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Summary: Derivatives are an increasing component of insurance company investments. In this session, panelists review the nature of derivatives and emerging practice with respect to the financial reporting for these instruments. Topics addressed include statutory, tax, and GAAP issues; implications for the valuation of liabilities; and differences between Canadian and U.S. practice.

Mr. Anthony Dardis: This session is designed for an audience that has moderate experience with the subject matter. When we last did a session similar to this a couple of years ago, we geared it towards those with substantial experience, and I'm delighted that we've lowered the experience requirement a notch. This session is about derivatives, so, unavoidably, it's going to be fairly challenging technically.

We're looking at all the reporting issues surrounding derivatives and comparing Canadian and U.S. practice. By the very nature of the coverage, some areas will only be touched on lightly. You could have gone the whole year without reading anything about reporting for derivatives. By attending this session, you'll at least be brought to a level that would make you sound reasonably intelligent talking to other people about reporting for derivatives in Canada or the U.S.

Michael Taht from Tillinghast will open the presentations. Michael is going to look generally at uses of derivatives in the insurance industry. We were going to have Nino Boezio talk about the whole spectrum in general terms, but he won't be able to attend the session so I will cover his material as best I can. Finally, Greg Henke from Goldman Sachs will be looking at the specific area of FAS No. 133 and the market value debate, which is a hot topic at the moment.

Mr. Michael S. Taht: I will look at some of the different ways that derivatives are used in both Canada and the U.S. and focus on different liability-based derivative strategies that are used in both the U.S. and Canada.

What is the nature of derivatives? First, derivatives as an asset group fluctuate much more than traditional assets that support life insurance company liabilities. Second, they can be used to hedge, which, from a life insurance company and a regulatory standpoint, is good; or they can be used to speculate, which is not good.

Derivatives are not particularly well understood by either life insurance companies or regulators. I'm not sure if it's that derivatives are not well understood or that they are not used as much. An article in the *North American Actuarial Journal* said that 12% of life insurance companies (144) were using derivatives and had reported them in Schedule DB. If you look a bit deeper into the data, you'll see that, except for interest-rate swaps and interest-rate caps, no other derivative class, as the article defined them, was used by more than 20 companies. So it's not necessarily that derivatives are not well understood, it's just that not everyone is exposed to them.

A recent symposium identified five types of derivative strategies for insurers. The first one was an anticipatory strategy where you're locking in the yield on future investments using either a future or a swap. It's often associated with new business or anticipated new business.

The second strategy is a liability-based strategy where you are matching against a product guarantee (i.e., one found in an EIA). The third strategy is an asset strategy, defined as converting specific assets to a standard fixed or floating rate equivalent. One could diffuse structured notes purchased in a secondary market.

The fourth strategy is a portfolio-based strategy where you are looking at adjusting the average duration and/or convexity of a group of assets, for example, lengthening or shortening the duration, to bridge the gap between assets and liabilities. One of the issues I think Greg will point out is that, unless the hedge reduces the portfolio duration mismatch to nearly zero, there will be income volatility under the new *FAS No. 133*.

The fifth strategy is a replication-type strategy where you might use an asset in a hedge to replicate a different asset or an asset class. One comment with respect to this is that it is not permitted under the NAIC Model Investment Act for general account investments.

In highlighting differences in the U.S. and Canada, I have focused on differences in a liability-based strategy. I had thought another area that would be of interest is any

other market factors that would influence the use of derivatives in the insurance industry. Accounting features will be covered by Tony and *FAS No. 133* by Greg, so I am talking about things outside of regulatory and taxation issues and outside of any product-driven issues.

The U.S. insurance market is significantly larger than the Canadian market, especially if we're looking at specific liability-based uses of derivatives. If you have more insurers seeking a certain type of derivative solution, more people will be willing to provide it. The second point is that the U.S. derivative market is much more developed than the Canadian market.

In an Institute of Actuaries paper that was published at the end of 1996, option volume was compared to stock volume and futures volume was compared to stock volume in 12 different countries. In the U.S., the ratio of options volume to stock volume was about 2.0, and the futures volume to stock volume was about 1.5. In Canada, it was almost negligible, 0.1. When looking at all the other countries surveyed, Canada was the only one where the combination of option volume and futures volume as a ratio of stock volume was less than one.

Does anyone know if the derivative market or the options market and the futures market has developed substantially over the last few years in Canada? In talking with a few Canadian actuaries and asking them about using specific derivative strategies, they commented that the market is illiquid, and it's often difficult to find the proper instrument. They also said the proper instrument might exist in the U.S.; however, once you start purchasing options in the U.S., you're introducing a currency risk. And, with what has been happening with the Canadian dollar of late, that is a real risk.

Let's look at a few specific products involved in a liability-based derivative strategy. Single premium deferred annuities (SPDAs) and equity-indexed annuities (EIAs), are both sold in the U.S. I believe there's one product being sold in Canada—the Canadian version of equity-indexed life (EIL). Other products are the indexed accounts on universal life products and the guaranteed minimum death benefit features that you find on both segregated funds in Canada and variable annuities in the U.S. I am also going to talk about how that's expanded to guaranteed minimum account benefits (GMABs) and guaranteed minimum income benefits (GMIBs).

Some of the uses of a derivative strategy with SPDAs include hedging the disintermediation risk through the use of interest-rate options. To address convexity risk that may be associated with SPDAs, you may want to look at yield curve swaps. And you may also have some pressures from rating agencies to demonstrate that you are hedging some of the liability options that exist within these products.

EIAs combine a zero-coupon bond with an equity option. The appropriate option depends on the product design. An annual ratchet design is probably the most popular right now in the EIA market; about 40% of products have it. With this design, you would use a cliquy option, which is a series of one-year options where the price is determined at the beginning of the period based on the initial participation rate.

The next most popular designs are the point-to-point and point-to-average designs. For a point-to-point, you would use a European-type option whereas for a point-to-average, because you're introducing some averaging into the determination of the equity returns in the product, you would use an Asian-type option. Generally, the averaging occurs over the last 3–12 months of the annuity period.

The high watermark design utilizes an annual discrete look-back option, and the low watermark design will use an annual discrete look-forward option. That's the type of option, but also embedded in the product design is the index that the product is tied to. The majority of products are still tied to the Standard and Poor's (S&P) 500. This is important to determine, because the index will determine the availability of the options.

A couple of other ways that derivatives can be utilized in an EIA include hedging against the excess lapse risk (greatest in a high interest-rate, low market return environment), and hedging the fixed interest-rate risk or the fixed interest portion of the risk using a treasury put and an interest-rate cap.

The EIA market in Canada is much less developed than in the U.S. In the U.S., about \$4 billion in premium is anticipated this year, and 42 companies are selling the product. In Canada, it is really just one product, but we can look at some differences in how the market is developing. Participation rates are at around 100%, whereas, in the U.S., on an annual ratchet type of product, you see a participation rate of between 60% and 100%. And participation rates have been dropping as the option costs have risen in the U.S.

On the flip side, the guaranteed minimum return in the U.S. is higher. It's generally around 3% in the U.S., compared with just a return of premium in Canada. Also, the product design in the U.S. is more complex. I am not sure if this is a function of the product life cycle in Canada versus the U.S., or if it is a function of the availability of certain derivatives to hedge against more complicated product structures, such as a cliquy-type option. You could not purchase that from an exchange. You would have to purchase it from an investment bank, and I am not sure you could find that type of option in Canada.

You have the same derivative strategies inherent in EIL products as in an EIA, with some added complications. You are probably not going to get the same volume of business from a premium standpoint (I'll talk about the minimum efficient level of premiums for trade later). You are not going to have a single premium, but a regular premium. This may help liquidity, but you are introducing an asset/liability mismatch. Also, conceptually, you have a life insurance product, so your investment horizon should be longer than in an EIA, where you are looking at five to nine years.

One of the things that will drive the complexity of your derivative strategy on an EIL product is the number of buckets of premiums. The number of buckets will be determined by the contribution period and the investment term. If you have a one-year contribution period and a one-year term, there will be one bucket. However, if you have a 30-day contribution period and a two-year term, you will have 24 buckets to manage.

The trade size requirements for different options have both a minimum level and an efficient level. For exchange options, the minimum level was quoted at about \$100,000; however, to be efficient you need about \$1 million for a trade. For a vanilla over-the-counter trade, you'll need a minimum of \$500,000, but to be efficient, you'll need about \$10 million. And for customized options, you'll need a minimum, again, of about \$500,000, but, to be efficient, you'll need about \$20 million. This gives you a sense of how you would have to bundle your premiums to handle different derivative strategies.

The EIL product in Canada is older than anything we are seeing in the U.S. Over the last six or seven years, Canadian universal life plans have had an account option that is tied to an external index. It is one of a number of account options. Within that account option, there is no minimum guarantee and the account participates in a gain or loss in the index, excluding dividends, but the assets are still held in a general account. I asked some people how they are handling this risk and whether they are investing in options. The responses were that, in Canada, the cost of the option to hedge this type of liability is too prohibitive so they are using yield management groups to handle that risk.

The last features I'm going to talk about are guaranteed minimum death benefits (GMDBs). GMDBs have been found on variable annuities for a number of years and their designs have increased in complexity. What started out as basically a return of premium has evolved into annual ratchet type designs or a certain percentage increase in the minimum death benefit per year. Over the last year, we have started to see activity on the mutual fund side; mutual funds are also introducing GMDB features.

In Canada, the corollary product is a segregated fund—a separate account annuity with two guarantees, a guarantee on death of 75% of deposits, less withdrawals, and a guarantee on maturity of 75% of deposits, less withdrawals. The GMDB portion of both these liabilities can be hedged with a total return put.

What is interesting is that, over the last few years, especially in Canada, there has been a strengthening of the guarantees in the market. The market is now guaranteeing up to 100% of deposits, less withdrawals, on death, and some companies are now offering a guarantee of 100% percent of deposits, less withdrawals, on maturity and offering a reset period. Fueling this even more is that one mutual company has, for a fee, taken its mutual funds and offered a segregated fund wrap to turn it into a segregated fund. The optionality of the liabilities are increasing, so you may want to consider looking at your derivative strategy within these products more closely.

For variable annuities in the U.S., we are seeing GMIB-type benefits, which guarantee a certain amount on annuitization. I believe one product had a guaranteed return of 6% on deposits until age 80. That would then guarantee the annuity benefits or go toward calculating the annuity benefits on the plan. We are also seeing GMABs that will guarantee a value at maturity for the plan similar to the maturity benefit on the segregated fund. One product design I have seen has a 6% return guaranteed through the surrender charge period, which is probably a bit richer than what we are seeing in segregated funds in Canada. Again, the optionality of the liabilities are being increased, so you may want to look at your derivative strategy a bit more closely.

In conclusion, the regulatory, accounting, and taxation environments definitely drive the use of derivatives. But forces on the liability side will drive the use of derivatives as well. To address both countries, the market availability will influence the uses as well.

Mr. Gregory P. Henke: I work for Goldman Sachs and sit on our fixed income derivatives or swaps desk. I'm the marketing specialist for insurance companies derivative use in the U.S. and Canada. There are the usual disclaimers attached to my presentation, but I'd also like to add the disclaimer that I am not an accountant, so those of you who are expecting detailed accounting issues will probably be disappointed. However, I do work closely with accountants, trying to get insurance companies the desired accounting and balance sheet treatment on derivatives.

The other disclaimer I'd like to make is that, at the end of the day, you have to ask your own accountants for the answers. *FAS No. 133* is a 254-page document. We're getting the overviews from the Big 8, Big 7, Big 6, or however many

accounting firms there are left, and those reviews make the SOA *Yearbook* look like an easy read. There's still a lot of disagreement and inconsistencies that need to be ironed out.

It all comes down to what your accountants, in conjunction with your audit partner, will let you do. Some treatments even depend on how you've been accounting for things historically. In other words, somebody who's already gotten sign off on a certain accounting treatment might continue to get a certain accounting treatment, whereas somebody who's just entering into the derivatives marketplace won't have that history to build on and might have to use a different approach.

I'd like to begin by explaining how life insurance companies use derivatives today. Then, I'll give you an overview of *FAS No. 133*. Next, I'll cover fair-value hedges and cash-flow hedges. These represent the bread and butter of how life insurance companies use derivatives. This is swapping fixed for floating and floating for fixed, and I think you'll still get pretty good accounting treatment for those derivatives under *FAS No. 133*. I'll also talk about the definition of a derivative, the scope of *FAS No. 133*, and some other key issues.

Mike, did you say 12% of insurance companies are using derivatives?

Mr. Taht: Yes, that was the percentage as of 1994.

Mr. Henke: That doesn't surprise me at all, because when you look at percentages by number of insurance companies, there are probably 1,000 smaller companies that aren't involved in the derivative marketplace and probably couldn't be just from a counter-party risk perspective. But if you look at larger company usage you get a different perspective. According to the Goldman Sachs Chief Investment Officer survey, of life insurance companies with more than \$30 billion of invested assets, 75% say they used interest-rate swaps in the last six months, 67% used futures, and 58% used options. Interest-rate caps were used by more than half of the companies surveyed, put swaptions by about one-third. Derivatives are more of a large company phenomena. In fact, I think we had 100% percent of our respondents in this asset class using derivatives in some form or another.

It's also interesting to note that interest-rate swaps are now more common than futures, and I think that's the way it should be. Typically, insurance companies are managing spread portfolios, not treasury portfolios. Swaps tend to be more highly correlated with corporate portfolios than treasury- or futures-based hedges. What are the reasons companies use derivatives? Hedging interest-rates risk is given as a reason by about 80% of companies who use derivatives. The next category is

replication, the fastest growing use of derivatives. Following that is hedging other risks, hedging foreign currency risks, and yield enhancement.

Let me give you an example of replication. I think this is going to be an area of opportunity for insurance companies going forward. As you probably know, hedge funds are running into a lot of financial difficulty. Hedge funds have been one of the marketplace participants that arbitrage out minor pricing discrepancies. They do a lot of replication by finding the cheapest asset, whether fixed, floating, or denominated in foreign currency or U.S. dollars, and arbitrage those 20 or 30 basis-point differentials. The fact is that liquidity has dried up in the market and most hedge funds are not in a position to go after those differences. Large cash buyers like insurance companies can take advantage of wider arbitrage opportunities because they've taken this whole segment of arbitration players and put them out of business.

Here's an example. Tunisia is an African country that is an investment-grade credit. It has U.S. dollar-denominated bonds that trade in the U.S. at roughly 500 to 600 basis points over corresponding treasuries for their maturity spectrum. I'm not here to tell you whether Tunisia is rich or cheap at that level, but I will tell you that there is another Tunisia issue called the BNDT that is cheaper. It's denominated in Japanese yen and guaranteed by the Republic of Tunisia. In a sense, you have a better credit than straight Tunisia because both Tunisia and BNDT are there. The price as of the middle of October was \$85. If you swap that to U.S. dollars, you're getting somewhere around Treasury, plus 700 basis points. I'm not going to say what yield it should trade at, but I know it trades cheaper if I can buy non-dollar assets and swap them to dollars instead of buying straight U.S. dollar debt. These opportunities will appear more often because hedge funds can't play this game.

Another reason you might want to consider cross-currency swaps or replication is that it changes your risk profile. I'll give you an example using Russia, because we all know that Russia just recently tanked. I want you to think about two different ways of getting Russian exposure, one using derivatives and one not using derivatives. Russia had ruble-denominated bonds and they had U.S. dollar-denominated bonds, and most insurers were more comfortable buying the dollar-denominated bonds. When Russia defaults, let's just assume that both the ruble- and the dollar-denominated bonds go to zero. If you had bought the ruble-denominated bonds and swapped them to dollars using a cross-currency swap, under the term of the swap, you would have been paying out the rubles that you had been receiving from the bonds and receiving dollars.

For illustrative purposes, let's assume that the ruble-to-dollar exchange ratio was a 1:1. If Russia tanks, as it did, your bonds are worthless either way, but your cross-currency swap is probably worth \$0.50–\$0.70 on the dollar. The reason for that is

you are paying out rubles, which are largely worthless, and receiving dollars, which have held their value. So, if you think that credit events are often correlated with currency devaluation (e.g., Asian contagion), it's important to note that using currency swaps can change your risk profile.

Let's turn now to an example of a replication swap or a credit derivative, which is increasing in use among insurance companies. Insurers want to know how to get exposure to an asset class without using the cash marketplaces. They can do that through a total rate of return swap. Let's say you own utility bonds and you'd rather get exposure to high-yield bonds. People typically sell the utility bonds and buy high-yield bonds in the cash marketplace. That generates taxable capital gains, which up fronts cash taxes paid, resulting in a negative. It also creates capital gains for GAAP purposes, which is usually a negative, because it has a dampening effect on above-the-line investment income going forward. Therefore, we see more insurance companies swapping out of their existing asset classes through their use of total rate of return swaps, especially if they just want to do it for a short period of time, say, three to six months. You can't move in and out of the cash market efficiently in a three to six-month period.

On to *FAS No. 133*. First, you should know it's effective for fiscal years beginning after June 15, 1999. So, for calendar-year companies, that's January 1, 2000. It applies to all GAAP reporting entities, but it's important to note that hedge funds, mutual funds, and a lot of entities are marked-to-market investors anyway, so *FAS No. 133* only has a significant impact on corporations and financial institutions. Corporate issuance is largely a treasury function. They're issuing debt and using derivatives to manage that process. The institutions that will be affected the most are insurance companies. They manage longer duration portfolios, so market values tend to fluctuate more, and it affects them both on the asset side and the liability side.

The simple overriding rule of *FAS No. 133* is that all derivatives will be on the balance sheet and they will be recorded at market value. Previously, you were able to keep derivatives off the balance sheet and get synthetic accounting treatment. The question is, how do changes in market value run through your earnings statement? and that's why we get into what qualifies as a hedge and what doesn't. Does it go into your profit and loss (P&L) into other comprehensive income (OCI)? Most people aren't that sensitive to OCI. That's the same treatment you get if you have bonds available for sale. For example, if interest-rates go down and bonds increase in value, that increase goes through OCI. Most equity analysts and people looking at insurance companies aren't too concerned about fluctuations in OCI. They are concerned about fluctuations in P&L.

Most insurance companies will try to get hedge accounting treatment to dampen above-the-line earnings volatility and there are three areas for which you can try to do so. One area is fair-value hedges, which is swapping fixed rate bonds to floating. Another area is cash-flow hedges, which is swapping floating-rate securities back to fixed. And the third area is foreign currency hedges. In general, *FAS No. 133* broadens the definition of what a derivative is, but you can still swap fixed to floating, floating to fixed, and both assets and liabilities. There might be some noise, but it shouldn't be too bad for the general hedging activity of insurance companies.

What is a fair-value hedge? The fair value being hedged is the market value of that security. If you buy a 10-year fixed rate bond, it's going to go up and down in price because of interest-rate changes. You don't want that volatility, so you're going to swap the bond to floating. Because you're receiving a fixed coupon, you are going to pay a fixed-rate coupon and receive London Interbank Offered Rate (LIBOR) under the terms of the swap. That swap will have a market value attached to it. You're going to have to record the market value of that swap on your balance sheet and the changes in that value will flow through income. However, if the swap qualifies as a hedge, there's going to be an offsetting change in value on your fixed-rate bond that will flow through income as well. If the hedge is working properly, those changes should offset and it should not introduce earnings volatility.

There is detailed criteria for what qualifies as a hedge under *FAS No. 133*. You can hedge either a specific asset, a similar set of assets, or a similar set of liabilities, but you cannot hedge the gap between the two. Assume you have \$100 million of assets with a duration of six years and \$100 million in liabilities with a duration of eight years. You find this out through your cash-flow testing and do a macrohedge, where you execute a swap to add duration to your assets.

Unfortunately, that will not qualify as a hedge. You cannot look at the net difference on a macro basis and say that is my hedge criterion. You have to isolate some group of assets or some group of liabilities specifically.

Accountants are trying to define how tight a group has to be. If, for example, you have a group of assets with a duration of 10 years, as long as every bond in that group has a duration between 9 and 11 years, the FASB will probably say that's similar enough to call it a group. Durations between 8 and 12 years are not similar enough. Those are the type of details the FASB is working on to determine what constitutes a group for hedging purposes.

To illustrate a fair-value hedge, assume you have a two-year, 7.5% coupon bond priced at par and you wish to convert it into a floating-rate bond. You would do this

by entering into a two-year swap with a notional amount equal to the par value of the bond, where you pay a fixed rate and receive LIBOR. The current market rates say you have to pay 6.65% fixed for two years in exchange for receiving LIBOR flat. This hedge would qualify as a fair-value hedge. It represents a substantial offset and it's against a single asset, so there's no problem with the macro or netting issue. The swap will be marked-to-market through income. However, the gains and losses on the bond caused by these same interest-rate fluctuations are also marked-to-market through income. Because you are long one and short one, they will offset each other, so you shouldn't have any income volatility.

The FASB did one thing that I actually like. It created a shortcut method and decided not to make you measure the market value changes in these two securities individually as long as you can identify that they qualify under the shortcut method. This is going to be important for your companies in minimizing the amount of work that goes into accounting for derivatives. If the notional amount on the derivative equals the principal amount of your asset or liability, if the maturity dates match, if the swap has a value of zero at the beginning and there's no up-front exchange of cash, and if the indexes are constant throughout the term and there's not a call option in the hedged item, you can assume that the hedge is 100% effective. You're not going to have to mark them to market. You'll just say, "I'm receiving 7.5% and paying 6.65%, so I'll just take that constant spread of 85 basis points, add LIBOR to it, and that's what's will run through my income statement." This is almost similar to synthetic accounting.

From the Floor: What's the consequence of not meeting the fair-value hedge criteria?

Mr. Henke: In that case, your swap will be marked-to-market through earnings, and your assets or liabilities will not. You still have book value accounting on your two-year fixed income security, so its changes in value don't get run through earnings, but the swap does, and that's going to create earnings volatility.

From the Floor: What's the impact of insurers having assets in their trading accounts?

Mr. Henke: Trading accounts help banks, so they do a lot more of that. That's why I think *FAS No. 133* is more important for insurance companies than banks and other institutions that are on more of a marked-to-market basis. But, trading account asset changes in market value do flow through income.

There is a shortcut method applied to prepayment risk, for example, call options embedded in your bonds. If you want to hedge that option, you can buy a call

option back because, when you buy an asset that has a call in it, you've shorted the call option. You could buy that call option back and get hedge accounting treatment by saying the asset is callable bifurcating it into two instruments. One would be a bullet fixed-income instrument and the other the embedded call option. You can buy a derivative that hedges that piece out, so you can hedge straightforward calls or possibly even prepayments on your mortgage-backed securities.

Let's turn now to cash-flow hedges. These are the flip side of fair-value hedges. Say you've bought a floating-rate bond or issued a floating-rate liability and you're not sure what the investment income or credited rate is going to equal. It is going to fluctuate with interest-rates over time and you want to hedge that uncertainty. If, for example, you bought a bond that pays LIBOR every six months, to hedge that variability, you are going to pay LIBOR to a counterparty and receive a fixed rate. So, in a sense, you've taken that uncertainty out of the asset and converted it synthetically to a fixed-rate bond.

You get earnings treatment similar to that of fair-value hedges, but the methodology is a little different. Instead of running through investment income, the derivative will be run through OCI as long as it qualifies for hedge accounting treatment. OCI is the same account that market value changes in your "available for sale" bond portfolio run through. And most people continue to consider OCI as noise, so this is not an unfavorable result, either.

You have to meet the same detailed criteria in order to get hedge accounting treatment for cash-flow hedges. You're going to have to show the hedge is highly effective. If you're hedging a group, it needs to have a pretty tight range of duration and things like that.

Here's an example of how that works. Assume that you buy a five-year floating-rate bond that pays LIBOR plus 100 basis points. You don't have to do a five-year swap. You may only want to hedge out the first three years, which is perfectly permissible. For the first three years, you would convert that floating stream to a fixed-rate stream. You would pay LIBOR and receive 5.9%, so you've converted it to 6.9% fixed. The swap substantially offsets the risk in the first six semi-annual interest payments, so it qualifies as a hedge. The swap is marked-to-market, but that mark runs through OCI which is not a big deal, and then it amortizes back through income in a way that matches your coupon flows.

There is a shortcut method for cash-flow hedges that use the same criteria as for fixed-value hedges. The terms basically have to match up. If they do, in this example, you're just going to get the spread on your bond over LIBOR, plus the

fixed rate that you're receiving, and that's what you would book as income. You don't have to see how the market values of these two individual instruments are changing using this shortcut treatment.

Here's another example. Let's say that you're going to buy a fixed-income bond in three months. You're going to buy \$100 million of 10-year bonds three months forward. To lock that in, you would buy Treasuries or swap rates forward, just as if you had made the fixed-rate investment today instead of waiting until you put the money to work in a cash market three months from now.

Hedging this risk is a cash-flow hedge, believe it or not, because you are hedging the variability of those future coupons. Even though they're fixed, you're not sure what they're going to be worth at the time you're ready to invest, so that is the fluctuation you are trying to hedge against. Because it's a cash-flow hedge, the unrealized gains or losses in this Treasury or swap rate lock will go through OCI which, again, is the treatment that most companies would be shooting for.

Let's turn now to basis swaps. A basis swap is anything that's not fixed or floating, in other words, not paying LIBOR to get fixed or vice-versa. An example of a basis swap would be paying LIBOR and receiving the 10-year constant maturity swap rate, because these are both floating rates. They're on different parts of the yield curve, but they're both floating, so this is considered a basis swap.

If you have LIBOR assets and SPDAs and can demonstrate that your credited rate is dependent on a constant maturity swap rate, such as the 5-year or 10-year part of the curve, this could qualify for hedge accounting treatment, but only if you own LIBOR assets. This is where you have to sit down with your accountants and say, "Can we demonstrate that I can tie this hedge to a group of assets or liabilities that are highly correlated and get hedge-accounting treatment?" If you can, you may be able to get hedge accounting treatment using basis swaps.

I'm going to skip foreign-currency (FX) hedging. If anybody has a particular question, you can follow up with me afterwards, but I don't think most U.S. and Canadian insurance companies are heavy into FX hedging.

Let's turn to written options. Most insurance companies don't write stand-alone options. Naked options are typically not allowed under regulatory purposes, but there are some new rules for written options under *FAS No. 133*. I'm not going to go into monetizing these options. However, I do think we should at least mention the definition of a derivative. It is a financial instrument or other contract in which the holder or writer participates in the price changes of an underlying asset, and it does not require the holder or writer to deliver the underlying instrument.

Assume, for example, that your company locks in its electricity rate for the next year by agreeing to pay its utility company a fixed rate to supply it with a fixed amount of energy for the next year. That contract is not a derivative unless the power company or counterparty, instead of physically delivering the energy to you, can settle that contract for cash. That's how fine the distinction is between something that's a derivative and something that is not. That ability to settle in cash makes it a derivative. And, technically, even things like energy contracts would have to be marked-to-market through earnings under *FAS No. 133*, but that's the unique difference. Can it be cash settled under the terms of the contract or does it require physical delivery of a non-cash asset?

Embedded derivatives in assets and insurance policies must be bifurcated unless they are clearly and closely related to the host instrument. This means if call and put options are clearly and closely related to a fixed-income instrument, they do not have to be bifurcated. Basically, everything else does.

One example the FASB provides is an investment return that can be more than doubled. It's not clearly and closely related to a host bond. That's the kind of bond they'll let you get away with, with embedded derivatives. Assume you had a LIBOR-based super-floater and it initially paid you LIBOR. If, when rates rise, the coupon is capped at 1.99 times LIBOR, it's probably not a derivative. If it's leveraged to the point that it can go up to 2.01 times LIBOR, that's a derivative. That's another type of threshold they put in *FAS No. 133*, that "double market rate" test.

Interest floaters that don't have a floor (potential loss of principal), catastrophe notes, S&P link notes, and convertible bonds all have an embedded derivative that needs to be bifurcated and marked-to-market under *FAS No. 133*.

From the Floor: What does bifurcated mean?

Mr. Henke: Bifurcated means that a convertible bond is going to be separated into two different assets for accounting purposes. One is a fixed-income instrument and the other is an equity call option. The equity call option will be marked-to-market through earnings. Unfortunately, I think more insurance companies were looking at convertibles as a way to try to get an equity kicker in a balance sheet-friendly, earnings-friendly manner, and that's no longer going to be possible under *FAS No. 133*.

Instruments that don't have to be bifurcated include a de-levered floater, if it can't go to two times LIBOR. Interest-only (IO) and principal-only (PO) instruments are okay. A ratchet floater is okay, as well as mortgage-backed securities and

amortizing bonds. Those are all considered clearly and closely related to the host contract, so you won't have to extract the derivative and mark it to market through earnings.

As Mike mentioned, EIAs are clearly derivatives. The good news is that, if your investment strategy matches your liability strategy, you'll be marking to market both the embedded call option on the liability side and the call option that you're managing on the investment side. To the extent that you're matched, the options should both flow through earnings and not cause earnings volatility.

Death benefits are insurance contracts and, therefore, not derivatives, because they are mortality-based. But a payment option might be a derivative. If you have annuitization options that change in value based on interest-rates, your accountants might deem that to be a derivative. Let me give you an example. If you've guaranteed a minimum annuitization rate of 5%, that has almost no value in a 10% rate environment. It has a lot of value, though, in a 3% interest-rate environment. That feature is a liability, it is a derivative, and it should be marked-to-market through earnings. Valuing that is going to be a very interesting exercise, but that is an example of where you can get tripped up under *FAS No. 133*.

Turning briefly to FX. The only reason I wanted to mention foreign currency denominated debt, is that more insurance companies are getting involved in the structured GIC or Euro GIC marketplace. A Euro GIC is where you issue a GIC to an offshore entity and that entity, in turn, issues Euro medium term notes. The reason you do that is because the insurance company cannot issue the Euro medium term notes directly. It's important to point out that foreign currency denominated debt is caught in the straddle between the old *FAS No. 52* and *FAS No. 133*, and you won't get clean hedge accounting treatment. There are ways around it, but if you put on a fixed/fixed cross-currency hedge, you won't necessarily get hedge accounting treatment.

From the Floor: You mentioned that a callable bond is a combination of a noncallable bond and writing a call option on the bond. Do you bifurcate the call option?

Mr. Henke: If you own a callable bond and then buy a call back to protect yourself from that?

From the Floor: No, if you just own a callable bond.

Mr. Henke: A call option embedded in a fixed-income security is considered clearly and closely related to the host contract, therefore, you do not have to

bifurcate that option. Plain vanilla callable, or putable bonds you'll continue to account for the way you do now. There is no bifurcation. They're not within the scope of *FAS No. 133*.

One of the key issues, again, is how you value these instruments and measure their effectiveness. It is going to require a lot more work. One of the complaints I've heard is that *FAS No. 133* is hitting at the same time as the Y2K problem. Some of your people are already completely overwhelmed with the administration issues of your investment portfolios and other things, and you're going to have to throw in an additional layer of complexity. I think there will be some resource problems in addressing these issues.

In summary, *FAS No. 133* is a change from current practice. It adds complexity and some work, but, in my mind, it's not going to stop the majority of insurance company hedging transactions. Insurers will continue to use derivatives to swap fixed for floating, floating for fixed, and things like that, and for general asset and liability management.

Mr. Dardis: I'd like to run through some of the highlights of what Nino was planning to cover and give a broad picture of regulatory, accounting, and tax issues as they affect derivatives. If there is a theme to the presentation, it's that, as far as regulation and tax is concerned, case law tends to be the dominant factor.

First, it's worth mentioning some of the reasons for derivative losses by institutions, which, in turn, may lie behind existing and potential statutory and accounting requirements. This is a somewhat controversial area and everyone has his or her own thoughts about why some institutions have seen huge derivative losses. But some reasons worth mentioning here are: They or their agents did not understand what they were doing; upper management could not be kept informed in a timely manner; adequate controls and safeguards were not in place; and there was a lack of proper strategies, policies, and procedures to handle unforeseen circumstances.

As far as the over-the-counter market is concerned, it is the participants and not the market who are regulated. And, then, what's allowable is defined by case law rather than specific regulation, and the treatment of derivatives by regulators is a worldwide issue.

In Canada the derivatives market has developed more slowly, and Michael referred to some of the reasons for this earlier.

There is a barrage of statements in both the U.S. and Canada including: *FAS No. 52* (foreign currency translation); *FAS No. 80* (accounting for futures contracts); the

Canadian Institute of Chartered Accountants (CICA) Handbook, Section 1650 (foreign currency translation); *FAS No. 105* (disclosure of information about financial instruments with off-balance-sheet risk and financial instruments with concentrations of credit risk); *FAS No. 107* (disclosures about fair value of financial instruments); and *FAS 119* (disclosure about derivative financial instruments and fair value of the financial instruments). That leaves *FAS No. 133* which Greg has covered in detail. It's also worth mentioning the CICA Handbook, Section 3860 (financial instruments disclosure and presentation).

Accounting requirements are trending towards more clarification and disclosure. Unfortunately, there are inconsistencies in accounting, regulatory, and tax treatment.

To move on to tax, the essence is, again, case law. Qualified pension funds are tax exempt while individuals and corporations face varying taxes, depending on the nature of the transaction. Different worldwide tax policies encourage trading, and it will be noted that there are few or no rules in place yet in Canada and that much reliance is placed on case law.

In conclusion, generally, the treatment of derivatives is somewhat still in flux, and inconsistencies are often present. There's a noticeable lag in setting standards and procedures, and this is a worldwide issue.

Mr. Luke N. Girard: This question is for Greg. At least one accounting firm I know is treating the use of caps for hedging interest-rate risk on SPDAs in a certain way. I just wanted to comment on this to see if you have any thoughts. The firm's managers are taking the view that the change in time value of the cap instrument flows through earnings. They came to that conclusion because they view the change in intrinsic value as being effective and the change in the time value as being ineffective. So the ineffective part of the change in fair value under the derivative, under *FAS No. 133*, has to flow through earnings.

It doesn't make sense to me, because, if you have an increase in volatility of the marketplace, the time value increases. That also increases the likelihood of having to pay extra interest crediting on your liabilities, so there is a one-to-one relationship there. And I think they derived that from the hedging of a bond with an at-the-money option. It doesn't make sense there either, but it makes a little less nonsense. Do you have any thoughts on that?

Mr. Henke: I think it's good that your accounting firm is even recognizing the intrinsic value as a hedgable item. Some people still think that the intrinsic value of the cap needs to be tied to a specific group of assets or liabilities. Are you arguing

that it's tied to liabilities or are you hedging some fixed-rate bonds that you're arguing would go down in value if rates went up? Do you know what the hedging argument is?

Mr. Girard: We're tying it to the liabilities.

Mr. Henke: I've heard people say that they can't define the market value of the liabilities well enough to establish the hedge linkage. You're not committed to increase your credited rates if interest-rates go up, correct?

Mr. Girard: Yes, but you're not contractually required to.

Mr. Henke: Right, and there hasn't been enough historical testing. I don't think most people could demonstrate what they would do with their credited rates should rates go up 100 basis points, for example. You can do it, in theory, but there's no contractual linkage. I'm saying I agree that the result is not optimal, but I'm surprised that they're already comfortable letting you get hedge accounting treatment, even on the intrinsic part of the cap.

Mr. Girard: But they're doing it because it's part of the cap. They're buying out-of-the-money caps. That will happen once every scenario.

Mr. Henke: If you're buying out-of-the-money caps, what they're saying is write it off over time, which is not a terrible result. It's probably not that much different from what you get on caps today. I agree with you. It's not necessarily sensible in the way the financial market values these things, which is in a sense what they're trying to do, but I'll just throw out a crazy idea to you.

We've been working with one client whose managers are concerned that they wouldn't even get the intrinsic value treated as a hedge. They're asking, "if rates go up and you don't increase the credit rates on your liabilities, what are you hedging?" We've been trying to do some swaps where the cap is actually a cap on the interest-rates that they credit, which would qualify as a hedge, but we don't want to take that risk because we're not in control of setting credited rates. So there's another complementary swap where they swap the credited rate on their policies versus LIBOR. The first derivative qualifies as a hedge and the second one has to be marked-to-market, but good luck doing that because no one knows what rates the company will credit in the future. It forces the issue back to the accountants and says, "Congratulations you win. Please mark this security to market and good luck."

Compared to the client we're dealing with, you have them at least part of the way home in getting some hedge accounting treatment. But I agree with you, it doesn't capture the volatility aspect, which is clearly going to influence the market value. Everybody—all the derivatives players and the accountants—will continue to work on this, so maybe we'll come up with some reasonable results. That's a good example of trying to do the right thing. You're trying to reduce your economic exposure and not necessarily getting smooth accounting treatment as a result.

Mr. William J. Schreiner: I'd like to add some information. Michael indicated that the NAIC's model investment law does not permit the use of derivatives for replications. That is not completely correct. It prohibits it until there is a regulatory framework to evaluate derivatives used for replications. So far, only Illinois has adopted that model investment law. But, in any event, the industry has been working with the regulators to create that regulatory framework and there's a good chance that that work will be completed either this December or next March.

Mr. Henke: Bill, you mentioned that some companies try to get replication in by using a non-regulated holding company to do, for example, a cross-currency swap. Do you see that going on? Would you rather have some of that going on at a non-regulated level or, when replication is permitted, that might be something you do at the regulated entity level. Do you have any comments on that?

Mr. Schreiner: We did a survey about two-and-a-half years ago and found that a number of companies are already using derivatives for replications. The point is that you're allowed to do what your state regulators allow you to do or at least don't prohibit you from doing. My assumption is that the effort is mostly being done within the insurance companies themselves, but anything is possible in this day and age.

Mr. Martin E. Goldman: If you're hedging a liability, such as the guarantees on, say, a universal life policy or an EIL policy, what is the treatment there? My question has to do with when the liability is considered not an investment, as opposed to an annuity, where it is an investment contract.

Mr. Taht: That's a good question. I don't know the answer to that one.

Mr. Frank M. Grossman: One of the presentations discussed the manner in which various life insurance companies are using derivatives, and yield enhancement was described as one of the purposes. I'm speculating that means some sort of basis swap or something between different risk classifications on a bond where you have something with a lower rating and you're swapping to get something with a higher rating or vice versa, depending on which way you're going.

Mr. Henke: I wish the question had been asked more clearly in the survey because I'm not sure how people were responding to that. An example would be, if you have an instrument that has two embedded credits, it's a first to default contract. That clearly increases your yield.

I'm always interested in these questions because I don't think derivatives ever enhance yield. They transform risk and things like that, but don't automatically add yield. There's no such instrument. Some people are probably responding to credit derivatives and others are saying derivatives allow them to invest in some type of securitized or structured note instrument to get a higher anticipated yield given the same risk classification.

Some insurance companies will monetize, for example, put options on bonds that they have purchased. You can buy volatility in a puttable bond cheaper than you can buy that volatility in the put/swaption marketplace. One strategy is to buy a puttable bond, but then you say, "I'm not getting much current income because I bought this option that's not showing up on my balance sheet. I can monetize that put option through a derivative." In a sense, that does increase yield back to the market rate for that security in a bullet format. Hopefully, you get an even higher yield, because volatility is cheaper in a put bond than it is in a put/swaption marketplace. So I wish I could specifically tell you what people were responding to when they checked that box, but I think it's a mixed bag.

Mr. Grossman: I tend to agree. If someone is looking for yield pickup, in that instance, it's certainly not a hedge and it's not going to qualify as hedge accounting. It seems that it flows straight through and you're going to take the risk-based capital hits. It all comes back to the definition of what that category is. Maybe it was fuzzy thinking on the part of the survey administrator and, perhaps, some of the practitioners as well.

Mr. Henke: They're probably getting used to it.

Mr. Girard: I have another question. Greg, if you can mark to market as a trading instrument the equity side or the asset side of the hedges, you can also mark to market the liability, at least the equity portion of the liability through earnings as well, so if you have a reasonable match, the two will offset each other, and I agree with that. My question is, do we have a reasonable or good approach to mark to market the equity part of the liability? Does that exist yet or is that still coming?

Mr. Henke: You're not allowed to use it, but I'd almost argue for using the shortcut method for that as well. If you can argue that it is a good hedge at the end of the day that it's easier to value the call options because you can get quotes on those

from dealers, and if you can verify that by observations in the marketplace, I would attempt to do the shortcut method. The liability options must be valued the same way, but, technically, you're not allowed to do a shortcut method there. I think it will be difficult to attack that problem.