2002 Valuation Actuary Symposium
September 19–20, 2002
Lake Buena Vista, Florida

Session 12PD
Embedded Value

Panelists: Duncan Briggs
Nancy E. Bennett

Summary: Panelists discuss the embedded value process, including discount rate, uses for embedded value reporting and implementation issues.

MR. DUNCAN BRIGGS: I'm going to be the first speaker. I'm a consultant with Tillinghast, and much of my background has been in the area of embedded value reporting. My initial experience was in the United Kingdom, and for the last six years, I have practiced in the United States. I've worked with embedded value for close to 10 years now. My co-presenter is Nancy Bennett. Nancy is a consultant with Milliman, and her consulting practice focuses on integrated financial management. She has managed assignments relating to many areas of financial management, including embedded value analysis, appraisals, investment strategy, cash-flow testing, and transfer pricing.

The topics that Nancy and I are going to cover include an overview of embedded value and how it's used in different parts of the world. Second, I'm going to cover the mechanics of embedded value accounting, how the system actually works in practice, and then I'm going to cover some of the practical issues associated with implementing an embedded value reporting system. Those topics are ones that are going to be covered in my presentation. Nancy is then going to look at some of the factors that are influencing the use of embedded value in the U.S.. She's going to cover some of the uses of embedded value once you have the framework in place. She'll look at comparisons with other accounting systems, including fair value. Then she's going to talk about some of the limitations of embedded value.

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

I'm going to start with a basic definition of what we mean by embedded value. I think most people are fairly familiar with this, but I want to make sure everyone is on the same page. I think it's useful to look at what I've referred to as the economic value, also known as the appraisal value of a life company. This can really be broken down into three components. It's two of those components that make up the embedded value. The piece that doesn't go into embedded value is any value that is associated with business not in force at the date you're doing the valuation. So any future new business is excluded from the scope of embedded value. The embedded value then has two components. The first of those is what we refer to as adjusted net worth, and this is really a statutory book value type number with certain adjustments made to it. The biggest components are typically statutory, capital, and surplus. Then a few adjustments are typically made to that number. For example, asset valuation reserve (AVR), which is a liability on the statutory books, is added back in for economic value purposes.

The other component of embedded value is what we refer to as the value of in-force business. It is the discounted value using a risk discount rate of projected distributable earnings arising from the business that's on the books at the time the valuation is being done. Distributable earnings are defined to be statutory income after tax adjustment to reflect changes in target surplus. What we're saying here is you can't run an insurance company with zero surplus. You need some level of target surplus to satisfy regulators and rating agencies and the change or the movement in that level of target surplus needs to be factored into the earnings definition.

The reason why we use a statutory definition of earnings underlying embedded value is really because we're looking at value from the perspective of an external shareholder of the company. If you put yourself in the position of a shareholder, that person is interested in the stream of dividends that could be paid out of the company. Obviously, dividends are constrained by statutory accounting. Therefore, we use statutory accounting underlying the embedded value calculation.

Once we've defined embedded value, the next step is to define embedded value profit under the embedded value accounting system. I've actually used three different phrases to refer to this. The first two, value added and embedded value profit, is commonly used. Achieved profit is

used in the United Kingdom to refer to, basically, embedded value profit. We define the profit to be the increase in the embedded value over the period that we're measuring adjusted to reflect any capital that's flowed into or out of the company. Think about this from the external shareholders' perspective. At the beginning of the period, they have an asset worth EV(t-1). At the end of the period they have an asset worth EV(t). The change in that asset is part of their return, but then, if they've been paid a dividend, you need to add that in when coming up with total return. Conversely, if they put in capital to the company, that needs to be subtracted out. Nancy will talk more about the discount rate, but we really expect this return to be greater than the discount rate that's being used in order for true value to have been created from the shareholder perspective.

I'd like to give a bit of the history of embedded value. It grew up in the 1970s in the United Kingdom. Embedded value started there partly as a defense against unwanted acquisition bids. At the time, there wasn't a realistic financial reporting basis for insurance companies. The statutory information that was available gave a very low valuation of the companies. As a result, there were often unwanted acquisition bids on some of those companies. As a defense against that, companies started producing embedded value type results so that they could give their shareholders a more realistic picture of what the company was worth.

In the United Kingdom, the embedded value framework is relied upon by financial analysts in coming up with their stock selections. They look at embedded value earnings in analyzing companies. It's also used on a widespread basis in Australia and South Africa. Recently, it has become commonly used by the multinational European insurers. That, of course, has affected a number of companies in the U.S. that have European parents. They've now started to do embedded value calculations, as well.

The way embedded value was adopted in Canada is an interesting situation. As you know, the large Canadian companies demutualized two or three years ago, and very soon after that, the analysts in Canada starting putting pressure on the companies to produce embedded value results. It's not to say they were unhappy with Canadian GAAP. Even today, the GAAP measures of earnings per share, price to book, and return on equity (ROE) are all still very important, but the

analysts believed that embedded value provided a more prospective looking picture of the company and they wanted that information in addition to the GAAP accounts. Because of that, the Canadian companies all did the calculations and published embedded value for the first time for year-end 2000.

There are a few different levels of embedded value publication. A lot of companies, in particular, the UK and now some of the European companies, report embedded value results in their annual statement. When I say annual statement, I don't mean bluebook type annual statement. This is a published report and accounts are equivalent to the GAAP accounts. In the UK, companies will report embedded value as supplemental information to the other accounting information that's in those documents. A number of the European companies haven't reached that point yet and don't fully publish embedded value accounts to the general public. They do, nevertheless, present the results to financial analysts on an embedded-value basis.

Another way in which embedded value information is being published is within initial public offering (IPO) prospectuses. A number of companies have included this type of information in IPO documents. Finally, a number of the financial analyst firms have taken the trouble to build up their own models that use publicly available data to try to estimate embedded value for publicly traded companies. This is actually what happened in Canada. The analysts started doing their own estimates, which I think was part of the impetus for the companies doing the calculations themselves. There are actually a couple of firms in the U.S. that have started doing this now for U.S. companies.

Turning now to the mechanics of the embedded value accounting system. Equation 1 is the generic formula for defining embedded value profit. For purposes of actually doing the analysis and understanding the results, we typically re-express that formula in the second version on the screen. We are trying to analyze embedded value earnings into the potential sources of those earnings. I'm going to say a bit about each of the terms in this equation, but at a high level. The first two terms are the expected embedded value earnings. If everything happened as you expect it, the first two terms would define your embedded value return. Everything else in the equation is then a deviation on what actually happened compared to what was expected to happen.

Value Added
= EV(t)
– EV(t-1)
+ Dividends paid (t)
– Capital injected (t) [Equation 1]

So the first term, interest on free surplus, means that if you retain any free surplus in the company, that is surplus over and above target surplus, then you would expect that surplus to earn some interest. The expected interest rate applied to that free surplus is the interest on the free surplus. This term is, typically, fairly small, because most companies are running with actual surplus. That is not too far adrift of the target surplus used in the calculations.

The second term is what we refer to as unwinding of the discount rate. When you do the calculation at the beginning of the year, you're really discounting a stream of earnings over a long period of time. Now, if you move the point of discount forward one year, then you're going to multiply the value of that discounted stream of earnings by one plus whatever the discount rate is. So if you use a discount rate of 10%, all this is saying is that you would expect your embedded value to increase by 10%, purely as a result of the unwind of the discount rate. Those two terms taken together define your expected embedded value return. The embedded value doesn't include new business. Any value that is added or destroyed by new business that has been issued in the current year is part of the reason why the return will differ from expected. We have a term representing the value added by the current year's new business.

In doing the embedded value calculation, we're making assumptions about every aspect of the company — mortality, interest, lapses, expenses, and so on. Actual experience is going to differ from those assumptions, and we need to be able to measure the impact of those differences between actual and expected. This term actually has two components, and I will use mortality as an example.

If we think of a situation where mortality is worse than expected in the year, then what does that mean? What it means is, in the current year, you're going to pay out more death benefits, so

there is one negative there. What it also means though is that what you have in force at the end of the year is less than what you anticipated at the beginning of the year. When you do your end-of-year calculation, you're going to come out with a lower number, purely, because your volume in force is lower than you originally predicted. So there's a current year component and a present value component to this part of the equation.

The next item is related to assumption changes. The embedded value system is a dynamic system. We intend to use best-estimate assumptions that are constantly reviewed and updated. When you update assumptions, you basically capitalize the whole future impact of that assumption change into the current year's number, so that's what that term is.

The final item is one that we typically hope will not be big. We're really recognizing that you're using a lot of complex models to do these calculations. Over time companies do refine and improve their models, so this is going to lead to some variations in the numbers from year-to-year.

I think it's important to recognize that the embedded value calculation, itself, is not a calculation performed in isolation. We very much need to view the calculation as part of a cycle. I've used the term control cycle, which was used in the general session, but it has a slightly different meaning. Once you've done the calculation, the key part is what we've called the variance analysis. You know what you were expecting the value to be. You know what the actual value is based on your new calculation. You need to analyze and understand what's causing the difference between the actual numbers and the expected numbers. The meat of the whole embedded value reporting process is doing that variance analysis. This will, typically, lead to issues that need to be investigated relating to both the models that are being used, and the assumptions that are being used. This, in turn, will lead you to define a new set of assumptions that will feed into the calculation that is done at the end of the next period. So we view this process very much as an ongoing cycle.

I wanted to comment on the fact that there are a couple of different presentations that are used for embedded value. If you happen to look through some sample accounts, you might see examples of both. I think the one on the right-hand side of Table 1 is more frequently used, but I have seen the other one used as well. They really don't make any difference to the total number. This is just geography as far as where various pieces of the equation are being put. We have present value of book profits of $100. The total surplus in the company is $70 of which $50 is target surplus, so we have free surplus of $20. We have a present value of the release of the target surplus, including interest equal to $35. Then the assets that the company is holding on a market value basis are 1.1 times what they are on a book-value basis.

TABLE 1
Differences in Presentation Format Being Used

PV Book Profits	=	100
Total Surplus	=	70
Target Surplus	=	50
PV (TS + interest)	=	35
Asset MV/BV	=	1.10

VIF	100 + 35	=	135	100 – (50 – 35)	=	80
ANW	1.10 (70 – 50)	=	22	1.10 (70)	=	77
Total			157			157

Under the first presentation format on the left-hand side, we would define the value of in force to be the present value of book profits, plus the present value of the release of the target surplus, which gets us $135. Then, the net worth is basically the free surplus, which is $20, multiplied by the market-value adjustment. The logic there is that free surplus could, in theory, be distributed immediately. If you did that, you would obviously distribute it on a market-value basis. We have $22 there for a total of $157.

The right-hand side shows the alternative presentation. The net worth is actually the full amount of surplus, not just the target surplus. It's total surplus with the full market value adjustment. As such, we get $77. In the value of in-force, we have the present value of the book profits minus what we refer to as the cost of capital. It is the initial target surplus, minus the value of the release of that target surplus. Then we need to back out the portion of the market value adjustment that related to the target surplus. We have a total of $80 for that. In aggregate, you get the same $157. Just a difference in how the numbers are presented.

I'm going to walk through what I've referred to as the embedded value movement analysis. There are some numerical examples of how you go from the embedded value at the prior year-end to the embedded value at the current year-end. We'll also look at the various steps that are involved in going through that process. The starting point of the example is an embedded value at the end of 1999 equal to $321 (see Table 2). We've broken that down into three components. The adjusted net worth is $200. This is the second presentation format from the previous slide. The value of in force is now the present value of the book profits of $140. The cost of capital is the present value of the release of the target surplus, minus the initial amount, which gives –$19.

TABLE 2
Embedded Value Movement Analysis

	Value of In-Force		Cost of Capital	Adjusted Net Worth	Embedded Value
	Regulatory Earnings	Change in Value	Change in Value	Regulatory Earnings	
VIF @ 12/31/1999 – before model adjustments		140	–19	200	321
Model adjustments and restatements					
– **Foreign exchange rate earnings**		0	0	0	0
– **Model changes**					
- Modeling changes					0
- Errors, corrections					0
- Other					0
– **Transfers**		14	–2	–10	2
VIF @ 12/31/1999 – after model changes		154	–20	190	323

For completeness, we've included some model adjustments and restatements. This is not necessarily going to happen, but it can happen. For completeness, I included an example. The numbers that are here could, for example, reflect a one off change in statutory reserves that the company has made. If it decides to do cash-flow testing, then it really should be holding reserves that were $10 higher than when you make an adjustment. Your net worth is going to go down by $10. However, you will benefit from getting the runoff of that reserve over time, so there's some compensation in the value of in force. At the end of the table, we have $323, which is carried forward to the next chart.

The next step of the process is to systematically go through the changes in assumptions that are being made for the current year-end (see Table 3). So when we do the calculation at the end of 2000, we have a set of best-estimate assumptions that we're going to use in that calculation. We compare those assumptions to what was used at the end of 1999, and there will be some differences. We need to go through and quantify what each of those differences is worth on the embedded value. In the example, we've made one economic assumption change. Economic assumptions would include earned rates, inflation, and risk discount rates. Then we made one change to a mortality assumption. Perhaps we decided mortality was a lot better than we had previously assumed. We make a change and that adds $37 to the embedded value. Everything we've done so far is still with the year-end 1999 embedded value models. We've now gone to an embedded value after assumption changes of $357.

Table 4 rolls that $357 forward to the end of the year, and there are three steps involved in doing that. The first is the expected return, and this is the unwinding of the discount rate, plus the interest on free surplus that I talked about previously. The example is based on a discount rate of 10%. Notice that the expected return, in total of $35, is slightly less than 10% of $357. That is because there's a small amount of free surplus in this example, and you expect the free surplus to earn an earned rate rather than a discount rate, so it's slightly lower than 10% of $357.

TABLE 3
Embedded Value Movement Analysis

	Value of In-Force		Cost of Capital	Adjusted Net Worth	Embedded Value
	Regulatory Earnings	Change in Value	Change in Value	Regulatory Earnings	
VIF @ 12/31/1999 – after model changes		154	–20	190	323
Assumption Changes					
– **Economic assumption changes**		–4	1		–4
– **Operating assumption changes**					
- Mortality assumption changes		37	0		37
- Lapses					0
- Expenses					0
- Taxation					0
- Other					0
VIF @ 12/31/1999 – after assumption changes		187	–20	190	357

TABLE 4
Embedded Value Movement Analysis

	Value of In-Force		Cost of Capital	Adjusted Net Worth	Embedded Value
	Regulatory Earnings	Change in Value	Change in Value	Regulatory Earnings	
VIF @ 12/31/1999 – after assumption changes		187	–20	190	357
Expected return		19	3	13	35
Expected regulatory profits from in-force	50	–50			0
VA by NB in 2000 @ eoy – after assumption changes	–5	15	–2	0	9
VIF @ 12/31/2000 – after new business and unwinding of RDR	45	171	–18	203	401

The next step is basically one that doesn't have an effect on the overall embedded value. In doing your 1999 calculation, you're discounting a stream of earnings that includes $50 of expected earnings in 2000. When you come to the end of 2000, that $50 is no longer in the stream that you're discounting so it drops out. So you have a –$50 in the value column, but that $50 effectively goes into net worth, so we've put a $50 in another column in the table. We could actually combine the first column and the fourth column. They're really both net worth, but for simplicity and to show you how the numbers flow, I've kept those columns separate.

The other part of this step is to add in the new business that has been issued in 2000. We need to identify that business.

FROM THE FLOOR: Did you have $50 on your adjusted net worth in there?

MR. BRIGGS: Actually, the $50 that's on the left side is the net worth number. I've kept the column separate just to show that it's coming from the in force rather than coming from elsewhere. So you've got five columns with numbers in them, and the first column is really the net worth number.

So we calculate the value of new business at the end of the period to be $15. That's the $15 that is in the value of in-force column. During the year, we make negative statutory earnings. Because of new business strain, we have to subtract five and then the cost of capital at the end of the year is negative two. So, in aggregate, new business is making a profit as shown by the nine on the right-hand side. We end up with $401, which is the expected embedded value at the end of the year after allowing for new business and after allowing for assumption changes.

The final piece of the puzzle (Table 5) is actually the hardest piece of the puzzle and the piece that requires the most work. This piece involves reconciling that $401 to the actual number you've calculated at the end of 2000. In this example, we've calculated $390 to be our actual ending embedded value. For simplicity, I've assumed that, in this example, we've been exactly able to do that reconciliation. I'll explain it by way of a deviation in lapses between actual and expected experience. That –10 takes us from the $401 down to the $390.

TABLE 5
Embedded Value Movement Analysis

	Value of In-Force		Cost of Capital	Adjusted Net Worth	Embedded Value
	Regulatory Earnings	Change in Value	Change in Value	Regulatory Earnings	
VIF @ 12/31/2000 – after new business and unwinding of RDR	45	171	–18	203	401
Deviation due to experience variances on in-force in 2000					
– Operating variances					
- Mortality/morbidity					0
- Lapses	–3	–9	1		–10
- Expenses					0
- Taxation					0
- Other					0
– Investment return variance					
VIF @ 12/31/2000 – after experience variances in 2000	42	162	–17	203	390

In reality, what happens here is that you'll get to the $401, and independently, you'll have the $390. Then it's a significant task to actually try and identify what components of experience have differed from what you expected during the year. Using your models, you go through and quantify how much those experience deviations have been worth in terms of the embedded value. Companies can do this down to a certain degree of accuracy, but there will normally be at least some unexplained components at the end of the day. The object is to try to get the truly unexplained piece kept to a minimum.

We can illustrate the last few tables using a simple graph, which takes us from the $321 that we started with through to the $390 and breaks it down into the components that I've just talked about (Chart 1).

In the final part of my presentation, I'm going to talk about a few of the practical implementation issues associated with getting an embedded value system up and running. I'm only going to make a few high level comments here. Nancy has some more material in this area as part of her presentation. The first comment I would make is that implementing an embedded value

reporting systems is certainly a significant undertaking. It's something that requires input from actuaries and accountants, typically in lots of different areas of the company. If it's going to work, I think it really requires a buy-in from senior management. If you don't have that, then it's almost doomed to failure from the start. I think senior management buy-in is definitely very important. There's a lot of coordination required between the various actuaries and accountants that work on this. As such, I think it's important to very carefully define the process and manage the process to make sure that it runs smoothly.

Many companies are not in year one going out and publishing embedded value. Rather, they will do the calculations internally for their own purposes just to actually get the system up and running to iron out any bugs. If and when they do publish, they have numbers that they're reasonably comfortable with. That's the process that we've seen a lot of companies use.

Most companies that do publish do so yearly, and the timeframe required for getting the results is getting tighter and tighter. Many of the UK companies will have results ready for publication within six or seven weeks of the year-end. This has created quite a few issues for those companies that have U.S. operations when those companies try and do it while they're also doing their regular year-end work.

At the start of the implementation, it is important to define very carefully the methodology that's going to be used. There are many different components of methodology. An important aspect is to develop what I call a guiding principles document. This document would set out for each element of methodology exactly how the calculations are going to work.

There are lots of different ways for numbers to be produced. Do you want to look at results by legal entity, by line of business, by distribution channel? Those are the decisions that need to be made, and then someone needs to be assigned to producing the numbers for each of those reporting units.

Treatment of options is another topical issue. We have heard a lot about the issues that guaranteed minimum death benefits have, and how you're going to treat those in embedded value is an important issue. Typically, what companies do is run these calculations with a single deterministic interest rate scenario and a single deterministic equity growth scenario. Clearly, if you do that, then you're not capturing the full expected cost of things like the guaranteed minimum death benefit (GMDB). So one way of getting around that is to do some stochastic testing to figure out what that cost should be over a large range of scenarios and then use that expected cost. Plug it back into deterministic scenarios so you have something more reasonable as far as what your expectations are with respect to those benefits. Any options like that in the past have tended to be ignored, but many more of them are in the money, so it's definitely important to consider how those are treated.

I've emphasized a lot the complexity of putting embedded value in place, but I think when you look at it, in reality, it's maybe not as bad as I'm outlining. In particular, the key inputs to the embedded value system should be pretty much in place in most companies. For example, the models that most companies have for cash-flow testing can, typically, be used without too much modification to do the projections that are required to do the present value calculations. Other key input is best-estimate assumptions. Most companies will have these in place for various purposes, including pricing, GAAP, and cash-flow testing. Again, without too much modification, this information can be used. More of the work that's actually required is pulling these pieces together and coordinating the work, rather than creating something that doesn't already exist. I'm going to pass it over to Nancy now.

MS. NANCY E. BENNETT: Duncan, thank you for your introduction and excellent presentation. Your presentation has given us a lot of background on embedded value concepts and basic terms of framework.

I'm going to pickup where Duncan left off and discuss a couple of uses for embedded value once in place. In particular, I'm going to talk about using embedded value as a tool for analyzing strategic alternatives and for using embedded value in the management incentive compensation formulas. I'm then going to shift my attention back to the financial reporting aspect of embedded

value and compare the embedded value accounting system to some of the other accounting systems that we're more familiar with in the United States. Finally, I will end with some comments on where embedded value might be headed.

The continued popularity of these embedded value sessions, as well as Duncan's statistics on the global insurance marketplace provide us with ample evidence that more and more insurance companies are implementing embedded value. As Duncan mentioned, embedded value in the insurance industry started back in the UK as more of a defensive play, but we also saw a lot of the seeds for embedded value in the manufacturing industry.

There's a fairly well-known consulting firm by the name of Stern Stewart that has been credited with pioneering the embedded value movement in the manufacturing sector. Stern Stewart worked with a lot of manufacturing companies and saw a need for companies to do a better job aligning their activities with shareholder interests. Stern Stewart has worked with a number of manufacturing companies to implement this embedded value process. If you read some of their annual reports, many of these companies credit the embedded value implementation as having turned their companies around. Some of the companies I'm referring to are household names such as Coca-Cola, the U.S. Postal Service, Eli Lily, and Monsanto. Now we're seeing the increased use of embedded value in the insurance industry, primarily due to the increased market share of the multinationals.

What we see as the appeal for embedded value as a reporting basis, regardless of the company, is that it is, theoretically, a superior approach to evaluating financial result because EV is based primarily on economic fundamentals. With an embedded value approach, there is a more direct recognition of the capital markets and the cost of capital for doing business. Embedded value does a much better job of directly recognizing the risk embedded in many of the company's activities. EV allows for a better comparison across countries and across different users of financial statements. Finally, and most importantly, EV facilitates a more direct link between compensation and shareholder value.

The globalization of the financial services industry has also given rise to more interest in implementing embedded value. I would characterize all of these factors that I have here as positive factors and those things creating an impetus to implement embedded value.

On the flip side, we have a negative drag on widespread implementation of EV primarily caused by a significant amount of resistance in U.S. companies. I think a lot of this resistance stems from embedded value becoming a third reporting system for many companies in the United States.

In addition to all the work associated with a third reporting system, embedded value represents a significant departure in the thought process for U.S. companies. U.S. companies are accustomed to dealing with formulaic standards, both in terms of their reporting standards, their valuation, and their risk-based capital. Everything is done by formula, and even if you don't like the formulas, that's how you have to do it. Stock analysts are accustomed to looking at GAAP earnings. In the U.S., we focus on short-term earnings. So an embedded value type of system that is based on company judgment, and the implementation of models based on long-term perspective is quite a difference in perspective for a lot of companies. Despite the resistance of the U.S., there are still a lot of benefits to implementing an embedded value system.

In terms of the uses of embedded value, we see it as a financial reporting, performance, and evaluation tool. EV is used directly in analyzing mergers and acquisition or appraising blocks of business. EV can provide some interesting information for companies that are evaluating different strategic alternatives. Finally, EV can be a very effective way of motivating changes in management behavior.

I'd like to talk about how you can use the embedded value tool to analyze strategic alternatives. From a more economic perspective, companies can basically take actions falling into one of four different categories. A company can look to different programs that will help them operate more efficiently, where they can earn a higher return on the capital that they already have invested. A company can also look to invest in new projects where the return on that project is greater than the cost of capital. A company can also use the embedded value tool to stop some of their capital

investments that are not producing an adequate return. Finally, a company can also use the embedded value tool as a way to analyze more efficient capital structures.

Let's put these strategies in a more of an insurance context. Basically, when you look at what insurance companies are doing, whether it's on new business or in-force business, you'll see they're looking at a range of things to try to improve their bottom line. They're issuing new blocks of business. Many companies might choose to tighten up their underwriting standards to improve their mortality results, to change their investment strategy, to earn more spread, to pursue a more aggressive expense management program, or to apply more aggressive growth strategies. As such, the expenses can be spread over more policies.

On the in-force side, the actions are similar. Of course, you don't have underwriting as an option, but you might look to improve your persistency on the in-force block. You may look to restructure your crediting or dividend practices along with rebalancing your existing asset portfolio, all with the intent of improving your spread. Finally, an aggressive expense management program can also help with the in-force business.

It's quite likely that most companies are pursing many of these different programs at the same time. It's a given in today's environment that resources are limited. To help a company operate more efficiently, is to essentially help direct resources and focus on those activities with the greatest chance of increasing shareholder value.

I've put together a very simple example of how embedded value works. I'm looking at the new business here. I start with the embedded value calculation of a universal life block of business (Table 6). We calculated embedded value based on an 8.5% hurdle rate. This rate is fairly typical in today's environment. We used all of the company's pricing assumptions and captured all of the options in the products. You'll see that when we ran the EV model, we got a negative embedded value for the amount of business issued, producing a 7.81% internal rate of return.

TABLE 6
Embedded Value Illustration
New Business Alternatives

- Base Case = pricing basis for UL policies
  - 8.5% hurdle rate used in calculating EV
  - Base pricing produces 7.81% IRR and –$460,000 EV
- Sustain a 10% decrease in administrative expenses
  - 8.28% IRR and –$140,000 EV
- Improve mortality 1% annually years 1-10
  - 8.29% IRR and -$150,000 EV
- Increase spreads on new assets by 50bp
  - 7.90% IRR and –$410,000 EV
- Increase policy count by 15%
  - 7.81% IRR and -$530,000 EV

You might think that result doesn't really make sense. This was a real client example. What often happens might not be ideal, but we worked with the corporate side to implement the embedded value, and the pricing people provided assumptions. We often talk about how there's a disconnect between pricing and financial reporting, but this embedded value implementation brought that discontinuity home in spades for this particular company. Although, the new business issued was still profitable, the new business was not sufficiently profitable. In other words, the companies were covering the cost of capital and all the embedded options in their product.

Again, I use this as an example because this realization alone was probably one of the more important things that came out of our embedded value implementation. I can still use this example to illustrate how this company can determine what actions to take to increase our embedded value.

I reran the embedded value for each of the different examples that we talked about. We're looking at how the internal rates of return and the embedded value have now changed. In this company's case, if they could improve their underwriting, such that they could sustain a 1% increase in mortality for the first 10 years, they would get the biggest bang for the buck. They're still not quite getting to the point where they're adding to shareholder value, but of all the different programs or activities illustrating underwriting standards seem to be the ones that have

the greatest chance of increasing shareholder value. The different programs add to shareholder value on a relative basis, so you could use this embedded value tool to help direct limited resources.

Another use that I talked about was implementing or using embedded value in the management incentive compensation. I referred to Stern Stewart earlier. Stern Stewart has published a number of books on embedded value. Stern Stewart goes so far as to say that if a company is not going to use embedded value in the incentive compensation, then there's really no reason to implement embedded value. Stern Stewart believes that if you don't put embedded value in the incentive compensation, all you're going to get is just another reporting system. You're not going to see a lot of the benefits from embedded value. By putting embedded value in your incentive compensation formula, you are essentially turning your managers into owners; as such, they are also compensated in direct relationship to the shareholders. The rewards earned by management are based on sustained increases in shareholder value.

There have been a few studies out on whether performance-based compensation works and whether an embedded value-based compensation plan as opposed to accounting type plans, does help sustain an increase to shareholder value. Some of the studies suggest that embedded value incentive plans do work. Some of the studies suggest that it's neutral, where the company gets some bang early on, and then the impact dissipates. I think one thing we can all agree on is that if we want to change human behavior, one of the most effective ways is to modify the incentive compensation accordingly.

With that, I thought that I would briefly discuss how you could put embedded value into an incentive compensation plan. I'm sure that there are probably thousands of bonus plans out there, so this is very simple to illustrate. In a lot of traditional bonus plans, we start out with a process where you sit down with your manager, you establish a target for the year, and then your bonus is probably based on some percentage of the target. The bonus may range from 80% to 120% of the target.

With a traditional bonus structure, the bonus ends up being capped. If you have a really good year, in essence, your high performance goes unrewarded. On the flip side, your poor performance may not be reflected enough. While we renegotiate the bonus every year, we don't really have a process whereby the bonus directly ties the executive's wealth to the sustained value of the company.

We need to think about how an embedded value (EV) compensation plan might work. In an EV compensation plan, you're going to base your bonus more on a percentage of the amount of value or achieved profits that were added in that year. In this regard, the bonus isn't capped. The more value you add, the higher the bonus. There's no reason to cap the bonus.

A company might choose to bank some of the bonus to absorb those years where you've actually destroyed shareholder value, since a company has no way to go back and take money from the executive. The point is that you can directly tie increases in shareholder value to your executive's pay. Essentially, the executives only profit if the shareholders also profit.

We've covered using embedded value in analyzing strategic alternatives in management compensation, the appraisal and financial reporting process. One thing we have to admit to you here. While a lot of companies have implemented embedded value, not all companies have fully embraced embedded value by using it in all of the manner that we have described. I think it's safe to say that all those companies that have implemented embedded value use it in the financial reporting and financial assessment process.

We wanted to spend some time talking about how embedded value compares to some of the other accounting systems. Again, embedded value can be a complicated process not only for calculating, but also for understanding. We thought that it might be useful to compare the embedded value to some accounting systems you understand.

In the United States, of course, there are a couple of primary reporting systems, both with different purposes. They're used for different reasons. Of course, the reporting system, whether it's statutory or GAAP, doesn't affect the total amount of profits that will be earned on a block of

business over its lifetime. All we're doing is simply changing the incidence or the timing of the profits.

As we're all aware, the U.S. Statutory Statement emphasizes solvency and a conservative calculation or presentation of results. We're all aware of the criticisms of statutory. We know that a lot of people believe that the income reported in the statutory statement is not a realistic measure of profits. Enter U.S. GAAP Statement, used primarily for shareholders, but the focus in GAAP statements is a realistic presentation of results. We create this realism through the creation of revenue and expense matching components.

With the emphasis on income statements and, in particular, with U.S. GAAP, we still don't know if the companies' actions have added or destroyed shareholder value. We know we have levelized the earnings, but we still aren't sure in looking at U.S. GAAP statements if we've increased or decreased shareholder value.

This, of course, is when embedded value comes in. Embedded value is a system that still would be considered for shareholders, but the focus now is on long-term contributions to a shareholder. EV is based on a realistic view of the future. Since embedded value is intended to measure how today's decisions have added to the shareholder value, most people believe that EV is a better measure of economic profits.

Finally, we want to talk about a fourth and new emerging accounting system and that is the fair-value system. The fair-value system, for those of you that have not been following this, is under consideration now by the International Accounting Standards Board as the basis for insurance accounting. There is currently no international standard for insurance, so the International Accounting Standards Board has said we need to have a standard and the International Accounting Standards Committee (IASC) is favoring fair value as the basis. Fair value is not the same as embedded value, but it's similar to embedded value. We thought that we would go through fair value in a little more detail.

I think there's at least one other session at the Valuation Actuary Symposium on fair value. So I'm not going to go into that in much detail or talk about the implementation timelines. I'd like to give you some very basic conceptual definitions on fair value.

Fair value is still in development. It has not been defined, but if you listen to the folks from the International Accounting arena, they are leaning toward a derivation of embedded value as the basis for fair value. Ideally, they would like fair value to mean market value. As we all know, there is no market value for insurance. They've had to develop a market value or fair-value-like measure to accommodate this market reality. When you're talking about fair value, you're really talking about two different options. One option is market value. This is the definition that comes from the International Standards. Market value is the amount for which an asset could be exchanged between knowledgeable parties. In other words, if you're doing an appraisal, what would a company pay for your block of business. With an active market, you could obtain a market value of your company. However, if your company is not on the market and you're not trying to be sold, then the question becomes, what's the value of my company? That's where the notion of entity-specific value has come in. Entity-specific value is what you think your company is worth. Because entity-specific value is defined as the present value of the cost to that enterprise of running off its liabilities, it is comparable to a hold-until-maturity concept.

As I said, the International Accounting Standards Board is working on a new standard for fair value. The IASB's approach for developing an international standard has been more considered a principle-based or top-down approach. The IASB has tried to stay away from looking at what's in the U.S., Canada, and other countries. The IASB is trying to come up with principles that should govern the calculation of fair value.

Though people can't really agree right now on whether or not fair value should be market value or entity-specific value, there are a number of people that think fair value should be a GAAP-like value. There are some principles that I think everybody could agree on. In developing fair value, they want an accounting approach that will be consistent among all financial institutions. That is true for not only an insurance company in the UK, the United States and Japan, but it is also true

of a bank in the UK. If you take the financial results from a bank in the UK and compare them to the insurance results for a Japanese insurer, there would be some consistency and comparability among the results.

One of the complaints and one of the catalysts for a fair value standard for insurance is that the different users of financial statements have gotten frustrated comparing results across financial statements. They're calling for what's called a transparent financial statement that is more easily comparable across all the different markets and companies.

Within fair value, the IASB is looking to have one approach for all insurance contracts that is ideally based on market value. If we just jump for a moment to GAAP in the United States, we'd of course see we don't have one standard for all the insurance contracts. The first thing we do in preparing GAAP financials is a classification. Is it life insurance? Is it property and casualty insurance? Is it health insurance? Is it short duration? Long duration? Then we go to the financial accounting standards from there. The International Accounting Standards say that insurance is insurance, and if it's insurance, it is going to be accounted for all in the same way. We're looking for one approach, and ideally, it would be based on market value to the extent that information is available.

The place where fair value deviates from embedded value is in the calculation approach, whether the methodology is direct of indirected. The embedded value method is characterized as an indirect method of calculating the value of the company. In other words, there's no balance sheet with an embedded value. You don't have a certain value of assets and liabilities. You simply say the embedded value of the company is the present value of earnings that can be distributed to shareholders, plus the value of the free surplus. That is called the indirect method. The International Accounting Standards Board is favoring this direct method where you have a balance sheet on which you directly calculate the market value of the assets and the market value of the liabilities. Ideally, the assets would be reported at market, and the liabilities would be reported on a market-value basis, if it's available, or using a fair-value approach if a true market-value is not available. The fair value is directly calculated as the market value of assets minus the market value of liabilities.

The market-value approach is based on exit values or fully prospective values. In other words, the market value of the company is what it's worth today. What happened five, 10, or 15 years ago when the product was issued is irrelevant for the purpose of calculating the fair value of the company. All you're concerned about is what is the fair value today. The fair value has much more of an emphasis on risk and the risk that's embedded in the balance sheet. In other words, the fair-value and embedded-value approaches are not concerned with coming up with a stable stream of earnings. The idea is let's capture all the risks, and let's look at the risks that come into the balance sheet. They also state that in fair value. The prudent approach for calculating liabilities is to use stochastic processes and that the deterministic nature of calculating reserves is far from best practices.

Now we're dealing with three to four different kinds of accounting systems, which I think is pretty overwhelming for all of us. I think two is almost too overwhelming for all of us. I kind of took a step back here and asked, what is the difference in all of these? When I look at the difference of the accounting systems, I just ask myself what are the different rules, what are the basic fundamental concepts or the fundamental rules that drive the timing of profits, because that's really the only difference that's taking place in each of these accounting systems. The way that I look at it is that the timing of profits really breaks down to six basic rules.

Does the type of insurance contract have any bearing on how profits are being calculated? In U.S. GAAP, we know that the type of insurance contract does make a difference on how profits emerge. With the fair value and the embedded-value approach, the type of contract really doesn't matter. It's a discounted cash-flow approach, so the type of contract has no bearing.

The second big rule that affects the timing of profits are the rules that govern the calculation of the benefit reserve and whether a benefit reserve is being calculated. In statutory and GAAP, we calculate benefit reserves with specified caps and floors. Do the reserves have to be greater than or equal to cash surrender value or less than account value? How does a tax reserve come in and affect the calculation of the benefit reserves? In a lot of accounting systems, we calculate reserves from actuarial principles; however, we have all these rules that come into play that tell us what we can book directly impacting the timing of profits.

The third big rule is how expenses are recognized. Obviously, in statutory we recognize expenses when incurred. In GAAP, we go through a fairly complicated expense reserving process so that we can match revenue and expenses. Even within GAAP, we have different methods for recognizing expenses, all with the purpose of changing or altering the timing of profits.

Another big area that influences the timing of profits is how changes in experience are recognized. In particular, we know that, within GAAP, much of the experience changes are amortized over the remaining lifetime of the contract, again, all with the intent of smoothing some of these experience changes. Depending on the contract type, experience assumptions can be locked at issue or adjusted over time. With embedded value and with fair value, as assumptions change, that impact is recognized immediately, so there isn't any smoothing of the earnings based on the differences in assumptions.

Beyond that, as the experience changes, EV and fair value results also depend on the basis for setting the assumptions. Discount rates are a big issue. Of course, within statutory, we're told what discount rate to use in the calculation of the reserve. On the GAAP side, there's more flexibility, but I think we're using one set discount rate. By and large, the rate doesn't change when you're calculating GAAP. With embedded-value and fair-value, there's a lot of discussion on what is an appropriate discount rate to use. Typically, it is to be discounted at the company's hurdle rate or at their cost of capital. There's a lot of theoretical discussion that ties the embedded-value discount rate to a Capital Asset Pricing Model (CAPM) of analysis and whether or not certain risks should be included in the discount rate. This discount rate is becoming a very large issue in this fair-value implementation. Should a company's default experience or credit standing be included and how much conservatism should, theoretically, be included in a market value approach? The assumption basis has a big bearing on how profits are going to emerge.

Finally, the last big rule concerns whether or not you're using entry values or exit values. In other words, statutory and GAAP profits are primarily based on values at issue. Think about a *Financial Accounting Standard (FAS) 60* product. Your profits today are still very much anchored to what happened when the product was issued. That's also true with *FAS 97*. With

the embedded-value and fair-value approach, you are not tied to assumptions at issue because you're always taking a prospective view of the future.

So those six big rules are the way that I characterize the differences in profits between all the different systems. Putting it all together, how do we really look at these rules, and how do they emerge? Fundamentally, what you're going to see is that embedded value or achieved profits are a more volatile measure of a company's profits than either statutory or GAAP.

For example, in statutory earnings, the first-year earnings will probably be the most negative under statutory compared to EV or to GAAP. However, if you look at projected embedded-value earnings, you're going to see the most volatility with an embedded-value or a fair-value type of process. One of the reasons is that embedded-value is not constrained with some of the rules that GAAP is. Also, embedded-value actually allows for a profit or a loss at issue because, again, they're not concerned with this whole revenue expense matching concept. Because the experience changes affect the achieved profits immediately, and because you don't have some of these unlocking and smoothing issues, you're going to see a lot more volatility in your embedded-value and fair-value earnings.

What we have tried to do in this session is explain some of the benefits of embedded-value. We've been talking to you more from the theoretical perspective on embedded-value. As I said, both Duncan and I would tell you that we believe that there is a theoretical appeal to embedded-value. It is a much more superior approach to calculating profits than any other reporting systems. However, we also recognize that there are some limitations with embedded-value.

Without any apologies, embedded-value proponents will tell you that embedded-value has a singular emphasis on shareholder value and not on stakeholder value. In other words, some of the stakeholders, such as policyholders, employees, or the community are not directly considered in an embedded value-run company. I think you can make the argument that if the shareholders prosper, then the employees, the community, and the policyholders also prosper. That's at least the counter argument to this. With embedded value, they make no apologies for emphasizing shareholder value.

Again, embedded value focuses on longer term results. I don't know that I would necessarily characterize it as a limitation, but I think it's certainly a major obstacle in understanding and implementing embedded value. You're suddenly looking at mortality fluctuations, but not just what happened in this year. You're reflecting the present value of those fluctuations over 30 years. It's a big switch in mindset for a lot of managers and boards of directors to understand.

With the embedded value calculation, certain risks are not fully captured in embedded value. What is most notable is that the embedded-value calculation does not capture the embedded options that are contained in a lot of different products. The reason for that is in the calculation process, embedded value is the present value of distributable earnings, and it's based on one deterministic discount rate. You might calculate embedded value using three different discount rates, but it's always based on a deterministic interest rate. You're not using any type of option pricing analytics where you could capture the value of those embedded options.

Again, a limitation that Duncan mentioned is how the implementation can be time consuming. Though you can leverage a lot of the processes in place today, it can be a time-consuming process to implement. Finally, this insurance embedded value is characterized as an actuarial black box. To those in this group, I'm not sure that we think that it is such a bad thing to be a part of an actuarial black box. Unfortunately, a lot of the people that look at embedded value don't quite have the same appreciation for our mystique, so they think this black box is a little bit of a limitation.

So where do I think that embedded value is going to go? Personally, I think that we're going to see more and more increased use of embedded value within the United States. I think we will see an acceptance by U.S. stock analysts. They're going to be more and more accustomed to looking at embedded value, if for no other reason than because of the influence of some of the non-U.S. parents. Many of the companies today, such as Aegon, ING, and Allianz calculate embedded value. There are currently many companies owned by non-U.S. parents.

It's probably too soon to tell where the international accounting standard is going to end up. There is getting to be more and more pressure for an international standard. I think that that will

put a lot more emphasis on embedded value. I think before embedded value is probably fully implemented within the United States, we're going to see some more enhancements or development of the embedded value theory. People recognize that we need to include stochastic analysis in there. We probably need to do a better job of integrating embedded value with all the types of risks.

So with all that having been said, we believe that embedded value is, theoretically, a much better system than statutory or GAAP. It's not a perfect system though, but it's much closer to fundamental economics. I believe that if a company institutionalizes embedded value, it can be a very effective system for evaluating results and for directing activities that are much better aligned with shareholder value.

FROM THE FLOOR: You mentioned an embedded value model. Is it really a liability model office? You say you must define a deterministic discount rate, but it sounded like an earned rate, too.

MR. BRIGGS: You can do it either as a liability model with a set of defined interest rates or companies will use asset/liability models as well. The point I was making was that typically the calculation is done under a single scenario. Current Treasury rates define all your reinvestment assumptions, and so on. Many companies will use full asset/liability models.

MR. RICHARD J. LAURIA: In countries where embedded value is being done regularly for financial reporting, are there standards in place because of a lot of assumptions. There's much variance in assumptions from company-to-company? Can you comment on that?

MR. BRIGGS: Yeah, that's a good question. Up until fairly recently I would say the answer was no. Recently, in the UK, the Association of British Insurers (ABI) introduced what they called Achieved Profits Guidelines. There's a guidance note that is now in place, and it does set out standards for companies that report on an embedded-value basis, standards of presentation, what should be disclosed, and some guidance as far as how assumptions should be set and other aspects. As such, there is some guidance. It will be interesting to see how that gets applied in

other countries. It's fairly new, and I haven't yet seen U.S. companies do embedded value or get subject to that same Achieved Profits Guidance, but I suspect that might be on its way over as well.

MR. LAURIA: Has there been any development in Continental Europe?

MR. BRIGGS: I'm not aware of any in Continental Europe. I think the Canadian Institute of Actuaries has issued some sort of guidance. I'm not aware of anything in Continental Europe.

MS. BENNETT: Yeah, there's a draft standard that has been issued by the Canadian Institute of Actuaries talking about embedded value guidelines. It's just a draft. It's pretty short if you want to look at it. It's on the Canadian Website.

MR. DAVID NEVE: Could you expand a little bit more on your feelings on acceptance by the U.S. stock analysts of embedded value? Working for a public company, I find my senior management team has made it pretty clear that there's really no interest in moving to this until there's broader acceptance by the stock analysts. It doesn't seem to matter how theoretically superior it is. Until it's accepted, they're not going to really be very interested in it. It seems to me there are two things working against it. As Colin said, the market is looking for stability of earnings. This is a system that creates more volatility in earnings, and that seems to be a negative. In addition, in this post-Enron and Worldcom environment, this system puts more reliance and more discretion in setting assumptions by the accountants and the actuaries. The market is looking for something that gives less discretion. You said that you think it's going to be accepted, but can you tell me why you think that's going to be the case. Also is there a time frame in which you think it's going to happen?

MS. BENNETT: I don't know if I want to go on the record saying it's going to happen. I think it's going to happen. The reason I'm speculating is because I think that we're just seeing an increased share from multinationals. Dave, your comments are very much in line with a lot of U.S. companies, so you represent a very strong voice in this international accounting debate. People say the U.S. markets are the standard for capital. Whether there's an international

insurance standard or not, the de facto standard is U.S. GAAP, so the markets aren't going to care about fair value.

My prediction could be completely wrong, but resolution of the issue depends on the level of influence the international groups are going to have on the U.S. I know there's a lot of discussion between the international groups and the SEC, in particular. Will the U.S. start accepting EV, and will the U.S. start using EV? I don't have a crystal ball. The U.S., Japanese, and German insurance organizations are adamant that a fair-value type approach isn't the best, but a lot of other countries think EV is more economically sound.

MR. BRIGGS: I'll just add a couple of comments to that. I was surprised a bit at some of Colin Devine's comments at the General Session. He didn't come out fully in support of embedded value. On other occasions, he has been more supportive of the whole embedded value concept. I know from speaking to some of the other analysts that more of them are now starting to come to grips with embedded value and starting to see the value in what it brings over and above the existing accounting system. So I think that if it does get big in the U.S., it's going to be analyst driven. I think the analysts are starting to understand it more, particularly because of globalization. They're having to deal with companies that have operations in many different countries. Some of those countries have embedded value, so they're getting more familiar with it, and that may well be one of the impetuses that gets it wider acceptance.

FROM THE FLOOR: I have a follow-up comment and then a question. I think that we have been publishing embedded value for the last couple of years in Canada, and we are tracked by both Canadian and U.S. analysts. In Canada, the analysts have gone from more of a fever pitch on the topic to a bit more subdued reaction to embedded value numbers. I don't know where it's going to go, but I think there is less enthusiasm today than there was 18 months ago. In the U.S., I don't think that we've seen a lot of difference. There is much general nonchalance in terms of the U.S. analyst community, but it might change.

A question in terms of compensation. You talked earlier about how embedded value could be a very useful model for compensating results over a one-year period. Then we talk about the

extreme volatility. I understand that we can sort of separate out assumption changes and model changes from the compensation. How do you successfully integrate the volatility aspect in terms of a one-year bonus plan? Maybe you could comment on any real life stories where you'll actually be able to overcome that.

MR. BRIGGS: I've worked with a couple of companies that have actually used embedded value for incentive compensation. One of the things they did was identify exactly how the calculation was going to work for obvious reasons. They needed very clear guidance upfront. One of the things they did was to look at the assumptions and identify those assumptions that are really outside of management's control. Any economic assumption changes, to the extent it is outside of management control, was taken out of the compensation formula. What the compensation formula looked at was what is the embedded value earnings adjusted to strip out the economic assumption changes and other items that are not within management's control. We can focus on what management has control over. That was what was used in the plans that I've seen.

MR. EDWARD C. JARRETT: My question deals with the movement toward fair value in the international arena. I forgot the date when it's supposed to be used in Europe. Isn't it 2005 or something like that?

MR. BRIGGS: It has been changed to 2007.

MR. JARRETT: But if that actually comes to pass won't fair value make embedded value a moot point?

MS. BENNETT: I don't know that I would say it would make it a moot point because I'm still looking at the fair value measure that the International Accounting Standards Board is considering. Fair value is very similar in concept to embedded value. Fair value is still a discounted cash-flow paradigm. Whether the current form of embedded value will go away if the IASB approach is adopted remains to be seen.

MR. BRIGGS: There's a lot of stuff that still needs to be defined as far as what fair value is. However, in many ways, it's probably a natural progression of embedded value in some of the shortcomings of embedded value like dealing with options and guarantees. I think fair value is intended to do a better job with those. I'm not sure the two are totally inconsistent. I think there is quite a lot of relation between the two.

MR. JAMES F. REISKYTL: I'm an observer, so, if you're only measuring shareholder value, I'd have little interest. However, as an observer, I have three practical questions. When you make best estimates, do you take current conditions into account? For example, say you have the inverse yield curve or high asset write downs at the moment. When you make your best estimates, do you just kind of smooth all of that out, or do you actually make a best estimate if you're doing it today for next year? Do you assume that the default would continue at the current level, or do you project where the stock market is going to go? The best estimate is a very interesting thing. What I'm most interested in is whether today has any influence over your choice of best estimates.

I also have an observation. You said earlier that you are using it for compensation. Since I control the assumptions, can I control my compensation? It seems self-evident that I love such a system as long as I can do it until I retire.

I'm a tax person, so I want to know what you do with taxes in this system. Do you recognize the taxes of each country when you try to do embedded value, or do you have some mysterious overall force that takes out some of the practical implication problems? Those are just immediate thoughts.

MS. BENNETT: Even though Northwestern Mutual does not have direct shareholders, the policyholders and your shareholders are actually the same. You might not have public shareholders, but you certainly have a responsibility to your policyholders. In that regard, I think that embedded value still can be a useful system, even for mutual companies.

In terms of setting the best assumptions, the questions that you ask are just as valid with a GAAP accounting system. I don't think that embedded value brings those issues to bear any more than GAAP or statutory. Best estimate is just what it indicates. Many companies are struggling today with what is the best estimate of future interest rates and future equity markets. Many companies do a better job with setting assumptions for embedded value than they have done with GAAP. Most companies start from scratch and write an assumption book, or a rule book. This book is basically a documentation of the assumptions, the basis for the assumption, and how changes in experience will be reflected. That documentation introduces some discipline into the process. Again, it's still not perfect, but at least there are a lot of things written out. This book is followed in calculating embedded value. The idea is that it will minimize some of the manipulation that can take place with any systems.

MR. BRIGGS: On the question of the compensation and influencing the assumptions, the companies that I've dealt with typically required that their calculations be independently reviewed to make sure that something like that does not happen.

As far as the taxes are concerned, the calculation should reflect whatever taxes you expect to pay. If you're paying taxes in five different countries, the calculations performed for each specific country should reflect the tax that you're projecting to pay in that country.

As far as the best-estimate assumptions and reflecting current conditions, much of that is dealt with in the UK within the guidance note. Companies have used smoothing mechanisms on equity funds the same way as we do for the deferred acquisition cost (DAC). That has been taken out, so any equity market volatility will come right through in the calculation. As far as things like defaults are concerned, if people accept the view that the defaults are cyclical, then we probably should reflect some default assumption that is going to vary over time. It might start off at the current high levels, and it goes down to a more normalized level.

FROM THE FLOOR: Nancy, I just want to make sure I got the flow of your EV illustration and new business alternatives. I think I remember this from study notes. If the internal rate of return is the same as the hurdle rate, the embedded value is zero under new business.

Practically speaking, if I have a client for which I'm doing asset/liability modeling every year, what's the difference between embedded value or the present value of profits on my base scenario? What needs to happen so I can do embedded value?

MR. BRIGGS: Perhaps not a whole lot, depending on how you've done your existing models. I think that taxes are one thing that might not be fully reflected, so you need to build in taxes. Cost of capital and the discount rate might be the big ones. You wouldn't have built that in, so you need to build in target surplus projected out over 30 years as well as the impact that has on the earnings each year and the discount rate. You're basically using a risk discount rate, so that would differ from the year-end rate that you would use in cash-flow testing.

FROM THE FLOOR: A couple of the questions I've heard are getting around to a similar topic. It's almost like people are looking for a quality of EV growth — I can grow the embedded value by making a bet and being right. That's probably not what we want to reward management for. Is any of the work that you're doing looking at sources of growth of inundated value that's allocating as to where it comes from? I might reduce the embedded value of the organization by hedging a risk. I'm spending money that maybe isn't in my base scenario, but I might want to do it. Is there any work that's going on in embedded value that's getting to that issue?

MR. BRIGGS: You're sort of hitting upon some of the areas where embedded value, traditionally, is not complete. There's a lot of current research on market consistent valuation techniques. They're very closely related to fair value in many ways. You can create money out of nothing or destroy money when really you've done something that's valuable. Those types of issues are what's being considered in the market consistent valuations. I think those are a natural progression of embedded values and we're going to see those coming through over the next couple of years in the UK and then maybe in the U.S. sometime later.

CHART 1
An Analysis of Embedded Value Earnings Reveals the Underlying Drivers of Value