

**1998 VALUATION ACTUARY
SYMPOSIUM PROCEEDINGS**

SESSION 33PD

GAAP ACCOUNTING FOR EQUITY-INDEXED PRODUCTS

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GAAP ACCOUNTING FOR EQUITY-INDEXED PRODUCTS

MR. JAMES P. GREATON: We're focusing mostly on equity-indexed products at this session. I'm vice president and corporate actuary at Keyport Life Insurance Company. We also have Cherri Divin who is a senior manager at KPMG, Pete Marwick in Chicago. Cherri specializes in financial reporting and product development. Our third speaker is Mike Hughes, who is a partner with Ernst and Young, and is also based in Chicago.

We plan to give an overview of the existing GAAP accounting, or how the world looks prior to the *Statement of Financial Accounting Standard (SFAS) No. 133*. I'm then going to give you an example of that guidance and how the accounting works. We'll then look at the new GAAP guidance, the new *SFAS No. 133*, and give you an example. Finally, we'll talk a little bit about deferred acquisition cost (DAC) considerations for equity-indexed annuities.

MR. MICHAEL A. HUGHES: Most of you are aware of the basic GAAP guidance for insurance products, so, I won't spend too much time with this. We'll give you a quick recap before we get into how it applies to equity-indexed annuities. *SFAS No. 60* is the first significant statement applicable to insurance companies. It was introduced in 1982, and it was essentially a codification of the audit guide from earlier. Under *SFAS No. 60*, premiums are defined as revenue. Benefits and expenses are recognized in proportion to revenue; and as a result, profit also emerges in proportion to revenue. *SFAS No. 60* also introduced the concept of locking in your GAAP assumptions and includes a provision for adverse deviation.

SFAS No. 97 is entitled "Accounting by Insurance Companies for Certain Long Duration Contracts and Realized Gains and Losses on Investments." Leave it to the accountants to come up with a title like that. *SFAS No. 97* introduced three new product classifications for GAAP accounting purposes: universal life type contracts. In addition, Practice Bulletin No. 8, an interpretation of *SFAS No. 97*, provided clarification on certain items, and issues that weren't fully addressed in the *SFAS No. 97*.

1998 VALUATION ACTUARY SYMPOSIUM

Incidentally, most of you have probably read *SFAS No. 97*, but I suspect that a significant number of you may not have ever read Practice Bulletin No. 8. I would suggest that you do so in your free time.

In terms of laying the groundwork here, *SFAS No. 91* provides guidance on accounting for financial instruments, principally bank products, but it is used to account for premiums and discounts on mortgaged-backed products and so on. *SFAS No. 91* introduces, or is a pretty good explanation of the interest method, so if you want to see a description of how the interest method (also known in actuarial lingo as sort of the prospective deposit method) works, you could look to *SFAS No. 91*. There's also an obscure bit of guidance called Emerging Issues Task Force (EITF) 86-28, "Accounting for Implications for Indexed Debt Instruments."

In the hierarchy of GAAP accounting guidance, SFAS statements are at the top, and there are various subcategories of authority. EITF papers have some weight, but they're a little bit farther down on the totem pole.

SFAS No. 97 establishes investment contracts as a separate product classification. These are long-duration contracts that do not expose the company to significant mortality or morbidity risk.

For accounting purposes, the right to annuitize the deferred annuity contract into a payout contract does not constitute a significant mortality risk.

SFAS No. 97 provides plenty of guidance for these contracts; it says they should be accounted for in a manner consistent with the accounting for interest bearing or other financial instruments. (Thank you very little.)

Practice Bulletin No. 8 clarifies how investment contracts should be accounted for. It says that a *SFAS No. 97* approach should be used when surrender charges are significant, or when revenue from sources other than the investment of funds is significant. Companies have interpreted this in different ways.

GAAP ACCOUNTING FOR EQUITY-INDEXED PRODUCTS

Some companies have looked at the amount of surrender charge that they expect to collect over the life of the policy and compared that to the interest margins. They concluded that surrender charge income is really fairly insignificant. So they've elected to use the interest method of *SFAS No. 91*.

Other companies have said that surrender charges are significant, and for this reason, and because we want consistency between the accounting for our universal life type contracts and the accounting for the deferred annuity contracts, we'll use a *SFAS No. 97* approach.

If you don't use *SFAS No. 97* to amortize acquisition costs, interest and other costs should be recognized at a constant rate applied to the net policy liabilities consistent with the interest method in *SFAS No. 91*.

The mainstream interpretation of all this guidance for deferred annuity contracts is that the GAAP reserve is the account value, and deferred acquisition cost (DAC) is amortized on a *SFAS No. 97*-type approach, although there are a select number of companies that have elected to use the interest method, and they would view that method as the preferred method.

EITF 86-28 talks about the accounting implications of index debt instruments. It addresses the accounting for debt instruments with both guaranteed and contingent payments: for example, a bond with 5% interest and final payment equal to the greater of the initial payment and an amount based on the Standard & Poor's (S&P) index at that time. Sound familiar? I think we're seeing that with our equity-indexed annuity contracts.

The liability for the contingent payment feature should reflect the current index value without anticipation of any future changes. So EITF 86-28 (I think the "86" suggests that it came out in 1986) is a little bit dated, but it provides some fairly specific guidance for accounting for financial instruments that is used by analogy to account for equity-indexed annuities. You could see the guidance that they're promulgating here is that you should not be discounting the payment. It's an

1998 VALUATION ACTUARY SYMPOSIUM

undiscounted liability that you're establishing. In this case there is no issue related to persistency. Your bondholders tend to stick around as opposed to lapse, so you don't have to figure out how many people are going to be around to receive their payment.

On the asset side, the accounting for bonds is really defined by *SFAS No. 115*. Held-at-maturity contracts are carried at amortized cost. Available-for-sale contracts are carried at fair value with changes in fair value reflected through equity rather than through the income statement. Trading contracts are carried at fair value with changes to the income.

Accounting for derivatives has been defined by various promulgations and generally accepted practices. These are some of the statements that are being applied to define the current accounting for derivatives. My general read on this is that accounting for derivatives has been the wild, wild west of the GAAP accounting. Being that this symposium is being held in Florida, perhaps the quagmire analogy would be a little more appropriate. There has been a lot of ambiguity and difference of practice with respect to accounting for derivatives and hedge accounting. As you know, there's a new FASB statement out that we'll talk about a little bit today that sort of brings all that together.

Under existing guidance though, the hedge criteria that we applied under, *SFAS 80* is that for the asset/liability, the hedge must expose the company to price or interest rate risk; the contract must be designated as a hedge; and the hedged item must be specifically identified by characteristics such as terms of anticipated transactions, exposure to the company to price or interest rate risk, and the occurrence of the above anticipated transaction must be probable. I believe it also needs to be designated as a hedge, as well. If hedge accounting applies, and it's designated as a hedge, then the hedge is accounted for in a manner consistent with the hedged item. Oftentimes the hedged item would be at book value, so your derivative would be held at book value as well under hedge accounting.

What does all this mean for equity-indexed annuity contracts? This is basically the guidance that we're working with. The way companies have tried to apply this to date is to say that the equity-

GAAP ACCOUNTING FOR EQUITY-INDEXED PRODUCTS

indexed liability should be held at the book value of guaranteed benefits plus intrinsic value of the embedded option. I think it's important to recognize that the book value of the guaranteed benefits is not the cash surrender value that you might think of in a statutory context or contractual context. It's really the premium accumulated at some sort of imputed interest rate to the end of the term guaranteed benefits. If you have a European design with a guarantee of 90% of the premium growing at 3% interest, I think the imputed interest rate comes out to 80 basis points or some rate that is lower than 3%. You would essentially just grade the basic guaranteed benefit liability up from the premium to the guaranteed nonforfeiture value at the end of the term. In addition to that you would hold an intrinsic value that represents the payoff amount on the contract in excess of the end-of-term guaranteed value if the index didn't change from the current date.

The supporting option is held at amortized cost; as such the cost of that option would be recognized uniformly over the period. In addition, you also hold the intrinsic value, so you'd have essentially a symmetry in the accounting on both sides of the balance sheet. You account for the guaranteed benefits at a constant imputed interest rate, you'd recognize the cost of the option hedging the liability at a constant rate, and then you'd add to both sides of the balance sheet the intrinsic value. If you're fully hedged, those intrinsic values should offset. Bonds are recorded at book value for income statement purposes with the market going through equity and acting as amortized using the *SFAS No. 97* approach.

Jim will give a quick example under current guidance.

MR. GREATON: Let's discuss a sample equity-indexed annuity. I'll run through some of the numbers to give you an overview of what Mike has just told you.

I'm assuming a five-year point-to-point or European design for the index annuity. The base guarantee is 90% grown at 3%. I calculated a participation rate of 48% in order to make this thing work and have a profit. The in-base assumptions were: a five-year Treasury at 5.56%, S&P at 1,136.8, and dividend yield at 1.39. I'm assuming an investment spread, and actually investing the fixed portion of the portfolio at 6.56%, instead of 5.56%. I'm also assuming a \$1,000 premium on

1998 VALUATION ACTUARY SYMPOSIUM

a single policy. The equity risk is fully hedged; I'm assuming no lapses in either my DAC calculation or my examples. I have a 6% commission, and 50 basis points worth of expenses. You probably can tell from the level of the S&P and the five-year Treasury, that I did this example a couple months ago.

Using an implied volatility of the underlying in the option price of around 20%. I calculated an initial option value of 137.43. Therefore, I had \$802.57 available to invest in my initial bonds, which is \$1,000 in premium, less what I spent on the option, less what I spent on the balance commission.

I'm going to go through some income statements and balance sheets. As we go through time, the bonds are growing at 6.56% per annum. I'm taking my initial option value writing that down a fifth per year, and then adding the change in intrinsic value. That's what's happening on the asset side of the sheet.

In my example, I'm assuming that the S&P grows at a steady 10% per year. I had to assume something in order to get my change in the intrinsic value. In my example, the book value of the bonds start at \$802, and they grow to \$855. The base option starts at \$137 and it goes to \$109. That was \$137 minus one-fifth of \$137. The intrinsic value grows to \$4.66. That's my \$1,000, times my 48% participation rate, times 1,250.50 (which is what the S&P grew to) minus 1,239.46, (the strike price of the options), divided by 1,136.80 which is my start point on the S&P. Where did I get that strike price? Where did the 1,239.46 come from? I'm trying to figure out what the S&P Index must grow to before I have to pay anything in excess of the guarantee on the contract. Take the 1,136.8, which is where the S&P is now, look at the guarantee (the 90% grown at 3%) for five years; divide by my participation rate, times beginning S&P. That's going to tell me where my strike price is. Once again this is where the S&P must rise to before anything in excess of the minimum guarantee is payable under the equity index contract, as I have designed it here.

GAAP ACCOUNTING FOR EQUITY-INDEXED PRODUCTS

On the liability side, as Mike alluded to, my initial value has to be a \$1,000, and my guarantee is going to grow to the 90% grown at 3%. Take that to one-fifth. I get an implied growth rate of 85 basis points. So the liability base value is going to be the \$1,000 grown at the implied growth rate of 0.85%. I'm going to have to add in the change in intrinsic value, so in the first year, my base liability goes to \$1,008.50, which is the initial \$1,000, times my 85 basis point rise and my changed intrinsic value. If the intrinsic value calculation looks familiar, it's the same one as on the asset side because I'm assuming a perfect hedge. I have my \$1,000 times my 48% participation rate, times where the S&P went to, which is the 1,250.50 minus my strike, divided by my initial S&P.

For DAC, I'm assuming I have 6% up-front, which is deferrable. I'm amortizing using the traditional *SFAS No. 97* approach. I calculate gross profits from this model, and then discount back at the implied liability growth rate, and coming up with a DAC amortization.

Looking at the balance sheet (Table 1), you can see at the top I have listed the current S&P, which is growing at 10%.

TABLE 1
Balance Sheet

Year	0	1	2	3	4	5
S&P	1,137	1,250	1,376	1,513	1,664	1,831
Bonds	803	850	896	945	998	1,054
Options Base	137	110	82	55	27	0
Options - Initial Value	0	5	57	116	179	250
DAC	60	50	41	30	17	0
Total Assets	1,000	1,020	1,086	1,161	1,241	1,329
Reserve - Base	1,000	1,009	1,017	1,026	1,035	1,043
Reserve - Initial Value	0	5	57	116	179	250
Total Liabilities	1,000	1,014	1,074	1,142	1,214	1,293
Equity	0	1	2	4	7	11

1998 VALUATION ACTUARY SYMPOSIUM

My bonds are growing along at their implied growth rate. The options start at 137 and then just decline by one-fifth per year. The intrinsic value takes a disproportionately smaller leap in the first year because the strike price is above the initial S&P value. It grows steadily thereafter.

The base reserve is the \$1,000 grown at the 85 basis points. The liability intrinsic value is identical to the intrinsic value in the options. You then see the total liabilities and get some equity from the profits flowing through.

The income statement (Table 2), shows the interest off of the bonds, a change in intrinsic value that's increasing the value of my options, and an options amortization piece that is a pretty steady decrease to total income. On the expense side, interest credited is 85 basis points, something real small. There is a large intrinsic value change that offsets the intrinsic value change in my options. You also have some expenses, some DAC write-off, and a slightly increasing net income stream.

TABLE 2
Income Statement

Year	1	2	3	4	5
Investment Income	52	51	54	58	61
Intrinsic Value Change	5	54	59	63	71
Option Amortized	(27)	(28)	(27)	(28)	(27)
Total Income	30	77	86	93	105
Interest Credited	9	8	9	9	8
Intrinsic Value Change	5	54	59	63	71
Expenses	5	5	5	5	5
DAC	10	9	11	13	17
Total Expenses	29	76	84	90	101
Net Income	1	1	2	3	4

GAAP ACCOUNTING FOR EQUITY-INDEXED PRODUCTS

Here are some noteworthy things. Imperfect hedging can cause earning discontinuities. It's easy to perfectly hedge these contracts if you assume no lapses. However, you know that some policyholders are probably not going to stick around for five years. Therefore, you make a lapse assumption. This assumption is going to affect the amount of your hedge, and there's going to be some noise coming through the hedging transaction over time, since your lapse assumptions aren't going to play out exactly the way you assumed they would up-front.

You could have a deliberate mismatch or poor implementation. You can take a bet. You can bet that the S&P is going to rise. You can overhedge or underhedge. You also can go into an option replication strategy that doesn't quite replicate the option, and therefore have some hedging gains or losses that are going to come through your income statement. They'll get in there because the asset side change in the intrinsic value isn't going to match up to the liability side change in intrinsic value.

MR. HUGHES: Jim, one of the things I've wondered about is whether or not it would make sense to try to get the intrinsic value of the liability to reflect anticipated persistency. It seems like a more logical type of liability to set up. You reflect what you're actually going to pay out based on your lapse expectations, but, I think the accounting folks would have a little difficulty reflecting that.

MR. GREATON: Yes, I think my auditors would really have a problem with anticipating lapses in the liability calculation on the balance sheet. It's almost like saying, "I'm not going to pay all my interest credited since some will be forfeited on lapse. I can take that into consideration when I set up GAAP liability on an SPDA." I think they'd frown on that, although it might be economic reality.

Another point I wanted to make about imperfect hedging is sometimes you sell a more exotic option on your liability side than you use on your asset side. For example, we have a high watermark option, but we're hedging it with some European options. Therefore you might be overhedging or underhedging the intrinsic value change. So you might be expecting differences in intrinsic value

1998 VALUATION ACTUARY SYMPOSIUM

to come through the income statement because of your hedging strategy. Do you want to recognize that income or loss that's really meant to hedge an increased or decreased option cost, possibly two or three years from now, or can you defer that?

Cherri's now going to go through the new rules.

MS. CHERRI R. DIVIN: I'll be going over *SFAS No. 133*: "Accounting for Derivative Instruments and Hedging Activities."

This standard was approved in June 1998 and will be effective for all fiscal quarters beginning after June 15, 1999. What this means to most companies on a calendar-year reporting basis is that starting in the year 2000, all free-standing derivatives must be accounted for according to *SFAS No. 133*. Also, any embedded derivatives that were issued, substantively modified, or acquired in 1998 or later years, also must comply. There's a special transition program for embedded derivatives that were on your books prior to that time, and the company generally will have the option to elect whether to comply with the new standard or to comply with the previous standards.

In recent years, you've seen a significant increase in the types and uses of derivative instruments; however, the accounting standards haven't really kept up as quickly. If you noticed at this session, Mike showed you guidance from the EITF that is around ten years old, and you can see the accounting guidance hasn't moved as quickly as the use of derivatives.

SFAS No. 133 is very lengthy. Mike referred to the long title of *SFAS No. 97*; it is about four lines long. If you look at the document itself, it's about 25 pages long. However, the standard *SFAS No. 133*, is 250 pages long if you include the appendices. You can see that it is a huge document by comparison. I would expect that most of you are probably pretty glad you're not taking actuarial exams any more. It's a pretty long document to have to study.

GAAP ACCOUNTING FOR EQUITY-INDEXED PRODUCTS

This document provides comprehensive detail on accounting rules for derivative instruments; however, there are a lot of areas where the rules are ambiguous. Derivative instruments are very technical in nature, and each one needs to be evaluated on its own terms and conditions.

There are four guiding principles in this standard:

1. Derivatives represent rights or obligations that meet the definition of an asset or liability and should be reported in the financial statements.
2. Only assets and liabilities should be reported in the financial statements.
3. Fair value is the only relevant measure for derivatives.
4. Special hedge accounting is permitted for certain qualifying instruments.

Not all derivatives are carried on the books. For example, at issue a swap agreement might have no measurable value and might be considered as an off-the-books instrument. However, one of the guiding principles for this standard is that derivatives represent rights and obligations of the company. Thus, these instruments are assets and liabilities and must be recorded on the books and be reported in the financial statement.

The standard also states that only assets or liabilities should be reported in the statement. The third item is critical to the equity-indexed annuity. It states that fair value is the only relevant measure for a derivative instrument. One of the principles of this guideline is that derivatives must be marked to market and carried at fair value. However, certain derivatives may be eligible for the special accounting rules for hedged items.

Our existing guidance for derivative instruments is based on the previous standards that were discussed earlier. These standards addressed specific instruments, such as futures contracts. They went into great detail about that one instrument, and then, by analogy, we derived interpretations for other instruments. *SFAS No. 133* is structured differently in that it defines the broad term “derivative,” and then gives you general guidance for derivatives. To understand this standard, you need to fully understand the definition of a derivative.

1998 VALUATION ACTUARY SYMPOSIUM

There are three items in the definition of a derivative. All of these must be met if the instrument is to be classified as a derivative. When we think about the equity-indexed annuity in relation to the current accounting rules, we typically look to the asset side of the balance sheet when we think about derivatives.

If you were to go through these three requirements for a derivative, you might look at the assets backing the equity-indexed annuity. For example, you might have an over-the-counter option or an option replication strategy, such as a hedge program based on S&P futures. These two types of instruments appear to meet the three requirements for a derivative: (1) a derivative must have one or more underlyings (an underlying is a rate, such as an S&P index) and one or more notional amounts; (2) a derivative requires no initial net investment, or a net investment that is smaller than that expected for another instrument that would behave similarly, and, (3) the terms require or permit net settlement.

When you think about an option or an option replication strategy, these instruments appear to meet these three requirements and would be classified as a derivative. However, if you move over to the liability side of the balance sheet to the equity-indexed annuity, you should think about the annuity similar to the manner described in Guideline ZZZ. In this guideline, the annuity is bifurcated into the guaranteed portion and the option portion. If you look only at the option portion and think about these three conditions that define a derivative, you might think of the option portion of the annuity as a derivative:

1. Does it have one or more underlyings? Yes, it is generally linked to an S&P index. Does it have one or more notional amounts? Yes, the initial notional amount might be thought of as the premium.
2. The initial net investment for the option portion could be smaller than what would be expected for full participation in an S&P index.
3. And, the terms required permit net settlement.

GAAP ACCOUNTING FOR EQUITY-INDEXED PRODUCTS

Thus, in the general form of equity-indexed annuities, it does appear that the annuity has an embedded derivative on the liability side of the balance sheet. The term embedded derivative is critical in understanding whether a portion of the equity-indexed annuity must be marked to market. Embedded derivatives are to be separated from the host contract (the equity-indexed annuity) and accounted for as a derivative, if and only if all three of the following requirements are met:

1. The first requirement is that the item is not clearly and closely related to the host contract. *Clearly and closely related* is the key term in this statement. For example, a prepayment option in a bond is tied very closely to the coupon rate of the bond itself; thus, the prepayment option would be considered to be clearly and closely related to the coupon rate of the bond and this requirement would not be met. However, a bond that is similar to the one discussed earlier, with respect to the EITF paper would have a provision for participation in the S&P index. Depending on the structure of the contract, the participation in the S&P index might not be clearly and closely related to the bond rate or price. Thus, this type of participation in the S&P index could meet this requirement and would be classified as an embedded derivative. Similarly, the equity-indexed option in an annuity might not be considered clearly and closely related to the underlying guaranteed rate.
2. The second item refers to the annuity contract itself, the entire contract, which would not otherwise be measured at fair value. Generally, annuities are held at book value. Thus, this second item is met.
3. On a stand-alone basis, the option portion of the annuity generally would be considered a derivative. Thus, it appears that the equity-indexed annuity generally meets these three requirements for embedded derivatives. In this situation, the option portion would be marked to market, and the guaranteed portion would be held at book value.

The statement specifically addresses equity-indexed annuities. To quote the statement, "Contracts that may include embedded derivatives include, but are not limited to, annuity contracts that promise the policyholder a return based on selected changes in the S&P index." For this reason, it seems that one definitely needs to consider embedded derivatives with respect to equity-indexed annuities. The statement also clearly states that embedded derivatives must be measured at fair value. If you have

1998 VALUATION ACTUARY SYMPOSIUM

an equity-indexed annuity with an embedded derivative, the first step is to separate the two portions and mark the option portion to market. The guaranteed portion can be carried at book value. Jim will go over how the portions are separated.

I'm going to go over hedge accounting. It probably does not relate to your equity-indexed products, but it may relate to other instruments on your books.

In order to meet the hedge criteria, the hedge must be formally documented, designated at inception, and maintain a high degree of effectiveness. The statement does not precisely define what a high degree of effectiveness is; that will be partially your own interpretation.

There are three types of hedges that are permitted: a fair-value hedge, cash-flow hedge, and foreign currency hedge.

For a fair-value hedge, the changes in fair value of the hedge and the hedged item will run through earnings every reporting period. Thus, the gain or loss will come through the earnings statement immediately. The hedge and the hedged item are marked to market each period, whereas prior to *SFAS No. 133*, these items might be accounted for at book value.

The cash-flow hedge works slightly differently. At the time the cash-flow transaction occurs, the effective portion of changes in the market value of the hedge and the hedged item are included in earnings; however, prior to the time that the transaction occurs, both pieces are marked to market but the effective portion of changes are reported in other comprehensive income (outside earnings). Thus, the effective portion of changes do not affect earnings until the transaction occurs. At that time, any changes are reclassified from other comprehensive earnings to earnings.

You can see that your balance sheet will reflect the changes in the market value of the hedge, and these changes would affect surplus. If a cash-flow hedge is not well matched to the hedged item prior to the time the transaction occurs, there might be some volatility in the surplus.

GAAP ACCOUNTING FOR EQUITY-INDEXED PRODUCTS

I'm not going to discuss foreign currency hedges. There are several different ways these instruments are handled, but I do not believe that currency derivatives affect many companies here.

I hope that you reached the conclusion that most equity-indexed annuities, in the general form, will be considered to have an embedded derivative and that a portion will be marked to market and measured at fair value.

The hedging criteria is usually not met by the equity-indexed annuity. It's a general rule of thumb in this statement that one derivative cannot hedge another derivative. Thus, the equity-indexed annuity typically is ineligible for hedge accounting.

MR. HUGHES: That's an important point regarding the classification of hedges and all that. It really doesn't apply to equity-indexed products, per se because you're bifurcating the equity-indexed annuity into the guaranteed piece and the derivative piece. The derivative piece is not eligible for hedge accounting treatment; so, it's a real important conclusion in this statement.

MS. DIVIN: The standard also provides new disclosure requirements. I think that the previous standard, *SFAS No. 119*, included disclosure requirements that covered only hedged items. This standard covers all derivatives, even trading derivatives.

The disclosures are basically of two types. The first is qualitative. For example, for hedging instruments, you must disclose the objectives and strategies for achieving your objective, and the context in which the derivative is used. The second type is quantitative in nature. For example, you must report the net gain or loss and the amount of any hedging ineffectiveness.

As far as materiality, I think a lot of us think about the amount and the cost of the derivative itself, but as far as *SFAS No. 133* is concerned, we also need to think about materiality with respect to the scope of the exposure.

1998 VALUATION ACTUARY SYMPOSIUM

In summary, I think you can see that this standard might require extensive work on your part to see whether your company has any unanticipated derivatives, as defined under this new statement, including both liabilities and assets. You'll need to take inventory of your assets and liabilities to see whether there are any derivatives or embedded derivatives. For some companies, the accounting changes are expected to cause a substantial change when all derivatives are marked to market. These changes could cause a company to establish new hedging relationships as the derivatives are identified and marked to market.

The statement includes transitional allowances that affect earnings under certain situations and should also be reviewed.

All in all, I think *SFAS No. 133* could have a significant effect on release of earnings and the balance sheet for equity-indexed annuities. The examination of assets and liabilities for reclassification as derivatives or embedded derivatives might require a considerable amount of work from the actuaries and accountants. You should probably look into the need for system time, too. So you will want to start early and plan ahead. For some companies, the new statement might actually affect your risk management strategy.

Jim is going to walk you through a numerical example of how this statement would affect the example we looked at previously.

MR. GREATON: I'm going to march through my same example, but with the new accounting guidance as opposed to the old stuff.

The asset options are now going to be held on the balance sheet at market value, and the bonds are going to be at book value, at least for the income statement. I'm ignoring, *SFAS No. 115* that says I must put them on my balance sheet at market if they are in the trading or available-for-sale category.

GAAP ACCOUNTING FOR EQUITY-INDEXED PRODUCTS

The options embedded in my liability are also going to be held on the balance sheet at market value, and the fixed liability piece is going to be at book value, like it was before—although the book value valuation will be different. The book value piece will look like a traditional single premium deferred annuity (SPDA).

On my asset-side calculations, the bonds are going to be the same as the other example—the current, pre-SFAS No. 133 environment.

For the options, you're not going to see any amortization costs now. You're not going to see that charge flowing through the balance sheet or income statement. They're going to be held at market value. I'm not going to show you the market value calculation. It's essentially a Black-Scholes calculation, which is how I got the initial market value of the option in the beginning.

On the liability side, I'm going to bifurcate the liability. I don't know where they get that word from, but it's now part of the required vocabulary of any annuity actuary. The embedded options are going to be at market value, or in this case, at fair value, because the S&P index piece of the liability is not something that you could really buy in the market; therefore it's not something for which you can observe a true market price.

The fixed piece is going to start out as my initial premium, less my initial liability option value. So I take the \$1,000, subtract the initial option value, which I calculated to be \$137.43. So the initial fixed liability starts out with a value of \$862.57. That's going to grow at an implied interest rate that gets me up to my ultimate guarantee, which is my 90% grown at 3%. If I take my 90% grown at 3%, times my initial premium, and divide it by my beginning fixed account value of \$862.57, raise that to the one-fifth and subtract one, I get an implied growth rate of 3.88%. So in the first year, my fixed liability value is going to grow to \$896.04, which is the \$862.57 times 1.0388.

The bond values should be unchanged from before. My option market values are going to go up because I'm assuming a 10% growth in the underlying S&P and no change in interest rate, volatility, or dividend yields.

1998 VALUATION ACTUARY SYMPOSIUM

The DAC is done in much the same way as the DAC was done before. I now have a different stream of profits because of the change in the accounting treatment of the options. The liability market value is going to be the fair value of the embedded option in the equity-indexed annuity, and that's going to look exactly like the asset side market value of the options. Once again, I'm assuming a perfect hedge. The book value piece of the liabilities is going to start out my \$863 and grow with a 3.88% interest rate up to the guaranteed value, which is the 90% of premium grown at 3%, or \$1,043 at the end of five years.

The total amount of earnings should end up at the same place over the course of the five years. In this example, they're slightly different; they're a little bit more front-ended.

On the income statement, the investment income off my bonds should be the same. That added to the change in market value of the option will produce total income. On the expense side, interest credited is a higher number than before since we're rolling the fixed piece forward at a higher interest rate. The change in market value is the change in fair value of the embedded liability option. There are expenses and some DAC amortization in the rest of the charges. Net income is a little bit more front-ended than the prior example.

The real difference in the two accounting approaches is that under *SFAS No. 133*, you don't have the option amortization piece. Instead you have a higher interest credited on your liability, and you have the two changes in market values (one asset side, one liability side). If you're well hedged, the changes shouldn't affect the bottom line.

Once again, my example shows a perfect match on the hedge. If you have an imperfect hedge, just as before, that will have an impact on the accounting statements. There are different reasons why you might have an imperfect hedge, and those are going to play themselves out on the balance sheet and income statement just as they would under the other accounting standard. They will come through for the market value approach (*SFAS No. 133*) more quickly. This methodology works much better for a flawed or imperfect hedge; it shows the mismatch immediately.

GAAP ACCOUNTING FOR EQUITY-INDEXED PRODUCTS

Mike's going to discuss DAC in a little bit, but I've got a question here about DAC under *SFAS No. 133*. I've assumed a perfect hedge, so the hedging piece doesn't really impact any DAC calculation that I've done here. That might be what you'd want to assume when you do your DAC amortization schedule. Just do it on the fixed piece and ignore the hedging piece. If you deliberately try to build in a profit margin or a mismatch, should you allow hedging gains or losses to go through the DAC calculation, and therefore allow hedging swings to be somewhat absorbed in the DAC mechanics? That's a question that I don't think has been answered, although, Mike might have an answer later.

MR. HUGHES: I haven't thought of that, but now that you bring it up, that's a good question.

MR. GREATON: What about other product designs? Take a ratchet where you have essentially a one-year guaranteed participation rate, but you have the ability to reset your participation rate in future years. What is the embedded option? How do you price that out? You probably have minimum guarantees, a floor that the participation rate can't fall below, and that probably ought to get into the fair valuing of your liability option.

MR. HUGHES: Jim can I just make one point? I think this is a real problem that companies are facing right now. If you have a European design, and you expect 75% of the people to actually make it to the end of the term, you might only want to buy a 75% hedge for economic reasons, so that, in Jim's lingo, it would be an imperfect hedge. Economically it's probably more of a perfect hedge. Under current guidance, if you were to only hedge at a 75% level, the intrinsic value of your option on the asset side is going to move only at 75% of the movement on the liability side. You also have this disconnect. The market goes up and you might have \$100 of intrinsic value on the liability side, but you might only have \$75 on the asset side, because you're only hedging at 75%. Ultimately though, you would expect the hedge to cover your liability requirements, but if you don't hedge at a 100% level, you get this accounting disconnect.

MR. GREATON: Mike's going to talk about DAC valuation.

1998 VALUATION ACTUARY SYMPOSIUM

MR. HUGHES: The first point I'd like to make is that you might consider doing DAC without reflecting the option components, as Jim suggested.

I think there are a lot of questions that come up when you start to think about how to do DAC with equity-indexed products, but I don't think that they're insurmountable. When you first think about how to do it, what should be going into gross profits? How should you handle the hedges that you've been purchasing and determine the net investment income to allocate to the contract? What sort of mechanics do you use? How should you deal with negative gross profits? The list goes on and on. I think there are also issues pertaining to what kind of interest you use. Should you lock it in at issue? Should it be based on some sort of long-term S&P growth rate expectation? What kind of amortization period should you use? Again, the list goes on.

Let's take a step back. If you go back to first principles, I think you'd find that the DAC issues aren't all that complicated, once you have your liability defined, and once you have your asset values defined. I think it's pretty easy to work through what your book profits would be for that particular product over time.

One way of thinking of gross profits for amortization purposes is to think in terms of a *SFAS No. 60* or a statutory presentation of earnings. In that kind of a presentation, once you have the asset value, and the liability value, you can do an income statement calculation and just strip out the things that don't belong in gross profits. What doesn't belong in gross profits are those things that you are trying to spread, like the DAC, those things that you're not allowed to spread, like nondeferrable acquisition costs and overhead expenses. When you start with a basic income statement calculation based on the asset and liability values that Jim and Cherri helped define, then you can calculate your income, adjust that to reflect the expenses that your trying to amortize, and you'll get the stream of earnings over which you will amortize those expenses.

You could decompose gross profits into the various margins. The algebra might get a little bit trickier, but you could take your total gross margins, and break them into an interest component, a

GAAP ACCOUNTING FOR EQUITY-INDEXED PRODUCTS

surrender revenue component, an expense component, and so on. That's the way I might suggest trying to figure out how to get the gross profit stream that is used for amortization purposes.

In regard to net investment income allocations, at first I would try to allocate the hedge to the contract and allocate enough fixed-income securities to cover the full account value. All you need to do is reflect net investment income on bonds equal to the guaranteed component. That's probably the way to go. I anticipate that you would want to reflect both the liability and asset side options in gross profits. I think there would be a certain advantage to doing that, because you would get a dampening if you had a fluctuation in your hedge performance, and you had a gain or loss on a hedge. That experience variation would be dampened to some extent by your unlocking of DAC, but, I can see some advantages to trying to do DAC without trying to reflect the option components.

The options are an integral part of the product that you're offering. So it makes sense, from that standpoint, to reflect them in your amortization pattern. By doing so, you would get some dampening, but it might get a little bit more complicated. On the other hand, if you're bifurcating the option out for accounting purposes, and really treating it as if it were a stand-alone separate contract, maybe you could build a case for keeping the option components out of the gross profits.

I think that the calculation of gross profits for equity-indexed annuities is relatively straightforward and not overly complicated. Trying to break margins into their constituent or component parts might get a little bit dicey. I'll leave that as an exercise for the reader.

So, I guess that really gets to the calculation mechanics, and I think that's a convenient way of trying to solve that problem.

Treatment of negative gross profits is an interesting thought. Depending on how well hedged you are, and whether you have some exposures on a contract with respect to your hedge program, there might be instances where, especially with the options at market value, you have some significant gains or losses. This is because of your hedge program flowing through income. If there's a potential for very significant, but infrequent losses, or less significant, but more frequent losses, I think there

1998 VALUATION ACTUARY SYMPOSIUM

will be some issues pertaining to how you want to deal with that from a reporting standpoint. The guidance has suggested that, if there is an expectation of significant negative gross profits, you might want to revisit whether or not the *SFAS No. 97* approach would be appropriate for DAC amortization purposes. Maybe you should be amortizing DAC on some other basis, like in proportion to revenues, in-force business or something similar.

In terms of some of the technical matters, you need to decide what rate you should use for DAC amortization. For fixed annuities you use your crediting rate, and I think you have the option of using the stream of crediting rates, over the life of the contract, or locking in a crediting rate at issue, and using the initial crediting rate as your DAC amortization rate. In the context of variable annuities, I think what most companies would do is take a look at what they would expect the funds to do over the life of the contract, on a long-term basis. They would look at what that translates to in terms of an effective crediting rate after mortality and expense charges and so on, and base their DAC amortization rate on that sort of long-term expectation. Then they would leave it locked in forever. That seems to make some sense for equity-indexed annuity products as well. I'm not sure that you would want to be trying to factor in the movements of the S&P onto your implied crediting rate. You could get some pretty strange results in your DAC amortization because of that.

Regarding the amortization period, these contracts, oftentimes, have distinct terms in the design, and the pricing has varied depending on whether or not you try to price it with a single term, or over multiple terms. I think it's going to be an important reporting issue as well. Because of these contracts (more so than many contracts), there's some uncertainty as to what the lapse behavior might be like at the end of the surrender charge period, or at the end of the indexed term. Even if you might be able to retain the business at that point, you might end up having to compensate the producer more at that time than you had hoped to. Because of all the uncertainties with what happens at the end of the term, if you're going to be using GAAP over multiple terms, I think you're potentially exposing yourself to some significant DAC unlocking if it doesn't work out like you would expect.

GAAP ACCOUNTING FOR EQUITY-INDEXED PRODUCTS

This is not to say that you should not consider using DAC over multiple terms, but I think you need to be judicious with your selection of assumptions and put in a reasonable provision for shock lapse at that time. If you do expect a significant portion of the business to remain after the first term, and you're not going to be paying significant compensation at that time, you wouldn't want to be unduly conservative by just using GAAP for it over a single term with relatively low profits for that term, and then very significant profits after that. You want to be realistic with your assumptions, but, given the uncertainty, you might want to err on the side of conservatism.

You also have loss recognition (measured at each valuation date) and recoverability (measured at issue) considerations on this contract like you have with other contracts. These terms are sometimes used interchangeably, but they have slightly different meanings.

Recoverability relates to whether or not you should be able to capitalize an expense to begin with. You're not allowed to capitalize an expense if it looks like you're not going to be able to recover it based on future margins of the product. The recoverability test is a test at issue. It's oftentimes done for an entire issue year of products at a plan level, or group of similar plans issued in that particular year. The idea there is to take your lumps on loss leaders when you issue the products.

The other test is the loss recognition test, and that's a test of the recoverability. That's done on each valuation date, and it's done on more of an aggregate basis for all issue years combined. Oftentimes you'd group the products on a more broad basis, and look at the line of business level. So you might aggregate all of your annuity contracts, for example, or you might aggregate all of your universal-life-type contracts, and maybe even all of your life insurance contracts.

There's some discretion needed as to how you look at these tests, but those are what they technically imply. I think that those issues are relevant here, and as we're dealing with new products and new hedging strategies and so forth, companies are coming to grips with and trying to understand these issues better. I think we're obligated to take a realistic look at whether or not there are losses that need to be taken. I'm aware of at least one situation where there's likely to be some work in this area.

1998 VALUATION ACTUARY SYMPOSIUM

There are some other technical issues. We do the DAC amortization on deferred annuity contracts on a deterministic basis, and we'll pick one sort of realistic set of assumptions, and try to amortize the DAC that way. I think we all recognize that it's very difficult to assess the pricing, reporting, and emergence of earnings, because a lot of that is very dependent on the scenario that you chose to look at. Nobody really knows, what scenario might ultimately develop. With this contract, more so than many contracts, looking at some sort of stochastic set of scenarios might be more relevant.

Your decision might depend on your hedge program, too. If you are pretty comfortable that you're hedging out your risk, maybe a more deterministic approach would be more appropriate.

If you do find yourself in a loss recognition recoverability type situation, how are you going to quantify that the amount of the loss to take? What you're likely to end up with is a sort of probability distribution of profitability outcomes. Do you write off enough DAC so that you'd be profitable in 50% of the scenarios?

What happens if the markets move and you suddenly find yourself with a more profitable product than you thought you had? If you previously had taken some adjustments for a recoverability or loss recognition, does it make sense to put those back up? Generally speaking, you would not do that.

Those are some of the technical issues that come to bear in trying to figure out DAC for these products. I think DAC, to some extent, is a fallout of the asset and liability values that you've established; however, there are a number of other considerations at play. Whatever approach you use, there are a number of other considerations at play.

The last point I wanted to make is that there is some new guidance under development at the AICPA. I think the insurance company committee is looking at this.

They're looking at developing a statement of position or something on accounting for nontraditional long-duration contracts and separate accounts. They're really going to look at the whole range of accounting issues with what they're calling nontraditional contracts. These would be fixed annuities

GAAP ACCOUNTING FOR EQUITY-INDEXED PRODUCTS

with contingent returns. I guess that sounds like equity-indexed annuities to me, fixed annuities with bonus interest, variable annuities with guaranteed minimum death benefits, and so on. I wonder if they might not also want to look at things like universal life contracts with secondary guarantees, and that sort of thing.

We have built a fair number of options and guarantees into our contracts that don't necessarily get dealt with very effectively in the current DAC accounting guidance and, as it comes forward, this will provide some clarity as to how those items should be handled. You can await that development. The AICPA is at a relatively early stage of fact finding. I wouldn't expect anything soon, but over the next few years, as this heats up, you're going to see and hear more about this particular issue. You might want to have some input and keep on top of it.

MR. GREATON: That concludes our prepared remarks. There's a little bit of time left for questions.

MR. CHARLES D. FRIEDSTAT: Mr. Greaton, in the general area of determining market value/fair value, I would think the fair value issue would be what you paid to acquire the options. The idea should be that there's zero gain or loss at issue, unless you sold a nonprofitable product. How do you determine your fair values after issue? And I'll ask you to respond from both the asset and liability side. Do you get quotes? You talked about using the Black-Scholes formula or modeling. Could you go into that area a little bit more in detail?

MR. GREATON: Sure, I'll tell you, from a practical point of view, what we're planning to do for *SFAS No. 133*.

The asset side options that we purchased are publicly traded, so we're going to go out and get quotes on those from the banks, or the dealers that we originally purchased them from, or from other dealers. So the asset side, for us, is more of a function of just looking it up or making a few phone calls, and sending out some sheets of options for them to price and send it back.

1998 VALUATION ACTUARY SYMPOSIUM

The liability side, especially for us, is where we have a high watermark option, which is not something that's really publicly traded. We could do the same exercise, and go off to a bank or dealer and have them quote us a price, but that might cost us a bit. Instead we have got internal models that we use for our pricing purposes, so that we set the correct participation rate. We're going to be using those to calculate a fair value. We're going to attempt to calibrate those models to the existing market. In other words, when we get the market quote on the asset side options, we can see what the implied volatility is and what implied dividend rates are, and the current level of S&P, and plug those into a big model, and let it grind for a couple of hours and turn out some liability option prices.

MR. HUGHES: That's a good question, Bud. I think the actuarial profession is not that ready to calculate the market value of some of these exotic embedded options. Some of the more exotic options are going to require simulation type option pricing capabilities and Wall Street-caliber option pricing. These are capabilities that we really don't have in our profession. We're not that familiar with the tools, and they aren't readily available to everyone. Some people have tools that are developed internally, but when you think about having to do a liability valuation, not just in a pricing context of evaluating your embedded option, but actually applying that to an in-force book of business in some way, it isn't going to be easy.

I think there's going to be plenty of work for the profession to deal with those issues.

MR. FRIEDSTAT: Following up on that discussion, it seems that under the prior guidance, the lapse rate didn't make that much difference. How much effect does the assumed lapse rate have on the liability side option? Also in terms of your example, at least in an upside market, the implication was that you have a faster pattern of emerging earnings. Is that a reasonable assumption, in general, or should we not take anything from your example?

MR. GREATON: I think in an up market, earnings are going to increase a little bit faster. I'm not sure that applies to a down market situation.

GAAP ACCOUNTING FOR EQUITY-INDEXED PRODUCTS

Obviously, lapse rates are going to have a big effect on how you're going to value that liability option. How you put it through your models is a big key, especially if you're doing a stochastic evaluation of a more exotic option that generally uses Monte Carlo type simulations. It depends on whether you throw in any assumption that your lapse rates might differ by the S&P or interest rate scenario.

MR. FRIEDSTAT: Under your prior approach, which I think was relatively common for most companies, assuming you were perfectly hedged, you could almost predict, and say here's going to be my pattern or earnings. There's very little discretion. It just seems that there's a lot more subjectivity involved in the earnings, such as valuing the liability option and taking into account the assumed lapse rate. Whereas before, unless you weren't perfectly hedged, earnings were objective and predictable. I'm not looking at it from an auditing point of view only; I'm looking at it from the view of somebody who is looking at developing a process internally. There could be terrific implications on the pattern of earnings. I think your comment before about just looking at the amortization of DAC based on the fixed option certainly made a heck of a lot of sense. It just seems like there is much more subjectivity under *SFAS No. 133*. I'm wondering what your thoughts are about that.

MR. GREATON: I'd agree there's more subjectivity. You made a comment that under the old approach, earnings would be more predictable. I don't think that was the case. Earnings weren't more predictable. That's because of how the lapse rates actually played out versus how the accounting statements reported changes in the asset and liability values. It's true that there's much less subjectivity in them. In doing any sort of fair value statement, where you are trying to fair value your liabilities, I think you're bringing in some degree of subjectivity. I don't think it's going to be unique to equity-indexed products. I think FASB has been moving towards fair value statements for a while. The reason they put off doing it on the liability side is because they are worried that it is subjective, and you don't have an objective measure. But they're moving towards a fair-value statement. In such a world you're going to increase subjectivity whether it's on an equity-indexed annuity, or a whole life insurance contract.

1998 VALUATION ACTUARY SYMPOSIUM

MR. KENNETH A. LASORELLA: Do you think that market-value-adjusted-fixed-interest-guaranteed type annuities would escape *SFAS No. 133*, or do you think there are some embedded options in these contracts that have to be handled?

MR. HUGHES: I will say that I think our contracts have a lot of embedded options in them, like guaranteed interest rates and book-value withdrawal options. I don't know if they meet the technical definition of a derivative instrument set out in *SFAS No. 133*, which includes underlying, index, a notional amount, and things like that. I think a lot of these options would not meet the technical definition in *SFAS No. 133*, but, I will defer to the rest of the panel to address the market-value-adjusted annuity.

MR. GREATON: My feeling on the market-value annuity is that you probably can make a case for it not being *SFAS No. 133* because the market-value adjustment is usually a function of the interest rate. Since that is an integral part of the contract as opposed to something that's not inherent in the original contract, it doesn't meet the *SFAS No. 133* definition.

MS. DIVIN: The rate could be determined or be closely related. I don't think anybody has come to certain conclusions on that. I think it's more of a "Who knows?" condition, but it seems to be leaning toward the conclusion that it might not be a derivative.

MR. HUGHES: One other observation is that the market-value annuity typically adjusts the surrender value before the end of the term. At the end of the term period, there would typically not be any sort of adjustments, so the majority of your business would not be subject to some sort of market-value adjustment. With an equity-indexed annuity, everybody's going to be affected by the index movements. I would stay away from it, but don't take that as an authoritative statement.

MR. HANS J. WAGNER: I have a quick question on recoverability. Let's say we're granting too rich an option. That is, when we go to determine our fixed piece, by taking the total premium, less the granted option cost, we could end up with an interest rate we can't support. Obviously the DAC is not going to be recoverable, so we're not going to book any DAC. Would you go so far as to book

GAAP ACCOUNTING FOR EQUITY-INDEXED PRODUCTS

a higher reserve? Because it's an investment contract, wouldn't we anticipate losses and just do the reserve mechanically?

MR. HUGHES: Hans, were you schooled at Ernst & Young. That's a good question. You typically would not book an additional benefit reserve for an investment contract. This doesn't sit well with most actuaries, but in the banking context, you would not establish additional reserves on a bank liability, even if it was in a loss position. I think the guidance for fixed annuities is that you could write off all your DAC but you would not be permitted under current guidance to set up a higher reserve than your account value. I think that would probably apply in this case.

MR. GREATON: Your guaranteed value is not fair value. You'd do the mechanics, set up the reserve, and then not be allowed your full DAC set up and show a loss because you might not have enough DAC in that first year.

MR. JERRY F. ENOCH: If a company is just beginning to do DAC for equity-indexed annuities, would you recommend just starting right away with *SFAS No. 133* or starting with the old way, and then go through a subsequent transition?

MR. GREATON: My personal feeling would be that that depends on what other derivatives you have on your books. If your going adopt *SFAS No. 133*, it's not going affect just equity-indexed annuities; it's going affect interest rates swaps or embedded derivatives on your assets (that's provided you have bonds that have equity kickers or something like that on them). There are lot of other issues in implementing *SFAS No. 133*, and if you don't have those issues, or if you're equipped to handle them, I'd go ahead and just do it on *SFAS No. 133*. I think it makes more sense. Otherwise you're probably better off doing it the easy way and using the old guidance, and adopt to *SFAS No. 133* when you're ready.

