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The Control Cycle: Pricing Issues and Financial Reporting

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Summary: An increasingly competitive marketplace has led many insurers to more closely scrutinize product profitability. This session will examine how insurers monitor product pricing issues through traditional financial reporting information and will also present other management information systems developed to more effectively monitor profitability.

Mr. Douglas C. Kolsrud: I'm the corporate actuary at Aegon USA, a member of the Aegon Insurance Group based out of The Netherlands. In addition to my corporate duties, I am the outgoing chairperson of the SOA Financial Reporting Section. I'll be your moderator and will tell you about what we're doing at Aegon in regards to our topic.

I am pleased to have with me two panelists who will have some fresh insights into methods relating to pricing and financial reporting. Bob Omdal is an assistant vice president and actuary at Aid Association for Lutherans. He has over 25 years of experience in the insurance industry, 16 of which were at Milliman & Robertson (M&R) in Seattle; the last 9 years were spent at AAL. Bob is currently a member of the program committee for the SOA annual meeting and will move into being the co-chairperson for next year's meeting.

He also chairs the Committee on Career Encouragement and, as you will see, has led his company's conversion to GAAP.

He has recently moved into a new challenge in the life product area, where he is going to implement what he calls the new current pricing methodology.

Our other speaker will be Rachel Hancock. Rachel is a consulting actuary with Tillinghast, based in Denver, Colorado. She came to Tillinghast in the U.S. six years ago, after transferring from the Tillinghast Sidney office in Australia. Her practice areas include financial reporting, appraisal values, and product development. She has helped a number of companies, one of which is Aegon, look at embedded value. With that, what I would like to do is provide a brief introduction and then go a little bit into what we are doing.

Historically, pricing and financial reporting have been somewhat separate, albeit not totally disconnected functions within a life insurance company. For example, within the actuarial department, you may typically have a product development actuary who designs prices and implements new products, while on the other side of the house you'll have a financial reporting actuary whose main function has been putting together quarterly financial statements under various accounting bases.

The two functions have frequently been joined through experience studies; the traditional vehicle used to relate emerging experience with historical pricing standards. Mortality, expense, and persistency studies have been used in setting pricing assumptions, establishing dividend scales and adjusting other non-guaranteed elements within an insurance product. Other traditional methods of monitoring experience have been through statutory gains by source analysis, trending of GAAP earnings and perhaps other internally designed management information systems.

In today's competitive environment, it's much more important to have financial tools that provide you with immediate feedback on meeting pricing assumptions. Our panel is going to attempt to break down some of the traditional barriers between pricing and financial reporting. As I mentioned earlier, I will spend a little time talking about a management information system that we've had in place at Aegon for several years, called value-added accounting. In addition to laying out a general framework of a value-added accounting system, I'll reference a couple of points in which we are able to use the value-added accounting system to monitor product pricing.

Bob will then follow me by describing a financial reporting system he helped to develop at AAL. Bob's system takes traditional GAAP financial statements and

relates them to pricing. Bob will present a series of reports that should help to illustrate his system.

Finally, Rachel will present her views on how to translate corporate objectives into consistent pricing objectives. Rachel will emphasize, using an embedded value framework, but she will also touch upon the challenge of translating corporate objectives within a GAAP accounting framework. With that brief overview, I will begin by sharing my own experience with value-added accounting.

Aegon has used value-added accounting since about 1989, and we've really undergone many changes since then. We're making our models better, and refining the system, but the company has been through many changes over time. As we're a very decentralized company, Aegon also uses this as a method of sort of benchmarking all of our different business units across a common language. Just as an aside, value-added accounting is also used internationally, and you'll see that embedded values are more apt to be used in Europe than in the U.S. With our parent being based in The Netherlands, it was sort of a natural evolution for us.

Before I get into some of the pricing implications, I want to define three terms from within our value-added accounting system that I'll use throughout my presentation: embedded value, value-added, and return on investment.

Embedded value (EBV) is a point-in-time measurement of the inherent value of a company, a line of business, or a particular product for which a value is being quantified. Embedded value consists of two primary components: adjusted book value and the value of the existing business in force. Embedded value is based upon accumulated past retained capital and future anticipated capital contributions and distributions. Statutory accounting principles and additional surplus requirements provide the framework for which embedded value is measured. Embedded value is driven by what earnings are available for the distribution to shareholders and the timing in which such distributions are available. GAAP accounting principles are not used within a value-added accounting system as GAAP equity is not distributable to shareholders.

Actuarial appraisals are typically based on embedded value calculations. Appraisal value includes such items as the value of new business yet to be issued, the strategic value of a distribution channel, and other goodwill items.

Next, we will take a more-detailed look at the components of embedded value. Adjusted book value primarily consists of statutory capital and surplus adjusted by several items. At Aegon we have well over a dozen adjustments; I will highlight the major ones.

First, we add back surplus-like liabilities such as asset valuation reserve (AVR). Another liability we add back is the liability for unauthorized reinsurance.

We also add back certain nonadmitted assets. Examples include the portion of agent debit balances that we deem recoverable, federal income tax loss carry-forwards and guaranty fund assessments recoverable from future premium taxes.

Finally, we mark-to-market those assets assigned to free surplus and remove surplus allocated from lines of business, which you will see is included in the other component of embedded value: the value of existing business in force.

The value of existing business in force is defined as the present value, at a risk rate of return, of future distributable earnings. The risk rate of return will normally be determined by an entity's blended cost of capital and debt and will have some relationship to the rate of return used in product pricing (hopefully, price will be greater than cost).

Calculating the value of existing business in force is where all the actuarial resources are expended (Actuarial Full Employment Act). This component is typically calculated using actuarial modeling systems that can vary from simple spreadsheets to complex asset/liability models. Our models tend to be the same models we use for cash-flow testing, budgeting, and asset/liability management.

Future distributable earnings consists of statutory earnings adjusted for statutory/tax timing differences such as tax-reserved and future deferred acquisition costs (DAC), and tax recoveries and payables.

Finally, future target surplus requirements and investment income generated on such target surplus are projected and then discounted at the risk rate of return. Since the asset earnings rate is often significantly less than the risk rate of return, a dollar of target surplus is often valued considerably less than \$1.00 (perhaps as much as \$0.50–0.60 cents on the dollar).

Value-added (VA) is determined by taking the difference in embedded value during the period adjusted for any capital flows during the period. Thus, value-added is an "earnings" measurement where earnings are measured in terms of the underlying increase in a company's embedded value.

Just to illustrate I'll use a simple example. Suppose that the embedded value at the beginning of the year is \$1,000, \$1,100 at the end of the year, and has a dividend to shareholders of \$20. Then the value-added for the year is \$1,100 minus \$1,000 plus \$20 or \$120. Rachel will get into slightly more complicated examples later.

Our final definition is return on investment (ROI) where ROI is defined as VA divided by EBV adjusted for capital in/out during the period. Continuing our simple example, ROI would be equal to \$120 over \$1,000 or 12%. As you will see in the upcoming charts and tables, relationships can be made between ROI and the underlying internal rate of return used in pricing products, and therein lies some of the key linkage between value-added accounting and product pricings that doesn't exist in other financial reporting systems.

I will now get into a couple of the important ways in which we link our value-added accounting system to product pricing. First, we calculate the EBV of new business at the risk rate of return. Assume our discount rate is 12%. For a new block of business priced at 12%, the EBV at issue is equal to zero. If we've priced at a rate in excess of 12%, then the EBV at issue is positive, and you'll have an immediate increase in the value of the company. Similarly, if we've priced at less than 12%, then the EBV is negative and your new business is deteriorating the value of your company.

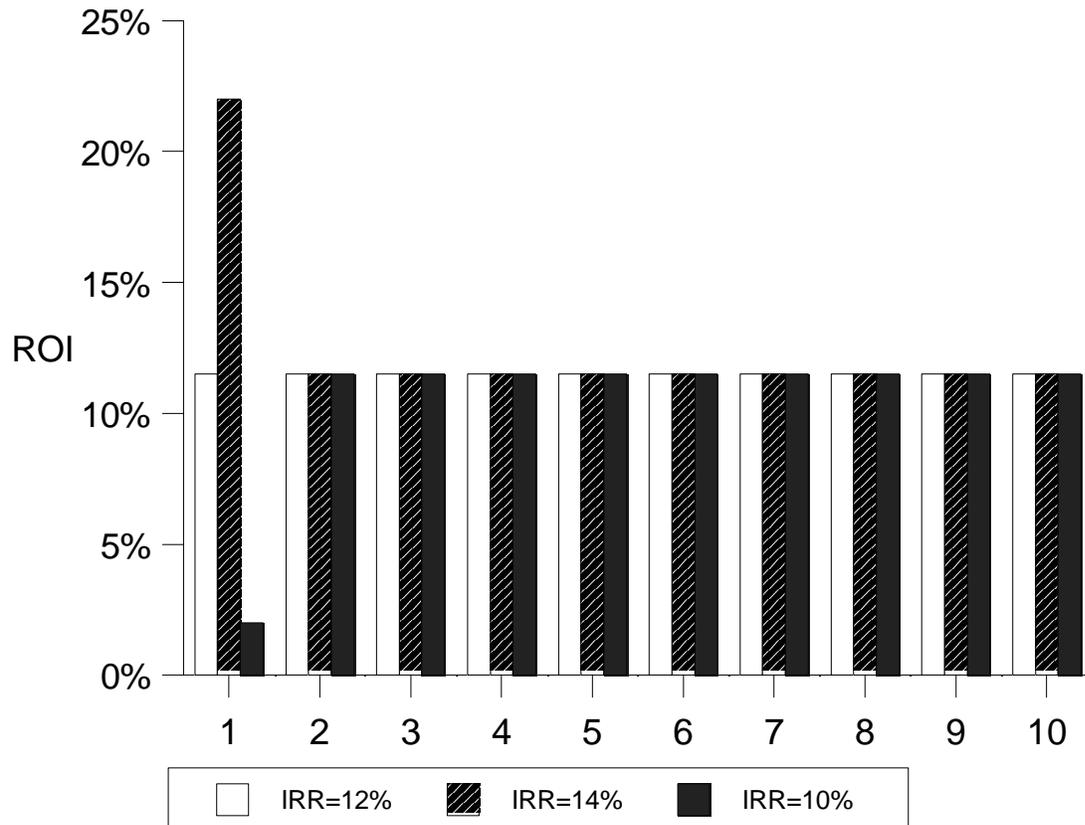
This is pretty powerful information in that it gives you immediate feedback between your new product pricing and the expected impact of the value of your company. When you compare this to GAAP accounting, inadequate product pricing is not immediately reflected in accounting but is brought in over the life of the product. Likewise, inadequate product pricing will not impact GAAP return on equity (ROE) immediately but have a depressing impact over time.

We also spend a great deal of time analyzing variances, an actual-to-expected type analysis. Expected results are distributable earnings based on the assumptions underlying your projection models which usually start out being the pricing assumptions. Then, as you go through time, they are adjusted to current experience. If you use initial pricing assumptions as a benchmark and compare those to actual, and if actual results equal expected, then the ROI will equal the hurdle rate, or in this example 12%. Likewise if you're getting experience that is better than expected, the ROI will be greater than 12%, and the reverse is true, also. I have a couple of graphs that show this.

The left bar in Chart 1 demonstrates a discount rate of 12%. The left bar shows you what the returns will be every year if you price at 12% and you realize your assumptions. You can see that every single year it's 12%. If you price in excess of 12%, in this case 14%, you'll get a big pop in year 1, which, in this case, is somewhere between 22% and 23%. After that, if you realize all your assumptions, you will earn 12% thereafter. Likewise, if you price at 10%, your first-year return will be substantially less than 12%, or about 2%. After that, if you realize all your

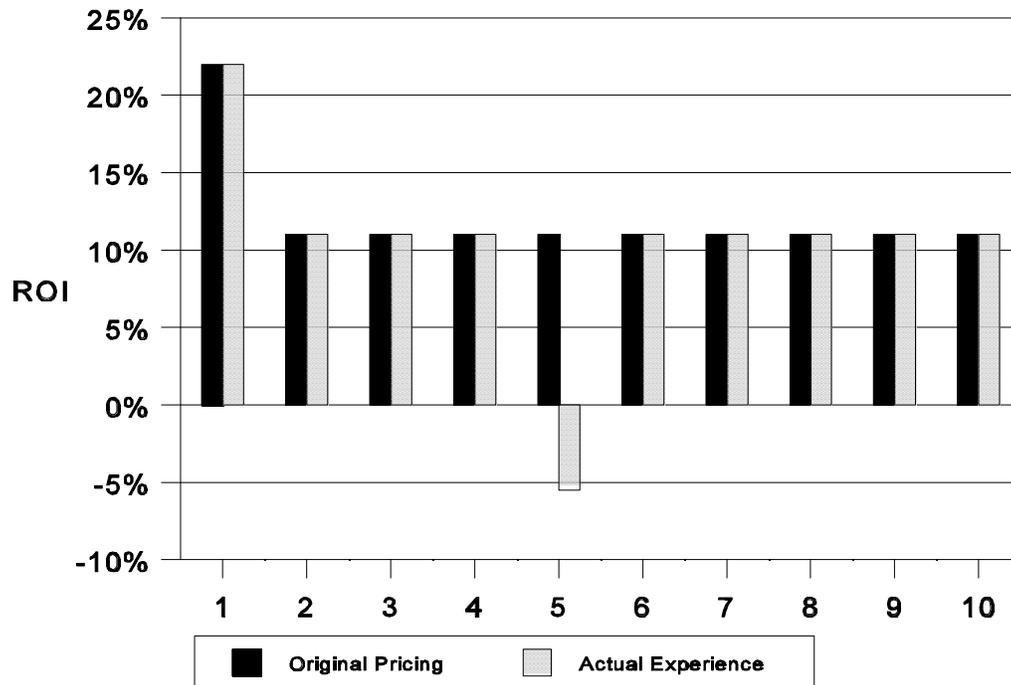
assumptions, you'll earn 12% thereafter. You just had that immediate impact on your results of any pricing differences from the objectives.

CHART 1
VALUE ADDED
HYPOTHETICAL PRODUCT



Finally, what happens if experience deviates from expected? I've constructed a 14% example, where I priced at 14% but my discount rate is 12% (see Chart 2). You can see you get a big increase in value in the first year. The right set of bars shows what happens in year five if, for some reason, I have a much different view of what life is really going to be. For example, it shows what would happen if there's a spike in interest rates on a single premium deferred annuity block. What happens is, at that time, you'll just make an assessment of what you think the future impact will be and you take all that hit in the current year. Again, GAAP has a somewhat similar type concept with GAAP unlocking, but the impact is not nearly as severe.

CHART 2
VALUE ADDED
HYPOTHETICAL PRODUCT (IRR=14%)



Let’s recap strengths and weaknesses of the value-added accounting system. One strength is that it gives you immediate feedback on pricing in the year that you issue the product. It also provides a vehicle with which to monitor experience against pricing. An auxiliary benefit is that you now have a model that you watch fairly closely that has other uses, such as cash-flow testing and other analytical work.

One of the weaknesses is that the results can be pretty volatile. Results are difficult to understand for people who aren’t as close to the numbers. As you can see from the charts, the results can be volatile based upon the impact on future experience all being brought into the current year. Generally, management isn’t comfortable with volatile results because they are accustomed to historical measurement systems that are much less volatile. Finally, there aren’t any consistent standards. So our value-added accounting may be different than company XYZ because everybody can make up their own rules. I think it would be much more useable and comparable to other companies if there were some standards in place. That may or may not ever happen. With that, I’m going to turn it over to Bob, who can talk to you a little bit about how he’s using GAAP accounting to monitor his pricing.

Mr. Robert W. Omdal: Let me begin by putting the last three years of my life into a context we are all familiar with.

You are the actuary for a Large midwestern Fraternal Benefit Society. For the last seven years, the company has been managed using internal basis financial statements. One of the key pieces of management information is a "Variance from Pricing Report," which compares actual results with expected results based on pricing assumptions.

Due to the Financial Accounting Standard Board's (FASB) *Interpretation 40*, your company has opted to convert to GAAP reporting and will phase out it's current reporting basis at the end of 1996. One of the key components of that "phase-out" is the ability to develop a GAAP replacement to the variance from pricing report. You have been asked to develop a GAAP sources of earnings framework that will capture all of the information currently available in the Variance from Pricing Report and improve upon it.

Discuss everything you will need to consider in developing these reports. Give numerical examples and make comparisons with prior reports.

Don't worry, I'm not going to do all of that! Your program states that this panel will "examine how insurers monitor product pricing issues through traditional financial reporting information." I'm not sure that what we produce could be called "traditional," but I think it qualifies as monitoring pricing issues through financial reporting information. What I plan on doing is taking you on a quick walk through the package of reports that we plan on producing each quarter, and then getting into more detail on the actual "analysis worksheet" that we use to produce the reports.

As alluded to earlier, we have been reporting variances from pricing for several years. These reports have been well accepted by management, and have been instrumental in pointing out several areas where our pricing has needed adjustment. This is a valuable tool that we do not want to lose in our conversion to GAAP. I believe that our sources of earnings (SOE) framework will achieve the goal of providing the desired variance information plus more.

My example shows a universal life line of business. This is a typical *Financial Accounting Standard (FAS) 97* product. We have completed a similar analysis for our participating business as well as our *FAS 60* business. It has taken a bit of creativity to make those fit the framework, but we feel pretty good about the final product.

Table 1 is a typical income statement for the line of business that we include in the package to emphasize the fact that all we have done with our sources of earnings report is rearrange the income statement.

TABLE 1
INCOME STATEMENT—UNIVERSAL LIFE 1996

COI Charges	\$12,916
Expense Charges	3,010
Surrender Charges	201
Investment Income	19,381
Realized Capital Gain (Loss)	544
Decrease in Unearned Revenue Liability	21
Total Revenue	\$36,073
Death Benefits	\$ 5,968
Supplemental Benefits	259
Supplemental Benefit Reserve Increase	585
Interest Credited	17,679
Total Benefits	\$24,492
Acquisition Costs	4,769
Maintenance Costs	1,085
Overhead Costs	958
Investment Costs	107
Deferrable Acquisition Costs	3,126
Amortization of DAC	3,058
Total Expenses	\$ 6,850
Fraternal	\$ 1,883
Miscellaneous Expenses	\$15
Net Income	\$ 2,833

Table 2 is a high-level summary that compares actual results with the financial plan for several key items. I will define these later. We expect that this page will be the main source of variance information for the Board of Directors. Table 3 is a similar report that compares actual results with expected results based on pricing assumptions for the same items. Tables 4 and 5 are reports that show the additional detail for each of these items. Let's concentrate on Table 5 which is a comparison between actual results and expected pricing results.

The approach we have taken differs somewhat from a typical source of earnings approach (if there is such a thing). Instead of showing margins, we are showing a hybrid of margins, revenue items, and variances that we believe provides more information to management. I will begin by defining each section or line item.

The first section represents product charges. These consist of the revenue items inherent in the product design. The first of these probably needs the most explanation—the cost of insurance (COI) loading shown on line 1.1 is not the full amount of COI charges, but only that portion in excess of what is expected for claim costs. The expected claim costs are shown on line 3.1. Thus, the full COI charges are the sum of lines 1.1 and 3.1.

TABLE 2
SOURCES OF EARNINGS SUMMARY REPORT
COMPARISON TO PLAN—UNIVERSAL LIFE 1996 (MILLIONS)

		Actual	Plan	Variance from Plan
1.0	Product Charges	8.6	8.4	0.2
2.0	Interest Margin	2.2	2.8	(0.5)
3.0	Mortality/Morbidity Gain	0.7	0.3	0.4
4.0	Net GAAP Expenses	(6.8)	(7.1)	0.3
5.0	Fraternal	(1.9)	(1.9)	(0.0)
6.0	Miscellaneous	(0.0)	0.0	(0.0)
7.0	Net Income	2.8	2.5	0.3

TABLE 3
SOURCES OF EARNINGS SUMMARY REPORT
COMPARISON TO PRICING—UNIVERSAL LIFE 1996
(MILLIONS)

		Actual	Pricing	Variance from Pricing
1.0	Product Charges	8.6	8.4	0.2
2.0	Interest Margin	2.2	3.5	(1.3)
3.0	Mortality/Morbidity Gain	0.7	0.0	0.7
4.0	Net GAAP Expenses	(6.8)	(6.8)	(0.0)
5.0	Fraternal	(1.9)	(1.8)	(0.0)
6.0	Miscellaneous	(0.0)	0.0	(0.0)
7.0	Net Income	2.8	3.3	(0.4)

The other four line items are fairly self explanatory. The expense charges line includes all of the expense charges inherent in the contract. The surrender charges are those collected at surrender. The unearned revenue represents the total amount of nonlevel expense charges that are capitalized, and the URL amortization represents the amortization of these items.

The next section presents the interest margin which is the difference between the investment income earned on the product reserves less the interest credited to the policyholder, plus interest earned on all other assets, including target surplus.

The next section is the mortality/morbidity gain. The actual and expected charges, by definition, equal the expected claim costs; thus, three entries in this section are identical. The variance from pricing is equal to the reported gain and is the difference between actual and expected claims experience.

TABLE 4
SOURCES OF EARNINGS DETAIL REPORT
COMPARISON TO PLAN—UNIVERSAL LIFE 1996
(THOUSANDS)

		Actual	Plan	Variance from Plan
1.0	Product Charges			
1.1	COI Loading	\$ 5,404	\$ 5,166	\$ 237
1.2	Expense Charges	3,010	2,945	64
1.3	Surrender Charges	201	172	29
1.4	Unearned Revenue	(1,145)	(1,121)	(25)
1.5	URL Amortization	1,166	1,261	(95)
1.6	Total	\$ 8,636	\$ 8,423	\$ 212
2.0	Interest Margin			
2.1	Interest Earned— Reserves	\$17,770	\$19,088	\$(1,319)
2.2	Interest Credited—Acct. Value	(17,679)	(18,632)	953
2.3	Interest Earned—Other Assets	2,155	2,315	\$ (160)
2.4	Total	\$ 2,246	\$ 2,772	\$ (526)
3.0	Mortality/Morbidity Gain			
3.1	Mortality/Morbidity Charges	\$ 7,512	\$ 7,516	\$ (4)
3.2	Claims	(6,813)	(7,216)	403
3.3	Total	\$ 699	\$ 300	\$ 399
4.0	Net GAAP Expenses			
4.1	Budget Expenses	\$(6,918)	\$(6,876)	\$ (42)
4.2	Deferrable Acq. Expenses	3,126	2,905	221
4.3	DAC Amortization	(3,058)	\$(3,153)	\$ 95
4.4	Total	\$(6,850)	\$(7,124)	\$ 274
5.0	Fraternal	\$(1,883)	\$(1,864)	\$ (19)
6.0	Miscellaneous	\$(15)	0	\$ (15)
7.0	NET INCOME	\$ 2,833	\$ 2,508	\$ 326

The next section represents the net GAAP expenses. The first line shows the total budget expenses. The next line includes those expenses that are deferrable and capitalized. The final line is the amortization that flows through income in the current year.

The line titled fraternal shows the extent to which the line supports our fraternal and benevolent activities. The miscellaneous line is for those things that the accounting department deems to be "off budget." These are anticipated to be minimal for most years.

TABLE 5
SOURCES OF EARNINGS DETAIL REPORT
COMPARISON TO PRICING—UNIVERSAL LIFE 1996
(THOUSANDS)

		Actual	Pricing	Variance from Pricing
1.0	Product Charges			
1.1	COI Loading	\$5,404	\$ 5,161	\$ 243
1.2	Expense Charges	3,010	2,937	73
1.3	Surrender Charges	201	170	31
1.4	Unearned Revenue	(1,145)	(1,118)	(27)
1.5	URL Amortization	1,166	1,259	(93)
1.6	Total	\$8,636	8,409	\$ 226
2.0	Interest Margin			
2.1	Interest Earned - Reserves	\$17,770	\$19,081	\$(1,311)
2.2	Interest Credited - Acct. Value	(17,679)	(17,873)	194
2.3	Interest Earned - Other Assets	2,155	2,314	(159)
2.4	Total	\$ 2,246	\$ 3,522	\$(1,276)
3.0	Mortality/Morbidity Gain			
3.1	Mortality/Morbidity Charges	7,512	\$ 7,512	\$ 0
3.2	Claims	(6,813)	(7,512)	699
3.3	Total	699	\$ 0	\$ 699
4.0	Net GAAP Expenses			
4.1	Budget Expenses	\$(6,918)	\$ (6,526)	\$ (392)
4.2	Deferrable Acq. Expense s	3,126	2,844	283
4.3	DAC Amortization	(3,058)	(3,150)	92
4.4	Total	\$(6,850)	\$ (6,832)	\$ (18)
5.0	Fraternal	\$(1,883)	\$ (1,845)	\$ (38)
6.0	Miscellaneous	(15)	0	(15)
7.0	Net Income	\$ 2,833	\$ 3,254	\$ (421)

Table 6 relates the variances from plan to the variances from pricing. I will not go into detail on this now, but will refer to it later as I develop some of the concepts in the next table. Suffice it to say for now that the far right column—variance from plan—agrees with the results shown in Table 4 and the far left column—actual variance from pricing—agrees with the results shown in Table 5.

TABLE 6
SOURCE OF EARNINGS VARIANCE RECONCILIATION REPORT
UNIVERSAL LIFE 1996
(THOUSANDS)

	Actual Variance from Pricing	Planned Variance from Pricing	Unplanned Variance from Pricing	Volume Variance	Variance From Plan
PRODUCT CHARGES	\$ 243	\$ 0	\$ 243	\$ (5)	\$ 237
COI Loading	73	0	73	(9)	64
Expense Charges	31	0	31	(1)	29
Unearned Revenue	(27)	0	(27)	3	(25)
URL Amortization	(93)	\$ 0	\$ (93)	\$ (2)	\$ (95)
Total	\$ 226	\$ 0	\$ 226	\$(14)	\$ 212
INTEREST MARGIN					
Interest Earned— Reserves	\$(1,311)	\$ 0	\$(1,311)	\$ (7)	\$(1,319)
Interest Credited— Acct. Value	194	(750)	944	8	953
Interest Earned—Other Assets	(159)	0	(159)	(1)	(160)
Total	\$(1,276)	\$(750)	\$ (526)	\$ 0	\$ (526)
MORTALITY/MORBIDITY GAIN					
Mortality/Morbidity Charges	\$ 0	\$ 0	\$ 0	\$ (4)	\$ (4)
Claims	699	300	399	4	403
Total	\$ 699	\$ 300	\$ 399	\$ 0	\$ 399
NET GAAP EXPENSES					
Budget Expenses Deferrable Acq. Expenses	(392)	(250)	(142)	100	(42)
DAC Amortization	283	0	283	(61)	221
Total	\$ (18)	\$(250)	\$ 232	\$ 41	\$ 274
FRATERNAL	\$ (38)	\$ 0	\$ (38)	\$ 19	\$ (19)
MISCELLANEOUS	\$ (15)	\$ 0	\$ (15)	\$ 0	\$ (15)
TOTAL VARIANCE	\$ (421)	\$(700)	\$ 279	\$ 46	\$ 326

Now we can move on to Table 7, which is divided into Sections A–F.

In general, Sections A–C of Table 7 present three sets of financial results and Sections D–F develop and summarize the differences between the three.

I'll start with Section A by discussing its purpose, describing the columns, and defining the line items. Sections B through E have similar line items and columns.

Section A represents expected results based on planned new business production. The first column is produced by our GAAP models and includes a projection of all of the components of the estimated gross margins using pricing assumptions. Thus

the first ten lines include an entry for each of these components, COIs collected, claims paid, interest earned and credited, expense charges, and expenses.

TABLE 7
ANALYSIS WORKSHEET—UNIVERSAL LIFE 1996
SECTION A
EXPECTED—PLANNED PRODUCTION

	EST. GROSS MARGINS	OTHER ITEMS	SUPPLEMENTAL BENEFITS	TOTAL	PLANNED VARIANCE	PLAN
1 COI Collected	\$10,887		\$1,795	\$12,683		\$12,683
2 Mortality Cost	6,510		1,006	7,516	\$(300)	7,216
3 COI margin	4,377	0	790	5,166	300	5,466
4 Interest Earned	\$19,088	\$ 2,315		\$21,403		\$21,403
5 Interest Credited	17,882			17,882	\$ 750	18,632
6 Interest Margin	1,207	2,315	0	3,522	(750)	2,772
7 Expense Charges	\$1,825	\$ 1,121		\$ 2,945		\$ 2,945
8 Expenses	1,190	4,427	\$1,010	6,626	\$ 250	6,877
9 Surrender Charges	172			172		172
10 Expense Margins	807	(3,306)	(1,010)	(3,509)	(250)	(3,759)
11 Unearned Revenue		\$ 1,121		\$ 1,121		\$ 1,121
12 URL Unlocking - retro				0		0
13 URL Unlocking - pros				0		0
14 URL Amortization - reg		1,261		1,261		1,261
15 URL Amortization - total		1,261	0	1,261	0	1,261
16 Net Decrease in URL		140	0	140	0	140
17 Deferrable Acq Exp		\$ 2,905		\$ 2,905	0	\$ 2,905
18 DAC Unlocking - retro				0		0
19 DAC Unlocking - pros				0		0
20 DAC Amortization - reg		3,152		3,152		3,152
21 DAC Amortization -total		3,152		3,152		3,152
22 Net Increase in DAC		(247)		(247)		(247)
23 Fraternal		\$(1,864)		\$(1,864)		\$(1,864)
24 Misc. Expenses	0	0	0	0	0	0
25 GAAP NET INCOME	\$6,390	\$(2,962)	\$ (220)	3,208	\$(700)	\$ 2,508

TABLE 7— CONT'D
ANALYSIS WORKSHEET
UNIVERSAL LIFE 1996
SECTION B
EXPECTED—ACTUAL PRODUCTION

	EST. GROSS MARGINS	OTHER ITEMS	SUPPLE- MENTAL BENEFITS	PRICING	PLANNED VARIANCE	TOTAL
1 COI Collected	\$10,879		\$1,794	\$12,673	\$ 0	\$ 12,673
2 Mortality Cost	6,507		1,005	7,512	(300)	7,212
3 COI Margin	4,372	0	789	5,161	300	5,461
4 Interest Earned	\$19,081	\$ 2,314		\$21,395	\$ 0	\$ 21,395
5 Interest Credited	17,873			17,873	750	18,623
6 Interest Margin	1,208	2,314	0	3,522	\$(750)	2,772
7 Expense Charges	\$ 1,819	\$ 1,118		\$ 2,937	0	\$ 2,937
8 Expenses	1,186	4,345	\$ 995	6,526		6,776
9 Surrender Charges	170			170		170
10 Expense Margins	803	(3,227)	(995)	(3,418)	250	(3,668)
11 Unearned Revenue		\$ 1,118		\$ 1,118		\$ 1,118
12 URL Unlocking —retro				0		0
13 URL Unlocking —pros				0		0
14 URL Amortization—reg		1,259		1,259		1,259
15 URL Amortization—total		1,259	0	1,259	0	1,259
16 Nety Decrease in URL		141	0	141	0	141
17 Deferrable Acq. Exp.		\$ 2,844		\$ 2,844		\$ 2,844
18 DAC Unlocking—retro				0		0
19 DAC Unlocking—pros				0		0
20 DAC Amortization—reg		3,150		3,150		3,150
21 DAC Amortization—total		3,150	0	3,150	0	3,150
22 Net Increase in DAC		(306)	0	(306)	0	(306)
23 Fraternal		\$(1,845)		\$(1,845)		\$(1,845)
24 Misc. Expenses				0		0
25 GAAP NET INCOME	\$ 6,383	\$(2,923)	\$(206)	\$ 3,254	\$(700)	\$ 2,554

TABLE 7— CONT'D
ANALYSIS WORKSHEET
UNIVERSAL LIFE 1996
SECTION C
ACTUAL

	EST. GROSS MARGINS	OTHER ITEMS	SUPPLEMENTAL BENEFITS	TOTAL GAAP
1 COI Collected	\$11,087		\$1,828	\$12,916
2 Mortality Cost	5,789		1,024	6,813
3 COI Margin	5,299	0	804	6,103
4 Interest Earned	\$17,770	\$ 2,155		\$19,925
5 Interest Credited	17,679	0		17,679
6 Interest Margin	91	2,155	0	2,246
7 Expense charges	\$ 1,865	\$ 1,145		\$ 3,010
8 Expenses	1,085	5,833		6,918
9 Surrender Charges	201			201
10 Expense Margins	981	(4,688)	0	(3,707)
11 Unearned Revenue		\$ 1,145		\$ 1,145
12 URL Unlocking—retro		(116)		(116)
13 URL Unlocking—pros				0
14 URL Amortization—reg		1,282		1,282
15 URL Amortization—total		1,166		1,166
16 Net Decrease in URL		21	0	21
17 Deferrable Acq Exp		\$ 3,126		\$ 3,126
18 DAC Unlocking—retro		(271)		(271)
19 DAC Unlocking—pros				0
20 DAC Amortization—reg		3,329		3,329
21 DAC Amortization—total		3,058		3,058
22 Net Increase in DAC		68	0	68
23 Fraternal		\$(1,883)		\$ (1,883)
24 Misc. Expenses		(15)		(15)
25 GAAP NET INCOME	\$ 6,370	\$(4,341)	\$ 804	\$ 2,833

TABLE 7— CONT'D
ANALYSIS WORKSHEET
UNIVERSAL LIFE 1996
SECTION D
VOLUME VARIANCE

	EST. GROSS MARGINS	OTHER ITEMS	SUPPLEMENTAL BENEFITS	FROM GAAP	FROM PLAN	VOLUME VARIANCE
26 COI Collected	(8)	0	(1)	(10)	0	(10)
27 Mortality Cost	4	0	1	4	0	4
28 COI Margin	(5)	0	(1)	(5)	0	(5)
29 Interest Earned	(7)	(1)	0	(8)	0	(8)
30 Interest Credited	8	0	0	8	0	8
31 Interest Margin	1	(1)	0	0	0	0
32 Expense charges	(6)	(3)	0	(9)	0	(9)
33 Expenses	3	82	15	100	0	100
34 Surrender Charges	(1)	0	0	(1)	0	(1)
35 Expense Margins	(4)	79	15	91	0	91
36 Unearned Revenue		3	0	3	0	3
37 URL Unlocking—retro		0	0	0	0	0
38 URL Unlocking—pros		0	0	0	0	0
39 URL Amortization—reg		(2)	0	(2)	0	(2)
40 URL Amortization—total		(2)	0	(2)	0	(2)
41 Net Decrease in URL		1	0	1	0	1
42 Deferrable Acq Exp		(61)	0	(61)	0	(61)
43 DAC Unlocking—retro		0	0	0	0	0
44 DAC Unlocking—pros		0	0	0	0	0
45 DAC Amortization—reg		2	0	2	0	2
46 DAC Amortization—total		2	0	2	0	2
47 Net Increase in DAC		(59)	0	(59)	0	(59)
48 Fraternal	0	19	0	19	0	19
49 Misc. Expenses	0	0	0	0	0	0
50 GAAP NET INCOME	(7)	39	15	46	0	46

TABLE 7— CONT'D
ANALYSIS WORKSHEET
UNIVERSAL LIFE 1996
SECTION E
OTHER VARIANCES

	EST. GROSS MARGINS	OTHER ITEMS	SUPPLEMENTAL BENEFITS	PRICING VARIANCE	PLANNED VARIANCE	UNPLANNED VARIANCE
26 COI Collected	\$ 208	0	\$ 34	\$ 243	\$ 0	\$ 243
27 Mortality Cost	718	0	(19)	699	\$ 300	399
28 COI Margin	927	0	15	942	300	642
29 Interest Earned	\$(1,311)	\$ (159)	\$ 0	\$(1,470)	\$ 0	\$(1,470)
30 Interest Credited	194	0	0	194	(750)	944
31 Interest Margin	(1,117)	(159)	0	(1,276)	(750)	(526)
32 Expense charges	\$ 46	\$27	\$ 0	\$ 73	\$ 0	\$ 73
33 Expenses	102	(1,489)	995	(392)	(250)	(142)
34 Surrender Charges	31	0	0	31	0	31
35 Expense Margins	178	(1,461)	995	(289)	(250)	(39)
36 Unearned Revenue		\$ (27)	\$ 0	\$ (27)	0	\$ (27)
37 URL Unlocking—retro		(116)	0	(116)	0	(116)
38 URL Unlocking—pros		0	0	0	0	0
39 URL Amortization—reg		23	0	23	0	23
40 URL Amortization—total		(93)	0	(93)	0	(93)
41 Net Decrease in URL		(120)	0	(120)	0	(120)
42 Deferrable Acq Exp		\$ 283	\$0	\$ 283	\$ 0	\$ 283
43 DAC Unlocking—retro		271	0	271	0	271
44 DAC Unlocking—pros		0	0	0	0	0
45 DAC Amortization—reg		(178)	0	(178)	0	(178)
46 DAC Amortization—total		92	0	92	0	92
47 Net Increase in DAC		375	0	375	0	375
48 Fraternal		\$ (38)	\$0	\$ (38)	\$ 0	\$ (38)
49 Misc. Expenses		(15)	0	(15)	0	(15)
50 GAAP NET INCOME	\$ (12)	\$(1,418)	\$1,010	\$ (421)	\$ (700)	\$ 279

TABLE 7— CONT'D
ANALYSIS WORKSHEET
UNIVERSAL LIFE 1996
SECTION F
SOURCE OF EARNING SUMMARY

	ACTUAL	PLAN	VARIANCE FROM PLAN	PLANNED VARIANCE FROM PRICING	ACTUAL VARIANCE FROM PRICING	PRICING
COI Margin						
Mortality	699	300	399	300	699	
Loading	5,404	5,166	237	0	243	5,161
COI Margin Total	6,103	5,466	637	300	942	5,161
Interest Margin						
Product Assets	91	457	(366)	(750)	(1,117)	1,208
Other Assets	2,155	2,315	(160)	0	(159)	2,314
Int. Margin Total	2,246	2,772	(526)	(750)	(1,276)	3,522
Expense Margin						
Expenses	(6,918)	(6,876)	(42)	(250)	(392)	(6,526)
Surrender Charge	201	172	29	0	31	170
Expense Charges	3,010	2,945	64	0	73	2,937
Exp. Margin Total	(3,707)	(3,759)	52	(250)	(289)	(3,418)
URL						
Unearned Revenue	(1,145)	(1,121)	(25)	0	(27)	(1,118)
Amortization	1,166	1,261	(95)	0	(93)	1,259
URL Total	21	140	(119)	0	(120)	141
DAC						
Deferrable Acq Expenses	3,126	2,905	221	0	283	2,844
Amortization	(3,058)	(3,152)	94	0	92	(3,150)
DAC Total	68	(247)	316	0	375	(306)
Fraternal	(1,883)	(1,864)	(19)	0	(38)	(1,845)
Misc. Expenses	(15)	0	(15)	0	(15)	0
NET INCOME	2,833	2,508	326	(700)	(421)	3,254

The next column titled "Other Items" includes those elements of profit for the base product that are not included in the estimated gross margins—interest on assets in excess of the reserves, nonlevel expense charges, acquisition and overhead expenses, and the impact of capitalization and amortization of deferrable expenses and nonlevel expense charges. These are also based on pricing assumptions.

Supplemental benefits are not included in our GAAP models. They are included in a separate column in this section of the report. We don't have a significant amount of reinsurance, so it has not been separately identified.

The fourth column, titled total, is the sum of the first three columns. Because our GAAP assumptions are equal to pricing assumptions, this gives us the expected results on a pricing basis. If our pricing assumptions are in line with experience,

this could be considered our financial plan for the year. However, that is rarely the case. As part of the planning process, we review trends in the variances from pricing, and make adjustments to the plan as necessary. Thus, the next column—planned variances—does just that. These are variances from pricing that we expect to happen next year. In my example, I have assumed that mortality will be \$300,000 better than pricing expects. We will not be able to pay our full pricing spread, so we will credit an additional \$750,000, and actual expenses will exceed pricing allowable by \$250,000.

Thus, the final column is the sum of the total and planned variance columns and represents the plan for the year. This is not in an income statement format, but shows totals to the planned net GAAP income. This is prepared prior to the beginning of the year, and doesn't change throughout the year. All of the values shown in the plan column of Table 4 of the SOE reports can be found in Section A.

Section B is identical in format to Section A, with a slight change in column headings. The only difference in how the values are developed is that Section B is prepared after the end of the reporting period and is based on actual production (sales) rather than expected. The first three columns—estimated gross margins, other items, and supplemental benefits—are prepared the same as for Section A, but based on actual units sold. As in Section A, the sum of these three columns equals the fourth column which we have labeled "pricing," since all of the assumptions used in developing these values are pricing assumptions. All of the values on page five of the SOE reports can be found in this column of Section B.

The planned variance column is identical to Section A, since, by definition these are plan numbers and are not dependent upon production. The total column, then gives a representation of what the plan would have been, if we had perfect knowledge of what sales would have been.

Now we can begin some of our analysis of results. Section D is called the Volume Variance and is structured similarly to Sections A and B. It merely shows the difference between the two: Section B - Section A.

Now, I'll digress for a minute for all of you who are trying to do the arithmetic. Let's look at the estimated gross margins column and the COI collected lines—that's the first column and line 1:

+ Section B	10,879
- Section A	<u>-10,887</u>
= Section D	(8)

Now let's look at the mortality cost in line of the same column:

+ Section B	6,507
- Section A	<u>-6,510</u>
= Section D	(3)

There's not only rounding, but a sign change. What happened? It's merely a "signing" convention difference between the top half of the worksheet and the bottom half. On the top half, I used positive numbers throughout to indicate activity, with the totals appropriately adjusted for revenue and expenses. On the bottom half of the page, I used a simpler convention to aid in the analysis of variances—plus means good and negative means bad.

Now, let's get back to the analysis. This section prepares what I call a volume variance. This gives an idea of how much of our variance from the plan is due to production differences. When production isn't as high as expected, the reduction in certain costs are attributed to the lower sales volume, but without any understanding of just how much they are related. Now we have a tool to measure this. In my example, this was a small number, 46,000, because actual production and the expected production assumption were of a similar magnitude.

Now we can move back up to the top half of the report to Section C. This is just a summary of actual results for the year. The estimated gross margins column comes directly from the DAC amortization spreadsheets which we use for the development and amortization of DAC. The unlocking and amortization lines for the unearned revenue liability (URL) and the DAC shown in the other items column also come from these spreadsheets. The balance of the information in this section is compiled from the income statements and supporting reports. The final column—total GAAP—agrees with the income statement for the line.

All of the numbers in the Actual columns of Tables 4 and 5 of the SOE reports can be found in Section C, with only one adjustment: line 1.1 (COI Margins) and 3.1 (Mortality/Morbidity Charges) of the SOE reports need to be added together to agree with line 1 (COI Collected) of Section C. As I mentioned before, the reason for this is we have elected to separate the expected mortality charges from the other margins inherent in the COI charges.

Section E is based on Sections B and C. The pricing variance column in Section E is the difference between the total GAAP column of Section C and the pricing column of Section B—this is a comparison of actual results with pricing assumptions, for a consistent volume of new business. The planned variance column from Section B is moved directly to Section E, and deducted from the pricing variance to arrive at the

unplanned variance. This is just a measure of how close we were in predicting the variances from pricing. In the absence of a volume variance, this would be equal to the variance from plan, but since we have a volume variance, this is not the case. This, as well as the relationships between all of the variances, is summarized in the variance reconciliation report—Table 6 of the SOE reports.

Section F is more of a typical sources of earnings summary showing the three major margins plus the impact of the capitalization and amortization of DAC and URL as line items. The variances for these items are also shown as columns. The one variance we have not talked about yet is the variance from the plan, which as you might suspect, is the difference between the total GAAP column in Section C and the plan column in Section A. These agree with the variance from plan numbers shown on Table 4. The other change in this section is the separation of the interest margin into product assets and other assets. The product assets margin represents the difference between interest earned and credited on the assets backing the account value, and the other assets margin represents the interest earned on all other assets allocated to the line, including target surplus.

As I said earlier, this package may not qualify as "traditional" but we do use it for monitoring pricing performance and managing the company on the basis of financial reporting information.

We've covered a lot of ground, but I trust I've given you an idea of how we go about measuring results against pricing. I'll entertain questions about this later. Now, Rachel will enlighten us on yet another basis for managing your business.

Ms. Rachel M. Hancock: So far we've heard two different approaches for managing and monitoring product profitability. Doug's presentation was on using embedded value to measure performance, in particular the performance of new business. Bob's presentation covered using GAAP source of earnings analysis to provide feedback on actual results and profitability.

Getting good financial reporting information is just one of the keys to managing profitability. Another key is ensuring that your product pricing objectives are properly aligned with corporate objectives. And it is this part of the control cycle that I'm going to talk about. How can we build a framework for analyzing corporate objectives and translate them into pricing objectives that achieve corporate goals?

Often there is a lack of communication between corporate people and pricing people. We hear, "We need a 12% return." But on what basis? Are we talking

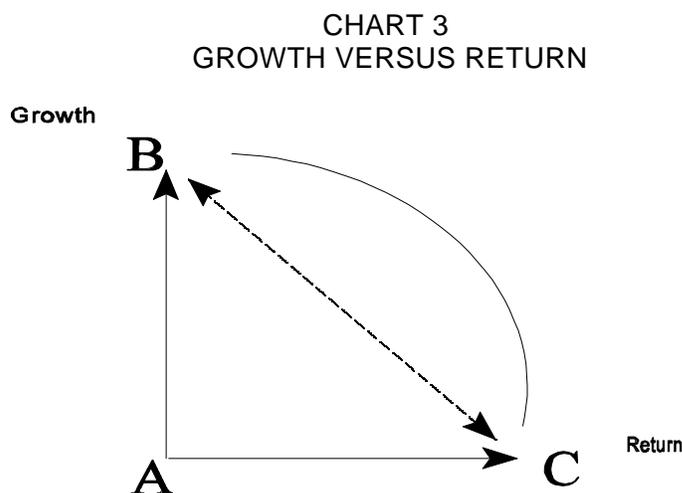
about GAAP, statutory, or embedded value? Return on what? Assets? Commissions? Capital? What capital? GAAP capital? Statutory capital?

Conceptually, the corporate goals may be clear, but as actuaries, we often feel bombarded with multiple measures that are sometimes tough to reconcile, especially when you have GAAP measures at the corporate level and ROI measures for pricing.

Despite the confusion, most corporate measures can be classified into two groups: growth and return. Growth can be measured in sales, assets, and business in force; return can be measured in ROE, ROI, or value added.

Growth and return are fundamental objectives of management. Of course, there are other objectives, such as market share, assets under management, customer satisfaction, and so on. But in terms of a financial plan, most objectives can be boiled down to growth and return. What we're going to be talking about is building a framework for analyzing corporate plans, the objectives of growth and return, and what those objectives mean in terms of pricing.

When we look at corporate objectives, it's useful to think of the trade-off between growth and return (Chart 3). And different companies will have different objectives. Small, privately owned companies may not be able to achieve the growth of the big players, so for them, maximizing return for their shareholders may be the best objective. Their corporate plan might be in the direction of A to C.



For others, especially the larger public companies, demonstrated growth may be as important, and possibly more important, than return. Their corporate objective might be in the direction of A to B or even C to B. This is something we've been

seeing much more of recently. With consolidation and increased competition, companies are concerned about growth. Being able to look at the trade-off between growth and return, and what that means for pricing, has become more important.

This framework of growth and return can also be useful when looking at different lines of business. For the more mature lines of business, corporate might have a specific return objective for that line, while newer, growing lines have different objectives.

Throughout the rest of this presentation I will try to define some type of analytical framework that we can use to analyze these different objectives, and translate them into pricing objectives. The point here is not so much the concept of growth and return, but how we, as actuaries, can analyze and interpret corporate objectives, and then bridge those objectives into pricing.

Before we get into a framework for analyzing corporate objectives, let's start with some general definitions.

What do we mean by the corporate objective of growth. We often talk about sales, market share, and commissions. Some companies use premium equivalents, such as 10% of annuity premium or 100% of annual life premium. Sales and commission are a valid measure of growth, but from a financial perspective, what we're really getting at when we talk about new business in terms of commissions or premiums equivalents is capital. Growth is putting capital to work, and return is getting an adequate return on that capital.

So let's put the corporate objectives of growth and return into a theoretical framework. The framework I'm going to use is the embedded value framework. To some extent, the framework that's going to be presented here could be done using GAAP. There are many advantages to using the embedded value framework, particularly when it comes to translating the corporate plan into pricing. I'm going to be touching on GAAP a little more later.

Doug has already introduced the concept of embedded value, so let me just recap with a couple of his definitions.

We going to define the value of in-force business to be the present value of distributable profit. In other words, the present value of statutory earnings, plus the present value of the release of target surplus, including investment income on target surplus. Embedded value is the sum of value of in-force, plus free surplus; that is, any statutory capital over and above target surplus.

We then use the term value added, for the increase in embedded value plus any shareholder dividends that were paid out, and less any capital that may have been paid in during the year. So value added is the increase in embedded value, after adjusting for any capital flows in or out of the company.

What do we mean by growth and return in an embedded value context. Growth, is going to mean capital invested in new business. By capital, I mean the initial statutory strain, after taking into account target surplus.

Return is going to be return on embedded value, which is the increase in embedded value after adjusting for any capital flows. That's the value added, divided by the beginning embedded value.

So our corporate objectives in this framework are growth (putting capital to work) and return (the percentage increase in embedded value).

One of the reasons for using an increase in embedded value as a corporate objective is because of its relationship to the appraisal value of a company. If we think of our corporate objective as maximizing market value, or the value of a company in the open market, and if you believe that there is at least some relationship between market value and appraisal value, then the increase in embedded value seems an appropriate objective to focus on.

The other reason for using an increase in embedded value, is because of the direct tie to new business profitability. We'll be getting into that more and making a comparison to GAAP later.

Before we begin looking at some examples of corporate plans using embedded values, I want to spend a few minutes on the components of embedded value because the breakdown of the increase in embedded value makes it so useful.

Table 8 shows a hypothetical projection of embedded value for one year. We're going to get to some real examples in a minute. For now, I want to use this example to quickly go through how embedded values roll forward from one year to the next.

TABLE 8
COMPONENTS OF EMBEDDED VALUE

Discount rate = 12%	Free Surplus	Value Of In-force	Embedded Value
Beginning of Year	\$ 60	1,000	\$1,060
Interest on free surplus	3	—	3
Distributable earnings from in-force	160		160
Increase in value of in-force		(40)	(40)
			120 = 12 % x VIF.
Investment in new business	(110)		(110)
Value of new business		125	125
			15 = VA by NB
Unallocated overhead	(5)	—	(5)
Shareholder dividends	(10)	—	(10)
Increase in embedded value	\$38	\$ 85	\$ 123
End of Year	\$98	\$1,085	\$1,183
Return: $(\$123 + 10) \div \$1,060 = 12.5\%$			

You can see that the increase in free surplus is made up of investment income on free surplus. That's the 3. The 3 is simply the after-tax earned rate, in this case 5%, on our initial free surplus of 60. Then you have the earnings being released from the in-force block, or \$160, less the investment in new business, or 110. Then we have overhead expenses. These are expenses that weren't included in our present value of future profit. In this case some shareholder dividends are being paid out. The total increase in free surplus is \$38.

The next column, value of in force, shows the present value items at the end of the year. The change in the value of in-force has two components. First there's the run-off of the existing block. The present value of future profits (PVFP) of the existing block declines by \$40. However, this is more than replaced by the present value (PV) of profit from new business written during the year.

Here is where you can see growth. We needed at least \$40 of value from new business in order to maintain the size of our in-force block. Any investment in new business over and above that will actually grow the in-force block, which is clearly one of our objectives. Here we actually grew the value of in-force business from \$1,000 to \$1,085.

If we go to the third column we can see the components of return or the increase in embedded value. What are the components of the increase in embedded value? First there's investment income on free surplus. Next there's the increase in embedded value from the in-force block at the beginning of the year. If we take the two components, the \$160 of earnings released less the runoff of the PVFP of \$40, we get a net increase of \$120. By definition, this \$120 is always the discount rate, in this case 12%, times the beginning value, which was \$1,000.

So even though it's sometimes useful to look at the impact of the in-force business in terms of its release of earnings into free surplus and the runoff of the present value of profit, the net impact on embedded value is always the discount rate times the beginning value. This, of course, is all on a plan basis for now; in other words, there is no difference between plan assumptions and actual at this point.

Let's look at the impact of new business. Again, if we add the two pieces of new business, we get what we call value added by new business. As Doug explained, this will be a positive number when the new business ROI is higher than the discount rate, and negative if the ROI is less than the discount rate, and zero when the new business ROI equals the discount rate.

And then the last two components of increase are unallocated overhead and shareholder dividends. In this example, our total increase in embedded value is \$123, which, if we add back the \$10 of dividends, gives us a return of 12.5%.

So in terms of our objectives of growth, the key variable is the amount of investment in new business. In terms of return, the key variables are value added by new business (in other words, the new business ROI), and excess expenses or overhead.

Let's move on now to some real projections that we did for a client company. Of course, we've changed the numbers. But it's a good example of how one company uses the framework of an embedded value plan to analyze corporate objectives and to set new business pricing objectives.

We're going to be looking at a few different plans. For each plan we have a model of the in-force business, and a separate model for one year of new issues. We use this model to look at the projected embedded value of the company over a five-year period.

The first plan we're going to look at is called Plan A, the slow growth plan. New business investment is going to be \$15 million a year, growing at 5%. Our pricing ROI, which of course affects the competitiveness of our product, is going to be 14%. The reason for setting this ROI fairly high is because of overhead expenses,

which, under this growth scenario, are not likely to go away. So we've made an assumption of excess expenses of \$2 million a year for all years.

The discount rate used to determine the value of in-force business is going to be 12%. I'm going to leave this rate fixed for all plans. Remember, in terms of the plan, the discount rate is not that important. What drives the plan is really the return on new business, the amount of new business, and the level of overhead expense.

So what we have in Table 9 is a projection of embedded value over a five-year period. What I've shown here are the components of the increase in embedded value from one year to the next. These are the same components we just saw in the one-year example.

Let's look at what happens to the embedded value after five years. Here we see that we've generated a great deal of free surplus. In other words, we're not putting capital to work; we essentially are getting it back. Our initial free surplus of \$20 million has grown to \$94 million. Our returns are pretty good though—we are earning the discount rate of 12% on the in-force business, by definition, since this is a plan, and there are no variances between actual and plan at this point. So our in-force business is earning 12%, and if you look at the value added of new business, after subtracting unallocated expenses, you see we are earning a net return of about 12% on new business. Our only drag on return is the 5% that we earn on free surplus. You can see the effect of this drag increase over time. Our returns drop from 11.2% to 10.3% as free surplus accumulates.

So under this plan, our returns average around 10.5–11%, but we really have a declining business. Look at the embedded value at the end of five years. Thirty percent of it is excess capital.

Let's look at a different plan now. Plan B has a faster growth scenario. We're investing \$20 million in new business a year, growing at 10%. To support this growth strategy we going to set our new business objective at 12% ROI, and use the growth to eliminate the excess expenses over time. We start out with \$2 million of unallocated overhead, but this is projected to go away over the next few years.

TABLE 9
PLAN A: PROJECTED EMBEDDED VALUE

	1997	1998	1999	2000	2001	2002
<i>Beginning of year</i>						
Free Surplus	\$20	\$20	\$44	\$57	\$75	\$94
Value of in-force business	180	191	203	216	227	238
Embedded Value	200	222	247	273	302	333
<i>Analysis of Income</i>						<i>Total</i>
Investment income on free surplus	\$1	\$1	\$2	\$3	\$4	—
Planned Return	22	23	24	26	27	—
Value added by new business	2	2	2	2	2	—
Unallocated overhead	(2)	(2)	(2)	(2)	(2)	—
Shareholder dividends	(0)	(0)	(0)	(0)	(0)	—
Increase in embedded value	\$22	\$24	\$26	\$29	\$31	—
Capital invested in new business	\$15	\$16	\$17	\$17	\$18	\$83
Return on embedded value	112%	10.9%	10.7%	10.5%	10.3%	66.4%

Looking at our five-year projection of embedded value for Plan B, you can see that we're investing much more in new business, so that our free surplus, while still accumulating, is accumulating at a much slower rate (Table 10). In our previous example, the \$20 million of initial free surplus accumulated to \$94 million. In this example, we end up at \$64 million, with much more in-force business. Our returns start out a little lower than the prior example, because initially our value added by new business, net of overhead, is negative. In other words, initially, new business is returning less than 12%. At the same time, the drag from free surplus is less over time because we accumulate less. So we get about the same overall return, but the makeup of the ending embedded value has a higher in-force value and less free surplus.

So comparing Plan A and Plan B, we see the average returns are close, but we've invested more in new business, and have more in-force business at the end of five years in Plan B compared to Plan A. That has implications for our market value at the end of the period. With B our unit cost position is going to be much better, so that on an appraisal value basis, we don't have excess expenses to worry about. Our competitive position going forward is going to be much better.

Really what we are doing here is macro pricing in an embedded value framework. But it's the framework that helps us to make informed decisions about pricing. It

lets us decide whether marginal pricing is a realistic strategy or not. It looks at the impact of all these decisions within the corporate objective, and it also takes into account the impact of excess capital.

I want to give one more example. Plan C is a growth scenario, where essentially we're going to increase the competitive position of our product, by pricing for a 10% ROI, but we're going to put much more capital to work—\$30 million, increasing 15% per year. On this basis, we don't have any excess expenses.

TABLE 10
PLAN B: PROJECTED EMBEDDED VALUE

	1997	1998	1999	2000	2001	2002
<i>Beginning of year</i>						
Free surplus	\$20	\$26	\$33	\$41	\$52	\$64
Value of in-force business	180	194	211	229	247	267
Embedded Value	200	221	244	270	299	331
<i>Analysis of income</i>						<i>Total</i>
Investment income on free surplus	\$1	\$1	\$2	\$2	\$3	—
Planned return	22	23	25	27	30	—
Value added by new business	0	0	0	0	0	—
Unallocated overhead	(2)	(2)	(1)	0	0	—
Shareholder dividends	(0)	(0)	(0)	0	0	—
Increase in embedded value	\$21	\$23	\$26	\$30	\$32	—
Capital invested in new business	\$20	\$22	\$24	\$27	\$29	122
Return on embedded value	10.3%	10.5%	10.6%	10.9%	10.8%	65.7%

Under this scenario you can see in Table 11 that we actually put all our free surplus to work, running it down to zero at the end of five years. As you can see by the negative value added by new business, our returns are being hurt. We are earning 12% on in-force business, but only 10% on new business, and of course 5% on free surplus. So there's a trade-off between growth and return. In this case, the returns increase over time as we get rid of the excess capital, but we still only end up with an average return of 9.5–10%.

How do we evaluate Plan C? Well, and I mentioned this earlier. For some companies, particularly public companies, growth seems to be an important factor. What we're saying is that while the returns for Plan C are lower, it's possible that once you include goodwill as part of the market value, Plan C may actually end up

with a higher total value at the end of the five-year period. This is something that we've seen in the public market more recently. Growth and market share does seem to be valued. You get a different multiple in the public market if you're a company with demonstrated growth potential.

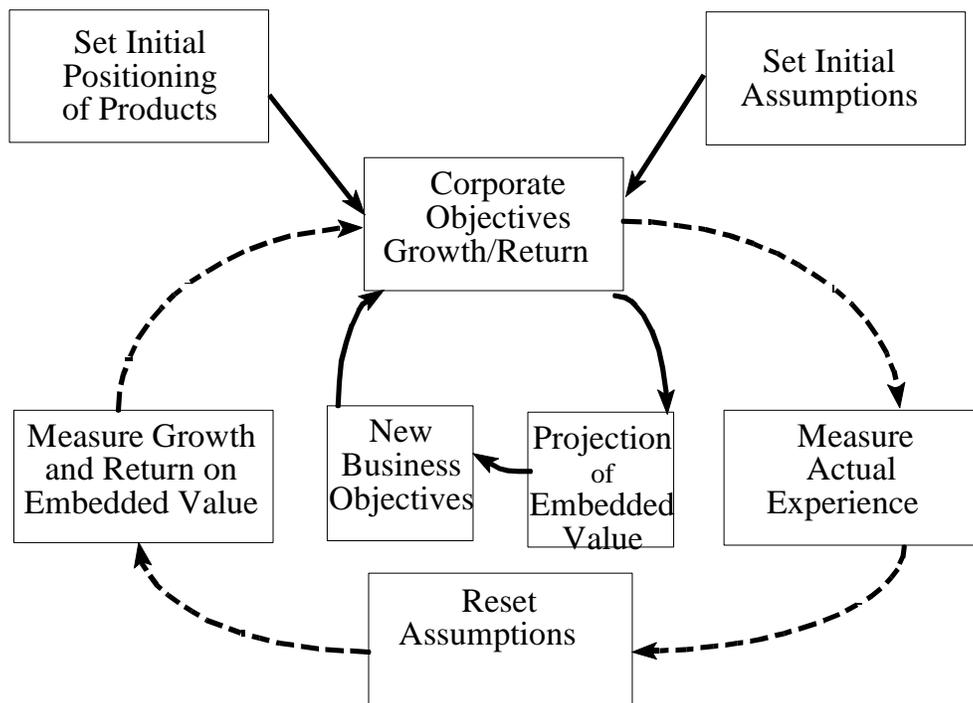
TABLE 11
PLAN C: PROJECTED EMBEDDED VALUE

	1997	1998	1999	2000	2001	2002
<i>Beginning of year</i>						
Free surplus	\$20	\$18	\$15	\$9	\$3	\$0
Value of in-force business	180	201	226	255	286	319
Embedded value	200	219	240	264	290	319
<i>Analysis of income</i>						<i>Total</i>
Investment income on free surplus	\$1	\$1	\$1	\$0	\$0	—
Planned return	22	24	27	31	34	—
Value added by new business	(3)	(4)	(4)	(5)	(6)	—
Unallocated overhead	0	0	0	0	0	—
Shareholder dividends	0	0	0	0	0	—
Increase in embedded value	\$19	\$23	\$23	\$26	\$29	—
Capital invested in new business	\$30	\$35	\$40	\$46	\$52	202
Return on embedded value	9.6%	9.7%	9.7%	9.8%	9.9%	59.3%

Now this doesn't necessarily mean that we should all be cutting prices in the hope that our track record of growth will result in higher goodwill value. I think the message here is that there are trade-offs, and different companies will view the trade-off between growth and return differently. What we're trying to do here is show a framework that can be used to analyze different plans, and how they translate into pricing objectives.

Let's just recap this process within the concept of the control cycle. There are really two elements to the control cycle (Chart 4).

CHART 4
LINKING CORPORATE OBJECTIVES WITH PRICING OBJECTIVES



The inside loop, shown here in the solid arrows, which is the one I've been talking about, is the control cycle of linking corporate objectives to pricing objectives. The outside loop, shown by the dotted arrows, is the control cycle of monitoring, measuring, and resetting assumptions. While I've been concentrating on linking corporate to pricing, clearly the monitoring and updating of assumptions is an integral part of the process. It's this process that is used to determine actual profitability and value added by new business. We want to see how we are doing relative to plan.

Let's just recap the framework used to derive our new business objectives. First, what's the reason for a framework in the first place? What we've been seeing in the industry is increased consolidation and greater emphasis on growth. Because of that, I think we, as actuaries, need to be able to analyze the trade-offs between growth and return in a more rigorous way. If growth is such an important factor, its not enough to set pricing objectives in a vacuum. We need to be able analyze the trade-offs in a corporate context, acknowledging the impact of excess capital, overhead expenses, goodwill value, and so on.

And why embedded value? As I said, there may be other frameworks, such as GAAP, but embedded value clearly has many advantages.

First, as an objective, it's clearly aligned with the objective of maximizing market value or appraisal value.

And second, with embedded value, value added by new business is a separate identifiable component of the increase in embedded value. This allows pricing objectives to be set in a framework where the impact of new business growth and return can be clearly analyzed and identified. With value added by new business, any deficiencies in new business profitability used to support a growth strategy are recognized immediately. Embedded value shows the full hit in the year of issue. That's where I think a GAAP framework doesn't work as well. I am going to finish up by talking a little bit more about GAAP.

As I've mentioned, what is being presented here is a framework within which to analyze the corporate plan and translate it into pricing. One could do the analysis using GAAP instead of embedded value. Your plan would be a five-year plan of GAAP equity and GAAP income and ROE. And you could look at different plans using different new business pricing and growth objectives.

But the problem with GAAP is that it doesn't immediately reflect deficiencies in new business profitability. By definition, GAAP returns are spread over the life of the policy, so that you only get a small impact during the year new business is written. It takes awhile to see the full impact emerge. With embedded value, the present value of each year's deficiency is essentially recognized at issue. You recall the negative value added generated by Plan C.

Additionally, if GAAP ROEs are not level, you could have even more difficulty isolating the impact of new business profitability, especially if you're combining products that have increasing ROEs with products that have decreasing ROEs.

So in a climate where companies are focusing on growth and return and new business profitability more often, I think it's important to be able to look at new business as a separate component and to determine how it impacts the corporate plan—this is what the embedded value framework provides.

Mr. Michael Kavanagh: One of the issues in the embedded value, which comes up in Canadian GAAP, is the problem with changing assumptions. How do you treat the change of assumptions in your embedded value and allocate it to management within the year?

Mr. Kolsrud: It sort of depends. We try to draw a distinction between assumptions that are “controllable” by management and those that are not. An example of those that are under the control of management, at least in our opinion, is managing a single premium deferred annuity block within the interest rate environment. That’s a key element of managing that block of business. Another example is managing your mortality through good underwriting and a monitoring technique. So those are the type of assumptions that we would hold management accountable for, and they would be impacted by those. One major assumption that we would not hold management accountable for would be changes in tax laws. When the DAC tax came about, it changed the value. Everybody’s value changed, but it was hard to argue to management that not only would it be held accountable for that, but I think the DAC tax was even retroactive. If we change the discount rate, that would also be outside the bounds of what management is responsible for. So, you look at each assumption, what drove it, and try to make some judgment.

Mr. Douglas Menkes: When I think about the shareholder of a publicly traded company and the return I require on the value of my stock, I think of that as the difference between the market capitalization of a company, which includes good will, and the way we calculate value added, which really reflects the value of the company. I’m wondering how you reflect that difference in setting the risk rate of return. I don’t see the gap being closed in the way we calculate value added.

Ms. Hancock: That’s a good point. How do we link embedded value to market value? Embedded value only reflects the value of in-force business. The big unknown is goodwill. You are exactly right. How to reflect goodwill is something that we really don’t know. Sometimes the multiples that we see in the public markets reflect huge goodwill components, and for some companies they don’t. Reconciling goodwill through the discount rate is not an easy thing to do. What I was getting at in one of my slides with a dotted arrow to goodwill value with a question mark was that, in some instances, it seems that the public market values growth much more than return on in-force business.

Mr. Michael E. DuBois: To fully implement the control cycle, we must not only identify the variance from plan, but we must also determine why it varies. This allows management to make a fully informed decision. Rachel touched on this with the outer circle in Chart 4. I was just wondering if you have any further comments on how we would inform management about the why’s and how we would reflect that, and also what management’s decisions could be that follow on that.

Ms. Hancock: In the example I just gave, this company uses a projection of planned embedded value to set its pricing objectives. In terms of looking at actual results, in this case, we really don’t do the comprehensive variance analysis that,

say, Aegon does. We're a company that just doesn't have the resources to do the full-blown modeling and analysis. So what we do is use experience studies to update assumptions and then feed those assumptions back into the embedded value plan. This is different than analyzing exactly why your return was 11% and not 12.5%. It's not that type of analysis, but it does involve a cycle of looking at experience, updating assumptions, and re-doing the plan.

Mr. Kolsrud: As Rachel mentioned, and as people from our company can attest to, we spend quite a bit of time looping back and looking at the actual-to-expected experience. The primary way we do that, from an actuarial perspective is to devote quite a few resources to it. I have one other comment on the goodwill issue. I'm puzzled by the relationship between embedded value and market capitalization. I guess I believe that the return inherent in your embedded value eventually is going to be what emerges over time. I have a hard time reconciling the swings in market value and in some of the PE ratios out there.

I have a GAAP question. We have spent a great deal of time in embedded value, but over the last couple of years, we've spent some time trying to relate embedded value to GAAP because GAAP is something that most of the people in our company watch quarterly and understand fairly well. One of the things that we've been driving at is trying to understand GAAP ROE and what it means. Bob, have you done anything in that area? Have you looked at ROE, or is that not an important measurement to you?

Mr. Omdal: ROE is an important measurement, but we're just beginning GAAP so, no, we haven't looked at anything. We've been doing ROI, but we base it on our internal basis statements, which are totally different from GAAP. I'm sure there has to be somebody in the audience who can offer some help.

From the Floor: I have a couple of observations on your question. One, I might refer you back to the Mutual Company Task Force analysis that looked at alternative methods of internal reporting and had various relationships. I think, in general, that report stated that the overall desired standard was a levelized return or a method that produced a levelized ROE. Let's contrast that to embedded value. Your embedded value would immediately recognize any deviations, positive or negative, and it would up front those changes from your target level of return. GAAP turned out to be a fairly good measure against the standard of a levelized ROE, but of course, that's going to vary quite a bit from product to product. I think what actually happens in practice is, because of nondeferrable acquisition cost, you'll get a somewhat lower ROE in early years. After the first year, especially, GAAP on many products isn't too bad if your standard is a level ROE. But that's really what you're trying to measure. The embedded value will recognize those deviations

upfront. One of the criticisms of embedded values is it doesn't spread your earnings uniformly. Admittedly, when Rachel was talking about the negative expectations, that might be viewed initially as a positive. There are also some products that we've seen priced to recognize all the positive benefit upfront when they measure embedded value. GAAP would tend to levelize that. A level return-of-equity type of approach would do the same.

Mr. Kolsrud: One of the things we struggle with, and it's an area where we have little experience, is *FAS 97* where profits emerge at a level percentage of gross margins. The annuity blocks I've looked at tend to have sort of a depressed ROE upfront with an increasing ROE over time. You say the number you're pricing at 12% and your initial returns on new business are 9% or 10%. It's hard to make that linkage. You need to educate them and say, "Even though your ROE is 9%, that's what you expect, and it's because of the *FAS 97* mechanism." One more comment on *FAS 60*. *FAS 60*, I think, in many cases, is the opposite. Where profits are emerging as a level percentage of premium, you have high ROEs upfront followed by lower ROEs down the road. I'm sure that's not uniformly true, but the examples I've looked at have shown that.

From the Floor: I think it's helpful if you try to, when you're explaining these results, format your income statement items, for example on the 97 line, for items that do take into account the estimated gross margins, the estimated gross profits or gross margins. To some extent if there's a little equity because you're using the credited rate rather than the earned rate, you should be, if everything emerges as anticipated, having some sort of level percentage of estimated gross profit (EGPs). From that you would take into account the items that are not included in your EGPs (maybe your nondeferrable acquisition cost or maybe certain overhead costs that aren't considered maintenance expenses). If you look at it that way, it's helpful for nonactuaries in terms of understanding the earnings. Only certain things are in this estimated gross profit and there's certain things that are not, and those come out below it. I found that is somewhat helpful in terms of explaining the results.

Mr. Tom Bakos: I got the impression during your presentation that management sometimes has a hard time seeing or understanding that the reports that you prepare for them are supposed to make it easier for them to understand the financial results. Why do you do this? Don't they trust you?

Mr. Omdal: What a loaded question! We are currently in the midst of transitioning into GAAP. Our prior framework has given us a variance from pricing report that has been understood, and there is some suspicion that we are going to lose something when we go to GAAP. As I said, I don't expect very many in management will be able to understand that six panel report that you need the

microscope to view. But, the intent is that top management will understand the high level reports where positive is good and negative is bad. They can manage off of that.

If there's a question of why a number is behaving the way it is, then the actuary can dig deeper and come up with an understanding of what's going on. There might even be something wrong in the reports!

I think that we have trust in what we've done prior to this, and we need to build that trust with our GAAP reports. For 1996, we're doing parallel reporting. In 1997 we will be moving directly to GAAP. Does that answer your question somewhat?

Mr. Bakos: Yes.

Mr. Michael Palace: We use both measures; we use GAAP projections, and we use embedded value on a statutory basis. There are two major differences that we, at this juncture, have incorporated into our thinking on embedded value versus GAAP projections. On future investments, for embedded value, we incorporate various asset/liability management adjustments which, on GAAP, really do not show up on income statements. We do not put them in. Also, such items as cost of guarantees and things like that go into embedded value. But in GAAP projections, typically, because we're not really incorporating any specific values on a GAAP income statement, we do not include them. I would just be curious to know how you folks would feel about that.

Mr. Kolsrud: I can just share our experiences. For our major interest-sensitive lines, we do use asset/liability management assessments in the calculation of embedded value. In one instance, we do stochastic scenario testing, and then use the embedded value as the mean of x number of runs. We use the same sort of technique in GAAP to get our k factors and our back amortization scheme. Under *FAS 97* reporting, there's an element to asset/liability risk—C-3 type risk built into our ks . Always get your spread scenario or something similar to that.

Ms. Hancock: At the company I was referring to, we used the same models to project future gross margins for *FAS 97* that we used to do the embedded value calculation. So we try to do it in such a way that there is consistency between the two.

It's also very resource intensive to do both embedded values and GAAP projections. You really end up doing all three accounting measures, which takes time and resources.

Mr. Kolsrud: I can echo what Rachel said. I think it does cause you to have additional resources. We actually use both accounting mechanisms for incentive compensation purposes in one form or another. That can be somewhat confusing, too, but I think, when it gets back to really being able to tie back to your pricing objectives and monitor pricing and some of the other benefits, we feel it's well worth the time and effort put in. Once you make the initial investment, it gets into a maintenance mode. Some people would argue with that, but it takes less and less as you go along, especially if your models get better.

Mr. Gregory M. Mateja: Two kind of related questions. First, at many public companies, GAAP is king and is what the markets use to measure us. We already have statutory constraints and we have sales goals. One of my favorite sayings is a man with two watches doesn't know what time it is. If you add embedded value to the equation, you suddenly have GAAP and embedded value plus statutory constraints that you're dealing with. How do you deal with that in terms of incentives for people and performance measurement? Related to that, and going back to the first question, assumptions are very important in embedded value. Do you ever run into situations where you get into disagreements over the appropriate assumptions to measure embedded value?

Ms. Hancock: The issue of consistent assumptions is becoming more important with the introduction of the Illustration Actuary concept. Sometimes we see companies with one set of assumptions for projecting GAAP margins, and a different set for cash-flow testing, and another set for the Illustration Actuary. I don't think that we should be telling the public markets one thing and using one set of assumptions, and then doing cash-flow testing for the regulators using another set of assumptions.