

**RECORD OF SOCIETY OF ACTUARIES
1986 VOL. 12 NO. 2**

PRICING IN A RETURN ON EQUITY ENVIRONMENT

Moderator: DANIEL J. MCCARTHY
Panelist: ARNOLD A. DICKE
Recorder: ARTHUR V. ANDERSON

In a corporate environment with a stated return on equity objective, how does this objective interface with:

- o Generally Accepted Accounting Principles profit
- o Statutory profit per unit issued
- o Breakeven year
- o Premium or revenue growth
- o Market share
- o Cash flow

MR. DANIEL J. MCCARTHY: The subject of "Pricing in a Return on Equity Environment" forces us to bring together an element of the actuarial pricing discipline, which has usually been called the "cell level," with the problem of measuring business performance of a cell within a company. This is a useful cross point and represents a significant direction in actuarial pricing and profit measurement theory. As is often the case during the relatively early stages in the evolution of a concept, return on equity pricing and profit measurement have generated a great deal of interest and a fair amount of thinking on the part of actuaries who are interested in these concepts. There has been rather less contribution to the literature at this stage and a down-right reluctance on the part of many people to stand up and talk about it, probably for fear of exposing the as yet undeveloped state of some of the thinking.

PANEL DISCUSSION

Let me offer a definition of return on equity at the outset. I will give the definition in a stock company environment first, with an alternate perspective for mutuals. We're talking about Return on Equity (ROE). For "equity," I suggest that for a public company there is no substitute for the GAAP book value of that company as the definition of equity. That is the definition that the capital markets will use. It's one that public performance measures will tend to show. For any other company, and you might think of this particularly for mutuals, I suggest that return is any comparable measure that attempts to relate income to the risks assumed and services performed. The E in ROE for a mutual company does not need to be defined precisely in a GAAP environment. It needs to have some of the same concepts as GAAP, but there are a lot of peculiarities in GAAP. Some would say that the peculiarities of GAAP were foisted on the insurance industry by the accounting profession or others. It seems to me that somebody not automatically subject to the GAAP rules need not follow these peculiarities.

The "return" is after-tax income on a basis consistent with the equity definition. I would stress here the "after tax"; that again has particular implications for a mutual company.

Measures of ROE are widely published for publicly held companies in all kinds of compilations; in The Fortune 500s, in compilations of how banks do from quarter to quarter, and so forth. Interesting things happen with these measures between industry types. On the assumption that a company needs to look at itself in relation to what the industry can achieve or what the industrial classification can achieve as opposed to all companies, it's worth looking at some of these divisions. Obviously one of the ways to increase ROE is to reduce equity. One way a lot of smoke-stack companies have done that is by losing money. Clearly, if you lose a lot of money and then begin to have some good years, your ROE will be fantastic. For example, in 1984 Chrysler's ROE was the second highest in the Fortune 500, at 72%; there was a lot of R and not very much E. By 1985, despite the fact that they had a better income year than 1984, the ROE had gone down to 39% because there was simply more equity in the company as a result of retained earnings. If you look at Fortune 500 type compilations, you find for 1984 a median measure of about 13% and in 1985 that was down to 11%. If you look at banks, service industries and other groupings

PRICING IN A RETURN ON EQUITY ENVIRONMENT

which contain insurance companies or are comparable to insurance companies, you find medians of about 8 to 10%. In any event, there's a fair amount published on this.

However, the number of insurance companies that are part of the larger financial service groupings that make up these listings is relatively small. As a result, it is difficult to generate good competitive measures of ROE for sizeable numbers of companies in the insurance industry.

I said before that there is not too much literature on our subject. However, I would recommend one paper that gives an excellent introduction to some of the theory, mathematics, and concepts underlying this topic. That is Don Sondergeld's paper, *Profitability as Return on Total Capital*, in Volume 34 of the *Transactions*.

The number of people who are examining this topic from a mutual company standpoint is of interest for two reasons: 1) mutual companies are not obliged to use GAAP, and 2) for mutual companies there are issues about whether the appropriate returns are before policyholder dividends, after policyholder dividends, or after some portion but not all of the policyholder dividends. There's also a different interplay with the tax law. This suggests that for a mutual company, whatever standard might be adopted, whatever benchmark you might seek to achieve, it would be different than for a stock company.

MR. ARNOLD A. DICKE: I'm going to handle this topic from the point of view of a mutual company.

1. What does return on equity mean in a mutual company environment?

"Return" and "equity" are accounting concepts and have meaning only in relation to a defined accounting system. The appropriate accounting system is one which is maintained on behalf of the owners of the enterprise. "Equity" measures the value of the ownership interest and "return" the effectiveness of the enterprise. Return on equity then becomes a measure of relative value -- the owner wants to have his equity utilized to produce the maximum ROE.

PANEL DISCUSSION

In a mutual company, these concepts are hard to define because ownership interests themselves are not clearly defined. To apply the ROE concept to mutuals, one must take a position on the nature of a mutual organization. Two such positions have been put forth in the actuarial literature,

- (A) the "revolving fund" concept; and
- (B) the "permanent surplus" concept.

According to the revolving fund concept, the mutual organization can be decomposed into a set of funds belonging to the various generations of policyholders. The funds belonging to mature generations have accumulated more assets than are required to support the corresponding liabilities. New generations borrow this surplus from the mature generations, gradually repaying the loan with interest. Notice that this loan is of a peculiar sort, since no liability is set up on the books of the borrowers. Statutory surplus is actually transferred. In effect, the loan is a surplus note.

The revolving fund concept ties in well with asset share pricing. The surplus loan and repayment underlie the equations of the asset share model. Usually, this takes the form of negative interest generated by lines which have statutory liabilities which exceed accumulated assets.

"Equity" in the revolving fund environment would seem to be associated with the fund value -- i.e., historical statutory surplus -- and the owners would be the policyholders of those blocks of business which have developed positive surplus. The only definable return on equity would be the rate at which intergenerational loans are made. Often this is taken to be the after-tax investment earnings rate, probably computed on a portfolio basis. Such a measure is not very useful for monitoring the performance of management on a portfolio basis.

A measure that is useful in such an environment is the pay-back period. If current investment rates are higher than the portfolio rate, the older generations may be subsidizing the new generations until the break-even year. Superior management will result in earlier payback and thus ultimately higher return on the equity which has been loaned. Moreover, the need to subsidize

PRICING IN A RETURN ON EQUITY ENVIRONMENT

new generations means increased growth can be costly to the older generations unless the growth results in operating efficiencies which benefit the older generations sufficiently.

The permanent surplus concept of mutuality leads to a different pricing theory -- one more compatible with the notion of return on equity. This concept assumes that each policyholder, in the course of his or her relationship with the mutual organization, is required to make a net non-refundable contribution to permanent surplus. This permanent surplus fund is not owned directly as is the contributed capital of a stock company. A limited form of ownership can be assigned, if desired, on some basis to current; or current and past; or even current, past and future policyholders. Normally, this is only done if demutualization is under consideration, or if a closed block is to be walled off or another such unusual procedure is to be carried out. Any such assignment is essentially arbitrary. In point of fact, the assignment of ownership makes no practical difference in the operation of the company on an ongoing basis.

Although it leaves the question of ownership unsettled, the permanent surplus concept nevertheless focuses clearly on a critical resource, for the preservation of which management may be held accountable. This resource is statutory surplus.

Maintenance of statutory surplus is even more important for mutual companies than for stock companies. This is because only additions to equity, and not debt, increase statutory surplus. A stock company which is otherwise healthy may obtain additional equity in the capital markets if surplus grows short. For a mutual, however, surplus replenishment is a slow, painstaking process of buildup, taking decades to accomplish. Moreover, while the depletion of surplus through rapid growth is self-correcting if the products are correctly priced (and if growth is subsequently restricted), an underpriced product line may represent slow death. Since statutory insolvency impacts all generations of policyholders, and since they all share an interest in guarding against it, maintenance of statutory surplus is a fundamental goal of the mutual organization. It is in monitoring the degree to which this goal is attained that return on equity is useful to mutual organizations.

PANEL DISCUSSION

2. What pricing model is appropriate for a mutual company concerned with surplus maintenance?

The book-profit pricing model developed by Jim Anderson and extended to the mutual context by Hank Ramsey and others is the appropriate tool for assuring that new products support necessary levels of surplus. First, a total reserve is defined for each policy, consisting of the statutory reserve plus any so-called required surplus that the company determines must be held for the C1, C2 and C3 risks. (Note that the C3 risk can be covered only to a limited extent by contingency reserves; risk-reduction activity such as hedging and asset-liability matchings are required as well.)

This total reserve must be backed by a corresponding amount of assets -- called required assets by Ramsey. These assets may be actual investment instruments or cash. Whether the stock of subsidiaries may be utilized is a question which is currently being debated among actuaries and regulators. Some see this practice as contributing to solvency problems faced by certain insurers recently. Others would analyze subsidiary stock in terms of risk and yield as any other investment. My tendency would be to hold such stock in a corporate line as a separate business unit and not use it as part of required assets.

In the pricing process, the amount of required assets is determined for each future policy year and compared to the assets made available when statutory cash flow for the year is added to beginning-of-year assets. Any shortfall is supplied from the permanent surplus fund and represents an investment of that surplus. Any excess -- that is, any book profit which develops -- is sent back to surplus and amortizes the investment.

The internal rate of return of the series of book profits thus represents a return on investment (ROI) for the permanent surplus fund.

The return on investment may be required to exceed some predetermined rate called a hurdle rate. Setting this hurdle rate requires an understanding of the goals of the mutual company, particularly as regards the desired rate of growth and its impact on intergenerational equity. In the long-run, a mutual company's growth rate may not exceed the hurdle rate used in pricing its

PRICING IN A RETURN ON EQUITY ENVIRONMENT

products. Jim Anderson calls this Koss's theorem. At Provident Mutual, this has been adopted as one of two goals of our capital strategic plan.

This close connection between growth rate and the return on investment required of products allows the actuary to provide explicitly for an elusive goal of mutuals, intergenerational equity.

Higher growth can only be achieved through higher levels of retained surplus thus lower current dividends. The book-profit mechanism can be used to assure that the burden of growth is distributed fairly among generations.

This may be accomplished through the development of a dividend scale which is based on ROI and requires a consistent return from all generations. While this approach to intergenerational equity is not unique, it is less arbitrary and more explainable than most methods currently in use. The book profit pricing model thus helps mutual organizations that operate on the permanent surplus basis to allocate the burden of maintaining that surplus in an equitable manner.

3. How is the hurdle rate set?

We have discussed the strategic consideration that goes into choosing a hurdle rate, namely, that it is a constraint on the long-term growth rate. But the choice of such a growth rate is not itself arbitrary since it affects current policyholders through dividends. It is helpful to consider what rates of return are reasonable at any given time as a practical guide to what hurdle rate may be required.

Rates of return on participating policies in a mutual company are not directly comparable to ROI numbers from stock companies. The "return" recorded by a mutual is actually the contribution to retained earnings: in other words, it is comparable to stock company return net of stockholder dividends. Such net returns vary greatly by industry sector and by company. Stockholders are often willing to sacrifice dividend yield in favor of potential growth in stock value. Indeed, stockholders benefit directly from retained earnings insofar as the stock price reflects them. This is not true for mutual policyholders --

PANEL DISCUSSION

they have no ability to obtain the increased value of surplus for themselves. Thus, for several reasons, setting the hurdle rate by reference to stock company return on equity is perilous at best.

A second consideration in setting the hurdle rate is the need for stability over a period of months or years. Products are normally priced with the expectation that no changes (apart from reflection of investment and other experience) will occur over a two-to-three-year period. Dividends usually must stay in place for a full year, and the administrative areas appreciate 2 or 3 year intervals in scale changes. Thus, the hurdle rate should be chosen so that only major cyclical changes need be reflected.

On the other hand, these cyclical changes must be reflected when they are of the magnitude of the recent interest rate plunge. Interest sensitive products such as single premium deferred annuities quickly lost their ability to hold the margins that provided the high ROI's available in 1984 when interest rates suffered their historic decrease. The hurdle rate must be able to reflect such change if management is expected to take it seriously.

Finally, a fourth consideration relating to hurdle rates and ROI's is that they are after-tax numbers. It is instructive to convert a typical ROI back to a pre-tax number. To do this, a mutual must know its marginal tax rates. These marginal rates vary by company and should be calculated in the manner prescribed by John Fraser years ago. Of course, the current tax formula should be used, with appropriate variables. Most mutuals (and their stock subsidiaries) will have marginal rates on the elements of gain from operations around 37 percent. (Various elements do, however, have slightly different rates.) The equity tax marginal rate is harder to estimate due to the indefinite nature of the law. However, a 3% rate is commonly used. On this basis, a 10% after-tax return becomes:

$$(10\% + 3\%)/(1 - .37) = 20.6\% \text{ pre-tax,}$$

while a 5% return becomes

$$(5\% + 3\%)/(1 - .37) = 12.7\%$$

PRICING IN A RETURN ON EQUITY ENVIRONMENT

Demanding a 10% ROI is asking a great deal.

Putting these four considerations together, it seems to me that the hurdle rate may best be set by defining its relationship to the average after-tax long term investment earnings rate earned by the company over a recent stable period. This is not to say the two rates should be equal. The hurdle rate may be some number of percentage points above the investment earnings rate since healthy enterprises tend to grow at rates that exceed current interest rates. However, no one rule for setting the hurdle rate can be stated. Each company must make its own determination.

4. What implications does this approach to surplus have for the management of a mutual company?

In adopting the view that surplus is a critical resource whose maintenance must be assured, a mutual company has made an important strategic statement. At Provident Mutual, we have formalized this statement into a Capital Strategic Plan. This plan has two "Goals," each with several "Strategies" designed to achieve it.

The first goal is the "Surplus Maintenance Goal."

Sufficient surplus will be maintained at all times to provide for fluctuations in the risk elements of the business. The amount of such "required surplus" will be determined by a formula set by the Chief Actuary with input from the Business Units.

Two strategies were adopted in support of this goal.

1. **Pricing Strategy:** Products will be priced, and dividend scales set, so that each line of business achieves a minimum rate of return on invested surplus. (Obviously, this is a restatement of the ROI pricing approach.)
2. **Monitoring Strategy:** A management financial statement will be developed in order to reflect surplus invested on behalf of each line of business and current return thereon.

PANEL DISCUSSION

Developing this management statement was a major project, which is still underway.

The second goal was developed when it was recognized that only surplus that was assigned to lines of business in the form of "required surplus" would earn an ROI higher than the hurdle rate. The remaining statutory surplus, called variously "free surplus" or "sterile surplus" or "vitality surplus," depending on the context in which it is being discussed, will grow only at the after-tax investment income rate associated with its assets. For many mutuals, this rate is actually negative when equity tax is considered. Responsible management of a mutual company requires that this surplus not be left to waste away, but rather be utilized for growth or diversification in businesses which can produce reasonable returns, or else returned to the policyholders. Such thinking led us to adopt a Full Deployment Goal.

At least X percent of statutory surplus plus Mandatory Securities Valuation Reserve (MSVR) should be deployed as "required surplus" for the various lines of business; i.e., "free surplus" should represent no more than $(100 - X)\%$ of total statutory surplus plus MSVR.

The methods of attaining this goal were seen to be these:

1. Dividend Increase Strategy: Formulate a new dividend scale to combat replacements and make new products competitive.
2. Investment Redeployment Strategy: Replace current investments with investments having a higher after-tax return when surplus tax is considered. Normally, a capital loss is sustained due to such redeployment.
3. Business Expansion Strategy: Use free surplus to expand business in directions set forth in the strategic plan.

Each of these strategies needs to be analyzed as to the effect on current policyholders as well as the effect on long-term corporate plans. While a dividend increase is clearly most preferable to short-term policyholders, the

PRICING IN A RETURN ON EQUITY ENVIRONMENT

payout would inevitably be quite slow, and a large amount of free surplus would remain invested at a low after-tax rate of return such as 2%. Over the long-run, higher dividends may be paid if one of the sheltering strategies -- investment redeployment or business expansion is used. Business expansion opportunities could include increased sales of non-par products, acquisitions (either of insurance or non-insurance companies), reinsurance arrangements or financial guarantees. Note that increased sales of par products is actually the growth of the base business that we considered when choosing the hurdle rate.

In assessing the value of business expansion and investment redeployment opportunities, return on investment is one key criterion. Normally, these opportunities can return a rate higher than the hurdle rate. Fit with strategic marketing objectives is clearly of major significance as well. Additionally, once a high percentage of surplus is deployed, there has to be careful consideration of payback schedules. Although other criteria may apply, ROI pricing theory can nevertheless be used for a variety of business decisions, even those not involved with life insurance. In determining the amount of investment, "required surplus" is assigned to anything risky, even if (as for financial guarantees), there is no statutory reserve impact.

Thus our view of surplus as a scarce resource has led directly to planning more carefully for its utilization.

5. How does return on investment relate to return on equity?

So far, I have been discussing return on investment which you recall I defined as the internal rate of return of the book profit flows; i.e., the flow of assets to and from a line of business where the line's assets are required to be equal to statutory surplus plus required surplus. Doug Doll and Patricia Guinn use the term differently in an article in the recent issue of *Emphasis*, the Tillinghast magazine. They use ROI to apply when no required surplus has been set up, and return on equity when there is required surplus. In my opinion, the first measure isn't a return at all; that is, it doesn't measure profitability. Instead, it measures the rate of payback of statutory strain. This is useful when surplus is short, but it is an inadequate strategic tool.

PANEL DISCUSSION

One could maintain a payback rate equal to the company's growth rate and see surplus diminish as a percent of assets, gradually reaching an unacceptably low level.

In order to define return on equity, on the other hand, you need to define equity first. That is, you must choose an accounting system in which equity is the difference between assets and liabilities. Changes in equity represent net return, and ROE can thus be defined on a year-by-year basis.

If the chosen accounting system is stock company GAAP with lines of business required to hold required assets, the ROE for a product will turn out to be close to the ROI (defined in my way). In one recent study, ROE was somewhat higher in early years, and correspondingly lower in later years (assuming experience exactly follows GAAP and pricing assumptions and assuming that nondeferrable acquisition expenses are not too great). However, the management statement need not be on a GAAP basis. While mutuals are more constrained in many ways than stock companies, they have no defined GAAP and so have in fact experimented with various forms of management accounting. A group of actuaries from mutuals who have studied the situation concluded that a level return on equity is a desirable characteristic of a management accounting approach for participating products.

Actually, an accounting approach can be adopted in which the return on equity exactly matches the ROI, if pricing assumptions are exactly achieved. This is the level return on equity method. It shows great promise as a method for monitoring ROI pricing and assigning ROE to business units.

6. What are the practical implications for a mutual company of pricing on an ROE basis?

First, it should be recognized that book profit pricing is more conservative than asset share pricing, assuming the hurdle rate exceeds the after-tax investment earnings rate. A higher rate of return is required, and it is required on a larger investment.

PRICING IN A RETURN ON EQUITY ENVIRONMENT

Second, the equity tax imposed on mutuals becomes a greater burden when required surplus is taken into account. If, for example, surplus equal to 5 percent of statutory reserves is held and if all assets earn 10%, the maximum credited rate which can be passed through to the policyholders is,

$$i^c = .10 (1 - m^I) / (1 + M^D) - .05m^E / (1 + m^D)$$

where m^I , m^D and m^E are the marginal tax rates on investment income, dividends and equity, respectively. Assuming $m^I = .37$, $m^D = -.37$ and $m^E = .03$,

$$\begin{aligned} i^c &= .10 (.63) / .63 - .05 (.03) / .63 \\ &= .10 - .0024 = .0976 \end{aligned}$$

Note that full earnings could be passed through tax-free by stocks, while mutuals suffer a net tax of 24 basis points. This net tax is independent of the earned rate.

It is quite important that the equity tax on the required surplus assigned to each product is provided for in the pricing. If marginal tax allocation is used and products are priced on an asset share basis (or on a book profit basis without required surplus), the tax on surplus is not absorbed in the pricing. Surplus is left, in effect, to fend for itself. It will achieve barely a 2% rate of return and may become inadequate over time. This is a significant drawback of using methods other than ROE pricing for mutuals, I believe.

Third, while the ROE approach is more broadly applicable to diverse product lines than any other I know of, it does have its limits. Basically, whenever required surplus represents a significant portion of initially invested surplus, the method becomes assumption-sensitive. The exact choice of required surplus formula then has a major impact on ROE. This tends to be the case for certain group products and low-commission individual products, and also for term products in which the risk element rather than the investment element dominates. It is good practice to test this sensitivity by trying more than one required surplus formula.

PANEL DISCUSSION

Fourth, any process that in effect maximizes present values of future cash flow can result in the proverbial drowning in the river that is on the average quite shallow. In addition to achieving ROE goals, the early-duration cash flows of a proposed product deserves careful attention. In other words, the surplus strain of a new line must be carefully managed to keep net strain within acceptable limits.

Finally, the most important practical implication of the ROE environment is that it will bring management into discussions of financial goals and performance. This is a language that senior managers and even Board members are comfortable with. This can be troublesome, however when unusual aspects of mutuals such as the lower appropriate ROE's are first brought to light. But in the long run, the ability to include financial criteria in strategic planning and to force decisions on what are otherwise obscure, but financially significant matters, are worth the effort and in my mind justify the methodology.

MR. MCCARTHY: For the purpose of my remarks I'm going to take the posture of a line of business manager. I hesitate to use the term line of business because sometimes that's thought of in terms of columns on page 5 of the statutory statement. Instead, think about a business that a company views as a separate entity with its own allocations of surplus and its own earnings requirements.

The business manager is given the following framework. He is provided by the corporate entity with assets equal to the slice of corporate GAAP assets that applies to his business in force. As Arnold pointed out, and I would certainly agree, stock company GAAP, unadjusted, is not a measure you want to use unless you have to. For this discussion I'm going to be using a GAAP measure, but it doesn't mean it's the only one that could be used. Everybody has his own list of reasons why he doesn't like stock company GAAP. My list would feature first the so-called lock-in concept of assumptions at issue and second, the non-discounting of the deferred tax reserve.

In any event, the GAAP asset in its simplest terms is GAAP liabilities plus GAAP equity. However, it can be arrived at and thought of in a somewhat

PRICING IN A RETURN ON EQUITY ENVIRONMENT

different way. That is to say, you can think of the GAAP asset as the statutory liability plus required statutory surplus in relation to risks. The GAAP equity is then the required statutory surplus plus the net difference between statutory and GAAP liabilities. So that's the focus of the assets that the business manager has to work with. He's given a target return on equity to meet where the numerator is the after-tax GAAP earnings and the denominator is the equity figure just defined.

To put the balance sheet in perspective look at this example. Start with a statutory balance sheet in which we have invested assets of \$1,000. We have \$900 in statutory liabilities of a policyholder nature. I include MSVR for another \$25 leaving statutory capital and surplus at \$75, and we'll assume for this purpose that that \$75 is the required statutory surplus that the corporation has decided, by whatever method of thinking, should apply to this block of business.

On the GAAP side, we have the same invested assets of \$1,000. They needn't be exactly the same in some situations, but I'll assume they are here. Deferred acquisition cost of \$125 are added for total assets of \$1,125. The policyholder liability is measured on a different basis and tends for most kinds of products to be slightly higher than the statutory liability. Particularly for modified statutory reserve bases, the GAAP benefit reserve will tend to be higher than the statutory reserve, so we have \$950 there. A GAAP deferred tax reserve of \$25 is added, for total GAAP liabilities of \$975. The GAAP equity is \$150 which you can think of as the statutory capital and surplus of \$75 plus the net effect of the three GAAP adjustments, that is, the \$125 deferred acquisition cost, less the \$50 difference in policyholder liabilities and the net effect (zero as it happens in this numerical example) of MSVR on one side and deferred taxes on the other. Thus we arrive at a GAAP balance sheet.

What would a manager in the position I've described like to do, other things being equal? Well, for one thing, he'd certainly like to minimize his requirement for statutory capital and surplus. If everything else stays the same and his requirement of \$75 gets smaller, then the GAAP equity of \$150 gets smaller, and any particular return that he earns will look better. This assumes, as will typically be the case and as Arnold pointed out, that the

PANEL DISCUSSION

hurdle rate is higher than the after-tax rate that can be earned on the assets which make up the required statutory surplus.

What would his view of statutory liabilities be? That will tend to depend on whether or not a reduction in statutory reserves is offset by an increase of the same amount in required statutory surplus. It doesn't necessarily follow that that's true. If you go, for example, to a less strong statutory reserving method, and if you then do a statutory analysis in relation to the risks of the types we are accustomed to hearing about, it won't necessarily be the case -- in fact, it will often not be the case--that required surplus will go up by the same amount as the statutory reserve goes down. He may have a view as to the strength of statutory reserves as well, but the interplay of those numbers is going to be important. Of course, if the statutory reserves are changed, depending on the nature of the change, that could also result in some change in current taxes.

Let's now look at a simple example of the effect of issuing one particular product. (See Exhibit 1).

In this example, investment income is left out for the sake of simplicity. There is a premium of \$100, deferrable expenses of \$80, other expenses and claims of \$20, and a policy reserve of \$30. So, there is a pre-tax statutory gain of negative \$30 in year one. I'm assuming that the interplay between the corporation and the business is such that a negative tax is treated as cash. So, there is negative current tax of \$10 and an after-tax gain of negative \$20 on a statutory basis.

If you look at it on a GAAP basis, you have deferrable expenses, and you establish a deferred acquisition cost which is equal to the deferrable expenses less the first year amortization charge. The GAAP current tax is the same as the statutory, but the difference between the pre-tax GAAP and statutory gains is \$30. So, when you tax that, you wind up with a GAAP deferred tax liability, and so the after-tax gain on a GAAP basis is \$20 higher than on the statutory basis.

DEVELOPMENT OF EQUITY BASE
(For One Newly Issued Policy)

| <u>Statutory</u> | | <u>GAAP</u> |
|------------------|----------------------------------|-------------|
| 100 | <i>Premium</i> | 100 |
| (80) | <i>Deferrable Expenses</i> | (80) |
| (20) | <i>Other Expenses and Claims</i> | (20) |
| (30) | <i>Policy Reserve</i> | (60) |
| - | <i>D.A.C.</i> | 60 |
| <hr/> | | <hr/> |
| (30) | <i>Pre-Tax Gain</i> | (0) |
| (10) | <i>Current Tax</i> | (10) |
| - | <i>Deferred Tax</i> | 10 |
| <hr/> | | <hr/> |
| (20) | <i>After-Tax Gain</i> | (0) |

PANEL DISCUSSION

Now, let's look at a continuation of the example. Assume that we have required statutory surplus of \$10 for this product. That means the net statutory-surplus required by virtue of writing the product is \$30. That is to say, we had an after-tax statutory loss of \$20 and required statutory surplus of \$10.

On the GAAP side we carry over the same required statutory surplus and realize a net GAAP liability of \$10. The GAAP equity can be constructed in lots of different ways, but no matter how you do it, it comes out to being \$30. The simplest way to look at it is to say equity is the required statutory surplus plus the difference between the statutory and GAAP net liabilities. In this example, the GAAP equity in relation to this product is \$30, but the product didn't contribute that. What did the product contribute? We see from the exhibit that on a GAAP basis, the product contributed zero. On a statutory basis the product contributed a negative \$20 after-tax statutory gain and didn't provide any money for its statutory surplus requirement, so in effect all of that equity that is required has to be provided from the corporation. This is just a simple way of illustrating what, in one sense is obvious. A corporate objective in an instance like this is going to be comparable to the objective that Arnold cited for the mutual company -- you don't want to have sterile capital around, you want to expend it. This is why you tend to find fairly high rates of stockholder dividends in corporations that are profitable but not growing rapidly. If that money is not expended in the production of new business, but is instead retained, corporate return on equity is simply going to be dragged down. So in this instance, the effect of issuing the product is that some of the free equity in the corporation is transferred to the line of business along with the requirement to make a certain return on it.

Exhibit 2 is a construction of a balance sheet that results from the prior example. On the statutory side, you wind up with invested assets equal to statutory reserve plus the required surplus. For GAAP you add a deferred acquisition cost. There are total assets of \$1,000 and \$30 of the \$40 of invested assets were not provided by the issue of this product. They were transferred by the corporation to the line of business. That was a transfer of equity in the form of invested assets.

COMPONENTS OF EQUITY BASE
(As They Appear on the GAAP Balance Sheet)

| | | |
|------------------------|--------------------|--------------------------------------|
| | Assets | |
| <i>Invested Assets</i> | } | Statutory Reserve 30 |
| <i>Equal To</i> | | Required Statutory Surplus 10 |
| | | D.A.C. 60 |
| | | <hr/> |
| | Total | 100 |
| | Liabilities | |
| | | GAAP Benefit Reserve 60 |
| | | Deferred Tax Liability 10 |
| | | <hr/> |
| | Total | 70 |
| | Equity | 30 |

PANEL DISCUSSION

I've talked about the equity part of the equation. Let's focus on some of the requirements relating to return on equity. First of all, it ought to be risk related. There have been some discussions about ROE pricing requirements, particularly when you include the notion of required surplus, about whether it is really true that a riskier project necessarily should demand a higher return on equity. The argument against it goes, "if for the riskier project, you require that project to carry more statutory surplus, then in effect you are putting a heavier requirement on it already." Now I'm not convinced that that's true, I think it's not a fully explored concept, but it seems to me that the reason that required statutory surplus is associated with products is to protect against statutory insolvency in meeting the promises made by the product. That does not necessarily equalize likely return to the "investor" in relation to all risks. At this point, I'm still inclined to believe that the target return on equity should be risk related and that it is not neutralized by simply requiring the riskier product to carry a higher required statutory surplus burden.

It also needs to be market related in the sense that you can't ignore your competition both within and outside the industry. In the long run, absent unique efficiencies in a particular company, you're not going to be able to run ahead of the competition in terms of rate of return on equity. To be sure, companies do have different rates of return, and that says that efficiencies of one form or another do make some difference, but there is a natural limit to those differences. Therefore, as Arnold observed before, you have to be careful that there is an element of reality in setting these targets.

The targets need to vary over time for several reasons. For example, in a time when investment rates are lower, reasonable rates of return on equity will tend to be lower. That is to say, there may be some constant delta there. Also, what will tend to happen, particularly for certain kinds of products, is that in certain environments there is simply no way, over a short period of time those products can meet a high rate of return on equity.

Ideally, rank of the rate of return is more important than absolute size. This goes back to the notion of setting rates of return in relation to your competition. Unfortunately, in the insurance industry, unlike banking and

PRICING IN A RETURN ON EQUITY ENVIRONMENT

other financial service industries, it's difficult to get a good competitive measure of return on equity to compare company to company. Though I've included that criterion I regard it as a difficult ideal to achieve in practice. Stability may be important particularly for a public-owned company in that the market will tend to regard more highly, other things equal, a company with a stable return on equity than a company with a fluctuating return that achieves about the same average.

The program for this session contrasted return on equity to various other measures that insurers will use as pricing or return goals. I'd like to suggest that if we use return on equity as the starting place in our thinking, we can think of the other measures in any of three ways. One way to think of the other measures is as translators. That is to say, if your goal is actually stated in terms of return on equity, it may not be convenient to enunciate goals to the organization in that way. It may be convenient to use a percent-of-premium target or some other simple rule which when translated happens to produce the same result as the return on equity target. To be sure, if you do that, you have to check the translations over time. But many of the rules of thumb that are used in the industry work very nicely if they are set not as goals in themselves, but as translations of what will happen in terms of return on equity.

Some of the other kinds of goals that are set serve as leading indicators. That is to say, they will tend to show you today what the pattern of return on equity may be tomorrow. These tend to be present value measures, value added, and anything that tries to appraise either today's pricing or the value of today's block of business in terms of its future results. Such measures tend to be leading indicators of what's going to happen to ROE tomorrow.

Finally, some of the other measures are analytical tools that are useful in developing pricing goals that can be employed in a return on equity environment. Internal Rate of Return (IRR) techniques are an example -- particularly, if the required surplus is built into the IRR technique. There is a good example of that in Don Sondergeld's paper in which he shows how that will come out year by year. GAAP margin types of analytical tools are also

PANEL DISCUSSION

useful. You can express GAAP margin as a level percent of premium which will tend to relate to a somewhat non-level ROE over the life of the product.

There are other kinds of measures, such as premium volume goals. I loosely call these measures market share goals. I don't believe these market share goals can be thought of in the same way as financial goals, but nonetheless they are not apart or totally separate from return on equity. This is because there is an interplay in an organization between the return that can be obtained, the competitiveness of its products, the volume of its sales to the extent that there are efficiencies in that volume, the efficiency and quality of its service, and what I've called its functional performance. By functional performance I mean underwriting performance, investment performance, and the other factors that make up the pieces of product results. Although, some of these goals at first glance seem to be unrelated to return on equity, you tend to find that organizations that can do well in those other areas will also do well in terms of ROE. The examples of that go well beyond the insurance industry.

Pricing measures are also useful as functional performance measures. That is to say, if a product is priced to achieve a certain goal, it's nice to be able to enunciate to the various elements of an organization what has to be achieved in order to attain that goal. It isn't necessarily helpful, for example, to an underwriting organization to be given an ROE goal. They don't control all the pieces. Similarly, it isn't necessarily helpful to investment organizations to tell them what the product's ROE goal is. They don't control all the pieces. Rather, I suggest that as functional performance measures you take the following approach. First, take the target return -- I'm assuming for this purpose that it's ROE, but actually it needn't be -- and analyze it into its components. That is to say, what has to be achieved in terms of a mortality ratio? What has to be achieved in terms of investment performance? What has to be achieved in terms of unit expenses for the product to meet the pricing goal? Having determined what has to be achieved, then establish goals for each component. When I say component, I'm thinking of organizational component, but really we are talking about components of the pricing. In some organizations the pricing components will match up one-to-one with the organizational components. In other organizations they will not.

PRICING IN A RETURN ON EQUITY ENVIRONMENT

Finally, a tough task that sometimes gets left out is to track the results. It'll be helpful when an exercise is ongoing to know if you're meeting the goal, why it is that you are meeting it, or if you're not, why not. It may well be that one of these components is actually performing above target and another below. In any event, this part of the exercise enables the translation of pricing into performance goals so that when financial reporting reveals what's actually happening, it is possible to determine why the goal was reached or was not reached.

MR. JAMES L. WERTHEIMER: I have a question for Arnold. You indicated that the hurdle rate needs to be set with reference to some sort of outside rate. Stock companies use their cost of capital as their minimum hurdle rate. What do you think is the cost of capital for a mutual company?

MR. DICKE: I've been dealing with this concept over 5 or 6 years. Lots of people have different points of view on how to set the hurdle rate. The cost of capital is in effect the growth rate. It's the reduction in dividends, if you want to look at it that way, and how much you can make your policyholders pay, in effect. Given that situation, it's a very hard number to determine. But what I was trying to indicate is that inevitably you've got to be sensitive to the rates of return and changes in the financial environment that we're living in. At a time when interest rates are in double digits, people seem to be willing to absorb dividend reductions. They seem to be willing to take into account future dividends and do all those kinds of calculations in their head on a basis that allows you to have a high hurdle rate. We noticed that with certain products, particularly SPDA's. If we try to hold to the hurdle rate that's too far out of line and it doesn't change when the environment changes, we just become non-competitive. We then get back to the same place we were before by making an appropriate adjustment. That's what I was trying to reflect. It is just a practical message.

MR. MCCARTHY: In relation to that point, if a stock company, is not meeting its cost of capital, at the hurdle rate, its stock is going to sell below book. When the stock company goes out to raise more money, assuming it can raise it at all, it's going to pay a higher price. As you suggest, that discipline isn't present in the same way for a mutual company.

PANEL DISCUSSION

MR. ALDEN W. BROSSEAU: This is an observation rather than a question. It seems as though there are more similarities than differences between mutual and stock companies in setting financial goals. I suspect that along the dialectic between mutual and stock, we're approaching a synthesis that is being forced by capital funding requirements. In this connection, I commend to you a book by Gordon Donaldson of Harvard called *Managing Corporate Wealth*. Today, the suggestion was made that stock companies can go into the capital markets if they need more capital. But Donaldson points out that corporate management may want to maintain independence of the capital markets, at least as far as funding management's core operations. Management tends to go for new equity only for new ventures.

MR. MCCARTHY: I would observe that in addition to the reason you suggested that the stock and mutual views are converging (because in effect they're both capital organizations), I think part of that convergence is because the products are becoming more similar in many instances than they were some years ago. As a result product and competitive considerations as well as capital considerations tend to bring them together.

MR. DICKE: There's another technical way to look at why they are converging. If you're going to do pricing, you could look at it as trying to solve a constrained maximization problem or minimization problem. In the case of the mutuals, it might be that you have a different objective function. What are you trying to do? Presumably, you are trying to maximize rate of return for stockholders in the stock company. At least everybody says that. In reality you might be maximizing management take, but we'll try to avoid that interpretation. But if you take the idealistic point of view, you would say you are maximizing the rate of return for stockholders. Whereas in the mutual company, presumably what you are trying to do is minimize the rate of return that is, the net cost of insurance. That's what people would state if they are forced to state a minimization or maximization goal. In that case, capital becomes a constraint. If the constraint is a tight constraint, then it ends up having the same pricing equation as a stock company solving a maximization problem. If it's a loose constraint, you don't have the same equation. For years and years we had slack in the surplus variable, but that is not true anymore.

PRICING IN A RETURN ON EQUITY ENVIRONMENT

MR. SOLOMON GOLDFINGER: I'd like to raise two questions. One is for Mr. Dicke. You mentioned that you use the return on investment in your dividend process. Most of the action on dividends is on policies that were issued some time ago. Do you go back and literally recreate what the initial investment on those policies was when they were issued?

MR. DICKE: That is a complicated problem to solve, and I trust we actually solved it, but we'll see as time goes on. We took the point of view that we wanted to look at where these policies had gotten to at the current time. So in effect, what we tried to do was to preserve future contributions to surplus that were going to be made according to the scale that was in place when we made the change. We looked at that present value, set it up as the profit goal, and then arranged for it to be met. That's how we treated the in force business.

MR. GOLDFINGER: What was the investment on the in force business? How did you get at that?

MR. DICKE: Well, in essence, what we did was start in the middle of an ROE process. What we needed to do was to set up the equity. We used a level return on equity method so that there's equity in every year. Basically, that equity is the present value of future profits or future contributions to surplus. That's what we used for the base.

MR. GOLDFINGER: My second question is more a comment, and perhaps it relates to the comment that was just made. All too often I've been at sessions dealing with the return on equity, and the focus was primarily from a stock company viewpoint. The comment would be made that with suitable modifications, things like the equity tax and statutory surplus can be built into this framework. I want to thank Mr. Dicke for highlighting the things that are unique about mutual companies such as the equity tax, the limitation on surplus, and policyholder dividends. These things should be thought of, not just as details that have to fit to the existing framework, but rather as things that perhaps are overriding in developing your profit method. My question, in light of that speech, regards a phrase I didn't hear Mr. Dicke use very much, that is "GAAP for mutuals." To the extent that the goal for a

PANEL DISCUSSION

mutual company is to manage surplus, statutory surplus, the equity tax and things like that, what is the place for GAAP for mutuals?

MR. DICKE: A session at this meeting is devoted more or less to that subject. GAAP, of course, means Generally Accepted Accounting Principles, and it's the accountants' business to define what that is. It's been said by the Financial Accounting Standards Board that financial accounting means reporting for outside people, the owners and potential investors of the company. So the audience is a very important consideration in setting financial statements. What I was talking about is not properly GAAP because we are talking about management reporting which is internal. The question of whether we want to or need to have something to be given to the outside world is an interesting question. One reason why you might want to have something is because more and more mutuals are actually borrowing money and getting involved in financial ventures where their financial stability is something that people want to know about. They want to know the mutual's ability to deal with certain financial affairs that are not well represented by a statutory statement. Another reason that a lot of people are interested is that they think there might be some carryover from accounting of this type into the demutualization debate.

MR. MCCARTHY: I'd offer two other reasons. One is the propensity of some large mutuals to acquire very sizeable entities that are not insurance companies. It can be very helpful to have a comparable basis of reporting when you have entities like that. The comparable basis may be a management reporting system that behaves a little bit like GAAP. The second reason is as a management performance and perhaps as a compensation measure. Some companies are interested in establishing these kinds of measures for compensation purposes. One of the reasons for this, which Arnold alluded to before in the instance of his own company, is the desire of company Boards, including mutual company Boards, to have some kind of translator that will put the performance of the company in terms those Boards can understand better.

MR. DICKE: In that context, let me underline one thing. Mutuals are not attempting, at least for the participating line of business, to maximize ROE. Instead they are aiming at a particular goal. Exceeding the goal could be

PRICING IN A RETURN ON EQUITY ENVIRONMENT

a sign of not paying attention to policyholder equity and the needs of the current policyholder. So good performance doesn't necessarily mean a maximum ROE. That's a hard thing to put into a bonus plan, but you need to get that point across before you accept that kind of measure.

MR. GERALD A. FRYER: Arnold, I think you said you could change the hurdle rate over time. Suppose today's hurdle rate is 15% and in 1996 it is 25%. Would you be changing the hurdle rate for the policies you issued in 1986 as well?

MR. DICKE: Yes.

MR. FRYER: So you don't regard the return on equity that you agreed to as perhaps a bargain with your current policyholders to be something that's unchangeable over time.

MR. DICKE: No. I think its relation to current economic conditions is the agreement rather than the exact number. I'm saying that it is a policy that you have to develop in your company. You could certainly develop a different policy, but that's the policy I'm recommending more or less to my company. I wouldn't say we've been explicit about it, but it's in the background.

MR. FRYER: If the assumptions for the 1986 policies were realized during the first 10 years, would you be able to explain to the policyholders why the dividends were being cut to obtain a larger ROE?

MR. DICKE: I hope so. It would be in a changed environment, and you've got to recognize the point when the change occurred. I would emphasize that you don't want to change dividends very often, and you want it to be with major changes. I think you'd find realistically that you have to do that. I know some companies that take the opposite point of view and have held a fixed hurdle rate through the last seven or eight years. So, I guess it can be done that way, too.

MR. JOSEPH P. MACAULAY: Arnold, in your presentation a major element of the need was the surplus choice. It seems that in developing the hurdle

PANEL DISCUSSION

rate, you have to establish consistent standards for what surplus is needed. Otherwise, you can get any answer you want. I know there are other sessions about what the appropriate surplus is, but we might like to hear a discussion from either of you about what you think might be desirable in surplus needs. That is a real test in a mutual company and basically the same item as capital in the stock company for varying products.

MR. MCCARTHY: I don't think either of us would disagree that this process, however you go at it, is assumption sensitive, and I think that point is very well taken. In any corporate environment, enunciating a return requirement by itself is not the whole story, as you suggest. The other part is the rules by which that process is played out and what the required surplus is. That will have a big impact on the ability to meet a given rate of return.

MR. DICKE: That's a very good point. I view the total reserve that I talked about as having two pieces. One piece is the expected cost and the other piece is a fluctuation reserve. There's a reserve for the expected values of claims, and there's a reserve for fluctuations. It seems to me that an approach that would use something like the standard deviation to try to figure out the total reserve would be nice. Then, you would have a similar standard for all lines of business.

Dan brought up the question of whether the rate of return should be risk related. There are really two things that we're talking about when we talk about risk. Fluctuation is one thing. That's what the required surplus element covers. In casualty reserves companies set a portion of reserves for expected claims and a portion for fluctuations usually based on standard deviations. The other part of risk is extra expected losses. We talk about junk bonds as being riskier. Most of us assume that part of the extra return you get is going to have to be used up to simply pay off the losses. But another factor is that the total return over time, if there are a lot of defaults, will vary greatly before you reach the average value. So there are two different things. One of them is covered by surplus, and the other is covered by a deduction in the rate of return.

PRICING IN A RETURN ON EQUITY ENVIRONMENT

MR. LARRY N. STERN: Dan, you mentioned a couple of times and I agree with you that you can increase your return by decreasing equity. However, a company's stability is often measured by the equity position necessary to support growth, such as the Best's rating and shareholder relations. It seems, therefore, that a conflict exists for management to maximize both rate of return and equity.

MR. MCCARTHY: Yes. I am not sure that you want to maximize your equity, but I agree that pressure is on a corporation to have adequate equity as measured by rating agencies, be they credit rating agencies or Best's, or the general perceptions of shareholders or policyholders. I view this as a constraint. That is to say, if those requirements turn out to be higher than what you believe your equity needs are, then there is going to be some compromise. If you can't sell your position on why your needs are what they are, you've probably got to hold the higher amount. Frankly, if you look at the Best's formula, I think for some lines of business the requirement is distinctly in excess of what one might logically think would be the case, and for other lines I happen to think it's the reverse. But nonetheless, if that's being used and that rating means something, then that becomes a constraint. In the real world there are constraints.

I want to say something about the point on analyzing risk in relation to fluctuation. It would be nice, indeed, to get some kind of standard deviation measure. Mike Mateja, who has done a lot of work on the Society committees that have thought about this subject, has come to the conclusion that what he calls the unpredictable or catastrophe risk in some lines of business tends to dominate the others. The problem with that is that it makes things less analytical and a lot more subjective in terms of what you are actually going to hold. Which is why, I believe, two things happen: one, you find companies with different requirements; and two, speaking in their defense, you find rating agencies with conservative requirements.

MR. DICKE: When I say fluctuation risk, I don't mean random fluctuation risk, that is studied in risk theory in Part 5. I guess a lot of us have probably done the calculations and discovered how small those reserves are. What I mean is the fact that any risks, even the unpredictable catastrophic

PANEL DISCUSSION

risks, if you pool enough of them, in the long run yield the expected loss. But in the meanwhile you may deviate a long way from the expected. For example, you might get the expected loss after 20 years, but after 10 years you can be far away from it. In other words, if you are collecting a certain premium to cover catastrophic loss, you may not have any claims for three or four years or you may have six of them right away and not have another for the next 60 years. So that kind of fluctuation is what is covered by required surplus, not just the random fluctuations due to the statistical nature of things.