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DETERMINATION OF APPROPRIATE SURPLUS LEVELS

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- o How much surplus is needed? How is it determined?
- o Treatment of participating policyholders
- o Approaches for measurement
- o Regulatory and professional body requirements affecting surplus relief reinsurance

MR. RICHARD K. KISCHUK: Determination of appropriate surplus levels for life insurance companies has become a "hot topic" today. I'd like to start out our discussion by giving an overview of why this subject is receiving so much attention.

One reason why companies are so concerned about surplus levels is the fact that the life insurance business has become so much riskier. Until fairly recently, life insurance was thought of as a very stable business. I think a lot of us here remember the good old days. Profit margins and cash flow were high and stable. Mortality was gradually improving, investment yields were increasing gradually, and unit expenses were declining. Life insurance products enjoyed long product life cycles. In fact, the "bread and butter" product of the industry, whole life insurance, had enjoyed about a 100-year product life cycle. In this environment, it was possible to maintain high levels of surplus and at the same time earn a comfortable return on capital.

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That's definitely not a description of today's world. Profit margins are thin and less stable. Interest rates and cash flow can be extremely volatile; in fact, interest rates often change more in a week's time than they used to change in a year. Product life cycles are now becoming closer to those more typical of other industries. Because of the shorter product life cycles and more complex nature of today's products, companies are having more problems controlling expenses. Even for companies that pay close attention to managing these risks, significant problems can develop.

Today's volatile environment and higher risk levels imply that companies should maintain higher surplus levels. At the same time though, the thinner profit margins limit the return on equity that can be earned and create pressures to maintain lower levels of surplus.

As if this were not enough, capital has become more expensive. Although interest rates have dropped dramatically recently, even at a yield of 7% to 8% for long-term Treasury bonds, insurance companies must earn an after-tax return of 13% or more on equity capital.

So companies must make difficult decisions. Whether stock or mutual, life insurance companies must earn a return on equity at least equal to their cost of capital to remain viable in the long run. This means companies must have a framework for evaluating the financial risks and rewards of strategic decisions.

One way to balance financial risks and rewards is to utilize target surplus formulas. Otherwise, a company will be prone to a number of financial pitfalls.

For example, in order to maximize profitability, a company might follow financial strategies that maximize profit margins -- that seems pretty logical. This could involve investing in volatile and cyclical product lines with high profit margins. It could involve intentionally mismatching assets and liabilities. Or a company might choose to emphasize riskier investments.

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This kind of strategy can look very attractive in the short run. But if a company does not maintain adequate capital for the risks involved, it could be disastrous in the long run.

So maybe it makes sense to try to minimize risks. A company could maintain a very conservative posture toward underwriting risks, for example, maintaining low risk retention levels. Funds could be invested in U.S. Government securities with no credit risk. A company can follow a strategy of matching assets and liabilities as closely as possible.

There is one problem with that strategy, however. Profit margins from these strategies would be very low or nonexistent. So no matter what surplus levels a company maintained, return on equity would be inadequate.

In other words, companies must assume some risks. Managements will differ in the maximum amount of risk they are willing to assume. And managements will differ in how they perceive the risks and rewards inherent in a given strategy. But they must constantly make tradeoffs between risk and reward as they decide where to invest their companys' surplus.

How do target surplus formulas help in making these decisions? Surplus formulas are intended to assist management in evaluating the risk aspect of financial decision-making. In an ideal world, it would be possible to evaluate all of the risks inherent in a given strategy. These would include asset depreciation, pricing inadequacy, interest rate change, and other miscellaneous risks. We would then go on to express these in terms of the surplus needed to maintain the risk of insolvency at a given theoretical level. Target surplus could be projected for each alternative strategy, along with the profit margins, and return on equity could be estimated.

Looking at this there's both good news and bad news. The good news is that, fortunately, we have come a long way in our ability to estimate the surplus levels needed for various strategies. A great deal of research has been published by the Society of Actuaries, primarily in the area of the C-3 risk, looking at matching assets and liabilities. Individual companies have

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devoted a great deal of time and effort to developing target surplus formulas, some of which have been published in the actuarial literature.

The bad news is that we still have a long way to go. Society of Actuaries' task forces are still actively at work developing techniques for evaluating risks. This is particularly true in the areas of asset depreciation and pricing inadequacy, where a great deal of work still needs to be done. The formulas developed by individual companies still leave a lot to be desired and, from a lot of perspectives, are still in their infancy.

Even once the research is complete, the techniques and formulas will still have many elements of "fighting the last war." Picture for a moment that five years ago you knew exactly what was going to happen in the U.S. economy for each of the next five years and that you knew exactly what interest rates were going to be. Would you have made a fortune as a consultant? I would say you probably would not because no one would have believed you.

Similarly, if any one of us knew what would happen over the next five years, no one would believe it, and it would be difficult to convince management to maintain a level of surplus based on that scenario. Chances are, the events of the next five years will present risks that have not been anticipated today.

Even if this were not enough of a problem, projections of profit margins are guaranteed to be wrong. Only by coincidence will actual experience ever correspond to the pricing assumptions. As we have learned in recent years, the actual results can vary widely from those anticipated.

Okay then, if all of this is true, what is the value of going through the exercise of determining target surplus levels and projecting return on equity, and why are we all here today?

For one thing, there is value in "fighting the last war." Stockholders, policyholders and regulators may forgive us for making a mistake once, especially if it was one that took the entire industry by surprise and provided it does not cause our company to become insolvent. As we heard in the keynote address, making mistakes is a large part of the essence of managing

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a company in today's environment. But once something becomes a known risk, management is expected to develop strategies to prevent similar problems from developing in the future. Target surplus formulas attempt to quantify known risks so they can be factored into management decisions.

Target surplus formulas can also provide for unknown future risks by adding a "general contingency" loading to the formula. That is, the actuary can provide for all known risks. Then, since it is predictable that new risks will develop, we just don't know what they will be, a general contingency loading is added to provide for these unknown risks. For example, 15 years ago, very few actuaries would have seriously considered the risk of loss from changes in interest rates. To the extent we considered interest rates, we looked at the interest yields that we were earning, looked at the conservative valuation interest rates built into statutory reserves, and said, of course, we'll have plenty of interest margin. The risk would be that if interest rates could go down. If interest rates go up, that will be just great. Two years ago, very few actuaries were aware of the potential impact of AIDS, yet that is something that a lot of us are considering today, both in life and health insurance.

If target surplus formulas are updated annually, developing risks can be incorporated in the formula as they emerge. Thus, target surplus formulas can be a useful tool in quantifying the risks inherent in any given strategy even though we cannot anticipate all of the risks that might develop.

The uncertainty of profit projections can be taken care of by developing financial plans based on several scenarios, and this would apply to target surplus levels as well. Given the uncertainties in today's world, it makes no sense at all to base financial decision-making on a single "expected" set of assumptions. Instead, scenarios should be developed for what could go wrong, as well as what upside potential might exist. Since we don't know which scenarios might actually take place, management can assign subjective probabilities to them and make financial decisions accordingly.

In summary, we still have a lot to learn in quantifying the amount of surplus needed for a given product or strategy. But actuarial science has developed

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enough techniques that we can use target surplus as a useful tool for comparing risks and rewards of various alternatives. As a result, life insurance company managements can make better decisions today than they might have been able to make a few short years ago. However, we should be aware of the limitations of these techniques as we apply them in actual decision-making.

MR. ALLAN D. AFFLECK: The first two questions in the program related to appropriate surplus levels are:

- o How much surplus is needed?
- o How is it determined?

As I began to prepare for this session, I realized it would be impossible to deal totally with those questions in the time that we have available. My comments, with the exception of describing some work we have done in the universal life area, will focus on current issues and trends in surplus determination that are related to these two questions. I hope you will find them practical in nature and helpful in the real world of the corporate or pricing actuary.

In my discussions with companies I have noticed a trend toward increasing sophistication in target surplus formulas. I will share two examples of this with you.

I will also review an example of how we arrived at appropriate target surplus levels for a particular product.

Finally, I would like to comment on some of the practical realities actuaries are facing. I have selected three specific examples:

- o First, I will discuss the conflict between holding margins in reserves versus surplus.
- o Second, I will discuss the reality of pricing. This will include pricing to meet target Return on Equity (ROE) objectives where the "E" includes

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target surplus, as well as some brief thoughts on how target surplus might be adjusted for participating dividends.

- o Finally, we will briefly review ROEs for universal life under different assumptions about how Financial Accounting Standards Board (FASB) may determine Generally Accepted Accounting Principles (GAAP) and, as a result, both the "return" and the "equity" that are used in the ROE equation.

Target Surplus Formulas -- Increased Sophistication

We are observing a trend toward more sophistication in the target surplus formulas used by companies. While many companies are just beginning to use target surplus as a concept, some have been using it for several years, and these companies are finding that refinements in their process are needed. One specific example of this is the C-1 factor, which provides for the risk of asset default.

Traditional formulas typically provided separate C-1 factors for each different category of investment -- bond, preferred stock, common stock, mortgages, etc. What we now see are companies segmenting their bond portfolio, for example, and using different factors for different quality bonds. As an example, the following illustrates the C-1 factors used by one particular company. This allows the investment or product managers in each line of business to make their own decisions about the quality of asset, the risk, and so on, within the company's overall investment guidelines.

C-1 Factor	Asset Class
. 0%	Government backed
.50	Short term
.75	AAA bonds
1.00	AA bonds
1.50	A bonds
2.00	BAA bonds
3.00	Below BAA bonds

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As another example of this same C-1 factor, we recently completed an assignment for a company considering a change in its investment strategy to place approximately 30% of its bond portfolio into higher yielding bonds, fondly known as "junk" bonds.

The question that arose was whether the current pricing model the company was using adequately reflected the additional risk that resulted from the presumably added volatility of the default experience that would arise with junk bonds. Our approach was to modify the C-1 factor in the target surplus formula, assume a higher level of defaults, and examine the volatility by heaping the defaults expected in a 10-year period into a single year. I think this illustrates the need for the pricing actuary, the valuation actuary, the investment area, and the marketing areas to work closely on these interest sensitive products.

A different example of the increased sophistication is the C-2 factor for group life and health business. Many companies still use a simplistic composite approach in arriving at the C-2 factor for their group line. In fact, of all the target surplus formulas that are in existence, I think perhaps the C-2 factor for the group business is the least sophisticated that I have seen. The following shows a somewhat more sophisticated approach, recommended by us in a specific situation last year where the C-2 factors vary by major coverages within the group line.

C-2 Factor for Group Life and Health

Group Life	15%
Health	
under 100	15
over 100	10
minimum premium	5
ASO	2
LTD premium	15
LTD reserves	3

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Also credits were permitted for the excess of the incurred but not paid reserve to the extent it exceeded 105% of the best estimate reserve, as well as for claim fluctuation reserves.

While this formula is more refined than the typical composite approach, even it does not begin to fully recognize the difference in risk between the different lines of coverage and different experience-rating provisions. For example, we believe factors should vary quite significantly depending on whether the company offers six- or 12-month rate guarantees in its basic contract. During the downside of the last underwriting cycle, many companies changed to a six-month rate guarantee in their group health contracts and have continued that approach. We believe this is a good argument for utilizing a lower target surplus requirement.

In the group business a company's management style is another factor in determining the appropriate surplus level for a particular company. Aggressive management of the group business is usually evidenced by timely management reports, effective analysis and prompt action on rate increases. These factors should be recognized when setting target surplus levels.

Let me now move on from the issue of more sophistication and talk about an approach we have used for measuring the amount of target surplus needed for a particular product.

C-3 Surplus for Universal Life (UL)

After reviewing the overall target surplus formula used by a client company last year, Dennis Stanley and I became more interested in trying to understand the target surplus requirements for the C-3 risk under universal life products. As a result, we undertook further research which we developed into a Discussion Note. Since the description of our methodology and assumptions is contained in that material, I will only briefly summarize them here and try to focus instead on the results of our studies.

Our basic approach was to assume a company began writing universal life in 1982 and built up a block of business from 1982 through 1990. We assumed a

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stable interest rate environment from 1982 until 1990, and then began to test different scenarios. The thrust of our work was to try to answer the question, "How much target surplus is needed at December 31, 1990 to maintain statutory solvency in the future?" In other words, how much must the company have on hand in addition to its statutory reserves in order to survive through the scenarios we were going to test?

The following shows the target surplus required under a rising interest rate scenario, increasing 2% per year for five years. This slide shows the required target surplus is very sensitive to the duration of the business in force, averaging 4.8% overall on the entire block of business, but varying from 9% for the business in the most recent year of issue to 2.8% on the business that was issued at the beginning of the period.

Issue Year	Required Target Surplus	Statutory Reserve	%
1990	5	58	9.0%
1988	81	1016	8.0
1986	140	1769	7.9
1984	103	2617	3.9
1982	94	3409	2.8
All	423	8869	4.8

We tested three other interest rate scenarios, and the aggregate amount of target surplus required at the end of 1990 is shown below. Again, the base amount of 4.8% was the aggregate amount for all durations that we saw in the rising interest rate scenario. The plateau was an immediate 5% jump in interest rates at the beginning of the period, and it just stayed level thereafter; the sawtooth as you expect was an up-and-down interest rate environment; the trough was rates declining by a half-percent per year for eight years and then rising 2% a year for a period after that. As you can see, the slowly but persistent rising environment was the one that created the most need for target surplus.

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Target Surplus	
Base--Rising	4.8%
Plateau	1.9
Sawtooth	.5
Trough	2.3

The next sensitivity test was the reserve methodology. As shown below, the amount of target surplus is extremely sensitive to the reserve method. Many companies today are using the maximum valuation interest rate because of tax considerations, and that produces a reserve for universal life significantly below the account value. As shown, the required target surplus is correspondingly higher. Again, we have our 4.8% base case if the NAIC model at 6% is held.

Reserve Method	Required Target Surplus
Base--NAIC Model @ 6%	4.8%
Account Value	0.0
NAIC Model @ 4.5%	1.1

As statutory reserves are driven to the level of tax reserves for practical pricing and tax planning reasons, it is clear a company should hold more target surplus. This is particularly true for universal life where the NAIC model reserve, at the maximum permitted interest rates, is relatively low compared to the account value. The result of using a lower reserve, even with more target surplus, is a higher ROE because the total capital committed to the block is still significantly less than holding the account value even with no target surplus. Clearly this is a more efficient use of capital.

The chart below illustrates the level of target surplus required under different interest rate crediting strategies. The base strategy, the results of which are shown in the first column, again our 4.8%, was to credit a portfolio interest rate less a 1.25% spread, subject to both a maximum and a minimum. The maximum was the new money yield rate less the target spread, while the minimum was the new money yield rate less the target spread less 250 basis points. We call this a "constrained" interest crediting strategy which

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maintains the credited rate within 250 basis points of the assumed market interest rate offered by competitors. While this results in considerable control of disintermediation lapses, the target spread is generally not achieved during periods of rapidly rising interest rates. When you move to the portfolio crediting strategy with no constraints at all, you have a much larger need for target surplus.

Issue Year	Base-Portfolio With Constraints	Portfolio No Constraints	Market No Constraints	Base with Greater Disintermediation Lapse
1990	9.0%	3.2%	24.4%	8.4%
1988	8.0	1.1	30.0	8.8
1986	7.9	1.5	26.7	9.0
1984	3.9	9.4	18.5	5.5
1982	2.8	17.1	14.3	4.5
All	4.8	9.8	19.9	6.2

The third column shows the target surplus required if a market crediting strategy were followed, again with no constraints.

Finally, as shown in the fourth column, we tested the original base strategy with constraints, but utilizing higher disintermediation lapse rates. And it drove the requirement for target surplus up somewhat.

Aside from these results that show the impact on target surplus, I think it is worth noting that the profit on a block of universal life business is going to vary considerably with the company's interest rate crediting strategy. We tend to focus on the other side, the investment strategy, and don't pay that much attention to crediting strategy. I think the two are equally important.

Several other tests were made and the resulting target surplus ratios are shown here.

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Test	Required Target Surplus
Base	4.8%
Vanish premium option	5.2
Pour-in premium	4.6
1.50% spread	3.7
No negative FIT	6.6
8% initial yield	4.3
Longer investment strategy	10.0

We note that it doesn't appear that the level of premium affects the target surplus requirement to a significant degree. Introducing a vanish premium option increased the target surplus slightly to 5.2% while adding pour-ins reduced the target surplus to 4.6%.

Increasing the spread in the product itself from 1.25% to 1.50% reduced the target surplus required to 3.7%. Of more significance was a change in the assumption that losses on the universal life line, if they should occur, could be utilized company-wide and result in tax credits. If we ignore these negative tax amounts, the target surplus required increased from 4.8% to 6.6%. This is a significant point that has been brought out by others and certainly confirmed by our analysis.

Dropping the entire yield curve to 8% reduced the target surplus requirement slightly.

Adopting a longer investment strategy from the outset, essentially by pushing the portions of the portfolio invested in five-, 10- or 15-year instruments back to 10-, 15- and 20-year instruments increased the required target surplus substantially.

Just a comment in conclusion about the practical implementation of these kinds of results -- clearly the sensitivity testing shows there is a great variation under different scenarios that one wants to examine. At a corporate level, I think the target surplus formula needs to be a simplistic, simple

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X percent of reserves or perhaps that plus Y percent of expected claims. That formula should be viewed as dynamic and updated periodically as the company's experience and mix of business changes, but I think it is important to have that kind of a simple formula.

Reserves Versus Surplus

Others who have considered the level of required target surplus, particularly Mike Mateja and Jim Geyer, have pointed out it is much less efficient to hold conservative reserves with lower surplus levels than to retain the margin within the surplus account itself. This provides the company more flexibility, since the surplus can be used for any purpose.

It should also be noted that it gives the appearance of a stronger balance sheet, since anyone calculating a simple surplus-to-liability ratio produces a higher result.

It may actually lower the total capital required by a life insurance company on some products, as we saw in universal life, because the combination of the more liberal reserve basis and a realistic target surplus level may be less than a conservative reserve with a modest additional amount of target surplus.

One danger in this approach is that many managements think of statutory reserves as conservative. This is not necessarily the case, particularly at maximum valuation rates, which are desirable to use for tax purposes and with some designs of interest-sensitive products. Thus a practical difficulty is to convince management that, if the lowest possible statutory reserve basis is employed, the company will need larger, and sometimes significantly larger, levels of target surplus. That can be a difficult communication.

Pricing

I was interested to read the results of a survey by another consulting firm which showed that 88% of mutual companies but only 44% of the stock companies utilized target surplus in their pricing process. This is similar to our experience and is a concern because the management of companies that do not use target surplus in their pricing process are overstating the return they are really achieving.

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The following shows the difference between ROE with the target surplus level built into the pricing process and traditional Return on Investment (ROI) measures where return is computed against the statutory investment without any recognition of target surplus requirements.

Product	ROE	
	With	Without
Graded Premium Whole Life	17%	20%
Par Whole Life	14	17
Universal Life	17	20
Single Premium Deferral Annuity	17	22
Guaranteed Investment Contract	17	26

The difference is 3% for the graded premium whole life product, and the same for par whole life and universal life, but then it moves up to 5% for single premium deferred annuities and 9% for guaranteed investment contracts. These results would vary considerably if the particular design of the products was altered because the ROE is very sensitive to product design.

One question that we've been asked is to what extent should target surplus levels vary between par and nonpar business. My own feeling on that is, with today's products, there isn't that much difference in many cases between par whole life with the dividend and interest-sensitive products where excess interest is determined from year to year. I think we do recognize that there is somewhat more discretion in the par business, and our attitude is that perhaps one could keep the dividend scale level for one year and allow that as an offset to the normal target surplus requirement; but beyond that, disintermediation lapse rates would be experienced just as they would under an interest-sensitive product.

ROE for Universal Life

As we know, the Financial Accounting Standards Board is currently considering the appropriate GAAP accounting methodology for universal life products. While not directly related to establishing target surplus levels, the ROE

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resulting from different GAAP methodologies is of immediate concern to life insurance company managements and stockholders.

There are two ends on the spectrum of the accounting methodologies being considered. The first would continue the traditional and existing methodology of treating premium as the revenue basis and allowing profits to emerge in relation to the receipt of premium income. The extreme at the other end would require profits to emerge in relation to the earning of the investment income spread. The next chart shows the ROEs that result under these two definitions of revenue.

Just to keep this table manageable, I've shown the results for every other year. Profits over the lifetime of the business are identical, but the different GAAP accounting methodologies result in the slope of the reported profits varying significantly. Clearly this affects the ROEs.

ROE for UL Product

Year	- - Revenue Basis - - Premium	Spread
1	20.2%	12.1%
3	17.1	12.4
5	15.4	13.2
7	14.9	14.7
9	14.6	16.5
11	14.5	18.4

This is a practical problem facing many companies today and puts pressure on the actuary to minimize the level of target surplus required to support a product like universal life.

MR. MARK PUCCIA: I have been asked to present to you the approach that's used at Standard & Poor's to analyze the adequacy of surplus in life companies. I would first like to outline the general approach that we use to analyze a life company in order to provide a perspective on our rating process; and then as the second part of my presentation, I would like to discuss our approach to

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capital adequacy in more detail. My presentation will center around the process used to evaluate a company's Claims Paying Ability rating which we define as a company's ability to meet its contractual policy obligations. The process of analysis used for the Claims Paying Ability rating is virtually identical to the process we use in evaluating debt obligations. A key distinction, however, of the Claims Paying Ability rating from other debt ratings at S&P is that it is a voluntary rating. The insurance company must request the rating before we will proceed with the analysis. We have taken this approach because of the unique information requirements needed to properly evaluate a life company. Given the large amount of information that is not publicly available, meetings between insurance company managements and S&P personnel play a critical role in the rating process.

Standard and Poor's system for evaluating the Claims Paying Ability of life companies is based on systems used by S&P to evaluate all types of debt issuers. However, the criteria applied are tailored to the unique aspects of the insurance industry. These criteria are segmented into three broad areas of focus which are further subdivided into 9 categories which we evaluate. The overall rating is not an average but a blending of the individual assessments. This blending is generally the same for companies within an industry sector but which may be individualized for a particular company.

The first area that we look at includes an analysis of Industry Risk, Company Characteristics, and Management. In the ratings assessment process, these are some of the most important categories as their impact is overlaid upon our evaluation of all other rating categories.

Most academic research on the "accuracy" of rating agencies' work suggests that, when in error, it is usually because the assumptions about Industry Risk are invalid. Therefore, the assessment of Industry Risk is critical to any rating decision.

This category encompasses the inherent risk and diversity of the insurance business being underwritten.

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The factors to be reviewed include those areas that we have labeled as structural analysis and are more conceptual than quantitative.

These are:

1. forces driving industry competition such as:
 - potential threat of entry
 - bargaining power of buyers and suppliers
 - threat of substitute products or services

2. competitive strategies such as:
 - cost leadership
 - product differentiation
 - niche orientation within the industry.

We also undertake a quantitative analysis of the industry, and we focus on:

1. demand
2. concentration
3. cost structure
4. capital requirements of the industry.

In summary, in our review we are looking at the level and the stability of the rate of return within the industry and in relation to other industries.

When looking at Company Characteristics we are making an assessment of how a company fits into its industry, its market position, its diversification by line of business and its geographic spread. We are also reviewing the company's strategic approach to its business and its distribution system.

The factors that we look at include:

1. What are market segments the company operates in and what is the company's market position? We evaluate the growth rate, market share, and industry ranking.

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2. Are the company's products high or low risk, high or low value?
3. What are the strengths of the distribution system? How will it differ in the future? Is it a high cost or a low cost system?

The questions we're asking are: How do the company characteristics fit in with the company's strategy? Does the company have what it takes to be viable in the long run?

The Management Evaluation is an assessment of management's ability to control, direct and plan for its business, as well as its resourcefulness in responding to changing business conditions.

The factors that we review include:

1. Are management's goals market share related, financially oriented, or traditionally based?
2. What is management's strategy?
3. What are the operational controls?
4. What are management's financial goals and tolerance for risk?
5. Finally, who are the senior officers?

Earnings Capacity focuses on earnings growth and returns relative to the lines of business, leverage, and company type (i.e., stock versus mutual).

The review of operations can be broken down into 3 components:

1. margins (which is the return on sales),
2. revenue and earnings growth,
3. the relationship of the first two to leverage.

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When we look at margins, the analysis focuses on the company's pricing philosophy and spreads as well as the stability of the margins. We will also review expense controls and expense dynamics. Finally, we try to relate the level of returns to lines of business and product risks of the company.

Revenue and earnings growth analysis should explain premium growth and its relationship to earnings growth.

As to the third category, the higher the leverage, the higher we would expect the ROE.

Overlaid on these 3 categories would be the impact of reserves and taxes.

The company's investment activities are also part of the analysis of a company's earnings capacity. Here we are interested in:

1. asset distribution,
2. portfolio quality (looking at the mortgage portfolio, bonds, equities, and real estate quality),
3. yield on the portfolio,
4. asset/liability match. Is the asset mix supporting the liability structure? What is the duration of the assets versus the liability duration?

The final area of focus is Capitalization and Liquidity Analysis. The four categories reviewed in this area are Operating Leverage, Financial Leverage, Liquidity, and Financial flexibility.

The principle focus of Operating Leverage is the analysis of the ratio of total liabilities to surplus relative to the lines of business the insurer is in. We then compare this ratio to industry norms.

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In the review we do a pro-forma analysis adjusting for contingent liabilities. We also adjust for hidden surplus, reserve conservatism, reinsurance and affiliate investments.

The key in evaluating Financial Leverage is the ratio of debt plus preferred stock to total capitalization. We are particularly interested in the characteristics of the debt and the preferred stock outstanding.

Given the prospective nature of our ratings, the company's debt philosophy is also important. As with operating leverage, we adjust this category for contingent liabilities.

We relate Financial Leverage to earnings through the analysis of fixed charge coverage.

Liquidity Analysis is the assessment of cash flows, the effect on subsidiary investments, and the potential implications of the asset/liability match. Cash flows are related to total liabilities as well as to surrender and benefit payments.

Finally, Financial Flexibility identifies the needs for and the sources of extraordinary levels of funds and/or extreme liquidity concerns. The type of needs include:

1. strategic business addition,
2. possible stock repurchase,
3. major disruption in capital markets,
4. the need to maintain dividends during weak earning periods.

The types of sources of funds would include:

1. sale of assets (which would be as used for funding purposes),

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2. sale of undervalued assets (which would be used for capitalization),
3. access to the equity capital market,
4. access to the debt and commercial paper markets,
5. access to the reinsurance markets.

In the second part of this presentation I am going to expand upon Standard & Poor's evaluation of life company capitalization and leverage. Our analysis of the adequacy of surplus centers on the operating leverage and the financial leverage of the life companies.

The primary consideration with respect to the level of capitalization in an insurance organization is the level of its risks relative to its resources. As I mentioned earlier, the principle measure of Operating Leverage used at S&P is the ratio of total liabilities to surplus. This ratio is adjusted to treat the Mandatory Securities Valuation Reserve (MSVR) as surplus as well as other special reserves that have surplus-like characteristics. In addition, those separate account liabilities that are not guaranteed by the general account are excluded from total liabilities as our claims paying ability rating focuses on general account obligations. If in discussions with management, however, we determine that it is in the company's best interests for the general account to make a separate account whole (as is often the case for instance for a GIC separate account), the leverage ratio will be adjusted to include the separate account liabilities.

In our analysis of Operating Leverage, we relate the leverage ratio to the risks inherent in the lines of business and the products offered by a company. While no set range of leverage has been established for each rating category, a company's ratio is compared to industry norms relative to the lines of business it is in. Generally, those companies which have large pension liabilities are considered to need less surplus support for their liabilities than those companies which primarily sell life insurance products. Likewise, life insurance requires less surplus support than Accident and Health (A&H). For A&H insurance, we also apply the Operating Leverage measure commonly used in

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the property and casualty industry of premiums to surplus. Incorporated into our analysis are a company's product features that would alter risk characteristics of a line of business. Examples of these features would include the passing of mortality and morbidity risks to the policyholder for life and health products and the passing of the investment risk to the policyholder for the life and pension products.

Once these aspects of leverage are considered, a different perspective is taken. This is to look at pro-forma capitalization making certain reasonable adjustments. Examples of items to be included are off balance sheet liabilities (this would include such things as leases and collateralized asset obligations supported by the company), potential reserve deficiencies, and investments in parents, subsidiaries, and affiliates. Each case will be different, but it is essential to make whatever adjustments are appropriate to determine what the real level of Operating Leverage is as opposed to nominal Operating Leverage.

One additional factor considered is whether or not a company can maintain a self sustaining growth rate. We analyze whether a company's retained earnings will increase capital sufficiently to support anticipated growth or whether a company must go to the capital markets to support its growth.

In looking at Operating Leverage, S&P does make some distinction between mutual and stock companies. Given the current tax environment, mutual companies often enter into tax motivated surplus reduction actions that do not reduce the real surplus of a company. In our discussions with management, it is incumbent upon the company to make S&P aware of its "hidden surplus." These actions could include such items as very conservative reserving, the establishment of special reserves, the effect of reinsurance transactions, and investment in assets which produce large unrealized gains such as real estate. Our analysis will incorporate these factors through looking at an adjusted Operating Leverage in addition to looking at the unadjusted figure.

The primary measure of Financial Leverage is the relative use of permanent debt to total capitalization in the company. It is recognized that insurance companies often use short-term commercial paper as a proxy for long-term

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capitalization if financial markets provide an opportunity for them to do so. In those cases, what is nominally short-term debt takes on the characteristics of long-term capitalization and is treated accordingly in the analysis of financial leverage. The analysis of capitalization is done by relating debt to GAAP equity wherever possible. In the case of a mutual company or in other cases where GAAP financial statements are not available, management is requested to provide such statements. If the company is unwilling or unable to do so, debt is related to statutory surplus.

The second aspect of Financial Leverage to be considered is the relative use of preferred stock in capitalization. The analysis recognizes that the terms of particular issues can take on alternately more debt-like or more equity-like characteristics. If the preferred stock is permanent or convertible into equity, S&P can be more liberal in its interpretations of the implications of preferred stock to financial leverage. If, however, the preferred stock is really a substitute for debt, it's evaluated more like debt. The standard by which preferred stock is evaluated is the ratio of long-term debt plus preferred stock to total capitalization. The higher this ratio becomes, the lower the level of creditworthiness, other things being equal.

Equally as important as the current level of Financial Leverage is management's debt philosophy. Since our ratings are prospective in nature, a company's stated intentions to access the debt markets as well as its historic track record of taking on additional leverage are considered in the analysis. As with Operating Leverage, the analysis of Financial Leverage adjusts for contingent liabilities in those cases where the contingent liability has debt-like characteristics.

Finally, Financial Leverage is related to earnings power through the analysis of fixed charge coverage. The extent to which earnings can comfortably cover interest payments and preferred dividends is factored into the analysis of Financial Leverage through the use of this ratio.

I would like to conclude by saying that the analysis of capital adequacy and leverage is only part of the rating process and does not by itself establish a rating level for an insurance company. The fact that two companies could

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have similar levels of Operating Leverage and Financial Leverage does not mean that they will automatically have similar ratings. Likewise, two companies with different levels of leverage may have the same rating as many other factors enter into the rating process.

MR. AFFLECK: It was very illuminating for me to listen to Mark describe the process that Standard & Poor's uses to develop ratings for life insurance companies. During the last few years, particularly since the Baldwin United events, we have noticed that organizations writing insurance have become increasingly concerned about the financial strength of the company with which they are placing business. Rate levels and service are still important, but confidence in a company's ability to meet its policyholder obligations has become a real concern. While the stock brokerage firms have always been subject to their own due diligence requirements, many of the typical insurance brokers have not felt this "due diligence" concern to the same extent. The environment is changing, particularly among those writing large volumes of GIC business.

During the last year we have worked with several organizations which write large volumes of insurance to help them understand what is involved in analyzing a life insurance company's ability to meet its policyholder obligations. From an actuarial perspective, undertaking an analysis of this nature involves as much work, if not more, than undertaking a complete appraisal of a life insurance organization. The focus shifts from one of trying to determine appraisal values based on best estimate assumptions to one of evaluating a company's ability to meet its policyholder obligations under adverse economic scenarios. Most producer organizations do not have the expertise or the volume of business to justify the type of in-depth study needed to analyze a company in this way. In fact, they focus on simple surplus ratios, not appreciating that reserve bases, excess interest guarantees, reinsurance credits, and so on can have a major impact on what a company's stated surplus is. Because of their lack of knowledge and sophistication, these organizations tend to turn to other rating organizations such as Best's, Standard & Poor's, Moody's, etc. In addition, we notice they now pay considerable attention to the National Association of Insurance Commissioners (NAIC) early-warning tests. I don't know about you,

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but it's certainly a different experience for me to have agency groups watching NAIC leverage tests and wondering about the adequacy of surplus margins in companies.

Our approach has been to help companies understand the various ratios and tests utilized particularly by Best's and the NAIC. In some cases we have helped producers develop a series of questions which they can ask the companies in which they are considering placing business. For the largest writers of insurance products, we may actually undertake a financial projection trying to help them assess the market value of assets to cover current cash values, to review the investment portfolio to see which assets are affiliate or parent-related, and to examine non income-producing assets. I believe this is a trend which we will see continue. Producers of business will become increasingly concerned and curious about a company's financial strength.

Certainly the litigious society in which we operate makes these organizations more aware of their responsibility when they recommend a particular company to a buyer of insurance; and I think companies can expect more and more concerns and inquiries about their financial strength.

Net cost is clearly still important, but the more responsible producers realize their first obligation is to ensure that policyholder obligations are met. They are now developing lists of criteria to apply to the companies with which they do business. I might add that our own experience seems to be confirmed by the insurance press. During the last six months many of you may have seen articles entitled "How good are A. M. Best's ratings?", "Standard & Poor's rates insurers" and more recently, an advertisement by a leading mutual company with a headline that says, "If life insurance promises to perform like stocks and bonds, shouldn't it be rated like stocks and bonds?" Without wanting this to sound like an advertisement for Mark's organization, the concluding paragraph read, "If your life insurance company hasn't been rated by Standard & Poor's, maybe you have the wrong life insurance company."

In any case, I think there clearly is a concern that we've seen in the last two years in this area, and it's something that companies should be aware of.

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MR. THOMAS F. EASON: I have question to Mr. Puccia regarding S&P. Do you provide product ratings for GIC contracts? Do your plans call for an extension of this process to other group pension or perhaps individual products?

MR. PUCCIA: At this point, we have one product that we do rate, the GIC product. It's still in its infancy. The approach that we take is that a company must first apply for the Claims Paying Ability rating as the Claims Paying Ability rating assesses the creditworthiness of the organization in general, and the GIC is just one type of policyholder obligation. Our evaluation process of the GIC product is not so much a rating of the organization's creditworthiness as it is an evaluation of that contract's ability to confer that credit rating to the policyholder. The reason we've decided to rate GIC contracts is because it's assumed that it's a sophisticated investor market and, as such, we're only looking to make sure that the contract will pass on that creditworthiness. We don't do a credit rating of an organization in rating GICs, because that will have been done in the discussions with management for the Claims Paying Ability rating.

Since what we're looking for is to make sure that contract confers that creditworthiness, our decision to rate the contract is really one of "Is the contract rateable or is it not rateable?" If it's rateable, then it automatically gets the rating of the Claims Paying Ability; if it's not rateable, there is no GIC rating. One of the most obvious reasons why a contract may not be rateable is that it's issued through a separate account which does not have the backing of the general account and, therefore, would not be applicable to the Claims Paying Ability rating. There are many other reasons why it may not be rateable -- these would include contracts allowing the insurance company to make unilateral decisions that would adversely impact the contractholder.

Do we have any intention of doing additional ratings? Maybe. I would say we would probably do this more along the lines of products that are group-oriented rather than individual-oriented, but we don't really have anything on the blackboard at this point. Again, the GIC rating is still in its infancy; in fact, we only have two outstanding, but we do have a number of requests that we're working on. The Claims Paying Ability rating in itself is fairly new,

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and we'd like to get that first level established and work on the GIC rating before we spread ourselves too thinly.

MR. KISCHUK: I think a lot of the marketing people in our organizations have thought, "Well, target surplus is interesting, but it's a backroom actuarial exercise." Now we see financial strength actually moving to the front and becoming a competitive and marketing issue. We may find the marketing people in our organizations becoming a lot more interested in what we actuaries are doing in the target surplus area.

MR. ALAN GOLDBERG: This is a question I believe for Allan. Target surplus is dependent on the reserve basis for statutory, so it's statutory sensitive. When we look at ROE, we tend to look at the GAAP basis for those returns. So is the ROE denominator target surplus or some adjustment thereof?" And are changes in target surplus, year-by-year, charged or credited to the earnings numerator?

MR. AFFLECK: I think the question is, "When you're computing the ROE, what do you use in the denominator?" Basically one should use the GAAP equity plus target surplus. If you want to pursue that, there is an excellent paper by Donald R. Sondergeld in the *Transactions* in which he talks about total capital return, lays out a formula, and goes through the algebra and the logic behind it. Changes in target surplus are not reflected in the numerator. Target surplus is added to the GAAP equity in the denominator, but the numerator is only the GAAP earnings for the year.

DR. ALLAN BRENDER: Mr. Puccia, as we seem to be developing surplus factors for bonds which vary by the rating class, does S&P have any data on the difference in yields according to rating and the relationship historically to defaults that have occurred so that we could in fact get some better guidelines on setting these factors?

MR. PUCCIA: We do have some affiliated services that put out a large amount of information, but I can't honestly answer that.

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MR. AFFLECK: There are several studies that investment banking firms have done. I'm aware of four or five of those that do study the default rate for bonds of different qualities. I think the concern that people have is whether today's so-called junk bonds have gone through the type of economic experience -- recession if you will -- that is severe enough to make the default experience that has occurred in the past a reasonable assumption to use in the future. If you look at the difference in yield you can obtain on junk bonds over let's say the last five years, it far outstrips any added default risk that has occurred. One study I saw showed approximately 3.6% as the average incremental yield, and there was approximately a 1% added default risk, which shows a significant improvement in net yield if you do invest in junk bonds. The difficulty is in being willing to project that experience forward during a recessionary-type environment.

MR. PUCCIA: I believe a New York University (NYU) professor recently came out with a study showing that junk bonds' default risks are substantially more than their yields which is, of course, in stark contrast to some of the studies the investment bankers have put out, particularly Morgan Stanley and Drexel. Of course, for some reason a number of these studies seem to go along the lines of what the parties' interests are, and sometimes I wonder about their credibility.

DR. BRENDER: Mr. Affleck, where did you get this measure of one percent default risk?

MR. AFFLECK: It was in one of the studies that I was referring to. It was published by one of the investment banking firms.

MR. KIN K. GEE: I have a question for Mark. In making adjustments on a company's capital and surplus for reinsurance transactions, do you distinguish the various types of financial reinsurance and what the objectives are? I'm thinking along the lines of a company using financial reinsurance to finance its sales versus a company which experiences adverse development and makes some sort of surplus relief transaction until it can make adjustment to its margins and rates.

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MR. PUCCIA: That's a good question. Adjustments for reinsurance in our approach take on both a quantitative and a qualitative aspect; and I'd have to put the emphasis on the qualitative aspect, recognizing that some reinsurance transactions have more legitimate purposes than others. To the extent a company needs surplus relief because of some adverse development, we do recognize that, and our concern then is whether the company will be able to continue to get this reinsurance and be a viable entity in the future versus those organizations that get reinsurance for surplus relief because of large growth.

MR. MICHAEL E. MATEJA: I'd like to make a comment picking up on the point that I think you made, Rick, about being aware of the limitations of target surplus formulas and tell a little story to illustrate the point. Target surplus by its very nature is really associated with the extremes of risk, i.e., catastrophe; therefore, the results of any analysis that you do of target surplus levels will prove to be very sensitive to what you define as a catastrophe. I think you'll find that the opinions on that score differ materially within your own company, and they will differ materially from time to time.

I was involved in the development of target surplus levels for the forerunners of the GIC products back in the early 1970s when interest rates were 9%. We tried to analyze the risk with GICs and developed models that assumed there was a 1-in-10,000 chance that interest rates would get to 15% or, in the other direction, down to 3%. History has proven in seven short years that interest rates can go right through that upper level. Today, having witnessed interest rates at 15% or thereabouts and seeing them stabilize at 13%, we ask how high interest rates can go again. We've talked about levels like 20% or even 25%, and people become very incredulous. The risks at those levels of interest rates go off the scale so that if you choose 20% versus 25% you're going to get a completely different answer. When somebody can provide assurance that interest rates won't go to 20%, I'd be prepared to start talking about surplus levels at 15%.

The important point is that this kind of analysis can tell you something about how to avoid risk and whether you really want to get exposed to an interest

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rate environment at 20% should it occur. We're not a risk-taking business per se; the history of our business has been built on prudent risk taking which is achieved by risk avoidance. The old underwriting process for individual life insurance was designed to ferret out the poor risk and assure stability in that process. We really need to think in those terms as we deal with the C-3 risk, and I think that's the big challenge before us -- how can we assure a controlled kind of a risk environment for these interest-sensitive products?

MR. KISCHUK: It is hard to add to that. I think any of us who are involved in that have all been through the situation where you posit a type of catastrophic scenario such as a "superbug" C-2 risk only to have people say, "that'll never happen"; then along comes something like AIDS. We don't know what comes after that -- AIDS 2 or whatever -- but almost anything that you think of could happen, and there's a question of how much surplus you can possibly hold for all these risks that you might think up.

MR. IRWIN T. VANDERHOOF: There was some discussion and some question in connection with the studies of defaults on bonds. For anybody who's interested in this sort of catalog, I'll just run a few things out. There are two recent studies by Edward Altman, a professor at NYU Graduate School of Business; one was published. They include much of the same data -- they cover defaults on bonds which are listed by the major rating agencies from 1970 through 1984. One of these was published by Morgan Stanley; this is the easier one to read and probably the easier one to obtain. The second version was privately distributed by Altman in the Q Group for a meeting I believe in Florida. In that case you'd have to get it directly from Altman. It's not generally available or published. This study includes not only all of the bonds at all grades that defaulted during that period, but also attempts to be restricted to the below investment grade bonds which are characterized as "junk" or "high-yield." The figures are, of course, as Allan mentioned.

The criticism of this study by Drexel is that the universe of bonds that are included in the rating agency manuals understates the existing bonds by about 20%. Second, Altman's study uses fallen angels. The specific case is Penn Central which defaulted around 1970 for \$618,000,000, which screws up all the figures. If you include that as being a junk bond, there is a very high

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default number, and if you don't include it as a junk bond, then all of a sudden the numbers improve a lot.

Between 1943 and 1970, I can't find any data on the proportion of junk bonds outstanding or below investment grade bonds outstanding. Prior to that there's the Hickman Study which has horrendous figures of the bonds issued -- these are rising stars -- the bonds issued at below investment grade in 1928; 75% went into default during the 1930s.

When you talk about how well these bonds are able to withstand a real economic upheaval, most of the below grade bonds, the rising stars (and I say the rising stars because Drexel will tell you about how these are rising stars, not fallen angels), about 50%, went into default during a period of severe economic problems. The worst problem in saying how much of a default risk we have, or how you relate the additional return you get on junk bonds to the probability of default, is it's been a relatively calm economic environment. Prior to that there was a very turbulent economic environment. I'm not sure that I trust anybody to know what the next 10 years is going to be.

MR. ALBERT K. CHRISTIANS: Mr. Affleck showed an example demonstrating a return on equity with and without target surplus being held, and the differences seemed relatively palatable. You had a decline of 2, 3, 4 or 5 points of equity by holding a little bit of additional surplus. When you convert that to a marginal return on the surplus held, I'm sure it looks pretty awful. I'm sure it looks like something you'd have a real hard time convincing a financially-oriented management that it should hold. I wonder if you have done any analysis of surplus that related to terms that management is interested in like "What do I get back for what I tie up?" Is there any way to convert your analysis to say, "Well yes, your return on this surplus is very low, but you get this other benefit that's worth so much."

MR. AFFLECK: I'm not sure if this specifically responds to your question, but in the examples that we showed, in effect you are securing a higher return on the product and a low net investment earnings rate after tax on the amount of surplus committed to support the product. Managements that do not include that

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additional surplus just don't appreciate that they are really dragging their overall return down.

MR. CHRISTIANS: Then why should they hold the surplus at all?

MR. AFFLECK: In spite of Mike's comment, that "we're not in the risk business," we are, at least to some degree, in the risk business, and you do need that surplus for reasons of stability.

MR. CHRISTIANS: My problem is that you have presumed a given required level of surplus for reasons of stability, and I'm looking at the problem more from the point of view of convincing management that this is the right level of surplus. In particular, that it is right in terms of a return on the surplus, or in terms of some payback for tying up funds.

MR. AFFLECK: One analogy you might use is to go to a different industry, like the banking industry, where there are requirements of capital over and above whatever, say, a deposit account is worth. There is a specific percentage that the banking industry must maintain as surplus for financial stability. You must be able to demonstrate to management that a certain amount of surplus is required because we do have, even forgetting about catastrophes, ups and downs in mortality, expense, and investment experience. Without that surplus, a company is in danger of not being a viable entity. It's really the price that you pay to be in the life insurance business. You have to commit a certain amount of surplus to the entity, and that does drag down the overall return you can obtain.

MR. KISCHUK: I think what we're saying here is that surplus is a resource, and it does have a cost. To the extent you use more of it, you are increasing the cost of your products and if you pass that cost through, increasing the price. Allan commented earlier that we may be making a transition from more of a price-driven market to a market that starts to care more about the financial strength of the company that is issuing various promises through its products. To the extent that's true, that tradeoff is going to become more important to management, and that might be something that you would want to raise with your management.

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MR. ABRAHAM HAZELCORN: Last week there was proposed legislation by the Life Insurance Council of New York supported by the New York State Insurance Department which was not submitted. The superintendent was a guest in the discussion. It happened to be a quid pro quo situation -- one item was limiting the investments in high yield investments, and the other was improving, as part of the same bill, the investments in hedging instruments. Two presidents of companies that have a very high degree of investments in unrated bonds led the discussion and won a decision not to submit the legislation. They couched their arguments in terms of greater diversification by not restricting junk bond investments whereas the memorandum supporting the bills spoke about increasing diversification by limiting junk bond investments. I'd like to hear some discussion on that aspect of unrated bonds.

MR. PUCCIA: I'd like to respond to that. It's an issue that we have been facing. I think from our perspective there are a few issues out there that could really come up to bite the life insurance industry and cause problems. Two that probably head the list are asset/liability matching, or the lack thereof, and investment credit quality. We've been discussing it with companies, and also debating it internally for quite some time. It's a matter of how you're hedging your bets.

I'd like to focus some of the comments on the interest-sensitive products. As an excellent example, take the GIC product. I have not yet met an organization that does not take one of those two risks in selling its GIC product. The organizations is either taking a credit arbitrage or it is taking a duration matching arbitrage. There is no organization that's perfectly matched in terms of duration, and there is no organization that's perfectly matched on credit risk. Historically, more attention has been focused on the credit side because it's easy to look at and understand. If organization A is buying all BB bonds or below versus organization B that's selling a GIC backed by investment grade type ratings you feel that organization B has less risk than organization A. But that's only one piece of the puzzle, the duration mismatch being in many respects equally as distressing. In fact, an interesting argument that I've heard is that with the credit risk, you're making your bet on a thousand risks, while when you're taking the duration mismatch, you're taking one bet: interest rates will go up or interest rates will go down. There are some

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interesting discussions that we've taken into consideration, and the bottom line is that S&P is willing to consider both types of risks. It's a matter of a management pointing out to us exactly how it has mitigated these risks. What are the potential and reasonable worst case scenarios; what are the potential losses that could develop; and how can a management be comfortable with its organization's capacity to meet that default risk? Likewise, when looking at duration, for those organizations that consciously recognize that they're taking a mismatch, management will try to quantify what situations could develop to provide a capital need and discuss with us whether the organization has the capital or some other instrument that will mitigate that risk.

MR. R. STEPHEN RADCLIFFE: Let me preface my question by saying that at American United we have been very carefully reviewing the Best's surplus formula because, as most of you know, that's an integral part of an A+ rating, and we're worried about its inconsistency with our own target surplus formula which, just out of coincidence, is very similar to the Lincoln National formula. I have two questions -- first for Mark, how many insurance companies have you made ratings for?

MR. PUCCIA: I think the number that we have outstanding is 15 for the life insurance Claims Paying Ability rating, plus a number of debt ratings.

MR. RADCLIFFE: Are those published?

MR. PUCCIA: Yes, the ratings are published. I could give anyone interested a list of the published ratings.

MR. PUCCIA: A caveat to that is the fact that we have investigated substantially more organizations. It's a voluntary process; and as part of that process, at the end of the rating decision, a management then has the right to say "It's not comfortable with that rating," for whatever reason and can withdraw the request and we cannot disclose them.

MR. RADCLIFFE: My other question is for either Rick or Allan. Would you care to venture a guess as to how Best's might react to a new rating

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service from an outside firm using a target surplus formula that is more modern, and I would also say more appropriate, than the Best's formula?

MR. KISCHUK: Well, I think if you look at bond ratings, for example, there are several organizations that rate bonds. I think in the insurance area we've historically had one dominant firm in that area, but you can certainly see that competition has set in, and there are a number of alternative rating services. In Lincoln National's case, we sought ratings for our own debt offerings from three different rating agencies, and drawing an analogy, it makes sense that we may see the same type of thing going on in the life insurance industry where life insurance companies may end up seeking a company rating from two or three different rating agencies.

MR. GEOFFREY L. KISCHUK: I'd like to shift the focus over to the stockholders whose best interests the surplus levels have to ultimately serve. The question is "How should the interests of the stockholders be reflected in target surplus calculations?" Or perhaps put a different way, "How does a company find stockholders who view risk and surplus the way we do?"

MR. AFFLECK: I'm not sure I am particularly well qualified to address that from the stockholders' viewpoint. Can anyone else on the panel respond?

MR. R. KISCHUK: I think all of our shareholders are actuaries so we don't have that problem!

MR. PUCCIA: I'm not sure if I could answer that either. I guess the only thing that I could say is there are times when stockholders' interests can be different from policyholders' interests and at S&P, we try to recognize them.

MR. R. KISCHUK: I think it's a tradeoff that you have to manage. Certainly the policyholder is going to want maximum security. The shareholders will want a limit on the amount of capital that you can invest in a given block of business, so you do have conflicting interests. I think that job falls to management to try to make those tradeoffs. In terms of the way actuaries view things, I think it's part of our job to figure out how policyholders and shareholders view things and then try to help management make those tradeoffs.

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MR. G. KISCHUK: Before Allan was talking about the difference in the number of mutual versus stock companies that reflect surplus in pricing, and the implications seem to be that the small number of stock companies that are doing that is somehow negative or bad. I was wondering if that's a recognition on the part of the stock company managements that they do have a different constituency.

MR. AFFLECK: I believe one of the issues is the size of company, and I suspect if you did that same survey by size, you would find that the percentages would not be that different among the large stock companies and the large mutuals. Perhaps the reason for the low percentage of stock companies in the survey is the size of company involved. Perhaps it is ironic, but the mutual companies who have a constrained source of surplus, which is totally internal, have had to pay more attention to managing that surplus because it is a limited quantity for them, and they have to generate it themselves. The stock companies do have the option of going into the capital markets and raising additional surplus. I suspect this is a size of company issue to a considerable extent, but at least perhaps for some stock companies, they have not been as rigorous in managing their surplus.

DR. BRENDER: Allan made a comment with respect to banks which I think is pertinent. They do have requirements in terms of capital and surplus; and insurance companies, generally speaking don't, particularly with respect to new money products. Wisconsin is one exception I know of in the United States. Insurance companies are taking on most of the same risks that the other financial institutions are taking on, and in addition, they are offering mortality guarantees. When considering what type of surplus is necessary, I'd suggest we should start paying some attention to what is required of these other institutions. Their reserving standards are probably at least as onerous as the ones that are placed on the insurance industry. My understanding is the Federal Reserve Board raised its surplus requirements the last couple of years in regard to all the bank failures we've seen. I think what the other institutions do is quite relevant, and when you consider that our products have additional risks because we're guaranteeing things like mortality, we should start basing our answer to the question "How much surplus is required?" partly on what the other institutions are doing. There's some wisdom there.

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MR. AFFLECK: I noticed somewhere in the last six months that there is a proposal in the banking industry to vary those surplus requirements or capital requirements which are now uniform for all institutions. The requirements are currently X percent of assets or liabilities. It is proposed to make that percentage vary by the quality of loan that the financial institution is making, and that relates back to the comments about the C-1 target surplus risk. That kind of approach is being considered by the banking industry.

MR. R. KISCHUK: I think it's appropriate to take into account differences in regulation. In the banking industry, you have insurance by the FDIC, and until fairly recently the interest rates that banks could pay on their various products were regulated. I think one of the things that has pushed the banking regulators toward this is the deregulation of interest rates, because that put the bank management in the position where it could be as aggressive as possible in crediting interest rates and making loans, and it was sort of a "heads I win, tails you lose" situation. If they came out ahead, the shareholders benefited, if they lost, the depositors came out okay, and the FDIC lost. I think you have some of those analogies in the insurance industry, but as Allan pointed out recently I think people came to realize with the Baldwin United situation that the state guarantee funds are not equivalent to the FDIC. The state guarantee funds can't print money to bail out insurance companies, and so now we have a lot more attention from producers. What we may have going on in the insurance industry is more of a free market approach where managements, because of activities of outside rating agencies and producers, may be pressured into paying more attention to target surplus levels.

MR. BRUCE E. BOOKER: I have a comment and a question. The comment is on Allan's surplus and pricing survey. When I was responding to your firm's survey, I was thinking that you were asking, "Do you price looking for 10% surplus contribution at 20 years?" or something like that. I would also have said "no" if I had interpreted it correctly. I suspect some of the people that said "yes" would have said "no" if they interpreted it differently.

Allan mentioned that many companies are holding statutory UL reserves using a 6% interest rate. Our conversations with most state regulators are

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that you can't do that unless you're guaranteeing 6% in the policy. Are you seeing something different from that?

MR. AFFLECK: *I'm not sure I can answer that.*

MR. DENNIS L. STANLEY: That's an unanswered question. It can be raised because we still have linkage in the standard nonforfeiture laws since in the aggregate your reserves need to be at least as high as they would be if you based them upon your nonforfeiture interest rate. With universal life, what is the nonforfeiture interest rate? Many regulators look toward the guarantee on the fund as the nonforfeiture interest rate. On that basis, that drives you toward using a 4 or 4.5% rate. I'm not aware of any universal life products with a 6% interest guarantee.

MR. JAMES J. AVERY, JR.: Not having worked for a stock company, I can't comment why so many stock companies have not used target surplus or required surplus in their pricing. Mutual companies, at least ourselves, are striving more towards having equity among classes of policyholders, and therefore, allocating all costs to a separate class is one reason why you might have your target surplus allocated in the pricing process and even to differentiate between different risks within different product lines.

There was a question raised earlier as to how you might convince senior management to accept the cost of target surplus in the pricing. Being a mutual company today, our target surplus earns about 3%, so that certainly drags down our earnings because of the equity tax that we pay. The approach we've taken is more in the strategic planning processes to run various scenarios and to show management under which scenarios it might start to lose control of the organization. For a mutual company, as its surplus starts to get lower and it runs out of means to raise surplus, it will start to have outside regulators, rating agencies, and its distribution force attack the credibility of the company and the ability to meet its future obligations, so it's more a question of control for management. That's the approach we've taken to convince management to help us establish target levels of surplus.

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MR. JAMES B. DOHERTY: I have two questions for Mark. When you go into a company to rate it, do you have a methodology for determining what degree of asset/liability mismatching is proper? Also, how do you reflect in your target surplus the degree of asset/liability mismatching?

MR. PUCCIA: The answer to the first question is no. In fact, we don't have preset numbers for any of the ratios we have. We do have some ranges in mind. The first thing we do is get the underlying assumptions down. What does this company mean by duration? How does it define duration? Definitions vary all over the board. We ask management, "What interest rate scenarios would create deficits of how much?" Then we ask, "Where is your source of comfort to offset that potential liability?" The approach that we take is more along the lines of looking at the company and the durations and understanding the methodologies. If we don't agree with the methodologies, we'll go back and do calculations on our own to determine results we feel are more realistic. We haven't yet done the full sensitivity analysis that Allan has done. It includes more of a qualitative approach.

In regard to the second question, that doesn't enter directly into our process. We use a more simplistic approach by determining under certain scenarios what would be the potential loss under a mismatch and what would an organization look like if that loss occurred. We approach it in that respect and then relate it back to Operating Leverage.

MR. GERALD A. FRYER: I want to focus my question on the word "target." We've heard some pretty high numbers as to the proportion of companies using target surplus in pricing. I wondered how this translates into actual practice when you look at the year by year financial statements. Are most companies holding more or less; are they earmarking it, saying exactly what the target surplus is? A particular example is if you had an aggressive company that saw an opportunity, how likely would it be to hold on to the target surplus as opposed to saying, "Well the reserves are high enough anyway, and if we do have a catastrophe, the target surplus won't hold that either, so why not just violate it."

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MR. AFFLECK: I think the range of practices from one company to another is very broad. Target surplus is a target, and I think the companies that are using pricing techniques based on target surplus and ROEs also view that as a target, particularly in the last year or so with the decline in interest rates and margins coming down. I suspect that not many companies are achieving the target spread and target ROEs that they are aiming for on universal life insurance. I think companies also view the target surplus formula as an objective over a period of time and do not expect to be at the target each and every year. Sometimes they will have more surplus than a strict interpretation of their target surplus formula would suggest, and at other times they will have less. This could be the result, as you point out, of opportunities that are available or unwanted, losses incurred because the group business is in the down part of the cycle. So these are targets that companies try to hit over a period of years, but at any given point in time, they are not going to be exactly on the mark.

MR. R. KISCHUK: I think too there's the concept of so-called vitality surplus, and companies vary in what they do there. I think, for example, in some holding company organizations the vitality surplus tends to be held up at the holding company level. In mutual company organizations, that vitality surplus would tend to be held in the company itself, and that can impact what you target.

MR. MATEJA: I feel compelled to set the record straight on my position regarding insurance companies as risk takers. I do believe that we take risks, and we could not be in business if we didn't. We are, in fact, a special kind of risk manager. My position really is that there's a difference between prudent risk taking and what I would call reckless risk taking. There's a material difference between the surplus that you would hold depending on which end of the risk taking spectrum you are at. Over time our business has established pretty well defined standards for the risks that we know a lot about.

With C-1 risk, for instance, there's a big difference in how Standard & Poor's or any other rating agency would view a company that has a portfolio of investment grade bonds versus one of junk bonds, or whether they're all in

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one industry or whether they're diversified. So, we know how to deal with the C-1 risk pretty well. Over time we've also learned how to deal with C-2 risk. For example, we use medical underwriting in individual insurance, the actively at work rules in group insurance, and pre-existing conditions exclusions for a range of other products. They're all designed to control the risk so that we don't get beat up on the C-2 side. The issue really is one of "What constitutes prudent risk taking in the C-3 area?" I think that's still an open question and probably constitutes a challenge to everybody in attendance.

MR. R. KISCHUK: Mike, I seem to remember a presentation you gave at one time that talked about betting your company. The kind of risks we're talking about here are risks where you're literally betting the company that a certain scenario won't occur. I think that may be one way to distinguish this point. While we're in the business of taking risks, you really should know if you're betting the company on particular scenarios and what those scenarios are. I think that ties into some of Allan's comments and Mark's comments as well.

MR. EASON: I'd like to elaborate on the general direction Mike's comments just took us with a couple of anecdotes about universal life insurance in general. Some of you may know that I worked on a couple of editions of a book on universal life. It started with a description of the early products and went through some of the marketing aspects and some of the pricing background from the early 1980s. I was asked to do a third edition and began the process, and about six months into it I gave up. Universal life has become such a diversified product category that it is almost impossible to try to characterize it in any general way.

Frankly, I have become quite concerned with the C-3 discussions in that they have spoken generally as if universal life was an interest-sensitive product. That universal life was subject to a somehow ominous C-3 risk, was somehow a concern that had to be dealt with. Now we've heard that even Standard and Poor's takes into apparently significant account what is a qualitatively analyzed mismatch in evaluating the quality of companies. I submit for your consideration and further development by the profession that universal life ranges over an extreme variety of products now, all the way from tax gimmicks

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with single premium types of coverages which must be interest-sensitive in the extreme, to companies such as my own which believe that universal life is nothing more than an improved form of whole life insurance that allows my company to reduce our expenses and provide a product that more flexibly meets changing needs of our customers. It's a tremendous challenge to evaluate the liability duration of products that vary so greatly. LIMRA just published this past year a formula that might be used to determine what persistency numbers are. My company will be up to \$100 million of new premium this year, and I imagine in another two or three years we'll have some idea of the sensitivity of our premium flow and partial cash surrenders, and loans if we start to have some, to changes in interest rates. The fact is that you cannot in my view determine with any precision what the liability duration is of universal life insurance generically. It will vary tremendously from company to company. We do have our work cut out for us, and I thought I would put these remarks into the *Record* and see if perhaps one of the panelists would like to elaborate on how he intends to approach this rather difficult area.

MR. PUCCIA: We fully believe that with a number of the interest-sensitive products on the market today it is impossible to come up with a clearly defined liability duration, and that's something that we recognize. With the universal life product, the thing that we do expect managements to do, however, is at least consider what is the range of duration of that product. I think to simply go in cold and say we're not sure what it is, we can't define it, will leave S&P with an opinion that management really can't react then to those durations. I wholly concur with the fact that product characteristics which differ by company can widely vary the duration of the universal life product. What are the surrender charges and how are they structured relative to the product; what is the crediting strategy used with the product; how do you motivate your sales force to keep the product's persistency? Nobody's got adequate persistency statistics yet because the product is too new; in fact, everybody seems to be changing it -- they've all come out with UL2s, UL3s, UL4s, 5s. I've seen them up to double digits. In terms of the approach that we take, we want management to take us through the process of thought that it's going through with this liability it has got on its books, what are the liability's characteristics, what kind of assets is management using to support that product, and how can management be comfortable that interest rate

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fluctuations in the asset portfolio will be balanced with the liability. How can you properly balance those two and expect a perfect match? You can't nail down precisely what that liability duration is, but I think the thought process is sometimes almost as important.

MR. AFFLECK: I will just confirm what you are saying. You were describing the diverse product going from heavy pour-ins to fixed premiums. Also consider the marketing distribution of universal life. You can start with traditional agency forces. There are also stock brokers selling the product, insurance brokers, S&Ls, payroll deduction -- all of those different distribution systems are another factor that affects persistency. It is just like investments -- when you try to come in and do a projection of a company's future operations, you need to look at its particular investment portfolio, the instruments the company has, the durations of those instruments, the quality, etc. I think you need to do the same on universal life. You cannot pick a standard set of assumptions, you really must understand the product and the distribution system and tailor your assumptions to that particular company's circumstances. I agree completely.

MR. CHRISTIANS: With respect to asset matching, are there any different considerations to be included in the process of asset and surplus matching as opposed to asset and liability matching? Do you consider the surplus to be like an additional liability for the purpose of that asset matching, or would you, for example, try to make surplus assets a little more liquid so that, when excess surplus appeared, it could be taken out of the line of business? Or are there any other considerations?

MR. AFFLECK: I think maybe you need to divide surplus up into a couple of categories. If we look at the target surplus which, for example, might remain in the line of business, some companies would adopt a theory that that amount of surplus within that line should follow the investment strategy for that line -- others might not even go that far. The surplus that would be in the corporate segment often has assets that none of the lines of business want, so you find the head office and other kinds of investments that have unpredictable returns (e.g., investment real estate) associated with them. I think you get quite a different kind of asset and surplus matching if you are

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looking at that part of surplus, as opposed to the target surplus associated with the product itself.

MR. PUCCIA: I've been fortunate in my position to do analysis on some of the European insurance companies, and I've noticed that in some countries there is a tendency to use more equity securities in their portfolio than fixed income securities. By equity, I mean common stock and real estate. I think the discussions we've had have been very illuminating as these companies have shown substantial strength developed due to the appreciation of their equity securities over an extended period of time that has exceeded fixed income securities' appreciation. That's a logic that we can accept to the extent that there is substantial strength in the organization to support its liabilities using Allan's approach of segmenting the surplus. If there's a base level that will cover the rainy days, then you can go out and try a few more risks. We recognize that there are some advantages outside of the target surplus discussions we had today, such as simple yield and returns that equity securities will provide. Of course, you start talking about entirely different types of matching characteristics, what is the duration of an equity security -- I've heard all sorts of notions on that. You're talking about taking a gamble, and we're more comfortable with that gamble if the organization has enough strengths to support the additional risks.

