grouping your X-factor classes prospectively, as we've talked about, with the inherent mix of business risks. Think about sweeping in earlier years' business that was subject to similar underwriting and marketing.

To the extent that experience is expected to be different than what's in your current block, you'd want to adjust for that in terms of your expected mortality. But certainly, sweeping in early years' business is one way to hasten the arrival of credibility.

Crossing legal entities was another proposal that was suggested to us by one insurance department. The regulatory actuaries indicated they still desired to see mortality experience at the legal statutory entity level. But in terms of hastening a time of reaching credibility, they were willing to allow sweeping blocks of business together and consider that in the analysis. Certainly, actuarial judgment comes into play in this process. Credibility is as much an art as it is a science.

We've had situations in which the expected number of claims was 0.25 for an X-factor class. So what happens when you have one claim? You've got a significant deviation from what you expected. In that situation you can always go back to first principles and use a convolution approach, knowing that this method can take into account accurately that you're only expecting a quarter of a claim in a given year.

X-factor Opinion and Report

Think about how the X-factor opinion and supporting actuarial report will address whether you met the six tests.

Is your experience emerging as you expected? Issues of format may be the most interesting question along the way here. How do you summarize your results quickly? You don't want to provide reams and reams of X-factor schedules to regulators. You'd like to come up with some way to summarize the results across all your X-factor classes quickly. Also think about the Actuarial Standard of Practice Number 40. It provides several guidelines in terms of issues that need to be addressed within the report.

Some regulatory actuaries have taken company submissions and decided to dig into them very deeply, trying basically to replicate the statistical analysis that was performed by the appointed actuary. I would anticipate that in the future, you could expect to receive a call from a regulator asking for the underlying data that you used to support your statistical analysis. So be prepared to submit that to regulatory officials if they ask for it.

In terms of reporting, we at Lincoln Re have used a visual somewhat like what I've illustrated in Charts 3 and 4, moving from left to right across a wide confidence interval for the younger ages (as the X-factor class varies by issue age) and a much tighter confidence interval for the 55-year-old. What we're capturing with this slide is the range of actual to expected ratios from the fifth to the 95th percentile. A regulator can choose which percentile they would prefer to use. The thin bar indicates where the client's actual experience has emerged in the study.

Chart 4 highlights results by number of claims. As you can see, a by-number analysis presents a more conservative view of the world for the male age 45. The by-amount analysis is less conservative than the by-number definition. By-number analysis falls outside of the confidence interval in this situation.

Miscellaneous

We need to account for claims that have been incurred but not reported (IBNR) to you as part of your statistical analysis.

Some companies have chosen, as they would for cash flow testing, to use a 9/30/xx-analysis date. Take a census at that point, and then look at claims that are reported over the last three months of the year to complete the IBNR. If you feel as though you want to use a December 31 date for your analysis, you could use some completion methods to work those claims into your analysis, either adjusting the actual claims up for the IBNR or reducing your expected claims to account for the portion that has not yet been reported.

There are a variety of resources that are available to you. Certainly, any regulatory actuary would be happy to talk to you about XXX issues in any number of forums.

ASOP No. 40 has been in our hands for a number of months, as has the Life Practice Note. It's available electronically at the Academy Web site. A number of months of effort went into the drafting of the Practice Note, and we intend to continue to revise that note each year as new questions emerge.

I would also add that, during the second quarter of 2001, I conducted interviews with six State Insurance Department actuaries on the subject of Regulation XXX. A compilation of these interviews was published in the third quarter 2001 *Reinsurance Reporter.* This publication is available at http://lincolnre.com.

I'll just quickly touch on a couple of reinsurance issues, starting with the YRT exemption. Just to remind everybody that with the advent of XXX, if you take the YRT exemption in the regulation, you are forced to mirror reserve with your reinsurer. It was commonly viewed, prior to XXX, that mirror reserving was not necessarily a requirement on a YRT basis. XXX has mandated the mirror reserving regardless of what state you're operating in.

Recapture

Just because you recapture business does not mean that you're going to see a return of assets in an amount equal to the full XXX reserves for which you were taking reserve credit. The efficiency in the XXX reinsurance process that benefits our direct clients who quota-share coinsure their level-premium term business reflects the use of offshore reinsurance and economic reserving. So if you're expecting to recapture business every 10 years and sweep in assets equal to a very high humpback statutory reserve, be forewarned.

MR. WILLIAM J. SCHREINER: (American Council-Life Insurers) I have a couple of comments relative to Jeff's presentation. The 2001 proposed table has been tested and the ultimate table produces lower reserves than the select and ultimate table, so the ultimate table would become the tax standard. The other point is that the proposed implementation vehicle will be a regulation and not legislation.

All of the existing statutory valuation laws and regulations make provision for the adoption of a new table. I should say all the models make provision for adoption by the commissioner. And we're only aware of one state that may require legislation to accomplish this.

MR. BECKLEY: Thanks for that update.

Chart 1

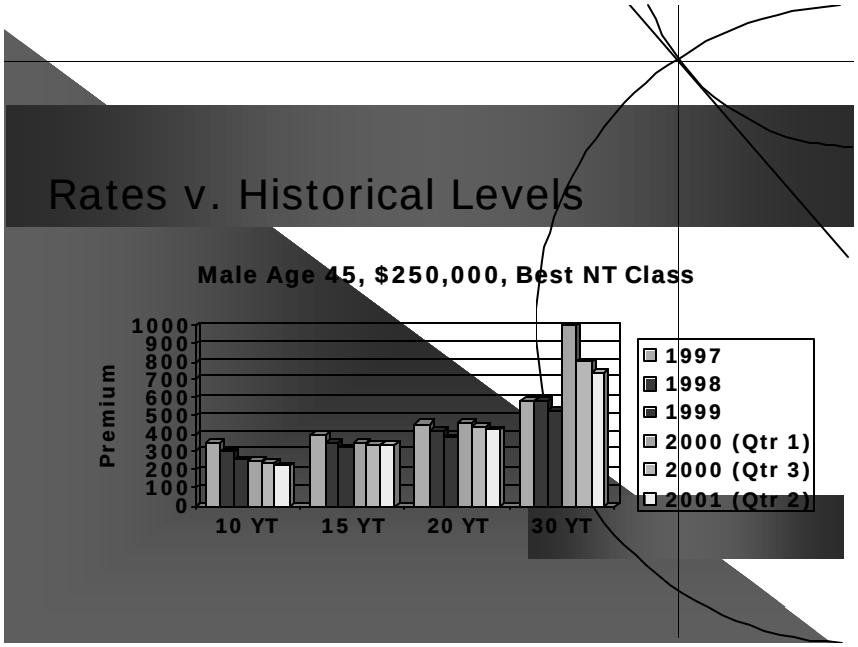

Chart 2

Appendix 1: "Six tests"

The Model Regulation outlines six tests to be applied to a schedule of X factors, by X factor class, as follows:

I. Vary by the policy factors expected to affect mortality experience – policy form, issue age band, underwriting class, and gender;

II. Are not less than 20%;

III. Do not decrease in successive policy years;

IV. Are such that, when using valuation interest rate used for the calculation of basic reserves, Item A. is greater than or equal to Item B., where:

(A) equals the actuarial present value of future death benefits using the mortality rates resulting from the application of X factors;

(B) equals the actuarial present value of future death benefits using anticipated mortality experience without recognition of mortality improvement beyond the valuation date.

V. Are such that the mortality rates resulting from their application to the 1980 CSO male/female, non-smoker/smoker valuation mortality table are at least as great as the anticipated mortality experience, without recognition of mortality improvement beyond the valuation date, in each of the next five years;

VI. Specifically take into account the adverse effect on expected mortality and lapsation of any anticipated increase in gross premium.

Chart 3

Step 4: Interpret results

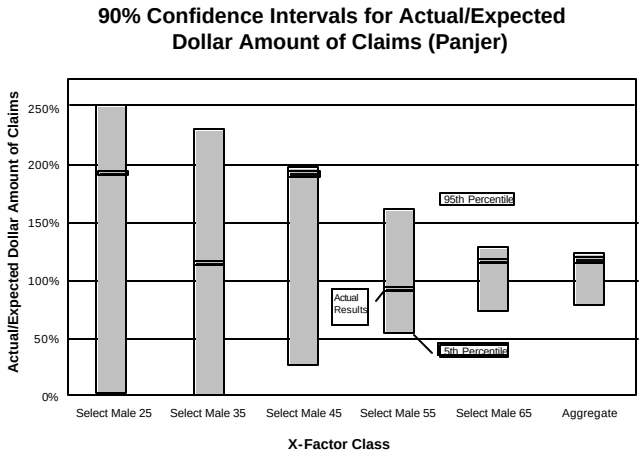

Chart 4