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## Session 42TS

### GAAP Accounting For Derivatives: SFAS 133

**Track:** Financial Reporting/Investment

**Moderator:** MARK A. WALKER

**Panelists:** CHERRI R. DIVIN  
DEBORAH WHITMORE†

*Summary: First, the attendee hears a brief summary of the major requirements of the Statement of Financial Accounting Standards No. 133, Accounting for Derivative Instruments and Hedging Activities (SFAS 133). Second, a more detailed description of certain key provisions is given, emphasizing definitions of derivatives, hedging accounting, embedded derivatives, and bifurcation. Third, the leaders summarize the impact on the industry in areas such as documentation requirements, assessing hedge effectiveness, and application of the "shortcut" method.*

*Under the leadership of a small group of experts, attendees work through two brief numeric cases. The first case shows the impact of hedge accounting. The second case is an example of assessing hedge effectiveness.*

**MR. MARK A. WALKER:** We have two speakers today. One is Deborah Whitmore from the New York office of Ernst & Young. Deborah specializes in insurance industry issues. The other speaker is Cherri Divin from the Louisville office of KPMG.

There was an FAS 133 presentation that was scheduled in September, and this is the first half of that program. That program was set up for an audience that was supposed to be a little less experienced in the area than today's audience was billed to be.

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† Ms. Deborah Whitmore, not a member of the sponsoring organizations, is a partner with Ernst & Young, in New York, NY.

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

**MS. DEBORAH WHITMORE:** We'll start with a bit of background on derivatives. Basically, there are futures—that is, contracts to buy and sell at a future date on specified terms—swaps, options, and various combinations of futures, swaps and options.

In the past, you've had accounting for essentially three basic categories of hedges. You've had fair-value hedges. A fair-value hedge attempts to protect the company against a change in the fair value of an asset or liability. There is the cash-flow hedge, in which you're dealing with variability in the cash flows of assets or liabilities, generally of a forecasted future transaction. Think of a variable-rate bond. The exposure I have is to variability in future interest payments. And the third category is net investment hedges associated with foreign currency positions and net investments in foreign affiliates.

Macro or portfolio hedges are designed to change the nature of the position that you have as a whole. The approach to determining the hedge strategy is generally on a macro basis. Accounting essentially is never done on a macro basis. There was no such thing as hedge accounting for macro hedges in the past. Under 133, it's even clearer that you cannot, in effect, get hedge accounting on a macro hedge. To some degree, you still determine what you need to do on a macro basis, but then it's translated into micro positions for accounting purposes.

Here's a bit of background. First, FAS 107 requires fair-value disclosures for all financial instruments. Then, FAS 115 came along and introduced fair-value accounting for securities, which has resulted in a balance sheet that is essentially a mixed balance sheet, with some assets and liabilities at fair value and some assets and liabilities at historical cost.

Why FAS 133? There was a great deal of dissatisfaction with the historical accounting for options and other derivatives. The accounting was very much a mixed model that, in fact, resulted in a lack of transparency in the financial statements. It was quite possible to have positions that essentially never showed up. You had a series of what I would call accounting scandals, to use the phrase pejoratively, in that you had companies with exposures through the use of derivatives that resulted in the recognition of significant losses. Yet it would not have been obvious from looking at their financial statements that they were making use of derivatives in the way in which they were using them. They were generally assuming that things were hedged and they were perfectly hedged. In reality, they turned out to be less than perfectly hedged.

So let's talk about where we are on FAS 133. As I said, the previous accounting was very much a mixed model. You had three basic approaches to hedge accounting or to accounting for derivatives. You had a deferral method, so that if you had gains or losses on a derivative position, it wound up deferred as either an asset or a liability and then amortized at some future date. You had an accrual type of accounting, in which amounts that were receivable or payable under the derivatives would be

accounted for, would be accrued, but there was nothing else reflected in the balance sheet. Then you had mark-to-market accounting for some derivatives, which meant that the item, the derivative position, would show up as either an asset or a liability marked to market through income.

But the three different methodologies were very much rule-based approaches. They didn't address all the instruments that existed. It was very much a "name your instrument and you get the accounting," as opposed to a conceptual framework.

The primary goal of FAS 133 was to reflect all derivatives at fair value. The FASB, in effect, reluctantly acceded to hedge accounting. There was a lot of opposition. They felt that a lot of the problems that had arisen in the past came out of this concept of hedge accounting. There is still hedge accounting, but only if the requirements are met. We'll talk about those today. The requirements are fairly strict. They're intended to be strict.

Earnings volatility is virtually an absolute certainty. It is very unusual to create a hedge structure that is perfectly matched. The only times you won't wind up with some level of earnings volatility is when your hedge is absolutely perfect, so there is zero difference in the fair-value movements between what happens to your hedged item and what happens to your hedge.

And then, finally, they introduced the concept of embedded derivatives. The FASB did not want you to be able to avoid hedge accounting simply by taking what otherwise would have been a stand-alone derivative and embedding it into another contract.

There are four basic cornerstones to FAS 133. One is that derivatives represent rights or obligations that meet the definition of an asset or a liability, and they should be reported in the financial statement. Second, fair value is the only relevant measurement; so all derivatives should be reported at fair value.

Third, only items that are actually assets or liabilities should be reported in the financial statements. This means items that represent the deferral of a gain or loss that was recognized from a derivative, which was part of the historical model for hedge accounting, in fact, are not assets or liabilities but are simply unrecognized gains or losses and that would no longer be allowed.

And fourth, there would be hedge accounting, special accounting, but only in very limited circumstances.

FAS 133 introduces an entirely new definition of derivative. The definition is conceptual, it's complex, and it's different from anything we've ever had before. A derivative is determined based on its distinguishing characteristics rather than its name.

To qualify as a derivative, an instrument must have all of the following. It must have an underlying. For instance, an interest-rate index, maybe the London Interbank Offered Rate (LIBOR) or something else. It must have a notional amount, a number of dollars, for instance. It must have a payment provision. By that I mean you can determine how much would be due in a settlement based on contractual terms of the agreement, multiply a nominal amount by the movement in an index, or whatever. The instrument requires no or little initial net investment. By that I mean an investment that is less than the amount that would be required to control that value movement in the actual instrument that you're acquiring. And then finally, the instrument must be net settleable.

A derivative can be either freestanding or embedded, and it was very important to the FASB, as I mentioned earlier, that companies not be able to avoid FAS 133 accounting simply by taking a contract that would otherwise be a freestanding derivative and embedding it into something that was not a derivative contract.

What's an underlying? It's a variable, such as an interest rate, the price of a security, a commodity, a foreign exchange rate, some measurement of credit worthiness, or an index. Generally, it's any variable whose changes are both observable and objectively verifiable. So for instance, in an interest rate swap in which one of the variable legs is LIBOR, LIBOR would be the variable underlying.

A notional amount is a number of currency units, shares, bushels, pounds, barrels, gallons, or something else. It's applied to the underlying to determine the net settlement. So, if a number of shares were multiplied by a price to determine the settled amount, the notional would be the number of shares. In an interest rate swap, it's usually the face amount.

Payment provision specifies a fixed or determinable settlement if the underlying behaves in a specified way. For example, you can have a provision that says \$1 million would be paid if interest rates change by 300 basis points. A more common example would be a LIBOR swap in which the amount that would be paid would be LIBOR minus a specified fixed rate times the notional amount.

Providing the opportunity to participate in some or all of a price change of the underlying, without actually having to own the underlying or pay the full amount that you would have to pay to have owned that item, is really what's meant by the initial net investment criteria. For example, in a typical option contract, the amount you invest initially, the option premium is far less than the amount you would have had to have paid to purchase the underlying and thereby have the same exposure to changes in value.

There basically are three ways to meet net settlement. First, you can have a contract that actually provides for net settlement. By that I mean it doesn't require gross settlement. It's contract provisions that say that we'll actually just settle for a net amount determined by the formula.

A second way to meet net settlement is for the contract to require gross settlement, but a market mechanism is available to facilitate net settlement. The futures exchange is probably the best example I can think of that constitutes a market mechanism facilitating net settlement. The normal types of futures contracts, by their terms, require gross settlement. If, for example, it's corn futures, the contract actually requires that the party deliver a specified number of bushels of corn to a specified location. However, the exchange provides a mechanism whereby the counter-party can simply buy another contract and close out the original position.

The third way to meet net settlement is if the contract requires gross settlement, but the asset itself is convertible into a readily determinable amount. An example of that would be a contract that required delivery of 10,000 shares of IBM stock. A block of 10,000 shares of IBM stock is small enough that it would not significantly impact the market value. It is a readily convertible asset because the market can absorb that amount and it's freely traded.

As a result of this very broad definition, the FASB realized that quite a few things that no one really meant to have subject to derivative accounting were going to be swept in under this conceptual definition. So, they specified that some things that met the conceptual definition are not to be accounted for as a derivative. First are regular way securities. If I buy a security, and it settles in the normal term—T1 or T3, as long as it's settling as the normal customary terms—that does not constitute a derivative or an embedded derivative. If the settlement terms are not the normal customary market terms for that instrument, then, in fact, you do have a derivative.

The second item is one that we don't usually care about, because that's the normal purchase and sale exemption for nonfinancial instruments. That's really intended for companies in which you're dealing with levels of physical product used in their production process.

Certain traditional insurance contracts and financial guarantee contracts are exempt from FAS 133, but that doesn't cover most, or even very many, of our contracts. For instance, a life insurance contract that pays off only in the event of death is exempt, as long as there is no embedded derivative within, for instance, any cash value that is available. The financial guarantee contracts that are excluded are those that pay off only in the event of default and only in the amount of the loss that you actually have by holding the instrument. So, a financial guarantee that pays off, for instance, in the event of bankruptcy or restructuring, would, in fact, not be under the "traditional contract" exemption as a traditional.

Other exempt items are embedded derivatives that are impediments to sale accounting. An example is a residual value guarantee in a lease. Other contracts that are settleable in the entity's own stock also would be excluded, as well as employee stock option plans.

Certain non-exchange-traded items are not subject to FAS 133 as long as the settlement is based on a variable that is climatic, physical, geological, or that sort of thing—or the variable item is a nonfinancial asset that is held by one of the two parties to the transaction and is not readily convertible to a known amount of cash. The easiest example of this is a debt that has a variable feature based on a piece of real estate property that the borrower owns, basically a participating mortgage loan. That would not be a derivative under this statement because real estate is not a financial asset. It's a nonfinancial asset that cannot be converted to a readily determinable known amount of cash. The other exception is a contract that is based on the sales or service revenues of one of the parties to the contract.

Certain contracts may not, as a whole, meet the definition of derivative, but they contain implicit or explicit terms that would affect the cash flows under the contract. If the terms are similar to a derivative instrument, they have to be evaluated to determine whether they constitute an embedded derivative that would be subject to FAS 133 accounting.

The whole idea of embedded derivatives is totally different, totally alien, from anything that preceded FAS133. The best example is probably something as simple as a convertible bond. The bond itself is a debt instrument. The conversion feature gives the holder the right to exchange the bond for a number of shares of stock in the issuer of the bond.

The guidance relative to embedded derivatives has been one of the most difficult areas of this statement for anyone to implement, but this has been particularly true for the insurance industry. It's useful to think of the analysis of embedded derivatives as a process. Chart 1 shows the criteria for embedded derivatives. First, it would have to be a derivative if it was freestanding. It has to have the four components of a derivative: a variable, a notional, net settlements, and an upfront investment that is nominal or less than what would be required to control that gross amount of assets or liabilities.

The second step is to determine whether the embedded derivative is clearly and closely related to the host contract. For instance, if the host is debt-like, if it's a bond, then an interest rate feature, a variable that's an interest rate, generally would not result in an embedded derivative because an interest rate variable is generally clearly and closely related to a debt host. But if that debt-host contract had an equity feature—either its final payment or its interest payment were going to be determined by reference to an equity index or an equity security of some type—then the embedded derivative would not be clearly and closely related.

The final step is whether the contract itself is already carried in the financial statement at fair value.

To determine whether an embedded derivative is clearly and closely related, you have to consider the nature and the economic characteristics of both the host

contract and the embedded derivative. There are essentially three kinds of host contracts: debt, equity, and lease.

To be an equity host, the contract must represent at that point an actual or potential economic ownership residual, an economic ownership interest in the entity that is issuing the contract. Very few of our contracts, of anyone's contracts, are equity hosts. Essentially, the only thing that's an equity host is, in fact, an equity instrument.

If the host contract is debt, interest, inflation, and credit worthiness-related items generally are considered to be clearly and closely related. I'll come back to some caveats in a few moments.

For instance, if my host contract is a debt instrument, and I have a LIBOR interest rate, and there's no leveraging, then my LIBOR interest rate will not constitute an embedded derivative that requires bifurcation. It is an embedded derivative, but it doesn't require bifurcation because an interest-rate variable is clearly and closely related to a debt host.

For an equity instrument, the underlying is the price of the shares of that particular entity, the issuing entity, and that's really the only thing that would also be clearly and closely related to an equity host.

A lease is essentially a modified form of a debt instrument. Variables that are related to inflation or interest rate variables are considered to be clearly and closely related to a lease host.

For a debt host in general, variables that are related to interest rates are considered to be clearly and closely related unless the hybrid instrument can be settled in a way that the investor would not recover substantially all of its initial recorded investment. It doesn't really matter whether or not the parties to the transaction believe that the scenario that would allow this to be settled at less than the original investment can ever occur. All that really matters is that it is hypothetically possible under a scenario for that to happen.

The other item that will cause an interest-rate related embedded derivative to have to be bifurcated from a debt host and accounted for separately, is a leveraging feature—that is, it's possible under some circumstances to at least double the investor's initial rate of return and also result in a rate of return that's twice what would otherwise be the market rate on the instrument.

In general, a call or a put option that simply accelerates the repayment of principal or interest would be considered to be clearly and closely related, unless the debt instrument involved a substantial premium or discount—which, as you know, would typically be the case in a zero coupon—and the put and call options were contingently exercisable. It would be okay to be contingently exercisable as long as

the event that could give rise to the contingent exercise of the put and call was, in fact, something that would be clearly and closely related. So, a contingently exercisable call or put based on a credit rating change of the entity issuing the debt instrument wouldn't be a problem. But if you had a debt instrument with a put or call feature that was contingently exercisable based on something that happened to the S&P 500, then, in fact, you have an embedded derivative that would have to be accounted for separately.

An embedded derivative that either unilaterally enables one of the parties to extend the terms, or automatically extends the terms of the debt instrument for a significant period of time would, in fact, require separate accounting, unless the interest rate is reset to market at the time of the extension. In general, floors and caps are considered to be clearly and closely related as long as they are not in the money at the time that the instrument was issued.

So, what's the accounting for embedded derivatives? We'll try to summarize them in two columns. First, which is far and away the most common, the embedded derivative is reliably identifiable and measurable. In that case, the embedded derivative must be accounted for in accordance with FAS 133. It's marked to market, and it is available to be used as a hedging instrument, as the derivative in a hedge against another instrument. The bifurcated host contract is simply accounted for in accordance with the accounting standards that are applicable to the host—the debt instrument or whatever.

There are circumstances in which it is not possible to identify and measure the embedded derivative reliably. If that is the case, the entire instrument must be accounted for at market with the mark-to-market adjustment recorded through the income statement; the hybrid instrument cannot be designated as a hedging instrument.

The common types of instruments that would be held by or issued by insurance companies include things such as convertible bonds and structured notes. Convertible debt either may have been issued by the insurance company or held as an asset by the insurance company. In general, if you're on the issuing side, this will be convertible into your own equity. As an issuer, you're not permitted to bifurcate an embedded derivative that, if bifurcated, would be reflected as shareholder's equity.

If, however, you're the holder of the convertible debt, the embedded derivative must be bifurcated and accounted for as an equity option and the host must be accounted for as a pure debt instrument.

Structured notes are very similar, except that instead of being convertible into your own stock, they will have interest and/or principal that will vary based on the behavior of something that's been defined in the note. Usually, that is an index of some type, whether an equity index, interest index, or sometimes particular types



of assets. The interest index is usually not a problem as long as there is no leveraging. You can't get interest rates that can more than double what they were at initiation and more than double market rates. But structured notes with returns that are tied to an equity-type index and/or tied to specific assets typically will be more of an issue.

Interest only and principal only strips generally are not subject to FAS 133 as long as the portfolio of assets that went into the structure from which the strips were created did not contain embedded derivatives that required separate accounting under FAS 133 and no embedded derivatives were introduced into the interest only or principal strips in the securitization process.

**MR. WALKER:** Now we're going to turn our attention to how FAS 133 applies to some insurance products. We're going to discuss the most common insurance products that you hear about having special treatment with Statement 133. However, if you take a very generic look at everything, you have to have a very disciplined thought process.

The initial issue you have to come to is to identifying the derivative itself. The next is how we're going to define the host contract. Is it a debt? Is it an equity? Is it the insurance contract itself? Then, we must consider whether that derivative is clearly and closely related.

Once we conclude that, then we would follow the accounting. A lot of these issues were addressed in statements by the Derivatives Implementation Group (DIG). Two years ago, they issued statements B7 and B8, which relate to variable annuities. They said the variable annuity contract is the host itself. That was rather unique, because the DIG specified that this guidance cannot be extended by analogy to any of the other insurance products. As a matter of fact, it can't even be applied to a variable-life product. So, if you had a rider that applied both to a variable-life and a variable-annuity product, they probably would be subject to two different accounting treatments because of the different nature of their host contracts. Another clarification in B7 is that the minimum guaranteed death benefit, which is included in a lot of variable annuities either inherently or by rider, is not subject to FAS 133. There's not an embedded derivative. Finally, there are other nontraditional features, such as guaranteed minimum accumulation benefits and guaranteed income benefits. The DIG ruled that for these, there is a potential that embedded derivatives exist under all four criteria within FAS 133.

B8 talks about the guaranteed floor and the guaranteed floor that could take the form of guaranteed minimum accumulation benefit or guaranteed withdrawal benefit. It is not clearly and closely related to the host VA contract itself and therefore should be accounted for as a derivative. The guaranteed minimum income benefit may or may not be considered a derivative. This is explained a little bit further in another issue paper, B25. In it, the DIG specifically addresses the accounting during the accumulation phase, and these guarantees are not

determined to be derivative under each scenario of the contract holder. It could only obtain the value of the guarantee if the contract holder elected to annuitize, or in other words, not net settle.

The key on guaranteed minimum income benefits is if it is net settled, it can be a derivative. Further, for a minimum income benefit, if it's life only, it is not considered an embedded derivative. It would fall under the paragraph 10C exclusion of FAS 133. However, if you read B25—and I had some conversations with Deborah about this—if you have a life and certain settlement option, it does tend to become a little bit clouded.

The DIG also addressed market value adjusted annuities (MVAs) in B9. The conclusion that they reached is important. Obviously, the adjustable surrender charges are clearly and closely related and therefore, it does not contain an embedded derivative.

In Issue B10, the FASB concludes that in equity indexed life and annuity contracts, the death benefit does not automatically trigger an exclusion and preclude FAS 133 treatment. The key is that if the cash surrender value is tied to equity performance, then there is an embedded derivative and FAS 133 will apply. If the death benefit is the only thing that is tied to the index, then it does fall under the paragraph 10C exclusion under FAS 133. The host in this case is a debt instrument.

Perhaps the issue with equity index annuities that causes the most discussion is reset annuities. If there is more than one period for which a contract can receive equity crediting, it's very clear that there is an embedded call option for that first period. But what about all the other subsequent or so-called forward-starting options? DIG Issue B29 concludes that all of those must be included in the value of the embedded derivative. We'll get into what things need to be considered a little later on, and we'll actually take a look at a graphic example.

I'll also touch on DIG Issue B30. In Issue B30, the FASB concludes that there will be no FAS 97 floor. In other words, the account balance won't be the minimum total liability for equity index contracts.

Now, what types of things do we consider when we value an embedded derivative, especially on these forward-starting options? Management does have to make its best estimate as to the future levels of the index, future participation rates, your caps, floors, et cetera in order to come up with, if you will, an anticipated cash flow of the embedded value. That may be done in a single scenario or in multiple scenarios. Secondly, you should consider the propensity for policyholder behavior. Do we consider the forfeiture of equity returns prior or on early surrender? That would also be a consideration. Surrender charges are not considered part of the cash flow.

In Chart 2 I've come up with a graphic example of an anticipated equity index

annuity over a 10-year period. The lower part of that graph is the underlying guarantee, which is not subject to movement in the index. However, that little different colored slice on top is the accumulation that is attributable to the movement in the index. We're going to take all of the contingencies (mortality, surrender, withdrawal, etc) and those contingencies should be consistent with our DAC assumptions, used to develop our estimated gross profits (EGPs)—and we should come up with a set of cash flows over the life of the contract. The present value due to the embedded option cash flows at the date of issue is the embedded option liability. These present values are based on the current risk-free rates for single scenarios or the path-wise risk-free rate for multiple stochastic scenarios. The remainder of the original deposit is the host contract liability.

If we are not able to separate out the embedded derivatives and value it by itself, and it cannot be identified or measured reliably, then we account for the entire contract at fair value and the contract may not be designated as a hedging instrument.

**MS. WHITMORE:** Let's do a brief review of what hedge accounting is and what we have to do to qualify for hedge accounting. The first thing you have to do is prepare very complete documentation related to each hedge. It has to document what the hedge is going to be, what you're trying to do with it, and how you're going to calculate the effectiveness.

The documentation, by the way, must be in place and complete at the time that hedge accounting starts. You can't go back and get the documentation done later. The SEC has focused on the issue of documentation for public companies. A number of companies have had to amend and re-file financial statements because of what the SEC perceived as incomplete documentation, even in cases in which it was pretty obvious, when you're looking at that instrument, how you would go about measuring effectiveness. But because every "t" was not crossed, and every "i" was not dotted, their documentation was considered to be incomplete. They, in effect, had to go back and restate financial statements, redo the documentation, and start hedge accounting, going forward from there.

The items that need to be in there include: What are you hedging? What's the nature of the risk that you're hedging? What are your risk management objectives? And then finally, how are you going to calculate effectiveness? "Highly effective" is generally being perceived as having a correlation of 80 to 125 percent. Also, effectiveness must be measured at least quarterly. If your correlation is less than or greater than or not exactly 100 percent, ineffectiveness will be reflected in the financial statements.

There's specific guidance on the use of pools and when you can qualify to use hedge accounting for a hedge of a pool of similar assets or liabilities. They must share the same market risk exposure, and the change in the fair value for each of the items in that pool must be expected to respond generally proportionately to the

pool as a whole. For example, if you expect the pool as a whole to change in value 10 percent for a 10 percent change in an interest rate, then each individual item within that pool must change by 9 to 11 percent. If the change were 7 to 13 percent, it would not qualify for hedge accounting as a pool.

The guidance for cash-flow hedge accounting could be seen as being a little looser, simply because it's less specific. They must share the same exposure and they must be expected to move in a similar way. You don't have the specific requirement that each item move in exactly this proportionate way.

Another requirement is that the exposure that you're hedging must expose the company to income statement risk. For instance, you can't qualify for hedge accounting for a fair-value hedge on a held to maturity security because there is no possibility that a market value change can ever impact your financial statements. The kind of risks that you can hedge under FAS 133 and qualify for hedge accounting are things such as the market price risk, the overall fair value, and for financial items, you can hedge interest rate risks, foreign exchange risk, and credit default risk.

Interest rate risk is usually going to be a change in benchmark interest rates. The acceptable benchmark interest rates are LIBOR and, in the U.S., Treasuries. In a non-U.S. situation, it's the comparable risk-free rate, that is, full faith and credit government securities if the government is rated AAA, or AAA corporate securities if government securities are not rated AAA.

Companies might like to use another benchmark rate, however, as far as the FASB is concerned, the only two you can use are LIBOR and risk-free.

Earlier I alluded to the fact that, prior to FAS 133, a number of companies were using macro hedging and admitting that they were using macro hedging. You can look at the old accounting guidance and you could say, "Well, you really hardly ever get there."

Companies will still determine their need to enter into various types of hedging strategies by considering their overall position. But they must translate this to a micro level in a much more detailed manner than has ever been required. Under FAS 133, you now have to document and perhaps execute transactions at an extremely micro level. You must have systems in place to support it, and that means systems that can document and redocument in their complete forms the various hedging and redesignation of hedges that will be necessary.

For fair-value hedges, gains and losses are recognized in earnings as a result of changes in the fair value of the derivatives, but then so is the change in the fair value of the hedged item that is related to the aspect you're hedging.

For instance, I could have a pool of GIC contracts where I'm concerned about my

exposure to changing interest rates. I could enter into an interest rate swap that would hedge my position. If I decide to structure it as a fair-value hedge, I identify a portfolio, all of which I expect to fall within my narrow corridor of a 9 to 11 percent change, given a 10 percent change. Then I enter into a swap in which I will pay floating and receive fixed. Now let's say, come the end of the quarter, there's been an interest rate increase so that my swap declined in value by \$ 1,000, but for whatever reason, my GICs only declined in value by \$900. I'll make an adjustment to my GIC liabilities to reduce them by the \$900; I'll reflect the change in the fair value of my swap, \$1,000; and a \$100 loss will be reflected in the income statement (the difference between the change in the fair value of the swap and the change in the fair value of the liabilities that I was hedging).

There will always be income statement volatility on a fair value hedge unless that hedge is absolutely perfect. It would be extremely difficult to construct a hedge that involves a portfolio that is perfectly effective. For it to be perfectly effective, every single item in that portfolio would have to have the exact same maturity date and the exact same interest reset date, and you can imagine how difficult that would be.

I said earlier that in a cash flow hedge, you're basically trying to protect yourself against a change in cash flows that will occur on a forecasted transaction. For hedges that qualify for cash flow hedge accounting, the derivative instruments are marked to market and reflected on the balance sheet, however, the gains or losses that occur on the derivatives are reflected in other comprehensive income until such time as the forecasted transactions occur. So for instance, let's say I had purchased a LIBOR-based bond. I could use the exact same instrument, the exact same swap, that I had used on my GIC example to construct a cash-flow hedge.

Because I'm going to be earning a variable rate, and let's say it was LIBOR, I enter into a LIBOR swap. I will agree to pay variable and receive fixed. This will be constructed as a cash-flow hedge. Let's say that at the end of the first quarterly period, interest rates increased, and my derivative has changed in value by \$1,000. That \$1,000 loss would go into other comprehensive income and then would be released into the income statement over the same period as interest payments on the LIBOR-based bond that I was hedging.

Hedge ineffectiveness comes from a number of places. Ineffectiveness will always be recognized in the income statement. For instance, I can get ineffectiveness because notional amounts are not identical. Repricing, or any of the other terms is not identical. Again, the important thing is that ineffectiveness always hits the profit-and-loss (P&L) statement.

The other thing you will have heard about is the shortcut method. The shortcut method was something that the FASB gave companies in an effort to relieve some of the complexities associated with hedge accounting. You can't use the shortcut method in very many circumstances. It can only be used when the derivative

instrument is an interest rate swap and the index on the variable leg is the same index that's used on the variable leg of the item that you're hedging. All of the terms must match exactly, and the FASB staff has clarified that "exact" actually means exact. So, if the bond that you were going to hedge repriced October 1, the interest rate swap must reprice on October 1. If it reprices on October 5, even though that's only four days, it would not qualify for the shortcut method.

It is nearly impossible to construct a hedge of a pool that would qualify for the shortcut method. It can be done, but it would be very difficult to do. I had conversations with people about trying to do it, particularly on the contract side. That usually means practices such as issuing all GICs on the same day and using a single maturity date. It creates what can be perceived as marketing problems to try to create a pool rigid enough to be able to get hedge accounting.

There are places where the shortcut method is usable. Probably the easiest would be if the company has issued variable debt and now would like to lock in the interest rate. It's pretty easy in that case to construct the hedge that would match exactly.

Despite the fact that it's not available very often, most companies will, in fact, attempt to qualify for the shortcut method any time they can. It is that much better in the sense that if you qualify for the shortcut, then there are the explicit and implicit assumptions that hedge ineffectiveness is zero.

**MS. CHERRI DIVIN:** Thank you, Deborah. I'll be going over testing for hedge effectiveness and some of the considerations you might want to take into account when designing methods for hedge effectiveness testing.

First of all, let's talk about situations in which hedge accounting might be appropriate. Deborah noted examples of when hedge accounting is appropriate, and I want to remind you that hedge accounting is not generally appropriate for equity index annuities. Obviously, this is because both the embedded derivative in the liability and the hedging instrument are marked to market in the earnings statement. As such, there would be no hedge accounting needed. Hedge accounting comes into play when there is a natural mismatch in the accounting results.

FAS 133 specifically states that to qualify for fair value hedge accounting, the hedging relationship at the inception and on an ongoing basis is expected to be highly effective in achieving offsetting changes in fair value attributable to the hedged risk during the period that the hedge is designated. FAS 133 does not define the term "highly effective." However, it does point to other areas that give further definition. All in all, you need to remember that when you first establish the hedge, you must have a reasonable basis for the methodology and an expectation that the hedge will be highly effective initially and ongoing. When financial statements are reported, you must do hedge-effective testing at that point in time, generally on a quarterly basis.

A key step in establishing an FAS 133 hedge is deciding which method to use for assessing effectiveness. The selection should recognize both the practical and the theoretical considerations. When we talk about hedge effectiveness, you must have the assumption that this particular relationship will be highly effective over the life of the policy.

Another type of hedge effectiveness testing is the retrospective look back, which is used to determine the effective and ineffective portions of a cash flow hedge. We'll go through those two types of purposes.

FAS 133 provides specific guidance on consistency in methodology. Hedges must be treated similarly when testing for hedge effectiveness. Also, your method of testing for hedge effectiveness must be consistent with overall risk management policy of the company.

On the other hand, FAS 133 does not clearly define the term "highly effective." This term is very important when you're designing your test, because you need to know how tight the margins are. Generally, FAS 133 looks to the FAS 80 term of "high correlation." The industry standard suggests that we use the 80 to 120 range or 80 to 125, depending on how you do the arithmetic for a dollar offset method. If you're using statistical amounts, you can use an R-squared factor of 0.8.

That leads us to the two methods that are commonly used for testing hedge effectiveness. One is the dollar offset method and the other is statistical, or regression analysis. The dollar offset method tests the historical changes in the fair value of a derivative, as compared to the changes with hedge items. When you're measuring these changes, you have a choice of testing between period-by-period changes and comparing those with changes cumulative from inception to date at the time the hedge was started. As you determine the amount of the change, you have a degree of leeway. To begin with, you can choose to recognize the time value.

If you compare calculations that include the time value money to ones that do not, the conclusions are likely to differ significantly since the spot rates differ from the forward rates. As you know, at the inception, there will be a difference between the spot and forward rates. And the degree to which the spot and forward rates differ will shape the difference in the results even though you might have a perfect hedge. If you measure only the changes with the time values, they'll merge at the end, but over the period, they won't be the same. In Chart 3 I've drawn it so there is a slight downward tilt to the price, but the forward rates would always go up, because of the time value of money.

For those of you who are more familiar with call options because of the equity index annuity, you'll see that the time value has a similar impact. If you don't strip out the time value when you measure changes, period by period, you may get a result that suggests a perfect hedge from an economic perspective, but it might not be

hedged well when measured on the offset method.

But again, this is just for example because typically, the equity index annuity would not come into play when you're doing hedge accounting.

To summarize, for this dollar offset method, you can use the entire value of the derivative, or you can strip out the time value and just measure the intrinsic value. You can use a discounted intrinsic value for option contracts and, for futures forward contracts, you can use the changes from spot price. But remember, when you're actually reporting your accounting values, any mismatch or the effect of the time value will fall through, which is a logical conclusion.

Table 1 gives you a numerical example of how the dollar offset method works. This is a fair value hedge. If you look at the first column, you see time periods measured on a quarterly basis. The first column is a period, and the next column is the change in the derivative instrument. You can see the derivative went up by \$100 the first period, the first quarter. The hedged item went down by 90, so there was a mismatch.

Table 1

## Cumulative Dollar Offset Fair Value Hedge

Derivative				
End of	Hedging Instr.	Hedged Item	Period	Cumulative
Month	Gain / Loss	Gain / Loss	Change %	Change %
3/31/01	100	-90	111%	-111%
6/30/01	25	-21	119%	-113%
9/30/01	-20	27	74%	-125%
12/31/01	-5	4	125%	-125%
3/31/01	25	-22	114%	-123%

Now, if you're looking at a period-by-period change, you look at the 111 percent change in the first period. This falls within the 80 to 125 ratio referenced previously. The next quarter, you still fall within it as you move on, and measure it period by period. If you move over to the fifth column where it talks about the cumulative change, that would be inception to date. Now, if you scan down the other column, where you have a period-by-period change, you'll see a 74 percent



rate occur in the third year, which means it does not fall within the 80 to 125 percent range. However, if you actually set up your test to measure on a cumulative basis, in this particular example, every answer would fall within that range. So, as you set up your method for testing, you have a number of choices, and those choices may affect your actual results fairly significantly. In this example, the period-by-period change would not show an effective hedge in every period.

I'm going to move now to a cash value hedge (Table 2). Similar to the previous table, you will see the change on a period-by-period basis, but also talk about the effective and ineffective portion that goes through earnings.

Table 2

## Cumulative Dollar Offset Cash Flow Hedge ₱140

		Fair Value of Derivative Gain / Loss		PV Expected Future Cash Flows on Hedged Transaction Gain / Loss			
		(A)	(B)	(C)	(D)	(E)	(F)
		Change During Period	Cumulative Change	Change During Period	Cumulative Change	Lesser of the 2 Cumulative Changes	Adjustment to OCI
Period							
1		100	100	-96	-96	96	96
2		94	194	-101	-197	194	98
3		-162	32	160	-37	32	-162
4		-101	-69	103	66	-66	-98
5		30	-39	-32	34	-34	32

You have a fair value of a derivative, and in this particular example, the hedge transaction is being measured as the present value of the expected cash. In the first column, you have a change during a period, as we did on the other slide. You see \$100 in the first column for the change during the period for the derivative, a \$96 loss on the cash flow.

You can use this method as we did with the fair value hedge to measure effectiveness. In addition, you can use this spreadsheet to measure the ineffective portion, the portion that actually goes through earnings, and separate that out from the effective portion. It goes into other comprehensive income (OCI). For example, on the first line, your derivative would pass \$100 through earnings, and then the amount to OCI would be the \$96. That means that you'd have a negative \$4 that would hit earnings. You would do this each period. In the second period, you'll see that the total amount in OCI, after you have a \$94 change—if you

skip on over to column E—would be the \$194, or the change in the OCI would be \$98. That's what you have in column F. And so again, in column A, your derivative would be the \$94. That would be your change to earnings. Your OCI would be the \$98, and you have a positive forward to earnings. You would do this over the life of the contracts.

Another method to test hedge effectiveness is a statistical method. For example, in a time series regression analysis, you can have an equation with X as the hedging instrument and measure the sensitivity of Y to X. And the R squared results would indicate the change in Y that can be explained by X.

Using this kind of analysis, at times, is fairly complex. You must determine whether your actual hedge matches the type of regression analysis that you're doing. In this type of equation, your beta and your hedge should match for the beta and regression analysis, or the R squared would not be a good demonstration of the true correlation.

One of the more difficult things about testing is getting the appropriate data—what's really relevant to what you're trying to measure. For example, if you're looking over a five-year horizon and you're reporting earnings quarterly, you'd probably want to get quarterly changes for your analysis. Quarterly examples are often hard to get if you want a number of samples with relevant data. For example, if you want 100 data points for a quarterly analysis, it's fairly difficult to find that in certain circumstances. You might try to get around these data concerns by using daily changes or monthly changes, but those might not have the same correlations as would quarterly changes.

Sometimes people think that to get more data points, they would just offset their starting dates. For example, to get quarterly points we often think of quarterly periods that tie to financial statements, or January 1 through the end of March. These quarterly periods might be the first step in getting points. You can stagger the start date by one day and start with January 2 and get another set of points and so forth. You get 365 sets of points. But what you have are sets of points or data that are actually dependent upon each other. But, a fundamental statistics assumption is the independence of the events. So, there are adjustments that you can make to offset the auto correlation.

The other question that comes up fairly regularly is, am I going to measure price changes or the prices themselves? If you read FAS 133 on fair-value hedges, for example, it talks about the changes in the prices, so that implies that changes in prices would be the best thing to measure. But as you do that, you might look at the results very carefully. As you read through the literature, you'll find that if you use prices, sometimes you can get very unexpected results, and if you do price changes, you might also get unexpected results. So either way, you need to be very careful with what you're doing.

I'm going to skip over to some of the DIG statements that provide more room to be flexible. FASB doesn't give you solid guidelines about how to choose your methods. But as Deborah so carefully pointed out, documentation is always a very good thing to have around, and very thorough documentation is even better.

One issue with E7, if you read it from a certain angle, is that it generally permits you to assume that hedges survive for brief periods of ineffectiveness and preserve the hedge accounting. Just keep in mind that any time you're measuring period by period and checking each period—no matter how strict your confidence is in that particular interval—at times, you are likely to fall out of the range and go off on the outlying boundaries. If you read E7, you might look at that very carefully to see whether that gives you a feeling that over a certain period, you may have an ineffective or might fall within the 80 to 125 range at that point in time. If you keep in mind, on a go forward basis, you're trying to satisfy the FAS 133 statement that there's a future expectation of highly effective.

DIG statement F5 has an interesting discussion of partial-term hedging. It gives the example of a five-year period. If you think about the first year of a five-year period, you may have very strong confidence that this hedge will be effective for that period, but you're not quite as confident over the remaining period of time. This DIG statement says that in the hedge effectiveness documentation, you could address a shorter period than the full life of the derivatives to be designated as a hedging period. But keep in mind that if you do that, there is an implication that you will either make changes as you go along, some sort of dynamic adjustment, or you'll terminate that hedge if it's not appropriate at that time and there's not an expectation of being highly effective. If you have situations like that, that would be a good one to read, but you need to be certain that you have an expectation that it is highly effective for the period.

If you read some of the DIG statements, it appears that there is a little more flexibility in statistical methods as far as determining whether they are effective. But keep in mind that regardless of whether you do the statistical methods, you can use those for looking back to see if it was highly effective and for looking forward to determine if you think it will continue to be highly effective. But when you actually get to the accounting results, the dollar offset method is the one that is being used to just compare the changes and roll them forward.

DIG E7 actually has some comments on statistical analysis. You must be careful when you use that. I think we touched on a number of points that can be very difficult. Read it very carefully if you are using these methods to ensure that you use them appropriately. The DIG statement also ends with a warning, essentially—that regression and other types of statistical analysis are complex and that these methodologies require appropriate interpretation and understanding of the statistical inferences.

To summarize, as you can tell, defining hedgeable risk presents a number of

challenges. If you do decide to set up a hedge, it can be time consuming, and the ongoing extensive assessment of hedge ineffectiveness is required. A considerable amount of work is required, and unfortunately, the shortcut method is only available in very limited situations.

**MR. PETER TILLEY:** We had a lot of discussion this afternoon about interest rate swaps, and I think I have that one pretty much figured out, thanks. But interest rate caps and floors present a different challenge. Perhaps I have a \$200 million block of portfolio annuities, and I want to put a \$100 million notional cap against that, because I want to have some protection so that if interest rates rise, I can increase my credited rates. Maybe I don't think I'm going to have to increase credited rates all the way once I get over that strike level on my entire block, but it seems that I'd rather be a little underhedged than overhedged in that situation.

It's the same thing with interest rate floors. If I have a block of business that has a minimum rate guarantee, and I want to make sure I'm protected, I buy an interest rate floor. But what amount of interest floor do I need to buy? Do I need to buy something that's equal to that current account balance? Or do I need to buy something where I expect that over the next five years, I've got the dollar amount? I have a \$200 million block that's going to decline to about \$150 million, and I want to buy about a \$175 million floor. Am I putting myself into a situation automatically, in which I can't get hedge accounting treatment on these things? Do I have to be that exact with the dollar amounts? Is there any way around this?

**MS. WHITMORE:** I should warn you, it's hard to answer any of these questions with a great deal of specificity. There are a number of ways you could design and then define what you were doing, and they can result in very different accounting. In your earlier example, you said you wanted to put a \$100 hedge in place. There are at least two ways you can construct that. You can, in effect, say, "I'm going to hedge 50 percent of my portfolio and structure it literally as a 50 percent." That's usually not what you're going to want to do. You want to define it as what I'm hedging is the change on the first \$100 worth of changes, because it'll usually be easier to demonstrate effectiveness for those pieces.

Now, in your other example, when you would expect to have the declining portfolio over time, you need to design a hedge that declined over time, which is possible to do. You can put the \$200 million in place, starting today, but you want it to drop off along the way, because you're going to wind up in an overhedged scenario. There's no way to have designed anything or to have defined anything in a way that will avoid the ineffectiveness.

Chart 1

*Embedded Derivative*  
 When Does a Contract Have an Embedded Derivative Subject to this Statement?

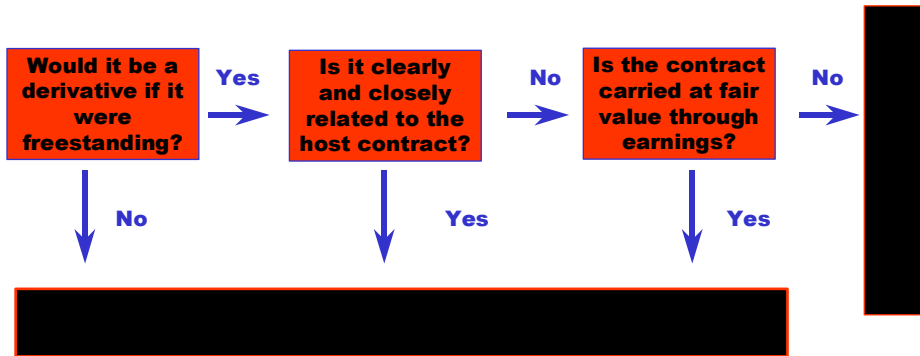


Chart 2

Projected EIA Fund Growth

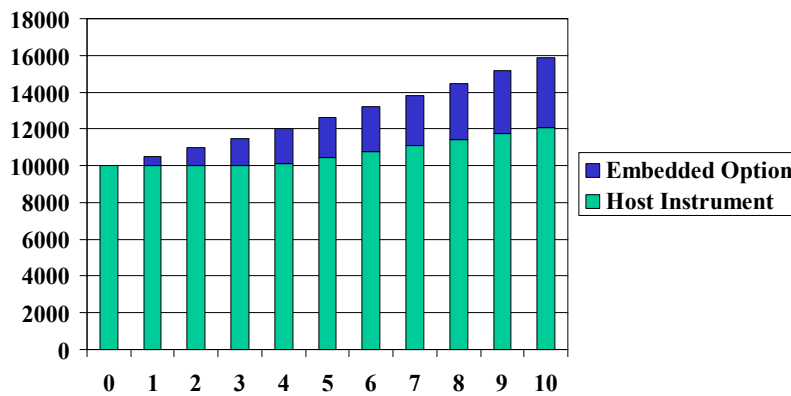


Chart 3

## Hedge Effectiveness

### Spot – Forward Convergence

Price changes in a perfectly matched forward contract might not be correlated with changes in the spot rates due to the forward rate discount.

