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Session 84TS
Fair Valuation of Insurance Liabilities—Implications for Economic Performance Measurement and Strategic Decision Making

Track: Financial Reporting

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Summary: This session uses a case study approach to demonstrate the critical link between strategic decisions and the appropriate valuation of liabilities. Performance measures based on current accounting practices are compared with measures based on fair liability valuation, including such items as policyholder options, cost of capital, and leverage. Panelists build on the paper by Luke N. Girard, "Market Value of Insurance Liabilities: Reconciling the Actuarial Appraisal and Option-Pricing Methods," that combines in one framework the traditional actuarial appraisal method and option-pricing method.

Mr. Gregory B. Goulding: The idea for this session stems from a paper that Luke Girard presented to the New York University Fair Value Liabilities Conference in March 1999, Girard, L.N., "Market Value of Insurance Liabilities and the Assumption of Perfect Markets in Valuation," *The Fair Value of Life Insurance Liabilities*. New York: Kluwer Academic Publishers, in press, 1999. Part I of the paper is published in Volume 4, Number 1 of the *North American Actuarial Journal* (January 2000). In that paper, Luke reconciles two methods commonly used for valuing liabilities in the United States. The first is known as the AAM and is based on an integrated valuation of liability and asset cash flows. The second method is known as the option pricing method OPM and is based on a valuation of liability cash flows without direct reference to the assets backing them. The cash flows are valued just as the cash flows of any other asset.

In the past, there has been much debate about the relative merits of these two methods, especially in cases when they produce different answers. In his paper, Luke shows that the methods are algebraically identical, and that any differences in

results really stem from differences in assumptions. The problem is that it is hard to see how assumptions made for applying one method translate into assumptions appropriate for the other. Luke provides this translation. The benefit of being able to translate assumptions of one model into equivalent assumptions for the other is that we can stop arguing about which method to use, but rather what the right assumptions are. Further, because we can see the equivalent assumptions in two different contexts, we gain insight into the nature of the assumptions.

In particular, if taxes and certain other complexities are ignored, Luke shows that AAM and OPM produce equivalent results if the distributable earnings stream of AAM are discounted at a rate that takes account of the leverage implied by the market value of liabilities, assets, and surplus. Further, Luke shows that this leveraged rate is none other than the leveraged cost of capital as defined using the well known Modigliani/Miller equations in the theory of corporate finance. (Modigliani, F., and Miller, M.H. 1958. "The Cost of Capital, Corporation Finance, and Theory of Investment," *American Economic Review* 48, no. 3:261-97.)

Our first presenter will be Joe Koltisko. Joe Koltisko is the corporate actuary at Fortis, Inc., the U.S. subsidiary of the Belgian/Dutch Bancassurance Group. He works in New York, and his responsibilities include general capital management and ALM initiatives for the U.S. operations. Joe will summarize Mr. Girard's paper, and point out some of the more subtle insights that the algebra gives, for example about the impact of taxes.

Joe will show that taxes actually introduce a kind of drag effect, which should be reflected in the market value of liabilities. There is value to the corporation—a market value which may be ignored under the OPM method—just because of the drag from taxes. The value of the corporation can be decomposed into a term which is pure OPM and a term which reflects the tax drags.

Marsha Wallace is not an actuary, but she is vice president of Transamerica/ AEGON in the asset/liability management division, and has published a few papers on transfer pricing and the fair valuation of liabilities. She is going to walk us through a simplified example that brings out key implications of Luke's paper, and fair valuation of liabilities in general.

Mr. Joseph Koltisko: I'm going to provide an overview of what's in these papers. They are complex, dense, and difficult. I'm going to have to skip through them a little too quickly, and highlight the main ideas and points. I hope you will go back and review them in depth. These papers include quite a few inductive proofs and algebra. Still they are worth the effort because they tell you something new.

Luke presented a paper at the 1999 Fair Value of Insurance Liabilities conference at NYU's Stern School of Business. It ended up getting published in two sections. The first one, as Greg mentioned, was published in January 2000 in the *North American Actuarial Journal.* That paper is called "Valuation of the Insurance Enterprise, and the Fair Valuation of Insurance Liabilities."

The second part of it was published June 2000 in the book (by Irwin Publishers) from the 1999 conference. The title of that paper is "The Market Value of Insurance Liabilities and the Assumptions of Perfect Markets in Valuation."

I want to give you enough tools to be able to pick up those documents, make sense of them, see where they are useful for you, and apply them. On this topic, actuaries tend to align themselves in opposing tribes. One group, one bias that many of you have, is that the actuarial appraisal method gives you the right value for the business. That's probably the case if you're involved in doing appraisals, either using them or preparing them for buying and selling companies or looking at reinsurance transactions. This is the typical ASOP 19 method of projecting the statutory book profits, less the change in required surplus, then discounting those net cash flows to shareholders at a target cost of capital, to produce the value. That's one camp.

The other bias, the OPM bias, is held by people who are mainly interested in the benefit and expense cash flows. They believe you should determine a risk spread over Treasuries for those liabilities, discount them at that spread, and come up with a market-implied value for the benefit and expense cash flows. Investment people tend to hold that sort of a bias.

This paper has advice for both groups. That's what we're going to step through. These groups need to be able to talk to each other and work together. They shouldn't give radically different answers to the same problem. I'm going to step through the decomposition of the actuarial appraisal into the option pricing method.

I believe the advice Girard would have for both of these camps is they are both incomplete. For the practitioners of the option pricing approach, his comment is that simply looking at the discounted value of the benefits and expenses at a credit risk spread misses something important. It misses the tax timing differences, capital requirements, and statutory reserve and tax regulatory constraints on the insurance business.

The advice to the appraisal bias people is that the cost of capital assumption is usually inappropriate, or at least, you ought to show whether it is appropriate. The appropriate cost of capital should be more properly viewed as a prospective price for the use of capital, for the risks to which shareholders are exposed, rather than as a historic, flat aggregate average rate.

So we're going to explore those things. A key point in this connection is the idea of leverage. The proper cost of capital—the proper charge for risk—has to do with the leverage adjusted price for the risks that you are trying to value.

I basically have three neat ideas to give you. I'm going to have one "aha," and I'm going to have a couple of jaded comments at the end.

The first neat idea that I want to present to you is that you can take an actuarial appraisal, and you can decompose it into the market value of the assets, and something like the fair value of the liabilities. Given any appraisal, I can then

always decompose it. The trick here is defining the liabilities in such a way that this happens. Since I can always do it, it doesn't provide that much new information.

Then we're going to talk about the idea of "tax drag." The idea is that reserve requirements and required surplus force shareholders to hold assets in the insurance company, where it is subject to tax. That entails a real cost to the shareholders, which needs to be in the valuation. We are going to show how Girard has some rather complicated algebra to capture it. "The cost to the insurer of providing those benefits is higher than it would be for the "market," because of taxes paid on the investment income, from assets parked in the company to meet regulatory and statutory requirements.

We're going to work through the idea of how a leverage-adjusted cost of capital implies a liability valuation rate, and visa versa. In the option pricing approach, you try to come up with a fair value of liabilities, which is the discounted value of the future benefit and expense cash flows at some appropriate liability spread. What is that spread?

We're going to see that the appropriate "liability spread," and the "leveraged-adjusted cost of capital" contain much of the same information. They ought to be consistent. I think this is the real gem of Girard's work. I urge you to look in to both of the published papers, and try to work through to this result. What he does is to link financial economics to ordinary actuarial practice. Actuaries have gotten a lot of criticism from financial economists about the inappropriate aspects of actuarial practice. This paper gives us tools to identify those aspects and correct them.

The first part is the decomposition mechanics. In an actuarial appraisal, the result is the discounted value of distributable earnings. It is the present value of net cash flows. You can get that same number by calculating the present value of the components separately. It involves calculating three items. One of them is called the "market value of liabilities."

What I've included in my first example is a very simple set of benefit and expense cash flows, and the ordinary assumptions you would see in a typical appraisal. The example is of a simple, traditional, actuarial appraisal. The cost of capital is a flat 10%. The assumed requirement on assets is 8%, target surplus is 5% of the reserves, statutory and tax reserves are set by formula. Most of those items are the same in each of the four versions of this example. We're going to discuss the mechanics.

The first example is a very familiar *ASOP 19* style valuation. What you do is to project revenues, benefits, expenses, and after-tax income on a statutory basis. We reduce this amount by the increase in required surplus in each period to give the anticipated cash flows to shareholders that are created by this insurance opportunity.

By discounting those cash flows at the shareholders' hurdle rate, we come up with a value that the shareholder ought to be willing to pay to assume that opportunity. This is the AAM.

The neat idea is that we can define decomposition for this analysis that comes up with the same value. This block is worth $89.7 million. For my example, I've decomposed that into three distinct portions, and I come up with the same number, $89.7 million. The three items are: first, the required surplus that is there to support the liability; second, the after-tax margin—you can think of this as the profit margin in the reserves, or what a fair ceding commission would be for the business and finally, an item which Girard calls the tax basis adjustment. Note that the market value of assets (MVA) is for the assets backing the products only. It excludes assets backing surplus.

The tax basis adjustment is a form of capital investment due to tax accounting rules. We always manage the business so that statutory assets equal statutory reserves, so what does it mean if I have a situation where the tax value of product assets is greater than the tax value of liabilities? It means I must have recognized earnings on a tax basis more quickly than they were recognized for statutory assets. To the extent that is true, I have paid taxes on those earnings. Shareholders have paid money to the government for this insurance opportunity, before the cash earnings were really distributable.

The same phenomenon shows up in an appraisal when the effective tax rate on statutory income is something other than 35%.

So you can decompose an ordinary appraisal into these three items. Note that the market value of the liabilities (MVL) is just the present value of the benefit and expense cash flows, including an item called required profit. Required profit is the return that shareholders are supposed to get on their investment. This is consistent with any actuarial appraisal. If I say my cost of capital (K) is 10% after tax, then my required pretax profit in total is the cost of capital divided by one minus the tax rate (T). Since the surplus is actually earning investment income (j), then by applying the factor for required surplus (RS), I get the amount of pretax profit required from in-force, due to target surplus. This is the "rent" shareholders should require for holding target surplus.

Let me skip to the last required profit item. Again, the tax basis adjustment essentially is money paid by the shareholders to the government because of tax timing, or tax rules that recognize tax income more quickly than it is earned for statutory. That's essentially a zero-interest loan to the government. There is no investment income on that item. So that item needs to earn a rate of the cost of capital divided by one minus the tax rate.

The reserve item may be confusing. The idea is that the shareholder owns the in-force reserve margin. One minus the tax rate times this pretax margin is the amount the shareholder owns. The required pre-tax return on that is K divided by one minus T, times that amount, effectively it is K times MVA minus MVL. At the

same time, that full pretax reserve margin is earning the rate of return on the product assets, or "I." Thus the factor is (K – I) * (MVA – MVL).

The sum of these three items defines the required return on what the shareholder owns. The decomposition means we produce an item, this required profit item, add this amount to the product cash flows, discount them at the net asset return, to produce the fair value of liabilities.

The required profit rate is determined after the decomposition of the value of the business. The "required profit" depends on the prior market value of liabilities, but you need required profit to calculate MVL. That's what's hard.

This is a recursive, iterative calculation. It converges. Given a set of benefit and expense assumptions, you can iteratively solve to the required profit and to the implied market value of liabilities.

Another way to get the same result is to take that required profit amount, divide it by the prior market value of liabilities to define a special liability valuation spread. Then you can use this spread with the risk free yield curve to discount the product cash flow alone, and get the same MVL.

In the example, the required profit divided by MVL equals the valuation spread; subtracting that from the 8% expected asset return, gives a liability valuation discount rate. I can apply those valuation rates to the product cash flows and get the answer produced by the model.

It's circular, it's iterative, but it converges. The bad thing is you can still use silly inputs and get consistent output. You can still say my cost of capital is 500%, for no reason. If you put that in the required profit calculation, you will come up with the same answer under the OPM as under the AAM. It's just that the implied liability calculation spread could be ridiculously low. This is out of sync with financial economics. The decomposition algebra by itself provides little new information.

Another idea is that leverage affects required returns. Suppose I have a company that has a little bit of insurance risk, and a lot of surplus, what is the required rate of return? A fair value rate of return for such a company is going to have very little to do with the insurance liabilities. Instead, it's going to have quite a lot to do with the market value of those surplus assets. So if I'm wildly over-capitalized, the required rate of return on the project out to be something like the surplus asset market yield.

On the other hand, if I'm wildly under-capitalized, there is a good chance the volatility in the liabilities will lead to insolvency, and therefore I need to expect a very high rate of return on that invested surplus. Why them do we use a flat cost of capital?

I think, in practice, appraisals are used for valuing existing businesses or large blocks of business where next year's products may be relatively similar to last

year's products. Effectively you have to assume the marginal price of capital is the same as the aggregate historic cost of capital. The issue, though, is that you can play with the appraisal to come up with an inappropriate or inconsistent answer.

Let's pick up, on the other hand, from the OPM. You remember that the OPM camp would prefer to define an appropriate spread for discounting the benefit and expense cash flows, and just discount them using asset valuation techniques. Net equity is then just market value if assets minus market value if liabilities. Girard shows that the amount the insurer needs to hold to provision for those liabilities is probably going to be greater than what you would come up with under a straight application of the option-pricing paradigm. That's because of tax costs relating to required surplus, and taxable income recognition.

Girard uses MVD in his paper or market value at the debt rate. This is supposed to be a spread due to credit risk, added above the risk-free rate, that's used to discount liability cash flows. We're talking about the same benefits and expenses as in an ordinary valuation. We're not talking about debt at the holding company or any other issues. We are just using a credit spread to value those liabilities.

The second neat idea that I have to explore is tax costs. What's going on there? The idea is that assets held in an insurance company are worth less to shareholders than direct holdings. That's because they have to pay tax in the income. Whatever my tax position as a shareholder, by putting assets in the insurance company, I'm subject to corporate tax in those incomes; I'm worse off than I was before. To the extent that my actual assets become different from my tax liabilities, this is an issue.

This has to do with required surplus calculations. It also has to do with the tax rules defining income recognition, proxy DAC tax, and tax reserves. The advance that Girard makes over Miller/Modigliani, is that he specifically identifies and defines how these drags work. This cost is not permanent; it has a finite life. It's a cost that gets repaid over time. To the extent it goes away quickly, it's less important than if it stays longer. Theoretical approaches instead usually deal with the more tractable steady state case.

The neat idea here is the tax costs create a penalty. The term that he uses to calculate this is called the finite life adjustment (FLA).

- Factors for required surplus
  $F^j_0 = 1 + [\ RS - (1-F_1)*RS_1]/[RS_0*(1+j)]$
- After tax value of required surplus assets is
  $RS_0 - T*(jRS_0 + F_1RS_1)/(1+j) = (1 - T*F^j_0)*RS_0$
  Similar factors for MVA and MVD
- $FLA_t = (1-F^j)*RS_t + (1-F^i)*MVA_t - (1-F^d)*MVD_t$
  $MVL_t = MVD_t + MVT_t$
  $MVT_t = (T/(1-T))*(RS_t + TVA_t - TVL_t - FLA_t)$

These formulas might be intimidating. We can understand it simply by looking to the second bullet, and making sense of what is going in there. This is one of the factors related to required surplus.

Let's pretend we are in the last period of the valuation so that next period there is no required surplus. So set the RS_1 term to zero. What does that equation tell us? It tells us that the after-tax value to us, of that required surplus, is going to be whatever the required surplus was, less "T," the tax rate, times the income that I'm going to earn on the target surplus, all discounted at the expected rate if return on that asset.

All we are doing with this factor "F" is coming up with an adjustment to the required surplus. To reflect this penalty, F can go from zero to one. If it's one, we're in steady state and the tax costs never get repaid. If it's zero, the surplus will be released tomorrow so there is practically no penalty. The complex formula under the first bullet simplifies down to what is the second bullet. The value of the required surplus in one minus T times this factor. Basically, "F" lets us measure the after-tax value of the required surplus.

Now let's go back to the term with F_1 in it. There is a recursive proof in Girard's papers to show that this is true. If F is zero, you can produce the inductive proof to show that this is the case.

The F terms, and the finite life adjustment in total, are useful in applying an option-adjusted pricing approach to liability cash flows. The point being that the MVD is going to be less than the amount that the insurance company has to hold for those risks. The difference, MVL-MVD is called the market value of taxes.

The point is, if you didn't have any taxes, you could just go out and value those benefits and expenses at an assumed credit spread. If you didn't have any taxes, all these statutory surplus and reserve requirements really wouldn't affect the value of the company. But because we are subject to taxes and regulation, there is a significant drag. If they ignore this, practitioners of the option pricing approach are probably understanding the total value of the liability and mispricing its cost to the insurer.

Remember previously, we expressed the valuation rate as a function of the asset return, less the valuation spread. The spread was required profit divided by market value of liabilities.

We can do the same thing by starting from the OPM. We can take that risk-free rate, plus a credit spread, and deduct an amount for these tax costs. I calculate a market value at the debt rate, and derive an appraisal spread to subtract from the debt spread.

As you would expect with the OPM, to calculate the result requires market-base pricing of embedded options, and risk-neutral valuation techniques.

Now on to our third neat idea. The crux of all this is that a leverage-adjusted cost of capital gives you the appropriate value.

- What is a consistent value for K^L?
  $[j(1-TF^j)RS_0 + I(1-TF^i)MVA_0 - d(1-TF^d)MVD_0]/DDE_0$
- Calculate this to demonstrate consistency between hurdle rate, valuation rate, asset return, and statutory conservatism

This shows that the leverage-adjusted cost of capital is a function of the risk of both assets and liabilities. It's just basically saying that the weighted average, after-tax return on the assets, less the required interest on the after-tax amount of liabilities, is what the market requires you to earn on surplus.

What actuaries could do is to calculate this amount, and use it to demonstrate that we are at least in the right ballpark with our actuarial appraisal values.

In my example the first time I used a flat 10% cost of capital, and came up with a value of $89.7 million. When I go through and calculate what the implied cost of capital is, it's not exactly 10%. It's more like 11 or 12%. This is why the AAM still has great acceptance. The difference in the result is not material.

I recalculated the result recursively with a consistent cost of capital. It was off by $1 million. This shows that most of the time the actuarial appraisals are probably in the right ballpark with a cost of capital assumption that is reasonably based on good judgment.

The problem comes when one tries to illustrate radical changes in how one would run the company. It harms the actuarial profession, of course, to distort results or mislead the public with an actuarial appraisal, which doesn't recognize the risk in the project, and may misstate the value of the business.

What I've done today is just to go through a rather technical discussion of the mechanics of these articles. I really think they are gems, and I urge you to go back and try to work through those articles, and make sense of the valuation rates and the leverage-adjusted cost of capital concept. The "aha" in this is that each approach can be reconciled with the other. Therefore we need to find some empirical input to drive the model.

The results under each method will be the same if we use internally consistent assumptions. At least one method though needs to start with empirical evidence on what the drivers of value are. The OPM method needs an empirical input for what the appropriate credit spread for the liabilities ought to be. The AAM approach works only when you use marked-implied scenarios and leverage-adjusted hurdle rates.

The two approaches imply each other. You can start from one end or the other. The focus of our attention ought to be on the benefits and expenses themselves, and the way the risks of those opportunities translate into an operational business plan.

One of the things to bear in mind is that "fair valuation" seems to mean the ability to see into the future. The market can be wrong, and when it is, you will still be blamed. It's very important in talking about fair valuation, to set users' expectations appropriately and to communicate that market-implied assumptions change in unexpected ways.

Another key point to consider in talking about fair valuation is that actuaries are typically focused on balance sheet valuation items, perhaps too much. What about the emergence of earnings? At what point do fair value assumptions change? When do we recognize such changes?

The market usually tries to filter out statistical noise and irrelevant measurement error. Yet some would report every blip in value as "market value earnings." For example, currently under GAAP reporting, a lot of the changes in unrealized gains and losses on bonds are held back in equity. Any fair value approach has to make some decisions on when these fair value, unrealized gains and losses on both assets and liabilities should pass from the equity account into the income statement. I don't think there has been enough discussion on what events and what issues trigger earnings emergence under a fair value system.

Ms. Marsha Wallace: Now you've heard a little bit about Luke's paper, and I totally agree with Joe that it's really a valuable paper. There are a lot of implications, and it's something that you might want to pick up and read. You have heard Joe's analysis, and everything appears to be kind of complicated if you're really doing all the full technicalities with the taxes and everything involved. I will try to explain the layman's version of the paper. That way, you can see what a lot of the implications are in a fairly simplistic manner, with a lot of the complications left out, but all the important stuff left in. I hope you'll understand how important it is, as a consequence.

I am going to start with a premise, that company value is measured by MVA minus MVL. Furthermore, I am going to try to show that statement is true even if you are running a buy-and-hold strategy in you company.

I'm going to use two examples to support that. Both of these examples are going to rely on information from Luke's paper. In the first example, what I'm going to do, is a comparison of a performance measure that is based on MVA minus MVL, with a performance measure that is based on present value of distributable earnings (PVDE); I'm kind of using some terminology interchangeably. But basically PVDE is what you would get from an AAM, and MVA minus MVL is what we get from using an OPM.

The first example is going to show you these two measures in an interest-rate environment, where the market rates aren't changing. The second example is gong to show you the same comparison in an interest-rate environment where the market rates decline by 100 basis points.

This is a case study, and it is based in an actual portfolio of assets and liabilities in an actual company, although, I've simplified it considerably, so it is not precisely the same, but it's really the same consequences.

I am going to draw some conclusions. I'll tell you in advance that my conclusion is going to be that market value measures of the assets and liabilities are the appropriate performance measures for your company. That, again, is regardless of whether you are selling or trading assets, and settling your liabilities; or whether you are running a buy-and-hold strategy.

Them I an going to look at GAAP and STAT accounting to see whether those measures are really consistent with market value based measures, and then I'm going to draw some final conclusions.

My premise states that company value should be measured by MVA minus fair value of liabilities, or MVL. Again, I'm going to use those terms interchangeably, even if you follow a buy-and-hold strategy. My rationale for that premise is based on information from Luke's paper. Effectively, if you were running a strategy in your company where you are trading assets and settling the liabilities, then it probably makes sense to you that you might want to measure the value based on MVA minus MVL. Because what you get when you trade your assets is market value, and what you have to pay when you settle you liabilities is their current fair value. So that probably makes sense to you.

What you might not understand, is that you might want to use that same measure, if you are running a buy-and-hold strategy. What I'm going to do is illustrate that if you run a buy-and-hold strategy, that you would measure the value of your company from the emergence of earnings over time. But you would have to discount those in order to get a current value of those earnings that are going to emerge over time, the net earnings. That would be like a PVDE measure.

Really, what Luke's paper is telling you, is that both of those measures are going to give you basically the same results. I'm going to show that in some examples. If you are looking at present value of distributable earnings, you are really looking at a market value measure of your assets minus a market, or fair value measure of your liabilities.

Again, you have to make some assumptions here. You have to use consistent assumptions when you see this, when you do these examples, or else you won't get the same result. You're doing similar methods with different assumptions, so you wouldn't get the same answer. But if you do use similar assumptions, then you will get the same answer.

The present value of distributable earnings is going to be calculated using a leverage-adjusted cost of capital, as Luke Gerard recommended in his article.

In the first example, we're going to compare the MVA minus MVL with PVDE, in an interest-rate environment, where the rates don't change.

These are the asset assumptions that we are going to use in both of these examples. Our asset is just a simplified 5-year zero-coupon bond. It doesn't pay any interest until the end, and then all the cumulative interest is paid at the end, along with the principal value. So the face value of the bond at maturity is $100,000. That includes the cumulative interest.

In this particular example, the initial yield is equal to the starting market rate, and we are assuming that's 7%. Just to add a little bit of complication here, the bond is callable at book value.

With the asset cash flows at the current market rates, it's not paying any interest in the first four years, and then you get your $100,000 at face value, in year five.

What's the book value of this asset at the time you purchase it? Well, if you take the $100,000 worth if cash flows, and you discount them using your 7% yield on assets, at the current market rate, raise it to a power of five, you get a book value of $71,299. Since the interest rates haven't changed since you put this on, the market value is the same because the current yield on the asset is 7% and the current market asset rate is 7%, so you discount it, and you still get $71,299.

Here are the liability assumptions. This is just a simple liability, it's a five-year period, and certain annuity pays compound interest equal to the new money rate of 6% per year at maturity. It's not going to pay anything out in the interim, because it's just a period-certain annuity. The annuity contract, in this case, does not permit early withdrawals. The reason we're using this liability is because it makes for a much simpler example. You can do it with more complicated liabilities if you want, but then it just complicates the examples, and so I'll leave that up to you.

On this liability, basically you get nothing in the interim four years as far as cash flow, and then at the end you get your $60,000 with the 6% credited rate, compounded five times. So the total payout in year five is $80,294. What's the book value of that liability at issue? Well, it's that $80,294 discounted at the 6% new-money rate, which is $60,000. The fair value at issue, since the rates haven't changed yet, is also $60,000.

What does that imply for surplus? Well, on a book value basis, your book value of surplus is just going to be book value of assets minus book value of liabilities, and you've already shown those to be $71,299 minus $60,000. So your book value of surplus, in this case, is $11,299. That's the same as your market value in this example, because market value of assets and book value of assets are the same, and market value of liabilities and book value are the same, because the interest rates haven't changed yet. So market value of surplus in this case is also $11,299.

That showed you one measure of value for your company—MVA minus MVL. Like I said, that would be a good measure to use if you were running a strategy where you were trading a lot of assets and you were settling all of your liabilities.

Now we are going to look at what you would use if you were doing a PVDE, because maybe you are running a buy-and-hold strategy.

First thing we have to do is, find out what are the net cash flows. The asset cash flows at year five are $100,000. The liability cash flows in year five are $80,294. So your net cash flows are coming out to $19,706, and that's kind of representative of the emergence of you earnings. It might be a little more complicated, if you were doing real statutory earnings, or something like that. Basically, this is what you get, this is what is emerging over time, with your credited interest and your yield on your assets.

Now to get a PVDE, we're going to have to discount this, and so we have to come up with a cost of capital to use as our discount rate.

According to Luke's article, we should be using a leverage-adjusted cost of capital. How would you derive that? I have a very simplified version of an equation that appears in Luke's article published in the January 2000 issue of the *North American Actuarial Journal*.

Asset market rate = MVL/MVA * liability new money rate + MVS/MVA * leverage
            adjusted cost of capital (COC)
So: 0.07=60,00/71,299 * 0.06+11,299/71,299 * COC
        =0.84123 * 0.06+0.15847 * COC
Solving for COC:
Leverage adjusted COC=12.3%

PVDE Calculation:
    PVDE = (1/(1+COC))^5*net cash flow in year 5
            = (1/1.123)^5*19,706
            =11,033

This is a lot more straightforward way of looking at the same equation. Basically what this equation tells you, is that your asset market rate is equal to a weighted average of your liability new-money rate and you leverage-adjusted cost of capital. Well, this makes sense, because when you've got your balance sheet, the assets are on one side, and those are being used to support the liabilities and the surplus on the other side, and so those have to be equal amounts.

Basically this is what the Modigliani/Miller principle states. What it means is, you can have returns on the asset side, and they have to equal the returns from the liabilities and the surplus. The risk on the asset side had to equal the risk from the liabilities and surplus. You can have a different distribution between the liabilities and the surplus, but the weighted average had to equal what's on the asset side. For example, if your surplus is absorbing all of the asset losses before the liabilities do, it's going to have a higher risk. It's going to have a higher return. But since your liabilities have a lower risk and a lower return, it can still come out that the weighted average equals the asset side, and that is very key to your understanding of what's going on.

Here's what we have. If we trade assets and we settle our liabilities, we have MVA minus MVL as our measured value of $11,299. If we buy-and-hold, we have

$11,033. Those are virtually equivalent. Actually, if I hadn't simplified this example a lot, they would be identical because the cost of capital is really varying over the whole five years. If you work it out, on a year-by-year-by-year basis, it will come out that those will be the same numbers.

You could basically measure the value of your company using the MVA minus MVL, even if you were running a buy-and-hold strategy. But then, if you look at the book value of assets minus the book value of liabilities, that's also $11,299 in this case. So it doesn't really matter whether you use book value measures or market value measures if the interest rates are not changing.

Let's look at what happens when the interest rates are changing. In this case you have a 100-basis point decline in the interest rates. I assumed that this bond is a callable bond. What has happened with the 100-basis point decline? Well, the market rates just dropped to 6%. The issuer of the bond can now go out and get a new loan at the 6% rate, and pay off the 7% bond. So he is going to do that, and he is gong to pay off the 7% asset that we are holding.

So now we have these proceeds at book value, $71,299 that we got from the call on this bond, and we have to reinvest them. But we can't get the same rate of return because the rates have fallen to 6%. Rather than getting the cash flows that we were going to get previously, what we are going to do is get the $71,299 earning 6% per year for five years. So the total cash flows that we are going to receive in year 5 are $95,414 at this point.

Since the market rate is now 6%, the book value is still $71,299, if you discount that, and the market value, since the current market rate is 6%, is still $71,299. So our book value and market value haven't really changed much, but our cash flows have changed.

What happens in the case of the liabilities? Well, we put this liability on, and there is no early withdrawal, so we still have the same commitment to pay $80,294 in the fifth year. The book value is still $60,000 because book value does not change when the interest rates change because we are really not measuring gains and losses on our liabilities when we are using book value. But the market value has changed, because we are discounting the liability cash flows at the current new money rate, which is 5%. So the market value of the liability is now $62,912. So the market value of our liabilities went up.

What does that imply for surplus? Well, the book value of surplus is still the same as it was before the rates changed. It's $71,299 minus $60,000, or $11,299. But the market value of surplus has fallen, and that's because the MVL went up to $62,912, and when you subtract that from the MVA, now you now you get a market value surplus of $8,387.

But what happened to our PVDE? Well, the net cash flows is now $15,120. The asset cash flows are $95,414 so they've gone down. The liability cash flows have stayed the same, so our net cash flows have actually fallen by year five.

Now we have to calculate the present value of those not cash flows, or net earnings, and so how do we do that? Well, we have to derive a cost of capital again.

Asset market rate = MVL/MVA * liability new money rate +
    MVS/MVA * leverage adjusted COC
So: 0.06 = 62,912/71,299 * 0.05+8,387/71,299 * COC
        =0.88237 * 0.05+0.11763 * COC
Solving for COC:
Leverage adjusted COC = 13.5%

PVDE calculation:
PVDE = (1/1+COC))^5*net cash flow in year %
    =(1/1.135)^5*15,120
    =8,027

We're going to use the same formula from Luke's paper, only in this case, the asset market rate is now 6%. The market value of the liabilities is $62,912. Market value of assets is still $71,299. Our new liability new money rate, is 5% now, because rates are 100-basis points lower. And our market value of surplus is $8,387. You substitute all of that information into this equation, and solve for the COC. Now we have a leverage-adjusted cost of capital of 13.5%.

So what happened here? The rates fell, and our COC went up. Basically, what happened is our risk to our shareholders is larger now, because there is a lower amount of surplus backing our liabilities. Because it's riskier, they want a higher return, and so their required cost of capital is 13.5% now, in spite of the fact that the rates fell.

For the PVDE calculation, we would substitute the 13.5% new COC, and the new net cash flows in year five. So, we get a PVDE of $8,027.

What does this example tell us? Well, if we trade assets and settle our liabilities, we're going to get MVA minus MVL. That's $8,387. If we buy and hold, we're going to get present value of distributable earnings, $8,027. Like I said, if I hadn't simplified this example, those two numbers would be the same.

But the book value of assets and book value of liabilities is still $11,299. So what we are doing with the book value of assets and the book value of liabilities is overstating the value of this block, even if we're following a buy-and-hold strategy. We really need to be using MVA minus MVL as a measure of our value of this block. From the examples, the conclusion is that the MVA minus MVL is a good measure of company value, even if the company is following a buy-and-holding strategy.

The next thing we need to consider is whether GAAP and STAT accounting are consistent with these market-value based performance measures that we are recommending.

I'm going to explain a balance sheet for this block of business, assuming the company has only this block of business, using GAAP, and using a fair-value approach. Fair value is really just showing you MVA minus MLA.

In the U.S. GAAP basis, we're assuming all assets are classified as held for sale, so we will show the market value of assets at $71,299, and the book value of liabilities is what is on the other side for a U.S. GAAP basis, so it's $60,000. So GAAP is showing us that we have a value of surplus equal to $11,299.

But if we use PVDE, or fair value, which is MVA minus MVL, then we get $71,299 minus $62,919, and so the value of our surplus, under that type of an approach, is $8,387.

So if you regard PVDE, as a good measure of the value of your block, you really ought to be using this approach, and GAAP accounting is overstating the value of your block. Incidentally, if you had held all the assets under GAAP on a held-to-maturity basis, you would use the book value in this case of the assets, which was also $71,299 in the example. So you would still get the same result, and it would still overstate the value of the surplus.

Now, what does your income statement look like on a GAAP versus a fair value basis? Well, if company value is measured by MVA minus MVL, then the change in the company value is just equal to the change in the MVA minus the change in MVL.

What is change in market value? It's total return. So total return on assets minus total return on liabilities is what you need to use to measure the change in your company value.

But what is included in total return? Well, total return on assets is just equal to asset current income plus realized gains, plus unrealized gains. Total return on liabilities is equal to liability current income plus realized liability gains, plus unrealized liability gains. So if we substitute that into our equation, we get the change in company value is equal to these six components; which is asset current income, plus realized asset gains, plus unrealized asset gains, minus liability current income, and realized liability gains and unrealized liability gains.

You've got six components of change in company value, but if you think about it, GAAP and STAT accounting are not measuring unrealized gains on your liabilities, so they are only measuring five of those six components. You don't really get a full picture of what the change is in your company value if you're looking at the GAAP and the STAT income.

My first conclusion is that current U.S. accounting measures, such as GAAP and STAT income are not consistent with MVA minus MVL. Fair-value accounting, which is getting a lot of attention at the international level right now, is more consistent with those measures or could be, if it was done properly.

My second conclusion, GAAP measures do not show the decline in the value of this block, as the rates fall. Fair value accounting measures would, if that was done properly.

My last conclusion consists of three statements. I'm just going to say these, and you can draw your own conclusions about what they mean. Transamerica used an incentive system that was based primarily on U.S. GAAP accounting. Aegon is using PVDE as part of their incentive system for their management. Aegon was the buyer in the Transamerica-Aegon merger.

Mr. Michael S. McLaughlin: With regard to Luke's paper, I think someone commented that there was a second version, a sequel coming out shortly that is being published by the Society of Actuaries with New York University.

The first one that is coming out in book form is actually a publication of what Luke gave, or presented at the March 1999 Fair Value Symposium. Although that is coming out later than the *North American Actuarial Journal*, I think that was the original version of his paper. That was changed, and then published in the *North American Actuarial Journal.* So it is an earlier version, rather than a sequel.

Slight plug for the Financial Reporting Section Monograph. I think we recognize the value in our section of that paper, and included it in that monograph, so there is yet a third copy. If you want three copies of the paper, that's where you can go to get the third one.

Just to make another comment. Earlier at this meeting there was an excellent session on Financial Modeling Tools, Session 38. Craig Merrill gave an excellent presentation. Interestingly, what Luke did was sort of reconcile AAM to OPM. What Craig Merrill did, was to show, and the conclusion, in very simplified terms, you could go with either method, provided you choose your assumptions appropriately.

What Craig Merrill showed, was that with OPM, you can either use risk adverse or risk neutral approaches. In other words, you can use a risk-free discount rate in OPM, if you appropriately reflect risk in the cash-flow assumptions that are used, which is consistent with an earlier paper that I published in one if the Fair Value Symposiums.

I guess the long and short of it is that I think there are many different ways to do fair value of liabilities. So I think the tools are in place now that are able to comply with what's likely to emerge out of the FASB. The preliminary review paper talks about using a fair value method for liabilities, which would embrace almost all-insurance contracts.

I would think the panelists would have added comments to that, but I think we are moving in that direction.

Ms. Wallace: I'll just make one comment. I do agree with Mike, that there are different ways of approaching it. I happen to have a favorite approaches that I think are easier to do and easier to reflect all of the assumptions appropriately.

One of them is replication of the liabilities, which you'll see a lot of attention being paid to. Replication with an asset portfolio, and then you mark the asset portfolio to market, and you get the value of the liabilities, when they are perfectly matched.

There are issues about whether to reflect credit risk. I personally believe you have to reflect credit risk. That's currently a big, contentious issue, so I won't go into it. What I'm trying to say relates to what Mike said about reflecting all the risk in the cash flows. If you're going to use a risk-free discount rate, you'd have to reflect all the credit risk in the liability cash flows as well.

The way you would do that is using more than one scenario. You would have to stochastically value it along many different rates. What I've done is just show you what happens in a single scenario, but really I recommend that if you are going to value your liabilities, you have to do it under more than one scenario in most cases, especially if you are trying to reflect all the risk in the cash flows.

Mr. David M. Walczak: I think everyone can agree that getting to the market value of the liabilities or the proper risk-adjusted spread to discount the liability cash flows is the trick. I'm wondering about the terminology using credit risk spread over risk-free rate in that context of discounting of liabilities.

I'm thinking about it in terms of an all-risk spread, instead of a credit risk spread, all of the optionality and the liability cash flows, and I think you just touched on it. But what about thinking about it in terms of the finance approach? That these are just cash flows, but they are volatile cash flows, and the higher the volatility in cash flow, the larger the risk adjustment spread should be, which is like solving for an OAS if you have a secondary market that trades the liabilities.

My question, along those lines, is this. If I'm a policyholder, say an annuity holder of a company, and in my head I'm trying to get a market value of my annuity, which I have purchased. The company's ability to change my future cash flows is going to affect what I think the value of that annuity is. Say the crediting spread management of the company is one thing that is going to make my annuity worth less, if the company can manage spreads. How do you factor that in to the credit spread management—the company's ability to flex the spreads?

Ms. Wallace: Effectively, I think that your policyholder is not going to sit out there and run option-pricing models. But effectively, this is what he or she is doing in his head, in sort of a subjective manner. The policyholder may be thinking, well it could be this, and it could be that. So I don't think it's worth quite so much.

Your company is actually doing this. If it is pricing an annuity with an adjustable credited rate, I think it should be running an option-pricing model to come up with the pricing for that. Hopefully, your customer will be able to distinguish between this company's policy and that company's policy.

Well, if he or she can buy one and he or she has to pay more of the premium, but knows the rate is fixed for a longer period of time, he or she might do it. So he or

she makes sort of subjective trade-offs that reflect this. Who knows what is in the human mind? Sometimes they do it pretty well, I think.

Mr. Koltisko: I think there are a couple of mine fields there in your question. I think what Marsha is describing, makes sense in the GIC market, where the insurance liability looks and feels quite a lot like a public security. I can think of retail products where you might have a teaser-credited rate and a lower credit rate afterwards.

First it's useful to make a distinction between the financial modeling of the cash flows, and this discounting spread. The credited rate offered to policyholders defines the benefit cash flows. I think it's useful to look at an industry-wide discount rate to allow for the chance that these benefits won't be paid to policyholders. This creates some unusual issues. I know Marsha disagrees with it.

The result is, you use a model of how credited rates will change, and how policyholders will behave in response to changes in the market interest rates. You will use an externally, industry derived discount rate to determine the value of those amounts.

There really isn't a market to observe what that rate is. I prefer to look at the credit spread as something implied by transactions between sophisticated insurers, who value those liabilities, rather than by the retail distribution market for insurance products.

It should be like a Federal funds rate. If we had a Federal guarantor for insurance contracts, it would be a rate at which insurers could borrow or lend to the guarantor. This would be a useful empirical market indicator of what that spread is. But currently, I think we just have assumptions.

The critical point out of all of this is, how valuable, and useful, and accurate is your model of how people will behave and respond to changes in interest rates? That's where it's going to be won or lost. This is probably more useful than arguing about the exact level and nature of the credit spread. Rather, how do policyholders behave?

Ms. Wallace: I want to respond to that, because I don't agree with Joe, and he knows it. But I do have a paper on this subject—on credit spreads and discount rates for liabilities. In fact, in this paper, an example shows the derivation of the liability value; where you would reflect all the credit risk in the cash flows, and not use a change in the discount rate to reflect the credit risk. If anybody is interested, you can contact me later and I will be happy to send you an e-mail of that example. It gets a little complicated when there is a guaranty fund included, but I include the guaranty fund in the example, and that's what I'm hoping to show is how you would show it in that case.

I still believe that credited risk, in this case, even in the case of a guaranty fund, is reflected. You would use the same company credit risk to come up with the value

of the liability on the company's balance sheet, regardless of whether there is a guaranty fund.

Mr. Charles D. Friedstat: I agree with that comment. I think that you have done an excellent job of showing us conceptually how to value the market value of the liabilities, and the various pitfalls and differences of approaches.

I'd like to extend this discussion to more of an accounting methodology. I think that generally, in following what is happening in the IASC and FASB, it's fair to say that they are both moving in directions that are leading towards some accounting model on a market-value basis.

At an earlier session I thought Roger Smith gave an example of the different patterns of earnings under different market value approaches that could be taken. One of the issues that both the FASB and the IASC acknowledge, which is distinctly different from our current accounting model, is the front-ending of earnings. Most of the market value approaches that I have seen, I'll say most, not all, were to greater or lesser extent, front-end earnings. Under the current accounting models, earnings emerge in proportion to some definition of revenue. For *FAS 60* it's premium, for *FAS 97* it's estimated gross profits etc., but basically earnings under current accounting models emerge over the life of the contract and in proportion to revenue.

Where is that issue in the discussions now? Several years ago, when we first started talking about fair value of liabilities, I remember making a comment on a panel. I think Mike McLaughlin was on the panel, and Wayne Upton was there. I asked Wayne Upton, "Are you aware that some of these approaches would up-front earnings?" I think it is much better understood now, but where are the different accounting bodies, as far as recognizing the possibility that there might be a drastically different reflection of the actual earnings?

Ms. Wallace: I'm going to start, and then I'll let Joe take over. I think all the accounting bodies, at this point, probably recognize that, and what I have tried to do in this example is demonstrate that isn't always going to give you a more positive result. This result, in the falling rate environment, is front-ending the earnings, but it is negative.

An advantage of using a fair value system is that you see things earlier, and it is really telling you what's already happened to you. You're just seeing it earlier. That gives you a chance to manage it earlier. That's the goal here, to manage the earnings earlier.

Mr. Friedstat: I entirely agree with what you're saying about the advantage of this approach as far as management. Maybe what I'm asking, is just looking back at the introduction of GAAP accounting, when the actuarial organizations came up with theoretical approaches, whether it was *FAS 60* or *FAS 97*, it was never the exact conceptual approach that was finally adopted. You can go back to natural reserves of *FAS 60*, some of the *FAS 97* issues; they were not exactly what I think our concept was of an accounting model.

In some cases it was fairly close. I guess what I'm asking here, and it may be a political question, is where are the accounting bodies that are looking at an accounting model that will, in most paradigms that I've seen, up-front earnings; I'm not saying that's necessarily positive or negative. But it's a real fact of life, that there will be a change.

Mr. Koltisko: I would point people towards the Web sites of the IASC and the International Actuarial Association (IAA). I think that those groups are leading in the direction of something called a market value margin. That is to say, the valuation spread estimating of a level of conservatism, which is derived or consistent with market results. To the extent that one's pricing assumptions and pricing margins are the same as one's assumed valuation margins, the two offset. So, I think they are going toward some level of defined valuation basis and margins. I think that it's a challenge to implement consistently, but that's one direction.

The other direction I'd point you toward is north. Consider actual practice today in Canada. I think there are a lot of interesting issues there regarding earnings recognition, within the Canadian model that may be useful for U.S. adoption, or possible international adoption of fair value practices.

Mr. Scott J. Witt: Before I make my comments about the emergence of earnings that we saw in some of the modeling that we did, I want to preface my comments. Our company is generally against fair value. Despite that fact, we did a lot of modeling, just in case the train was going to run us over, we wanted to be able to jump on board and not to be run over.

The extensive modeling that we did was also based on Luke Girard's paper. We took a little different approach, though, and on one hand we have the AAM, the discounted distributable earnings; on the other hand, we reflected in the liability cash flows, a risk and capital adjustment. We showed that those two methods came to exactly the same results over the lifetime of the business.

We based that on the premise that we felt that FASB wanted to have a method that worked directly with the cash flows, and we also assumed that the AAM is an accepted method, and one that is being used in the actual purchase of blocks of business. We ended up with a method that was consistent with Girard, and also an appraisal value consistent with the AAM. I think it's really just the inverse of the method that you displayed.

The point I wanted to make about the emergence of earnings that we saw, was contrary to the popular conception that earnings were going to e front-ended. What we saw was that earnings emerged as a level percentage of equity over the life of the business.

The first year, the key really is the relationship between the underlying rate of return on the business, and the hurdle rate. When those two values were exactly

equal, we saw a level emergence of earnings over the life of a business. Like I said, when they were different, there was a front-ending, either a small or a positive emergence of earnings in the first year, but it really was that relationship.

We thought that made sense, that if you developed a product, say, at a 10% rate of return, and your cost of capital was only 8%, you should be rewarded at the time of issue. On the flip side of that, you should be penalized if you are selling a product that is not meeting your cost of capital. So we didn't see that front-ending of profits that was in that phenomenon the first year.

Ms. Wallace: Let me ask you a question. Is your hurdle rate fixed?

Mr. Witt: It is.

Ms. Wallace: I don't think you should have a fixed hurdle rate. I think your hurdle rate needs to change by the interest-rate environment.

Mr. Witt: We took a look at a couple of different scenarios, and granted our model was simple, but I guess the conclusion that we came to was that the conclusions that we arrived at were not dependent on that simplifying assumption. Perhaps we disagree on that.

Ms. Wallace: I think if you're going to run stochastic scenarios, what this paper really shows, is if the asset rate is changing, the liability rate, and the cost of capital has to be changing, too.

Ms. Witt: We discounted at the asset-earned rate. The liability cash flows, and a risk and capital adjustments were discounted at the asset-earned rate.

Ms. Wallace: By asset-earned rate do you mean the current market asset rate?

Mr. Witt: No. The actual portfolio earned rate.

Ms. Wallace: I don't think that is an appropriate way to do things.

Mr. Witt: Well, the risk and capital charges were adjusted automatically for the different portfolio earned rate. The conclusion was the same that you arrived at. You get the same value as the AAM.

Ms. Wallace: I'm not sure the emergence would be the same.

Mr. Witt: Okay.
Mr. Koltisko: It sound like you introduced a method that carried through the decomposition of appraisal value to the market value of the liability. I would caution, in a model this is OK. But what happens in actual practice is you find out your assumptions were wrong. It is tricky to pick the time to admit your assumptions were wrong, and to make permanent changes.

I think Conseco stick was badly hurt by gain-on-sale accounting. So there has to be some level of judgement involved in when one is released from risk, and when that emerges in the income statement.

Ms. Wallace: If you want to read a little bit more on emergence of earnings under a fair value system, I recommend you go to the IAA Web site, which is what Joe is talking about, because they have done a lot of work on this. There is one particular paper, which is related to the IAA Response to the IASC Insurance Issues paper. There are a number of papers there, but one of the papers is titled "Insurance Liabilities and Capital Requirements," and it explains in more detail how you can tie in capital requirements and also profit emergence.

Mr. Friedstat: My comment is in relation to the prior person who was talking about the methods that he had done. It sounds an awful lot like some of the analysis that has been done on economic value added, when the rate of return exceeds a hurdle rate, there will be some up-fronting of profit in certain situations like that.

So it sounded an awful lot like some of those analyses, and I think that we have seen those at presentations at the Society of Actuaries over the years. It just brings out the point that there is no one well-defined approach yet, that depending on your concept, or up-fronting of losses if you've done something bad in designing a product.

But there has been a lot of this, and I think we need to go back. There has been a lot of work on economic value added. Although it is not the same as this, it is very directly related. I think this whole area of emergence of earnings is going to wind up being decided on other than conceptual matters, and political matters. The difference from what has existed in the U.S., with the emphasis on GAAP reporting as an emergence of earnings, and the possibility that will change dramatically in our industry, and also be subject to certain element of subjectivity, is something that I think needs more discussion.

Ms. Wallace: One of the things that I want to point out to you is that one of the reason that I broke down the change in company value into six different components is because I really advocate that when you measure fair value of assets minus fair value of liabilities, you show it in terms of these six components. If you do that, then you can look at that, and the components that are net income (current income of assets minus current income of liabilities) are currently going through the income statement. I can't recall whether the realized gains on assets minus realized gains on liabilities are going through the income statement; but they are being calculated.

The unrealized gains on the asset are also being calculated, although I know they are not going through the income statement; I think they are going through the equity part.

If you show all of those components separately, then you can pretty much look at it the way you are looking at it now. All of the subjectivity that people are talking

about, and front-ending of income, is concentrated in the two components that are unrealized gains and losses on your assets and liabilities. They are still being separately identified there, and you can discount them to your heart's content, if you don't want to take them into consideration, but at least they are there (in fair value accounting), and at least you have some concept of what they are.

They (unrealized gains on assets and liabilities) can tell you whatever you want to know about it, or they can tell you nothing, if you really don't want to know. But if these (net unrealized gains) are negative, don't you want to know about it?

Mr. McLaughlin: I'll be brief. I do think you're going to get some up-fronting of gains or losses, depending on the pricing of the product. I mean that only makes sense. Already we have front-end or immediate recognition of losses. What we've got with fair value is the possibility of having some earnings emerge at issue. This sounds a little like heresy, compared to traditional GAAP. But if we lay around constraints, if we say we want fair value but it needs to break even at issue, or spread profits so that we somehow disguise the mismatch, the true mismatch between assets and liabilities, then we don't have fair value. So I think we just need to be clear about that.

Likewise, with the credit risk of the entity, it seems to me, to the extent we build that into the fair value of liabilities, we're reporting something other than fair value of liabilities. What we have done is embedded some characteristic of the entity into the fair value of liabilities.

It is true that there is this so-called PUT option, the possibility of default, of not meeting those liabilities, but it seems to me that is a separate element in your financial statement.

Ms. Wallace: I am advocating currently that we report what would basically, be a full-value of liabilities on a fair value adjusted basis, minus the credit risk component, shown separately, and then a net value that is really the fair value of your liabilities. I believe.

I think that without the credit component, it's not fair value. I will argue this with you, Mike, on some other forum. By the way, this is a very contentious issue, so let's not get into it here. But I would at least say that it should be reported as a separate component.

Mr. Kenneth A. LaSorella: I have a question for the panel, more or less to get the opinion, as far as presentation of what I'll call the embedded value. Luke Girard made an algebraically correct partition of the discounted distributable earning into three pieces. One piece would be the required capital, the second piece is a deferred tax element, and a third piece would be what he calls embedded value.

So to put things into perspective, if the discounted distributable earnings were $1,000 for example, we might see $400 as required capital; $200 as a deferred tax element; and then another $200 would be the embedded value. Now, at the

extreme, if we actually gave the required capital to a line of business, we would say the embedded value would be the full $1,000; whereas Luke is proposing it would be $200. We could take something in between as well. Any comments?

Mr. Koltisko: The terminology embedded value is unfortunate. Because if you look at standards of embedded value or talk with our Dutch colleagues, for example, they usually mean what we Americans call the discounted value of distributable earnings.

Luke's paper instead uses the term embedded value to describe the value of the profit in the reserves alone, and excludes the other two pieces of PVDE. So I think it is confusing terminology. This need not get in the way of our analysis.

I think both approaches for managing the company are practical; one can give the business units responsibility for the profit margin and keep the surplus in a surplus segment to control centrally. Or one can make the whole amount the responsibility of the business unit. That's a practical issue for execution.

But to clarify the definitions of those terms, embedded value as used in Luke's paper only, exclusively referred to the profit in the reserves. That's why I used a different term in this presentation. The standard in European reporting is to use that to mean the whole appraisal value.