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Fair Value of Insurance Liabilities

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Moderator: J. PETER DURAN
Panelists: FREDERIC W. CORWIN, JR.
S. MICHAEL MCLAUGHLIN
ROBERT C. WILKINS†

Recorder: J. PETER DURAN

Summary: The Society of Actuaries (SOA) has recently conducted a call for papers and subsequently cosponsored a conference on the fair value of insurance liabilities. This session presents an overview of the conference, including a comparison for some of the methods presented. The session also provides a status update of recent industry and professional activities and what the future may hold for the use of fair value of insurance liabilities in insurance company financial statements.

Mr. J. Peter Duran: Bob Wilkins is project manager with the Financial Accounting Standards Board (FASB). He will update us on the latest developments at the FASB in the area of fair value of liabilities. Mike McLaughlin is a partner and consulting actuary with Ernst & Young in Chicago. Mike has written a paper on what he has termed the indexed discount rate method for determining fair value and will speak to us on that topic. Finally, Rick Corwin is second vice president at John Hancock. For internal management purposes, John Hancock has been reporting their pension products on a fair-value basis for quite some time. Rick has a lot of very practical experience with actually reporting on a fair-value basis.

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†Mr. Wilkins, not a member of the sponsoring organizations, is Project Manager with the Financial Accounting Standards Board in Norwalk, CT.

I'm a consulting actuary and partner with Ernst & Young in New York. I think it will be an interesting panel.

Mr. Robert C. Wilkins: I thought I might just make a few opening comments about the FASB just to help make sure everybody understands the organization. We are a not-for-profit organization. In setting standards for financial reporting, our focus is general purpose external financial reporting, not statutory reporting. Our standards are made by a group of seven board members who come from diverse backgrounds. We have three members who have auditing backgrounds—certified public accountants (CPAs), who typically come directly from major CPA firms. We have two members who have come from corporate America. We have another member with an academic background, and our seventh board member typically represents the user community—those that use financial statements. Currently that board member is a former financial analyst.

Our standards have to be decided by a supermajority vote of two-thirds of the board members. When we have a full complement of seven board members (as we do currently), that requires five out of seven to agree in order for us to issue a standard. Under the supermajority requirement, each board member may not get his first preference, and so sometimes we have to try to work out some compromise that is still an improvement in financial reporting.

We operate in the sunshine. I, as a staff member (as mentioned I've been a project manager at the FASB for 18 years), cannot get five board members in the same room to talk about a technical issue without it being a meeting that must be open to public observation and announced in advance. We follow that requirement pretty religiously. We have public meetings usually on Wednesdays of each week, where the public can come in and observe the technical discussions that take place. We have liaison meetings with various organizations, such as the American Council of Life Insurance (ACLI) and the American Academy of Actuaries (AAA), once a year. Those liaison meetings also need to be open to public observation. If we're meeting with an outside group, we can't have more than two board members participate without it being open to public observation. In addition to functioning in the sunshine, we also try to get input from our constituents with respect to any standards we plan to set.

Before we ever issue a final rule we always issue a proposal, which we refer to as an Exposure Draft, and give people several months to read and comment on it. Then we analyze the comments received and redeliberate all the issues before we issue a final statement. I am pointing this out to let you know that, as we move forward on a particular issue, the input that we get is important to us. Actuaries as well as other

representatives of companies and organizations are certainly encouraged to give some input about the various projects that we're working on.

With respect to the valuation of liabilities, we've already been involved somewhat in looking at that. We do have a standard—*Statement 107*—that requires the disclosure of fair values of financial instruments, both assets and liabilities. But we did exclude liabilities for insurance contracts from the scope of that document. In our project on marketable securities, we discussed at great length whether liabilities should be reported at fair value in the balance sheet. The project's principal focus was on the asset side, namely, investments in securities. But, of course, we were aware that entities use asset/liability management to try to correlate the maturity of their assets with those of their liabilities, in order to minimize or control their exposure to interest rate changes. And so, when the staff went to the board on this project and recommended that the board add it to its technical agenda, which is a formal decision to commit resources, we recommended that the board do both sides of the balance sheet—both the assets and the liabilities—and not just one side alone. In June 1991, the board decided to undertake the project on marketable securities. In making such an agenda decision, the board members usually want to have some agreement about the general direction that the project would take. They decided that the most relevant method of reporting would be to report investments in securities, and perhaps related liabilities, at market value. That was the original direction of the project.

We encountered a couple of different difficulties when we considered the liability side. One problem was which liabilities should be reported at fair value. Since we were looking at only investments in securities, we were addressing only some assets, not all the assets. Clearly investments in loans are financial instruments that would not be reported at fair value. Thus, you would not want to report all liabilities at fair value; that would create an imbalance. If you wanted to report only certain liabilities at fair value, then you had to decide which are the liabilities that are related to investments in securities, as opposed to which are the liabilities that are related to, say, investments in loans, which would not be covered by that particular project. We learned there was really no good way to identify which liabilities should be at fair value. We met with representatives of various companies, such as insurance companies, banks, thrifts, and industrial companies. They typically did not identify which assets are tied directly to which liabilities. They did their asset/liability management on a macro (or overall) basis, or they did it in large groups. But they didn't pare it down to say that one security is related to a certain liability. And so, the first problem—trying to decide which of the liabilities should be at fair value—presented us with a great hurdle.

The second issue that we ran into is that some liabilities are of such a nature that it's not clear how you should determine their fair value (market value). In particular, we had difficulties when we looked at the banking industry's deposit liabilities and, for the insurance industry, certain liabilities for insurance contracts that are written. For instance, bankers would say that the obligation for \$1,000 deposited in a passbook account would have a fair value of less than \$1,000. Why? In their view, it was a cheap source of funds due to the very low rates of interest paid on passbook accounts. Even though those amounts are withdrawable on demand, bankers have the expectation, backed by historical experience, that people will not be taking their money out in the near term. Therefore, because those funds represent a cheap source of borrowing, bankers essentially want to be able to report them at a gain, or report them at a fair value that is less than what is payable on demand. Some board members are troubled by that line of reasoning. It would also imply that a bank has a loss simply because a depositor exercises its pre-existing right to make a withdrawal.

Now the same analogy can also be applied to the world of life insurance products, where there's a cash surrender value. Academy representatives have suggested to us that the fair value of the insurance obligations should, in many cases, be less than the cash surrender value. I recognize that when a policyholder surrenders a policy, he foregoes other rights, so it is not a direct parallel to a depositor simply making withdrawals from his passbook savings account.

Because of these troubling areas, ultimately we ended up not being able to resolve the liability side, and thus *Statement 115* focused only on the asset side. We also gave up on the idea that all investments needed to be at fair value. We acknowledged, for debt securities, that the investor has the intent and ability to hold until maturity, amortized cost as the basis for reporting those assets. That accounting is consistent with the practice that pre-dated *Statement 115*.

We issued *Statement 115* in May 1993, and within a month-and-a-half, we received a letter from 13 life insurance companies, requesting us to undertake a project to address the valuation of liabilities. They said that adoption of *Statement 115* would cause them too much imbalance to their net shareholders' equity if indeed some assets were going to be at fair value (and therefore, reported at different amounts when interest rates changed) but with no adjustment for fair value changes on the liability side. It was surprising to get a single letter signed by the 13 life insurance companies and not get anything from the ACLI, because normally they seem to be the voice of life insurance companies in terms of interactions with the FASB. When we asked them why we weren't hearing from them, ACLI representatives indicated that there were diverse views in their membership.

Shortly thereafter, we learned that the AAA was undertaking a project to examine the fair value of liabilities. The ACLI also said that it would at least serve somewhat like an umbrella organization for a working group that would also examine this issue.

Normally, when we get a request to undertake a project, we bring that request to a formal board meeting within 12 months and have the board decide whether or not there are resources they wish to allocate to that particular project request. In this case, because we knew that we had at least two groups studying the issue and implying that the FASB would receive the results of their efforts, we thought it would be premature to make an agenda decision about whether we should have a project on the fair value of liabilities until we heard from those two groups.

Where do we stand now in 1996? The AAA group gave us results of their efforts last year. You may be aware that the SOA issued a call for papers and held a symposium last December on the fair value of liabilities at New York University. The Academy as well as many other participants presented papers discussing different approaches. I participated in the conference and obtained the conference materials.

With respect to the ACLI efforts, we never really got any helpful information. ACLI representatives said that they were unable to find a single method that could be used in determining the fair value of all liabilities. They mentioned that some methods seem to fit certain liabilities, and other methods seem to fit still other liabilities, but they couldn't find a single method to fit all liabilities. We indicated that we would be very interested to know their views about which methods were apropos to different types of liabilities. That would be very useful information because there's no requirement that you use only a single method in valuing different types of obligations. They have since told us that their board of directors has been unwilling to share that information with us.

I hope we'll be able to meet with ACI representatives later this summer, because they said they wish to explain in person the sensitivities involved and why they could not share anything. I suspect it's probably because of adverse views that some members of the organization have. Some are very content with *Statement 115* because they fear that if we're able to determine the fair value of liabilities, maybe there is no reason to continue to have some investments in securities at cost. Remember that those deemed to be held-to-maturity are still reported at cost. Some could say that if you know which liabilities relate to those investments, then report both of them at fair value. And then, to the extent that there are any differences, they would be reflected in the balance sheet. I think some are quite content with the status quo, so we'll just have to see. But in any case, I wanted to let you know

that the valuation of liabilities is one issue that the board has considered in various contexts.

When I talked about those two difficulties there's a third one that I should at least mention. If there is a change in the creditworthiness of the issuer of the obligation (the debtor), an issue arises as to whether it is appropriate to reflect that in the issuer's balance sheet.

Suppose an organization has a liability of \$1,000, but suddenly its creditworthiness starts to deteriorate. The interest rate relative to lending to it is going to increase, which would cause the fair value of the obligation to decrease. Clearly if somebody held that company's \$1,000 bond, the value of that bond would fall when its creditworthiness is impaired. If that liability is to be reported at fair value, is it appropriate (in accounting for the issuer) to report that liability at a lesser amount?

Should a company be reflecting the deterioration of its own creditworthiness? The difficulty would be that in a double-entry bookkeeping system, as we have, that would tend to increase the shareholders' equity. So should shareholders' equity increase, which typically indicates an improvement, because the company's creditworthiness is deteriorating? Some say that makes no sense at all. Why should shareholders' equity show an increase as the organization is deteriorating or entering troubled times. Others would say that's the way it should be because, after all, when your creditworthiness deteriorates, the shareholders alone don't bear the sole burden of that deterioration. Typically some loss-producing event or situation causes the deterioration in creditworthiness and that loss has independently reduced shareholders' equity. Reporting a company's debt at a lower fair value mitigates the impact on shareholders and shares with debtholders the impact of the event and related deterioration in creditworthiness. This is a contentious issue. I have board members with different views on it, and that's one issue that we will also have to address.

One other endeavor at the FASB that I wanted to mention is our project on derivatives and hedging that I'm currently in charge of. We recently issued an Exposure Draft. As I mentioned, we never set a final rule immediately; we always come up with a proposal. So we have a proposed statement, referred to as an Exposure Draft, that came out a week ago today. It is free. Just call our offices and we'll send you one. We're soliciting comments until October 11, 1996. So up until that date a copy of the proposed statement is free. We will also be holding a public hearing the following month for individuals who wish to come in and talk to us face-to-face, explain their views in a public session, and also be available for questions from the board and staff. That opportunity will come up in the middle of November.

In the derivatives and hedging project, we are proposing that all derivatives be reported at fair value. We're also identifying two major types of hedging activities for which special accounting will be permitted. One is if you are hedging the variability in future cash flows. From an insurance perspective you have no difficulty understanding variability of future cash flows. Typically we also point out that this would apply if somebody had an investment or an obligation that was a variable-rate investment (floating-rate bond or floating-rate security). There's variability to future cash flows, so you can designate a derivative as a hedge of the exposure for the variability of future cash flows.

The second way in which you can get special accounting under our proposal would be to designate a derivative as a hedge of the exposure to changes in the market value or fair value of an existing asset, liability, or firm commitment (referred to as a fair-value hedge). In contrast, the first example I gave was a cash-flow hedge.

For a fair-value hedge, one of the requirements is that the item being hedged (the asset, liability, or firm commitment) has a reliably measurable fair value. There are concerns about how that would ever be applied by insurance companies, given the diversity of methods used with respect to valuing the liabilities for insurance contracts written. And so, the proposal, as it's currently drafted, says that the liabilities for insurance contracts written may not be designated as a hedged item under a fair-value hedge. You can still hedge the variability of future cash flows relative to obligations you may have, but you may not designate the liability itself as a hedged item. And that decision really relates to the SOA's December conference on valuation of liabilities. The AAA paper took no position with respect to a particular method, though it did discuss a wide variety of methods that could be used in determining the fair value of liabilities.

I reported to the board the results of the conference, pointing out the diversity of viewpoints that were expressed. I think the board said, at this time, they thought it safer just to exclude liabilities for insurance contracts written, from being able to be designated as the hedged item until there is better agreement about how to value them. I mention this because, quite possibly, the comment letters we receive on this proposal could say that insurance companies need to be able to designate those obligations as hedged items.

Getting back to our original request from 13 life insurance companies that we add a project to address the fair value of liabilities, it is still being held up. I have not yet taken that back to the board for a decision. When we realized in March 1996 that we weren't going to be getting anything from ACLI, we decided to wait until past the middle of this year.

As I mentioned we have seven board members, who are all full-time employees of the FASB. They serve five-year terms, for no more than two complete terms. We have two board members that are completing their terms and will be leaving the board at the end of this month (June). The two new replacement board members have already been appointed. They will start in the beginning of July 1996. We thought it did not make sense to take a decision about this potential project to the existing board members in April or May, when the new board members would be involved in the deliberations. We thought we ought to wait until we had the new board in place before we take that decision before them. They can decide whether or not this is an area to which they wish to devote resources.

Normally then we would be going to the board in the third quarter of this year. I do not know if the decision might be postponed until the fourth quarter just to see what kinds of comments we receive in response to our Exposure Draft on derivatives and hedging since those comments could very well focus on the particular exclusion we have with respect to liabilities for insurance contracts written.

By the way, when I use the phrase *contracts*, that does not include investment contracts. In accounting, we distinguish between investment contracts and insurance contracts, and so when you're just talking about something like guaranteed investment contracts (GICs), it's an obligation to make future cash flows that do not have any of the risks involved in a notion of insurance—there's no mortality risk. This just gives you a little bit of an overview of some of the things that we have been considering.

As a final comment, I want to point out that I've been using the terms *market value* and *fair value* interchangeably. We view them as synonyms at the FASB. Fair value happens to be the phrase that's used by international standards setters, and so that's the phrase we use in our discussions. Some people also felt that there was no "market value" if there was not a ready active market. And so that's why we decided to go with the term *fair value* rather than *market value*. If there's an active ready market, that would provide the most relevant information, and the most relevant way of determining fair value. But if you don't have a ready active market, then you need to make an estimate of fair value. In making estimates, we certainly permit various methods. We are letting the individuals preparing the financial statements make the judgments about what are the methods that are the most appropriate in determining fair value.

I would encourage you, to the extent you have an interest, to call us and get a free copy of our Exposure Draft on derivatives and hedging. The more input we get, the better it is. Obviously it's more work for me as a project manager, but we want to get comments. And the reasons for your views are more important than just what

the views are. We don't just take a headcount; it's not like a vote. We describe in this document why we have arrived at the conclusions we made and we look forward to people rebutting the logic that we've used in forming those conclusions and learning the reasons that people have for the views that they hold.

Mr. S. Michael McLaughlin: I'm going to talk about the indexed discount rate (IDR) method of fair valuation of liabilities. I wrote a paper in response to the SOA call for papers on the subject of fair valuation of insurance liabilities. Those papers were presented at the seminar at New York University in December 1995, to which Bob made reference earlier.

This paper deals with a method that is similar to Method #7 in the AAA paper. That document was prepared by the Academy's Committee on Life Insurance Financial Reporting, and was made available directly to the FASB. I was a contributor, if not the author of Method 7 in the Academy's paper. I think it's fair to say, that this IDR method supersedes Method #7.

The Academy's position in testifying to the FASB in response to the exposure draft that became *Statement 115* was, of course, that actuaries can determine the fair value of liabilities. Seven different methods were presented.

The plurality of methods presented reduced rather than increased the credibility of the actuaries' approach. If we had just one or two methods presented with unanimous support perhaps there would have been more credibility. Similarly, the multiple options within some of the methods (the option-pricing method suggested eight different ways to determine appropriate spread) is not necessarily convincing. To limit the number of methods and approaches, my paper suggests that we first agree that there are certain criteria to which fair-value methods should adhere.

Criteria

We're taking it as a given that liabilities should be held at fair value, which is a proxy for market value. In fact, there is no market. But if we hold all or most of the assets at fair value, there can be no logical reason to hold all or most of the liabilities at book value.

The fair value of liabilities needs to be independent of the assets. In testifying to FASB, the Academy Committee on Life Insurance Financial Reporting (COLIFR) explained our seven different methods. After our presentation, one board member said, "Let me get this straight. You're going to determine the fair value of liabilities, but that depends on the specific assets that are held to support those liabilities." And my response was, "Yes, of course." The reaction was disbelief. The board really had difficulty with that. They felt that we have an asset but we know its market

value. If we buy some other assets, that by itself doesn't change the value of this asset. In fact, if we took on some liabilities, that would not change the value of the asset. Regardless of the liabilities, whether they are life or health or property/casualty, you know what your asset value is. Similarly, if we are to have a pure fair value of liabilities, it must be determinable without a dependence on specific assets.

It must be an objective method, at least as far as possible. Perhaps no method will meet all criteria absolutely. The method that I'm going to present to you is objective in its determination of the discount rate of future liability cash flows, which is the most difficult and perhaps the most subjective assumption. It is also the only assumption that's common to assets and liabilities. For that reason it is the most important assumption to be chosen objectively.

Any fair-value method should be consistent insofar as possible in several respects: (1) consistent over time; (2) consistent with the method used to value the assets; (3) consistent with the current interest rate environment; (4) consistent between companies; and (5) consistent as far as possible with existing methods for option pricing, dynamic cash-flow testing, and appraisal.

The method should be general. One characteristic of present-day generally accepted accounting principles (GAAP) accounting is that we have one method for traditional nonparticipating policies, a different method for traditional participating policies, a third and different method if premiums are not paid for the full lifetime of the contract, a fourth method if there's no mortality or morbidity contingencies, and a fifth method for asset-accumulation-type products, such as universal life (UL). Of the five methods, none can really be considered purely general. The ideal, if we can obtain it, is to have one method that will work for life insurance liabilities, health insurance liabilities, medical or disability, personal automobile insurance, or environmental liability insurance. It really should work for all of these if it's going to be worthwhile.

And the method should be simple. If you cannot explain it to the Board of Directors, or analysts, or shareholders, but can explain it to professors at actuarial science schools, then it isn't simple and is not going to be acceptable. It's fine to rely on experts in appraising value, for example, real estate, because there's no ready market for it. Likewise for valuation of insurance liabilities, it's fine to use experts, like actuaries, finance scholars and so on, but the method has to be explainable and understandable. I submit to you that the IDR method meets all of these criteria.

Method

We project realistic liability cash flows. We do not project asset cash flows, those are separate. We explore a wide range of assumptions. We're going to use multiple scenarios and the range of assumptions chosen is going to be sufficiently wide that it will penetrate all the options available to the policyholder. We assume different types of policyholder behavior depending on, among other things, interest credited to those liabilities that have an account balance.

In general, we want to explore the assumptions to which the liability cash flows are most sensitive and explore those to the greatest degree.

Thus, if we have an interest-sensitive liability, we should explore a wide range of different interest rate scenarios. If we have medical or disability income business, perhaps there are other more important variables, such as morbidity or mortality risk. We should explore a wide range of scenarios for those assumptions.

We're going to choose a discount rate that is completely objective and risk-free and appropriate to the duration of the cash-flow item. We're going to use that same discount rate to take the present value of all our different scenarios as to future liability cash flows. We're not going to discount along the path because for high interest rate scenarios, that will give a lower weight to the results of that scenario, and vice versa for low interest rate scenarios.

We'll choose a central value among these many scenarios using either the mean or the median. We're not going to have any artificial probability weighting as to the likelihood of different scenarios arising; instead we will choose the central value. That is the basic method.

Characteristics

Here are the characteristics of the IDR method. First, the liability value, as determined, will be volatile. Typically it will go up when interest rates go down and vice versa. That volatility is appropriate, depending on the interest rate sensitivity of those liability cash flows. The balance sheet will reflect volatility on the asset side, as well as volatility on the liability side. Thus volatility in surplus will be truly reflective of asset/liability duration mismatch, if any.

The IDR method is a direct method. The Academy characterized this method as a mitigation or an indirect method, but I don't think that characterization is accurate. Here we are performing calculations directly on liability cash flows.

It's similar in essence to certain option-pricing methods except for the choice of an objective option adjustment spread, which I'll talk about in a moment.

This method is independent of the assets. It is necessary in many cases to model assets in order to determine an investment rate. In this method it need not be and perhaps should not be the assets of the company in question. Rather, these should be assets that are typical for the liabilities and the least confusing available, in terms of embedded options.

The discount rate is objective and the risk adjustment spread is also objective. Option-pricing methods rely on the "law of one price." One can determine the value of a new asset by decomposing it into component parts. One can reproduce the market value of those component parts by projecting a large number of scenarios, discounting those at a risk-free rate, and then solving for an option-adjusted spread that will reproduce the market value. For example, if one has a callable bond, one could value the option separate from the noncallable portion, add those values together, and reproduce the value of the asset. One can then use the determined option-adjusted spread to determine the value of other assets.

Here's where the flaw comes in. We're determining the value of liabilities, not assets. And that is the heart of the problem here. If you are valuing assets you need a positive spread, because you are going to take a view of the assets that reflects their risk. There is some risk with assets that you will not receive all the cash flows to which you're entitled, or that you will receive them later than expected.

If you are the holder of the liability, your risk is that you will have to incur greater outflows, or the same outflows at an earlier point in time. If a spread is to be used at all, then the spread for liabilities should be negative. This explains a great deal of the confusion on the subject. It also resolves part of the dilemma as to what happens if a company becomes less creditworthy. Larger positive spreads would lead to a lower value of liabilities, which doesn't seem logical. In fact a larger negative spread would increase the value of liabilities.

In the case of the IDR method, no spread whatsoever is used. That gives a value that is neither the conservative view that would be taken on one side of the transaction as an asset, nor on the other side as a liability.

The method does not necessarily match up very well with existing GAAP methods, which are intended to produce a certain flow of profits emerging over time. The IDR method does not deliberately embed any future profit into the liabilities, and so it may cause profit to be released at issue.

Specific Questions

In an early version of my paper I commented that the spread on liabilities should not be a positive spread. Several people reviewed the paper before it was finally

accepted. One reviewer commented that the implications (i.e., that the spread should not be positive) are that the buyer and seller or the holder of the asset and the holder of the liability would take a different view of the value of an asset or a financial instrument, which the reviewer said would be preposterous!

It's not preposterous at all! It's a correct and true statement and representative of reality. Here's an example. I own something. Maybe it's a minivan or maybe it's a stream of future cash flows. If I sell that I will receive a certain dollar amount of cash. The buyer gives me \$ x of cash. There's no question as to what the dollar amount is that's transferred, but as the former owner of this minivan, I would rather have \$ x than the minivan itself (or the stream of future cash flows). Thus, the dollar payment of \$ x represents something greater than the true value of this asset to me.

The purchaser has transferred \$ x ; there's no question about that. But he or she would rather have the minivan (or the stream of future cash flows) than \$ x . That's because it has greater value to that person than \$ x . That's why anything gets bought and sold. So in fact, the value of an instrument is different, depending on the different parties that look at it.

This idea is at the heart of using multiple scenarios to represent different views. When we select a central value, we select a number that is somewhere in the middle of all the different views that different parties might have to value these liabilities.

If some spread were to be needed at all, I would argue that it would be a subtraction or a reduction to the risk-free rate of return. But I think by doing that you're moving somewhat away from determining the true central value of the liability, and you are then building in some sort of future profit margin. It would be fine to do that if we wanted to have a particular pattern of future profits emerging from this liability. Absent a preference for some specific profit pattern, we want no spread whatsoever.

The IDR method does not discount along the future interest rate path because the higher interest rates scenarios are going to be discounted to a lower value than they otherwise would be. Our models generate a large number of different interest rate scenarios from our current yield curve. What I think we're saying is that all these future paths of interest rates, subject to certain assumptions, are consistent with the present yield curve. In fact, our scenario generator, if it is a good one, will have 100 or 1,000 scenarios, all of which are consistent with the yield curve as of the date of valuation of these liabilities. Instead of picking multiple interest rate scenarios, which are intended to be consistent with the current yield curve, we will

just use the current yield curve. We should not give the interest rate generator any more credibility than it would have as a model generator.

Cost of capital is not reflected in the fair value of liabilities. There are also a few other things that are not reflected in the fair value of liabilities. For example, options embedded in the assets are not part of the value of liabilities. We're also not reflecting in the fair value of liabilities the worth of the company, if there's an insurance company involved, as a going concern. The insurance company has agents or brokers or computer systems in place. It has the capacity to generate additional new business going forward, but that's not part of that fair value of present-day liabilities.

The fair value of liabilities also does not include the possibility of the insurance company's insolvency. That is certainly a real possibility. But I would rather not embed that in the fair value of liabilities. Again, this gets back to the point, if the creditworthiness of the insurer should change, should that be reflected in the liability? I would say, no, it should be reflected in the fair value of the company.

Some of the methods in the Academy paper fail the generality test and/or the independence test. They determine a value of liabilities as the value of assets minus the appraised value of the company. That may sound like that should give the fair value of liabilities. It gets close. But it includes these other components of value. Such as cost of capital, the value of the entity as a growing concern, and the "put" value of the company (the possibility that the company will become insolvent and pay less than a hundred cents on the dollar to each of its policyholders). That could happen, but we think it is not part of the fair value of liabilities.

We mentioned before that profits under this method do not emerge with a nice tidy break-even number at issue, and smoothly in proportion to something or other thereafter. There may be profit or loss at issue. That's what you want if you truly want a fair value balance sheet. But it is somewhat of a deviation from present accounting methods. With respect to generality, one comment I'll make is that, if the method is derived from existing accounting standards, it's pretty hard to make the case that it's independent. We have several methods within the Academy paper that say, "We're going to start from present GAAP liabilities and adjust them for market value." There are a couple of different ways to do that. Such a method may be a good practical approach, but it certainly is not a general method.

Example

Table 1 shows the details of a simple test that was contained in the paper. For more details you can refer to that paper. We took a UL contract and we modeled liability cash flows only. We think this is reasonably realistic and representative of a UL

contract, which generates profit from all sources, including interest rate spread, mortality margins, and loads. We started with our most realistic set of assumptions, projected forward liability cash flows, and took the present value at the yield curve on the date this test was performed. And that was scenario one.

TABLE 1
SUMMARY OF SENSITIVITY TESTS

NO.	AT ISSUE	1 YEAR	5 YEAR	DESCRIPTION
1	(0.98)	15.08	49.11	Base scenario
2	7.56	23.93	61.51	(Credited rates) pop up 1.5%
3	6.39	22.72	59.97	Gradual up 1.5%
4	(8.21)	7.60	38.68	Pop down 1.5%
5	(7.31)	8.53	39.84	Gradual down 1.5%
6	2.61	18.74	53.26	Mortality up 20%
7	(4.57)	11.43	45.04	Mortality down 20%
8	0.22	16.29	50.39	Lapse rates up 2%
9	(2.54)	16.75	47.66	Lapse rates down 2%
10	0.63	16.75	50.61	(Admin.) expenses up 50%
11	(0.66)	15.42	49.42	Expenses up 10%
12	(1.29)	14.76	48.82	Expenses down 10%
13	(2.57)	13.44	47.64	Expenses down 50%
14	(0.44)	15.64	60.50	Extra premium, yr. 3
15	(2.74)	13.29	47.10	Mortality down 10%
16	(0.36)	15.71	49.77	Lapse rates up 1%
17	3.11	19.32	55.05	Credited rates pop up 75 basis points
18	2.56	18.75	54.34	Gradual up 75 basis points
19	(4.74)	11.19	43.68	Pop down 75 basis points
20	(4.26)	11.69	44.31	Gradual down 75 basis points
21	3.38	19.60	55.42	Pop up 75 and lapses up 1%
22	4.44	20.70	67.63	Ditto, plus extra premium
Mean	(0.82)	15.25	49.38	
Median	(0.98)	15.08	49.11	

We also varied a large number of assumptions in the simplified test. We considered the impact of increasing or decreasing credited rates. We looked at the impact of mortality increasing or decreasing by larger and smaller amounts. We looked at the impact of expenses, lapse rates, and the compounded effects of multiple changes all at once. In this simple example, we didn't try multiple credited crediting strategies or multiple investment strategies. In a more general case, I think those should be modeled.

For illustration purposes we wanted to see what range of values we would get in a simple example. The model comes up with something that would not be too surprising if you have worked with option-pricing methods before. There's a more frequent central value and a distribution of values, although there's not a normal curve, but one that's slightly skewed to the right. We would pick from a large number of scenarios a median value of -\$1. This, by the way, is less than the account balance.

This method does not necessarily produce a result which equals or exceeds the account balance. I know that gives some trouble to certain members of FASB, but I don't see why it should. I have no trouble looking at a large number of savings account deposits or a large number of UL contracts, and saying that, in the aggregate, the total liability is less than the full account value if everyone demanded their cash all at the same time. We don't assume that everyone is going to die all at the same time so we don't hold a reserve equal to the face value of your term insurance. Rather, we look at reasonable expectations. So I have no real trouble with a liability lower than the maximum amount that could be demanded all at once.

In fact, present GAAP methodology doesn't really have any trouble with that concept either. Currently, we hold an account value reserve on the liability side, for UL or single-premium deferred annuity (SPDA) contracts. But then we have an offsetting asset, the deferred acquisition cost (DAC). This is the part of the present value of future profits that we're going to use to recoup our acquisition cost. The net liability (reserve less DAC), in many cases, is less than the account balance, and it doesn't seem to cause a problem right now.

Distribution of value result is as one would expect. Table 1 is a simple example; thus the distribution is not perfectly uniform. There are only 22 scenarios run here. I think you'd see a smoother distribution with a larger number of scenarios. Probably the range of values at year five is about as typical as you would see with some skewing to the right.

Issues for Further Discussion

I would like to see this method tested much more in practice. I'll close with just some of the things that I think should be discussed further.

In early versions of the paper, every reviewer asked, "Do you want to use the mean value or the median value? Why don't you discuss the pros and cons as to which you should choose given that you've got a wide range of scenarios? I did not do that and don't really want to take a position on mean versus median. You will get fairly similar results most of the time, whichever value you choose. And we know from probability and statistics part two that there are certain advantages or disadvantages to using one versus the other. I would like to see this choice evolve. I think the method is sufficiently specific in definition when we say we're going to choose a central value.

What exactly is the range of assumptions that should be tested? I think we need to figure out what is a wide enough range to penetrate all the options, but not so wide that you get unrealistic or only remotely possible cash flows. I don't think it's a weakness of the method to say that some of these areas need to be developed further.

We will need to discuss whether and how this method could become part of generally accepted accounting principles. It does not do some of the things that present GAAP methods do, but that's OK. When you're going to a fair value balance sheet, you are changing the rules quite a bit, so there will be some emergence of profit at issue and reduced emergence of profit thereafter, assuming that you have a profitable product. You will get much improved asset/liability matching information.

We assume that fair value of liabilities is an appropriate measure and so came up with a method for fair value of liabilities, but I think there is perhaps still some room for discussion of that issue. If we do have a risk-bearing contract that takes 30 years or 50 years or more to go from beginning to end, then I think it's fair to ask whether its market value as of a particular date is meaningful. If I buy 100 shares of Microsoft stock, I want to know what the fair value of my asset is each day, so I check the newspapers first thing in the morning. But if I have a mortgage on my house as well, I really don't need to know what its fair value is. I need to know what my monthly payment is, and how much longer it will continue. That is not its fair value. So there is some diversity of opinion as to whether fair value is always appropriate. If it is appropriate for assets, then it is appropriate for the liabilities. If we agree that it is appropriate, then actuaries know how to determine the liability.

Mr. Frederic W. Corwin, Jr.: I'm from John Hancock. Bob has shared the accounting standards perspective, and Mike McLaughlin has shared his concept of market-value accounting. I'm going to move from the theory to the practice and give you a brief look at John Hancock's experience with market-value accounting. I will tell you why we use it and how we do it. I will identify some issues and comment on the pros and cons. When I finish, I hope you'll have a reasonable understanding of our approach to market-value accounting.

At John Hancock we've used market-value accounting for about ten years, for one interest-sensitive segment of our general account. That business has been managed using asset/liability matching techniques within a segregated investment segment of the general account. The products are GICs, which we sell to defined-contribution pension plans, and annuities, both the single purchase type for defined-benefit pension plans and the terminal funding purchases that are sold to defined-contribution plans. Both these products have highly definitive cash flows, which make them ideal for backing with fixed-income investments and for managing with asset/liability matching techniques.

Picking up on a comment from Bob, the GICs clearly are investment contracts, and the annuities are very similar to investment contracts, although he probably would classify them as insurance because they definitely involve life contingencies.

We are very serious about how we use market-value accounting at John Hancock. Financial results are reported on this basis every quarter to senior management. We set our earning goals in terms of market-value results. Most importantly, our incentive compensation is based on these results. So clearly, this is important to us.

Why is it important to employ market-value accounting? We believe that this is especially appropriate when using asset/liability management techniques, that is, duration and convexity measures for these interest-sensitive products.

Both the pricing function and the investment management function reflect current investment market conditions and interest rate conditions. Using market-value accounting completes the picture. We measure the financial results within the context of the same current market conditions as for pricing and investment management.

Prior to installing market-value accounting, we relied on book-value accounting, that is, statutory accounting. We found that there were difficulties involved with statutory accounting. It was difficult to understand and to explain the incidence of earnings.

While we were confident when running our business that we were adding real value to the company, we couldn't demonstrate that. More importantly, we had no reliable basis for evaluating alternative actions in the account. We knew that we needed something better, and we developed our own technique for market-value accounting strictly for internal management purposes.

The concept is quite simple. We discount all future cash flows using a single yield curve. This means we're looking at a portfolio of cash flows. We're not evaluating the market value for a specific investment, or the market value of individual contracts. They constitute a portfolio of cash flows.

We start with the balance sheet. Assets and liabilities are valued independently of each other. There's no linkage in this valuation process. Surplus is the difference between assets and liabilities; and the earnings for the period are simply equal to the change in surplus.

Table 2 is an illustrative balance sheet. We have the market value of the assets, both bonds and mortgages, on the left side, and market value of the product liabilities on the right side. In addition, we have liability reserves for future profit, risk and expense, and asset default charges. Note that both the assets and the liabilities have been reduced for the value of call options on the investments, like call options on bonds, and in our products, like callable GIC contracts. That's our balance sheet. We calculate all these values net of taxes.

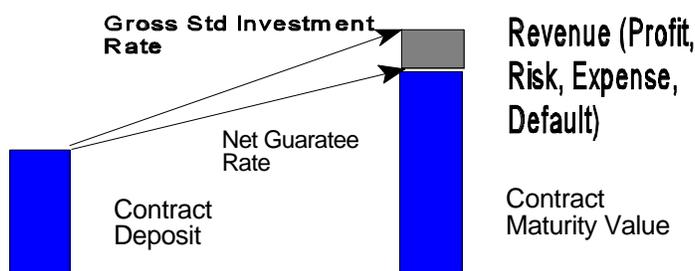
Now for a quick review on the basics of our methodology. We construct a single yield curve, and that serves as the basis for our investment rates, for pricing our products, and for valuation. The discount rates are spot rates, meaning that they are semi-annual bond yields that have been converted to be zero-coupon rates. We can discount individual cash flows on any given day back to the current point in time. Interpolation provides us with rates for each day 70 years into the future. Note that we do not use any interest rate scenarios.

TABLE 2
ILLUSTRATIVE BALANCE SHEET

Assets		Liabilities	
Corporate Bonds	\$8,775	GICs	\$8,000
Commercial Mortgages	2,000	Annuities	2,000
	10,775	Future: Profits	100
		Risk and Expense	50
		Default	100
			\$10,250
Less: Call Options	50	Less: GIC Options	25
Total Assets	\$10,725	Total Liabilities	\$10,225
		Surplus	500
		Total Liabilities & Surplus	\$10,725

The single yield curve is our gross standard investment rate curve (Chart 1). These rates reflect current asset acquisition rates, standardized for quality. They reflect pricing by connecting the contract deposit to the total of revenue plus contract maturity value. At issue, the market value of the contract deposit equals the market value of the projected contract maturity value and the future revenues, so we do not generate a gain or a loss at issue. That's an important point to us.

CHART 1
METHODOLOGY BASICS



$$\text{At issue, } MV(\text{CD}) = MV(\text{CMV, Revenue})$$

To compute the present value of future cash flows we need: principal and maturity payments, future deposits, pricing revenue, and tax flows. Note that we include explicit cash flows for tax payments.

The data requirements are straightforward. For GICs, we need contract data and pricing information.

For annuities, we include the specifics on individual plan participants, as well as the plan provisions and similar information for the bonds and the mortgages.

Some assumptions are necessary. First, we have to have some contract-specific assumptions, such as what level of withdrawals we expect from the GIC participants. These are unscheduled withdrawals. And what about the annuitants' retirement incidence? When will the deferred annuitants retire, and what will their mortality be? These assumptions are necessary for constructing cash flows.

And for the entire portfolio valuation, we need to know the current interest rates, interest rate volatility, and tax rates. To ensure the proper emergence of revenues, we establish reserves for future unearned pricing charges. We do, however, capitalize a portion of the expense charges to cover acquisition costs. This is especially important with annuities, which involve a large acquisition effort.

I want to discuss briefly some of the issues that we have encountered in working with market-value accounting. Despite the intent to hold only fixed-income investments, we do have a few assets, such as real estate, that don't have either fixed cash flows or definitive durations. We also have some bonds that generate warrants and common stock. How do we treat them? There are basically two ways to go. One way is to make assumptions as to any cash flow, for example, and what the value will be. That's rather speculative and involves many assumptions and much subjectivity. Alternatively, you can get an appraisal value on assets such as real estate or a current market value on the common stock and treat that asset as a zero-duration asset. That's what we do.

The options are important to think about. As noted earlier, we have options both in the assets and in the liabilities. We value them using an options model, and for that we need an assumption as to interest rate volatility. Incidentally, and in contrast to the general method, this aspect does involve, implicitly, interest rate scenarios. But that's a characteristic of the option model.

The third issue that I want to share is the comparison of the portfolio management to the financial measurement. The cash flows and their parametric measures of duration and convexity should be identical, both in managing the portfolio (i.e., matching the assets to the liabilities) and in measuring the financial results. But conflicts can easily arise, because when you're managing the account you want to use the very best estimates of cash flow. But there is a difficulty in measuring the results—what do you do in terms of adhering to certain accounting principles? For

example, one GAAP principle is to lock in pricing assumptions. So what do you do as you learn that your experience is different from the original pricing assumption? You certainly have got to use the best estimate for managing the account, but, if you use something different for financial reporting, you can report gains or losses that may not be real for that period.

Let's take a look at some of the difficulties with market-value accounting. The income statement is not a direct by-product since this method does not look at the actual cash flows for the period just ended. When computing the market values, a huge amount of detailed information and supporting computer systems are necessary. That's not an overstatement. The computations involve projections of cash flows many years into the future, allocations of pricing revenues among the various components, and discounting each to determine the market value. Clearly, the compounding of interest rates over several years will compound errors, as well. An incorrect guaranteed interest rate or payout date can easily have a material effect on the results.

Finally, unless the asset/liability cash flows are precisely matched, earnings will be volatile. Yield curve changes, both for parallel changes and nonparallel changes (i.e., changes in the shape of the yield curve), will cause gains or losses. It is very important that your senior management be well aware of this. They have to expect and understand that volatility is a way of life.

Despite those difficulties, we believe that the advantages are numerous and that they outweigh the difficulties. The data requirements and the sensitivity to errors force a discipline of requiring detail and accuracy to assure the best possible quality of data. The effects of business actions and financial market conditions show up immediately. The result is that we have become very aware of what causes volatility in the account. This includes cash-flow mismatches, the effects of which are revealed by yield curve movements. We do believe that we achieve a true valuation of the business portfolio.

Because we lack an income statement to link the balance sheet from period to period, we rely on a source-of-earnings analysis to confirm the result. This discipline provides us with an explanation of the forces affecting our earnings. Because we can measure the effects of actions, and we know how and what forces are affecting the portfolio, our decision-making process is greatly improved. In terms of managing the business, this is the most important result.

All of the foregoing advantages work to provide a complete picture of what is going on in the business. This is important since the company must be willing to take

appropriate actions whenever necessary, which means senior management must understand what is going on.

Let's take a moment to look at the criteria for fair-value methods, which Mike also went through:

- (1) Independence of assets—the assets and the liabilities are determined independently of each other
- (2) Objectivity—except for the appraisal value on real estate, there is no subjectivity in our methodology.
- (3) Consistency—the assets and liabilities are valued on a uniform standard that is consistent with current market conditions and our pricing methodology. We do not exclude any assets or liabilities from this process.
- (4) Generality—in theory, this method is applicable universally. In practice, however, it is most easily applied to products with predominately fixed cash flows.
- (5) Simplicity—there's no getting around it; this is not a simple process.

The methodology is complex. It requires strong technical knowledge and a substantial computational effort. You can judge from what you've heard whether it's explainable and understandable.

In comparison to book-value accounting, we see these three attributes as the primary reasons for employing market-value accounting at John Hancock. The incidence of earnings is appropriate. We can measure the economic value, and the decision-making process is greatly improved.

So that's my story on how we use market-value accounting, why we use it, issues that we have encountered, and our views on its strengths and weaknesses. We believe that it works, and we believe that it's worth the effort. I hope that this brief look at the John Hancock experience has provided you with a sense of the benefits of market-value accounting. We believe that it has been one of the keys to high achievements and continuous improvements in managing the GIC business.

Mr. Duran: It's very interesting to see some of the practical aspects of actually determining the fair value of liabilities. It struck me that Mike's method and the method used by the Hancock are extremely similar, except that, in Mike's method, you'd be using the Treasury spot curve. Whereas, in the method employed at Hancock, you are solving for a rate at issue so as to produce no gain or loss. Therefore, you have a spread that's positive or negative over the Treasury curve.

Can you give us a feel for the level of spreads that come out of your method, in order to not produce a gain or loss at issue and to defer acquisition costs?

Mr. Corwin: It's not a matter of solving for a spread. The spread is there by definition. Everything starts from the pricing curve. It's all intertwined. We determine the rate at which we can acquire assets, and we have a pricing curve for assets. It is also our pricing curve for the liabilities, so the spread is consistent. Then for valuation, we're using today's curve and the curve at the end of the quarter for both the assets and the liabilities. It doesn't matter what the spread is. The spread is worked into our methodology by definition, and we can change it from day to day. We're always saying we can invest at this spread; therefore we can guarantee at this spread, and we value at that same spread.

Mr. Duran: So it's basically what you can acquire assets at, given your investment strategy.

Mr. Corwin: And that has to be standardized for the different qualities of the investments. We use one single standardized quality as a common mechanism.

Mr. McLaughlin: I will just make the comment, I think you have characterized the comparison between the two methods accurately. I think buried in there is a spread, and I think that the index discount rate method could be modified to be perhaps identical or very similar, if one accepts the constraint that the break-even issue is appropriate. And I think it probably is appropriate for book-value methods, but I think the question is an open one for fair-value methods. I think perhaps everyone here is familiar with so-called value-added or embedded-value accounting. It's a system more common in Europe than it is here, although it is used for internal purposes at some companies. The effect of that method of accounting is to report in surplus on the date of issue, all or essentially all of the future profit to that generated from business sold. And so, the pattern of earnings is not the dominant descriptive criteria for that method; rather it is a fair value as of a current date.