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ROLE OF THE ACTUARY IN DEFINING INVESTMENT POLICY AND STRATEGY

Moderator: DAVID W. COOK
Panelists: MATTHEW S. EASLEY
 JOHN L. MAGINN*
 RICHARD M. STENSON
Recorder: CHRISTOPHER R. PERRIN

- o How should investment policy be developed?
- o Role of the actuary and the investment officer
- o Role of the pricing actuary and the valuation actuary
- o Liquidity considerations
- o Tax considerations
- o Capital loss constraints
- o Process for changing strategy as the economy and company circumstances change.

MR. DAVID W. COOK: At most American life insurance companies, the role of the actuary in investment strategy would have seemed an unlikely topic only a few years ago. Today, however, several factors stemming from the environment of volatile interest rates have combined to make it very important. One factor is the proliferation of interest-sensitive products. Another is the liquidity crisis that insurance companies faced when interest rates rose rapidly, and the yield curve became inverted -- with resulting concern over how to manage the C-3 risk. Another factor is the increased emphasis on line-of-business financial management and asset segmentation strategies for pricing and all the preceding financial management reasons. Finally, with the emerging definition of the responsibilities of the valuation actuary, it may become improper for an actuary to sign the annual statement or any required valuation opinion without having a role in establishing the asset structure of the company.

Mr. Richard M. Stenson is a senior vice president of The Equitable Life Assurance Society. He is chief actuary of Equitable's life insurance product line. He is also a vice president of the Equitable Variable Life Insurance Company (EVLICO), which is a wholly owned Equitable

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subsidiary. The Equitable has one of the more advanced systems of asset segmentation and asset/liability management.

MR. RICHARD M. STENSON: I speak from the point of view of the Equitable, a large multiline company in New York with sophisticated investment expertise and resources; we have a fine investment community. I want to give my company's perspective on the interface between the actuary and the investment professional.

My concern and focus has been with individual life and individual annuity products with the perspective of the pricing actuary (i.e., designing products and setting prices) and the repricing actuary (i.e., dividends on existing prior life products, resetting of interest credits on single premium deferred annuities (SPDA) products, and interest credits and mortality charges on universal life contracts). I have been involved with ongoing profitability and solvency, the appropriate match of assets and liabilities (between the product and the assets underlying the product), the valuation actuary's role, and seeing that assets are appropriately invested in recognition of the product characteristics -- the type and quality of investment as well as the maturities.

The partnerships between the actuary and the investment officer and also between the business and marketing people in my company are critical today as we get into products that are changing more frequently and involve more interest-sensitive characteristics. Actuaries understand these products and the expected insurance cash flows. Investment officers understand the types of investment vehicles currently available on the market, how they change, their quality, and the expected investment cash flow and can pick actual investments, of course. Clearly you need a partnership between these two types of people in order to manage the investments backing your contracts.

Our segmentation process, which we set up in 1981, has been very helpful to us. We essentially have subdivided our general account by major lines of business. Included were the individual life segment and the individual annuity and supplementary contract segment of the parent Equitable. A changing factor since we began has been the extensive writing of a much greater proportion of our new individual business, including SPDA contracts and our universal life contract, in Equitable Variable Life Insurance Company, EVLICO, our nonparticipating subsidiary. The structured universal life product is called the Equitable Life Account Policy. We're moving in the direction of going further with universal life contracts. So EVLICO, which started as a business to sell variable life insurance, a purely separate account product, now has two large groups of business, and we manage it as two separate segments -- our SPDA business and our universal life business.

The segmentation of business is not in separate accounts; it is segmentation of the general account with designated pieces of assets of the general account. The general account, of course, stands behind all the business that the general account funds as a whole. We are coming out of some fairly large long-term investments shared by segments for

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the more formal segmentation. For some assets a piece goes into a number of different segments; so they are not completely separate assets. We can look at the whole investment component, underlying the individual life business or underlying our new universal life business or our SPDA business separately, and we can work with the investment people to manage that business. That is a wonderful communication tool in a big company like the Equitable.

For each of these major segments, the investment people have given us a portfolio manager to work with the actuaries and business people in managing the investments with respect to the type, character, yield, maturity structure, and investment cash flow to fit the product. Each portfolio manager and representatives, including actuaries of each business segment, meet frequently to manage this business as we project the cash flow during the year and as we see how the business comes in during the year. The portfolio manager does not pick specific investments but oversees that we have the right types of investments. The portfolio manager and investment professional might be involved in picking detailed investments, but the key is to make sure that we have the right type and shape of portfolio that fit these products and the mix of expected runoff of liabilities, as well as what we need in the market place to make the product sell and fit the pricing appropriately.

Obviously the system is not perfect; nothing ever is. The investment people have a number of these portfolios to monitor, and there are times when the business people may think that the investments are not getting placed quickly enough if we have a little bit heavier incidence of cash flow than expected. But the important thing is that we have a communication device and can work together and solve such problems. It gives the investment operations area of the Equitable the opportunity to pull together the cash flow for all these different segments and plan the investment by various types of investments for all pieces of the enterprise. It has been extremely useful for developing formal investment policies for each of the segments, which can be accepted and used by the investment community, but with direct input from actuaries and from the business community.

MR. COOK: Mr. Matthew S. Easley is Associate Actuary of Nationwide Life Insurance Company responsible for annuity lines and investment actuarial. Nationwide also has a functioning system of asset segmentation and asset and liability matching.

MR. MATTHEW S. EASLEY: Nationwide Life is smaller than the Equitable. We have approximately 3 billion dollars in the general account of the life company, although we have over 9 billion dollars in total between property and casualty, the mutual funds, and the life company including variable funds.

We are motivated in part by the desire of our investment area to maintain large pools of assets rather than see things broken up into separate portfolios for each line of business. We can't justify the restructuring of the investment area because we share it with the property and casualty company. There also has been concern about splitting the investment area's expertise; if you have a separate area

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that invests each of these different portfolios, you end up with one person having to know about all the different investment aspects and, for example, you would have to have somebody from the mortgage area on each team. Considerations like these suggest that a different type of splitting is needed.

Like the Equitable, we were initially group pension driven in the process, and we did some things for the group pension area before we went to complete segmentation. We also do business in New York and are subject to many rules there.

Our emphasis is much more on the C-3 risk of different durations. We see less variation in the quality of investments, and our method does not reflect differences in quality, but strictly different length to maturity.

To structure this process, you must design your investment strategy because it is the way you eventually will drive the machine. So you had better design the machine to take the input in the same way you are going to give it. Our approach was mainly actuarial with a great deal of help from the investment people, but the result is that it is actuarially intensive (i.e., most of the work is done there rather than in the investment system or by creating a major dislocation in the investment area).

There are a number of reasons for segmenting in the first place. It's a vehicle for lessening C-3 risk. It allocates responsibility for participation in setting investment strategy to those people who have to live with the results. Those people will make sure that they don't get investments that will create a major problem for them. It also allocates the existing assets in a potentially meaningful way and encourages an overall management of the investment structure. Also, it allocates investment income fairly, based on the investment needs of each line. Lines that need longer investments get the higher rates as long as we have normal yield curve and a lower desirable rollover. Lines that need shorter investments get lower rates that typically accompany those investments and the more rapid rollover needed.

Some alternative methods include:

1. A separate company approach sets up an entire subsidiary to sell a particular interest-sensitive product. It's comparatively straightforward to do, although a bit expensive unless you are doing it for other corporate reasons. It's incomplete because it leaves the base company without the benefits of any type of segmentation.
2. A separate account approach accomplishes the purpose for a particular line of business. It has been used by companies for guaranteed investment contracts (GICs) and so on. It's incomplete because it leaves the rest of the company behind, and there are some fairly complex regulations.
3. An investment year method distinguishes the timing of acquisition but fails to recognize the different term securities needed. We

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remained on the portfolio method until we jumped completely to segmentation because we have always based investment income allocation on liabilities rather than on funds, and in New York you must be fund based to go to the investment year method. Our segmentation plan is liability rather than fund based, also.

4. A complete segmentation method accomplishes the purpose but can complicate the process, and whether you need that complexity may depend a little bit on the size and economies of scale. The Equitable can justify it more with the size of assets and may be at a point where it is desirable for each area to run separately.

We did not see the benefit of actually breaking up the assets. We saw a lot of expense associated with the investment area tracking securities and investable cash separately by the areas that were going to be using them. Fairly complex investment systems are required to share securities across lines, which is desirable, because if each business segment does not have sufficient cash flow to generate the kinds of large economical acquisitions or placements, you have a major drawback. Similarly, you run into problems where you end up selecting among similar securities acquired at about the same time for the different portfolios. Who is going to make the decision? Again, it is a complication for the investment department and also an opportunity for dispute.

5. Partial segmentation approach can be used where you must have some interest-sensitive lines upon which you want to focus. You segment specific lines from the pack and end up with an "all other" pool. You have specific pools or business segments for the lines in which you are really interested. It's useful for getting into the interest-sensitive market quickly, but it's incomplete because it ignores the needs of other lines, which eventually will complain. A lot of areas are interest sensitive, and even people in our group life and health area wanted to have their own approach. They wouldn't be happy just to be carried along with what somebody else wanted.
6. A synthetic segmentation approach, by virtue of asset pools, is what Nationwide Life has been using.

We adopted our method in 1984, and it has been approved by the New York Insurance Department. There is a potential for divergence between the statutory and the GAAP allocations of investment incomes that could create problems with different lines being self-supporting on a statutory basis. Even once you develop a segmentation method for statutory purposes, if there is some reason for variance for GAAP purposes, it is possible to reflect that in detail. Particularly we've looked at the area of capital gains and losses where, by regulation, we have to allocate the capital gains the same as the assets but where we're not sure we want to do that for GAAP purposes. To the extent that it reflects a variation in the interest rate environment, we want to pass on the gain or loss to the line of business. However, to the

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extent that we have an entire company sharing a default risk, we prefer to have that be a shared risk and not be tracked with a specific security. There are opportunities for variations in the details.

Our asset pool segmentation works similarly to a family of mutual funds. We have multiple options available to all lines: a cash pool (which is basically under-one-year securities), a one to two year, two to four year, four to six year, and six to ten year in addition to a corporate asset pool. This corporate asset pool is primarily common stocks, real estate, computers, which we lease to the property/casualty company, and some stock of subsidiaries. We also have an immunized pool for the different lines that have a well defined liability structure.

Fixed pools operate like closed-end mutual funds, so each quarter, any investment that is purchased of a two to four year maturity would be shared by all lines that had an investment need in that quarter. If you had a third of the need, instead of owning a third of the investment, you would own a third of all of the investments. All similar investments are shared proportionately.

Each line of business sets a strategy for a quarter at a time in terms of these asset pools. So the liability increases are allocated, in accordance with your strategy, to the various asset pools. This simplifies the process and makes it fairly easy to express and change an investment strategy. Plus, we found that since the cash pool turns over so fast, it is desirable to have that in terms of a dollar target. For every line, they have a liquidity target. For capital and surplus, they not only have a potential liquidity target but also an amount that is in the corporate asset pool. Then the balance gets allocated in accordance with the percentages.

There are really three different sources of "investable liabilities":

1. rollover from prior securities,
2. carryover from the prior quarter to the extent that there is a mismatch between what was acquired and what was needed, and
3. new liability increases.

In the long run, there probably will be a need to differentiate among these sources.

Essentially you end up with a multiple investment year method. Each pool operates like a company on the investment year method. You keep track of securities by time of acquisition and by shared ownership of the different business segments.

The investment actuaries act as intermediaries between the investment area and the line actuaries. A team consisting of the investment actuary, the line actuary and representatives from the investment department set an investment strategy. The goal is to make the process somewhat invisible to people on a daily basis. So, the investment department gets reports from investment actuarial based on

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these asset pools. The line actuaries give reports based on their business segments to investment actuarial. They perform a translation function, making it relatively invisible, so investment people essentially can tag things based solely on the attributes of the securities without regard for whom they are being bought.

MR. COOK: Mr. Maginn is a Chartered Financial Analyst whose investment experience has included common stock and bond analysis, as well as the management of insurance company, mutual fund, and endowment fund portfolios.

Mr. Maginn is the vice chairman of the Board of Trustees of the Institute of Chartered Financial Analysts and a past member of the Institute's Council of Examiners and Candidate Curriculum Committee. He is a former director of the Financial Analysts Federation and a past president of the Omaha-Lincoln Society of Financial Analysts.

Mr. Maginn is coeditor of the book Managing Investment Portfolios published in 1983 by Warren, Gorham & Lamont. He authored the insurance company section of The Determinants of Portfolio Policy published in 1981 by the Institute of Chartered Financial Analysts.

MR. JOHN L. MAGINN: In the world of interest-sensitive products and asset/liability management, the need for internal communications and coordination is imperative. Communication between the actuarial, investment, and marketing departments has been a theme of the Society. The 1984 Spring meeting in New York reinforced and validated many of the steps that United of Omaha has taken to adapt to the current insurance and capital market environment. It also prompted United of Omaha to take another look at some of the basic factors that characterize our particular place in both the individual products and group pension markets.

Common Characteristics of Our Roles

Actuaries, investment analysts, and portfolio managers have much in common. The responsibilities of our professions are based on three factors:

1. Uncertainty
2. Risk
3. Probability

For today's interest-sensitive products, actuaries and investment managers are concerned with the uncertainty of changes in the level, direction, and term structure of interest rates. We are all concerned with the risk factors such as disintermediation, market value, and reinvestment risks related to this uncertainty. Finally, we all attempt to do a better job of measuring the probabilities involved through modeling techniques that use multiple scenarios.

There is no evidence that anyone -- economists, investment professionals, or actuaries -- is able to forecast interest rate changes with any degree of accuracy over any meaningful period of time.

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Thus, there is a definite need for joint modeling, combining the actuary's mathematical skills with the investment manager's knowledge of the theory and history of interest rates. Managing the spread between earned and credited rates requires the combined know-how of the actuaries and investment managers and the support of top management.

Language of Portfolio Management

Even though actuarial and investment staffs have much in common, differences in professional language can be a problem. Thus, actuaries should be familiar with two investment concepts which involve (1) the basic decision making process that is applicable to the management of any type of investment portfolio, and (2) the basic determinants of investment portfolio policies.

Portfolio Management Process

Exhibit 1 shows an outline of the portfolio management process in flowchart form.

The Institute of Chartered Financial Analysts defines portfolio management as "an ongoing process by which:

- an investor's objectives, constraints and preferences are identified and specified to develop explicit investment policies;
- strategies are developed and implemented through the choice of optimal combinations of financial and real assets in the marketplace;
- market conditions, relative values, and the investor's circumstances are monitored; and
- portfolio adjustments are made as appropriate to reflect significant change in any or all of the relevant variables."

Basically we are saying that the concept of portfolio management as a dynamic and flexible process is extremely important for all investors but especially for insurance companies. The traditionally passive "buy and hold" fixed-income portfolio strategy of life insurance companies is giving way to semiactive strategies of cash matched or immunized or contingently immunized portfolios. Some companies are employing active portfolio strategies based on "junk bonds" or substantial duration mismatching.

Portfolio management is also a continuous and systematic process complete with feedback loops for monitoring and adjusting policies and strategies in response to or anticipation of changes. For an insurance company, these changes can be related to policyholder factors such as the ebb and flow of the demand for short (three to five year) or long (eight to ten year) GICs.

These changes can be related to competitive factors that reflect the pricing and portfolio strategy of other life insurance companies in that

THE PORTFOLIO MANAGEMENT PROCESS AND ITS DYNAMICS

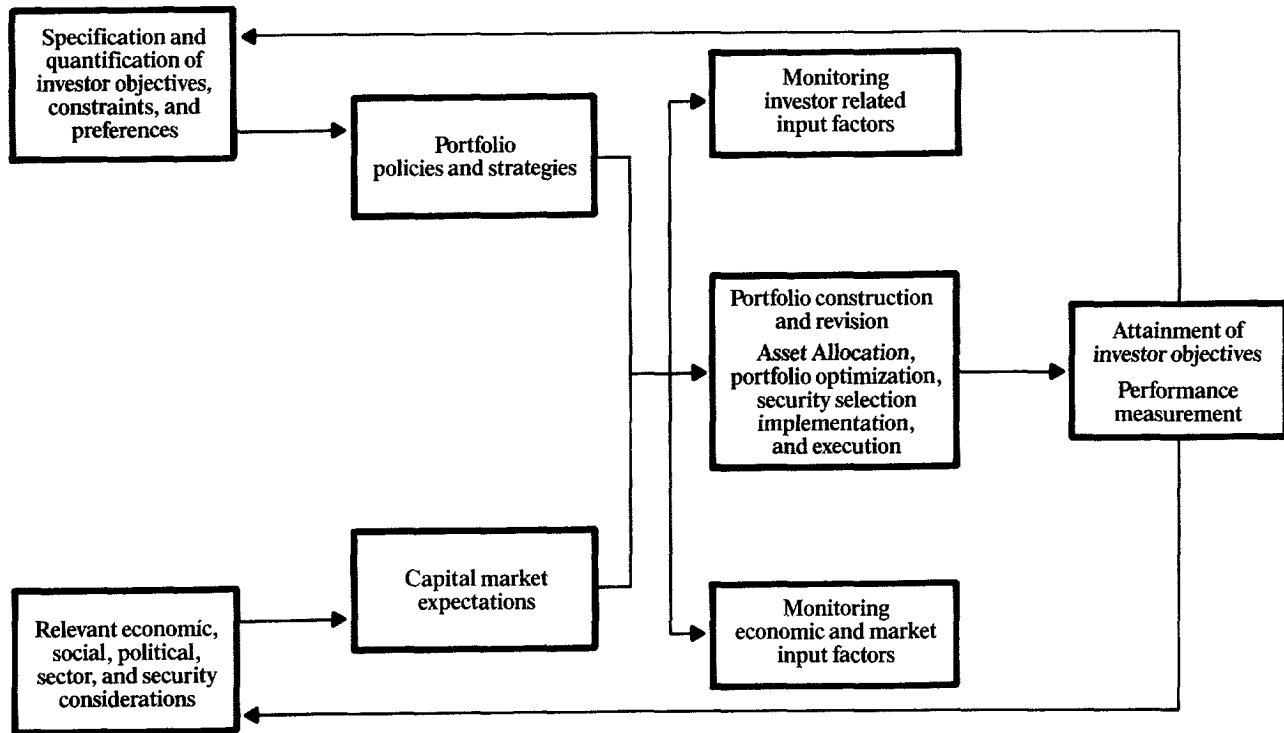


EXHIBIT 1

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market. To analyze and understand these policyholder and competitive changes, the input of the actuaries is extremely important. Good communications with the marketing department is required.

Changes in the economic or capital market environment traditionally have affected investment policies, in some cases causing a rebalancing of fixed-income portfolios to lengthen or shorten portfolio maturity or duration, or in other cases, causing a shift in the asset allocation between bonds and mortgage loans, and more recently to shift across markets like the U.S. to Eurodollar or U.K. bond markets.

On the flowchart in Exhibit 1, the elements of the process needing input from actuaries are:

1. Specification and quantification of investor objectives, constraints and preferences -- in other words, the characteristics of the company's products, the liabilities resulting therefrom, and the results of interest sensitivity modeling;
2. Portfolio policies and strategies;
3. Monitoring investor-related input factors -- the system of feedback loops to reflect changes which can result in revisions to the portfolio policy statement and rebalancing all or some portion of the portfolio.
4. Portfolio construction and revision -- actuaries can help the investment staff develop, implement, and refine asset allocation models and portfolio organization techniques.

The mathematical skills of the actuaries along with their knowledge of the liability structure can assist in the design and implementation of portfolio policies and strategies. Asset and liability management requires expertise from both sides of the balance sheet. Since a product has to be sold, marketing input is also essential to the formulation of investment policy. Exhibit 2 depicts the actuarial, investment, marketing (AIM) triangle in a slightly different format.

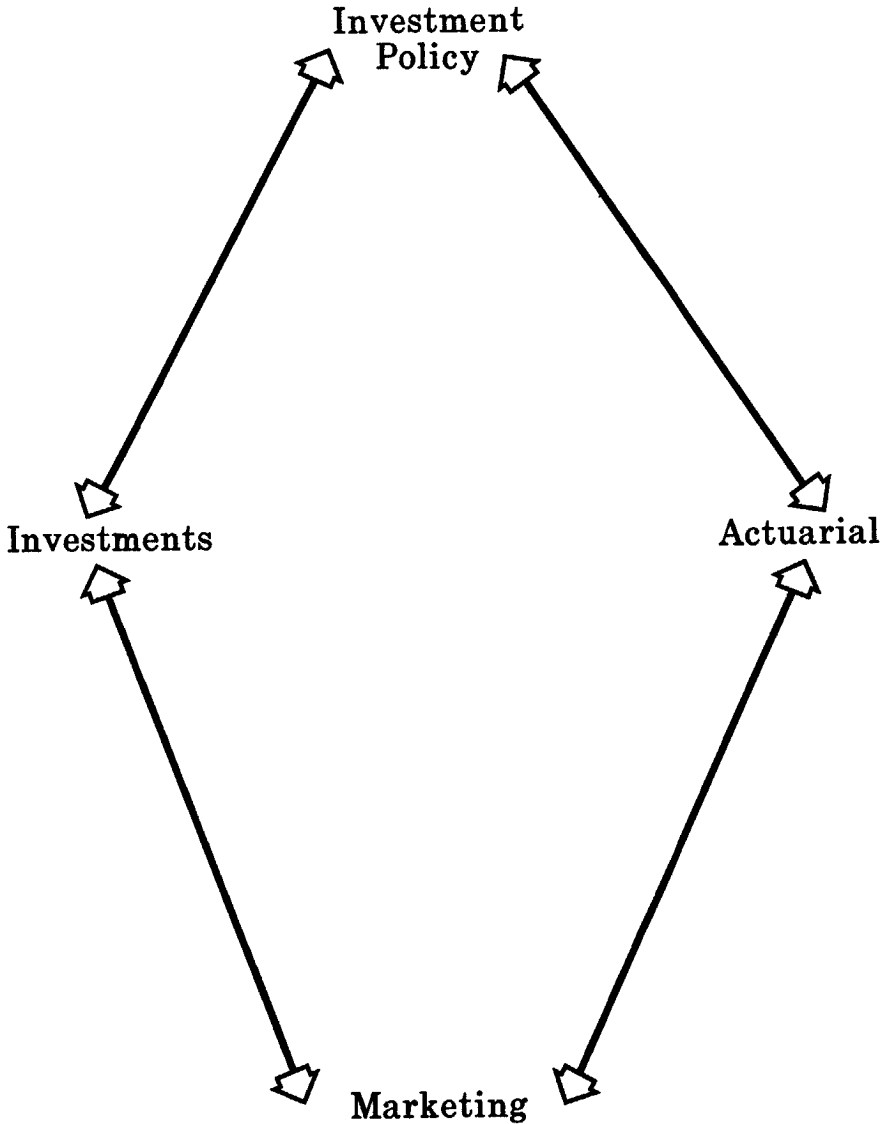
Determinants of Portfolio Policies

Portfolio policy can be defined in terms of the specific objectives and constraints of the investor, in our case the insurance company's general account, or any segment or subportfolio thereof. The objectives and constraints are shown in Exhibit 3.

Portfolio objectives are goals that are generally defined in terms of return requirements and risk tolerance. Risk tolerance can be defined in at least two dimensions, credit (default) risk and interest rate (duration) risk.

Constraints are limitations on the portfolio management process within which the investment manager must operate to achieve the portfolio objectives. These constraints include:

ASSET/LIABILITY MANAGEMENT



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EXHIBIT 3

DETERMINANTS OF PORTFOLIO POLICIES

Objectives

Return Requirements -

Income (Yield)
Capital Appreciation
Total Return

Risk Tolerance -

Credit Risk
Reinvestment Risk
(Risk Adjusted Returns)

Constraints

Liquidity Requirements -

Product Considerations
Capital Market Considerations

Time Horizon -

Product Considerations
Capital Market Considerations

Tax Considerations -

Income Tax
Capital Gains Tax

Regulatory and Legal Considerations

Unique Needs, Circumstances and Preferences

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1. Liquidity
2. Time horizon
3. Taxes
4. Legal or regulatory matters
5. Unique needs, circumstances, and preferences

Clearly, actuaries can and should play a major role in defining the liquidity needs and time horizons of various duration products or product segments. These considerations should then be incorporated in the investment policy statement for the general account or segments or subportfolios within the general account.

Legal, regulatory, and tax matters generally apply to all segments of the general account. The actuaries, marketing people, and senior management generally help define any unique factors that should be reflected in the investment policy statement. For example, some companies will not buy foreign securities, and others will not make mortgage loans in certain geographic areas. The combining of objectives and constraints leads to the development of a set of investment policies for the general account and each segment or subportfolio. You may have a company that has a set of investment policies. To be effective, these policies should be translated into a set of guidelines that specify the action to be taken to achieve the investment objectives within the constraints imposed. Many of these considerations are qualitative, but all lead to a quantification of risk and return and ultimately to the development of a portfolio geared to the needs of a particular insurance company, product line, or segment.

Examples of the Actuary's Role

At United of Omaha, the investment staff looks to the actuarial division and the actuaries assigned to work with our staff as important and integral parts of the portfolio management process. For example:

1. The product development committees generally are aware of the risk tolerance of our management and Board as expressed in the investment policy or investment strategy and goals statements. One of our investment officers is a member of the Product Development Committee.
2. Using marketing forecasts, reserve formulas, and models, the actuarial division determines the amount required to be invested to support existing and new business products -- the liability cash flows. This data is projected for a full calendar year on a monthly basis to highlight any seasonal factors.
3. Again using various modeling and sensitivity techniques, the actuarial division determines the minimum liquidity needs of major product lines which then serve as a constraint to be dealt with in the investment policy and strategy for product segments or subportfolios.
4. The actuarial division also uses modeling and sensitivity techniques to derive or estimate the duration of the liabilities. The invest-

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ment staff then uses this information to establish duration or time horizon constraints, which are reflected in the policy and strategy statements for each segment or subportfolio.

5. The staffs of the actuarial and investment divisions then jointly monitor the liquidity needs and duration characteristics of the total portfolio and all segmented or subportfolios.

The Senior Actuarial Officer and Senior Investment Officer serve on a corporate committee, which sets credited rates on all individual products and is responsible for managing the spread between earned and credited rates.

Attractive Products or Attractive Assets

Exhibit 4 depicts the spectrum of assets and liabilities, which influence the investment strategy of a life insurance company.

The actuarial and investment staff has spent most of its time funding products that the individual product or group pension marketing department has determined are attractive. Some attention should be given to attractive assets identified by the investment staff. The actuaries could analyze those assets to determine how they might be used to extend existing product lines and enter other markets.

While the actuaries are dealing with a spectrum of actual or potential products, the investment staff is dealing with a spectrum of assets. The company whose product line best utilizes the most attractive or least efficiently priced of the potential funding assets available in the marketplace could realize more efficiencies. Through coupon stripping, interest rate swaps, and other assets modification techniques, the flexibility to reformat assets is increasing.

Organizing to Manage Assets and Liabilities

The traditional organizational structure of an insurance company does not lend itself to the asset/liability management techniques required today. Banks changed their organizational structure in the mid-1970s and established asset/liability management committees that now overshadow the traditional primacy of the loan committees.

I expect that insurance companies will establish senior level asset/liability committees and may well assign overall asset/liability management responsibility to one senior officer. Such changes in organizational structure will facilitate communication between the actuarial and investment departments and more clearly define everyone's role regarding investment policy, product development, and market planning.

MR. COOK: At Ohio National Life, we completed our asset segmentation by line of business in 1983. We began by listing the maturity, liquidity, and required interest characteristics of each block of liabilities, using these as guidelines to assign existing assets by line of business and to assign new asset purchases.

INVESTMENT STRATEGIES

Assets

- Private Placements
- Public Bonds
- Mortgage Loans
- Interest Rate Swaps
- Cross-Currency Trades
- Futures
- Options on Futures
- Real Estate
- Equities

Duration

Liabilities (Reserves)

- Ordinary Life
- Universal Life
- Annuities (flexible premium)
- SPAs (immediate or deferred)
- GICs
- Structured Settlements

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We are smaller than Nationwide -- about 1.1 billion dollars of assets -- but we didn't use synthetic segmentation. We actually assigned specific assets to each line of business. We found both advantages and disadvantages to that approach.

One of the advantages is that the business managers feel that they can believe the results. They can see which assets they have and what those assets are earning. They are not subject to some artificial allocation.

One of the disadvantages is our size. Some portfolios are rather small, and it is difficult to manage them efficiently. You run into the risk of a particular asset going bad thus having an undue effect on the portfolio. Another disadvantage is the disagreement you might have about choosing which assets go to which line of business. If two lines of business wish to buy a lot of mortgages and your investment department can produce mortgages only at a certain rate, there may be some difficulty with who gets how much, since there aren't enough coming in. We still haven't determined whether our method is good enough to stay with or whether we should take a look at another method.

We are still trying to find solutions, for example, to how investment policy should be developed. Our most formal process involves the GIC product line. We have weekly meetings (more often if necessary due to market changes) among three investment officers and the officer who is head of the pension and annuity line of business -- an actuary. This group reviews investment strategy and available rate guarantees in the market, and establishes guarantees for the following week. That seems to be a good example of an ongoing system of cooperation that's working well.

We do something similar for products like universal life and our flexible premium deferred annuities. They are reviewed monthly; rates are set; and the investment strategy is reviewed. Other lines are reviewed less frequently.

It is obvious that the pricing actuary and the investment officer work together. We discuss types of available investments, their quality, maturity, yield structure, and how these would relate to a given level of interest guarantees. From these meetings we generally have been able to arrive at a workable consensus on investment strategy and pricing.

The communication, the joint analysis, and the consensus are the most successful ways to build a workable pricing and investment strategy.

The role of the valuation actuary at Ohio National is less obvious in this process. The valuation actuary had an important role in our initial segmentation process. He also serves as arbiter when asset assignments get out of balance. (For example, we are still trying to improve our process of tracking segmented investment and product cash flows. This has to be done frequently enough so that no line becomes significantly under-or over-invested.)

DEFINING INVESTMENT POLICY AND STRATEGY

The proposed increased responsibility of the valuation actuary to certify that future liability cash flows are properly matched by future asset cash flows clearly requires the valuation actuary to be more involved with managing the company's asset structure. This may be a much longer term development than the pricing development already begun.

We are developing a system at Ohio National Life that works reasonably well in terms of acquiring new assets for pricing new sales. But what happens if economic or company circumstances change so that the company as a whole needs to sell certain assets, take capital gains or losses, change quality levels, or shorten or lengthen the portfolio? A given line of business may have priced based on certain asset purchases, which at the time properly covered the emerging expected product liabilities. We have not yet developed a method of reacting to this situation. Perhaps an acceptable solution to all parties is to sell the asset and give the line the resulting capital gain or loss. But this might not work well in all circumstances.

MR. RICHARD L. SEGA: The perception around my company, the Travelers Insurance Co., is that GICs are risky, but the GIC people joke that, if everybody knew what their individual liabilities were, they would have GICs. When you apply investment strategies, how do you reconcile the problem of needing to know where the flows are (for the investment side) with the uncertainty in liabilities?

MR. MAGINN: In our company, the GIC side (group pension) is the easier of the two, the other side being the individual (primarily universal life and individual annuity) products. It's easier for us to track the liability cash flows for GICs since they seem to be discrete sales. We drop in and out of the GIC market depending on whether we can be competitive or not, and we do not let the market itself drive our investment policy. The policy we use is either a cash matched or a duration policy. We started out cash matching in 1981, which worked well but became noncompetitive in 1983. Now we are more into an immunized approach. We hear the same comments, from within the investment staff in particular, about the riskiness of GICs and the things that other companies are doing which allow them to post the rates they do on those GICs in the marketplace.

MR. SEGA: When you are trying to structure an investment policy program, what do you do about investment strategy for lines with short options; book value withdrawal provisions; and dumping or lack of dumping provisions of deposits in the contracts? How do you apply traditional investment management techniques to these strings of liabilities that are essentially uncertain? If you knew what they were, then you could run them like GICs.

MR. MAGINN: We run into that problem with our sensitivity analysis. We have another problem with our individual products; we're not able to reconcile forecasted with actual cash flows. Through our sensitivity analysis, we have attempted to identify the options as you described them and how those options would be used under a variety of different interest rate scenarios. The liquidity consideration is a major factor particularly for our universal life and individual annuity portfolios

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containing options for people to disintermediate, given changes in interest rates. We are hoping that our models are giving us a fairly accurate range of expectations which we then attempt to use in building a liquidity component into those portfolios.

MR. PHILIP K. POLKINGHORN: In the United Kingdom, the valuation actuary is required to set up reserves if he sees any mismatch of assets and liabilities which motivates management to get the actuary involved in the investment policy because at the end of the year, if he feels you are mismatched, he'll require you to set up additional reserves to cover that risk. Is there a different role for the pricing actuary as opposed to the valuation actuary?

MR. STENSON: In a sense, I think not. Both a pricing actuary and a valuation actuary should be concerned with the ongoing viability of the business. If it's going to get in trouble for a mismatch of assets and liabilities, then the price isn't right considering what is backing the product. That is an ongoing problem for the company as a whole. The pricing actuary's perspective is primarily concerned with the current management as it moves along with the product and with the investments backing the product. The valuation actuary's perspective is longer and has to be concerned with modeling and various possible scenarios. Basically, they are going after the same thing.

MR. COOK: I agree. Pricing and valuation are just different phases of the process. The one has to be done up front when the product is sold, while the other is an ongoing matter as long as the product remains on the books.

MR. R. ALLAN IRELAND: My feeling is that the attainment of investor objectives performance measurement is part of the laudable communication process, which many companies are setting up between investment professionals and actuaries; agreements should be made in advance on what performance standards are expected. What are your comments?

MR. MAGINN: I didn't think that actuaries would want to take any of that responsibility upon themselves, but we on the investment side, would welcome passing as much of that off as possible. It is extremely important that performance criteria be established up front and that those performance measurements be risk adjusted. You can increase yield by mismatching or downgrading, and I often find it strange that everybody doesn't realize that that's the name of the game, and that's how extra yield, in many cases, is achieved, i.e., by taking some additional risks. Perhaps the risk is justified, but it needs to be made known that there was risk taken, and the returns need to be measured in light of the degree of risk that is taken. It is not an area that our actuaries have wanted to be part of, but maybe it's because we haven't invited them to be a part of that discussion.

MR. ROBIN B. LECKIE: It seems that many of us, in endeavoring to compete, close our eyes to the degree of risk we assume in the mismatch or in the quality factor. As we are forced to follow the

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competition, an investment policy is articulated and perhaps carried out that is then passed to the pricing area or vice versa, without adequate reflection of risk until such time as the valuation comes along. The valuation actuary, if he or she is doing their job, cannot ignore that and will have to appropriate some surplus for that risk. It seems that it shouldn't have occurred in the first place; we should be risk adjusting.

In my own company in the U.S., we established what we consider to be an appropriate investment policy on our new money products (pension and annuity products) -- both term and quality for each type of business we write. It may be a short-term block, a five-year SPDA, or a much longer annuity -- a structured settlement, for example. Each type of annuity, would have its own policy, and from that we can derive what the appropriate pricing rates are. It's got nothing to do with what will actually be invested. Our investments are up to the investment department, and they will have participated in the process of establishing the rates. The actual investments will go into the segmented funds, but there will be an element of mismatch and an element of quality disparity, either favorable or unfavorable, from the pricing standard. The product manager will receive the return that is based on the pricing. We can get into an active (trading, holding, or selling) investment management program, and it's quite immaterial to the product profitability. In the case of our portfolio products (our participating products), we have a notional fund which is established as an appropriate backing set of investments and term for products that are fairly long term and are carried through a long period of time. We permit no trading whatsoever on the notional fund, but again, there is no such set of assets. Your surplus fund then has to carry all of the mismatch on your new money products and all of the possible mismatch on your notional fund. Within the surplus fund, you can analyze all of the profits that you are earning on your mismatch and the profits you are earning on your quality (assuming that you've got lower quality than you have assumed in your pricing). Those profits must be reserved. You'd be foolish to allow them to flow into earnings. Of course, you've got the direct earnings on your surplus funds. The majority of equities would be in the surplus funds. But through the analysis of your surplus fund, you can follow essentially what the performance of the company is, the risks that the company is taking, and the provisions that will have to be made to account for that. You can, of course, validate your regular liabilities in a manner according to the way in which you've priced. But all has to come together for the total company in the final analysis.

MR. EASLEY: So you actually have hypothetical assets for each of the lines of business and the real assets are owned by the corporation as a whole?

MR. LECKIE: That is correct. We argue that the Ohio National approach is not good in that it pushes you into holding your assets, immunizing, and breaking up your investment department into components. It may make the actuary's job easy, but it will make the performance of the company poor.

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MR. MAGINN: Is the idea there that you would be suboptimizing and segmenting your investments to such a degree that inefficiencies are created for your investment operation?

MR. LECKIE: Yes, we're trying to look into the investment department in its totality rather than its parts. That way it can continue to manage aggressively a very large pool of funds. The investment department is participating along the way on all the risks that are assumed by the company so that it is, in fact, going to steer the ultimate investment policy of the company. This doesn't lend itself easily to statutory reporting, so this is primarily for internal analysis. This also permits an aggressive investment policy to take account of the shifting situations.

MR. EASLEY: We have a single immunized pool. The GICs and other different varieties access that one pool, which is owned by the line of business that issues the "purchased annuities." This line acts as reinsurer much like your corporate asset for the GIC line. The GIC line basically guarantees the rate of return that the pricing person believes there.

MR. COOK: Whether you are using real or synthetic assets, you certainly have to recognize the level of risk, whether it's quality or mismatch of maturity length, in the pricing, or you have not priced the product soundly. If you're pricing an SPDA, you may want to model series of potential lapse rates, credited rates, changes in investment yield rates, and changes in mix of asset lengths and make sure that you have set your rate so that if things go badly in any direction, you can still cover it.

MR. STENSON: In our arrangement, the good news of higher returns would go back to the managers of the various businesses with which they are associated and so would the bad news of any of the bad results. Presumably, if it's a matter of risk, in terms of the quality of investment, a judgment has been made that the extra return is greater than that risk.

MR. IRELAND: In our asset segmentation process, we have arranged our affairs so that the real asset returns do go to the various product segments. Our regime of asset segmentation is too new for us to judge whether or not the dangers that Mr. Leckie referred to will transpire (the diluting of resources of the investment community). However, one observation about the process as a whole is that the investment community now has many more sensitized customers than it had before. That is a valuable aspect of having the real assets allocated to the various product lines.

MR. EASLEY: Perhaps a primitive version of that is how much liquidity we need. If you look at liquidity on a line by line basis, you probably think you need more than you do if you look at it on a company wide basis. Also, if you take a look at the different forms of liquidity you really have, not only those that are short term but also the potential profits on the various lines of business, they buffer each other.

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Especially today when you've got such a sharp yield curve at the short end, you pay a heavy price for liquidity. There is a synergy among the different lines when you're a multiple line company.

MR. COOK: The pooled approach, which the synthetic approach leaves in place, builds in corporate reinsurance against any one line having a disaster. The advantage of the real asset segmentation is that it helps enforce the idea of line-of-business accountability, and that's what we are trying to stress at our company.

MR. LECKIE: In a fixed account, we are not aware of the performance until the assets have run their course, and they have, in fact, paid off the return we anticipated. It is difficult to assess exactly what that risk means along the way. The measurement of the risk factors by various modeling techniques and other reserving approaches is attempted. It is not exact, and each of us views differently when we can realize profits and how much we should set aside for risk. So, my concern is our ability to measure, in fact, the risk over the horizon you have in mind, which is three months to a year. I don't think we're that good, and I don't think we're going to be that good five years from now.

MR. COOK: I agree that there are uncertainties, and we're not yet certain that we made the best choice.

MR. WALTER L. RUGLAND: I start out with two premises. One is that the marketplace sets the price, and you can choose to price what the marketplace will allow. The second premise is, given that we have assets in total and given the price that the market will let us charge, we need to determine how much of a mismatch or how much of a quality compromise we need to go through in order to play the game in the market. When we do that, we decide how much of the asset volume that we want to allocate toward covering all these risks we're going to have to take. The decision then is, do we have enough assets to ante up to the game? If we do, are we going to get the return that whoever gave the assets is going to demand that we get for those assets? If the marketprice would let us play the game with a hundred units of assets, and we can meet our return on those hundred units, we obviously couldn't enter the game if the marketplace required a hundred and fifty units of assets.

MR. EASLEY: In the insurance community, if one person folds up, everybody else is expected to pick up the tab for them. There is a certain amount of discipline that will be enforced. The whole issue of the valuation actuary comes into play there, both in terms of the default and the C-3 risk. It is a major concern. You would hate to see the entire market deteriorate to the practices of the most unwise in that market to match the rate.

MR. STENSON: There's a range of what the marketplace will accept in terms of price depending on how much you want to do. It may not be that broad a range, but there are some variabilities, so you may have choices.

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MR. LECKIE: Each company needs to establish its own discipline and approach to pricing. When you don't like what the marketplace is doing, you shouldn't compete. But you have to compete, and you have to do things on occasion that you don't think you should do. The marketplace is not always rational. There is so much of this "follow the leader" and "the need for growth" that we're doing irrational things. The problem is shaving on margins or poor quantification of the risk consideration. Eventually you come to the point where, like in the property and casualty cycle, you ought to get out and let the other companies take the losses.

MR. DAVID N. INGRAM: The reason that our company is looking to go from a partially to a fully segmented situation is to increase the communication between actuaries and investment people. Historically, we've had an investment and an actuarial community diverging over the years. With each segmented case, we've brought the two communities together and started to have full understanding of each other's roles and making our products produce the desired results. The segmentation does not produce real financial results for the product necessarily. It probably introduces some inefficiencies in terms of expenses, just as any kind of management structure, which breaks things up into finer pieces and has some duplication, would. We think that, perhaps after we've established this communication and understanding, we may be able to eventually get rid of the segments and go back to a full management of the portfolio in one block again.

MR. COOK: That has introduced communication between the actuaries and investment people and also with the marketing people and top management. All of them now can understand or see some aspects of this entire enterprise that were not nearly so clear before.

MR. EASLEY: I think you want to keep that in place. Just through the forces of turnover and not seeing each other on a regular basis, the communication would be lost if you ever gave up the segments completely or some other method of continuing the dialogue. It is hard for us to find the time for sufficient dialogue even when there is a regular reason to meet.

MR. JOHN S. TILLOTSON: Many actuaries now are seeing this tremendous C-3 risk and saying "a big part of industry is going too far because they don't realize this risk." The problem is that you always should then set your risk standards and get out of the market if it's too big. That in itself can be riskier for certain companies; they can't just decide not to sell anything for three years. I am hoping as an industry effort that we can try to straighten things out so that we don't get caught up in this competitive cycle. I don't see options for individual companies unless the industry as a whole identifies the problem and solves it.

MR. EASLEY: It is important to maintain the competitiveness, but if it gets to the extreme of companies going under, then that's a negative to the consumer as well.

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MR. MAGINN: From an investment standpoint, there are many other industries that practice predatory pricing and similar kinds of pricing policies. You can see what happens in many of those industries -- property and casualty, for instance. You can also look in the corporate and the nonfinancial world and see other pricing policies. You can even look in the banking/savings and loan world and at other financial institutions and see people who are pricing aggressively. This leaves a question about the awareness in these industries of the risks involved and the evaluation and quantification of those risks. We deal in an environment, particularly in the financial industry, where there is a rather long tail on these types of things. In the nonfinancial corporate world, the risks tend to be identifiable and come to the surface sometimes more quickly than they do when we're pricing over a five-year period.

MR. WILLIAM L. BOGARDUS: We have had, for three or four years, a full segmentation of Lincoln National's business with the investments broken into the various portfolios. I happen to be in the group life and health area. Therefore, I don't have the problems or opportunities with the interest-sensitive products of which you have been speaking. Still, we have a concern with the level of investment income, the maturities and so on.

In our full segmentation, the actuary has much responsibility with establishing the investment portfolio objectives for the segments involved. We review the liabilities and from that we determine that we want X percent of the assets to mature within one year; X percent in cash; an average life of maybe five years; or maybe a certain percent maturing in each of the next ten or twenty years depending on the portfolio involved. So, there is strong guidance from the actuary in the product line on the mix of the assets.

The actuary also has some influence on the quality of the assets. We might dictate that we want all of our assets in Baa or better bonds or equivalent securities, or we want 25 percent of our assets in high risk investments because that segment has low priority. We might expect that the yield will more than compensate for the risk taken.

We monitor how fully invested the portfolio has been at the end of the quarter and the year. We measure the average yield of the portfolio and the yield of the new investments, which are then compared to the jointly established objectives. We communicate the new cash flow for the next year and the next quarter involved so that we have some feeling for how much new investment will be needed.

The investment department can be viewed in two segments. One is the acquisition or origination people who are looking at private placements, mortgages, public bonds, and securities to determine which would be good companies in which to invest. Then there are the portfolio people who work with an actuary who determines what kinds of duration and quality the investments should have. Those portfolio people then draw the particular portfolios, which are necessary to fulfill the needs within the segments, from the origination people.

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When a capital gain or loss is taken we give it back to the line of business over the next two, three, or ten years that the security was supposed to stay on the books until it matured. This way it's a kind of compensation for things that happen to our portfolio, which are out of our control. For example, consider a change in the tax law that implies that you ought not to be in tax-exempt securities. If there is a corporate philosophy that bans tax-exempt securities, then we have to abide by that and end up taking some unplanned capital losses. These are then spread over several years. If we have to sell a security at a capital gain, we get additional income to the line over the remaining life of that security.

MR. COOK: Is it as if your corporate parent paid a stream of synthetic coupon payments to compensate for the lost investment income?

MR. BOGARDUS: That is correct.

MR. COOK: Mr. Stenson, is that similar to the system that you would use?

MR. STENSON: No. Ours would tend to go back directly and immediately in the same year to the particular line. Otherwise, it is relatively similar to some of those operations.

MR. MAGINN: Are there any companies represented here that are considering or do have asset liability committees at a senior level or have a senior officer that is an asset liability manager?

MR. IRELAND: We have such a senior committee. I am not sure whether it is going to be permanent or not. It has been set up primarily because asset segmentation in our organization is relatively new. It has been in place for approximately a year and a half. The purpose of it has been to develop ideal asset portfolios by segments (this is where the various line actuaries have a lot of responsibility) and also, to establish the kinds of communications and reports that should become part of the formal communication process. But, as you solve some problems, more are generated.

MR. EASLEY: One of the things that would create a problem would be if you have a major disagreement between the pricing and the valuation actuaries about what the different risks are. How many companies have those people as being separate versus being the same, at least for a given line of business?

MR. COOK: Our pricing actuaries are in the lines of business and our valuation actuary is in the corporate actuarial division, so in our company they are separate.

MR. STENSON: We have people both in the line and corporate level concerned with valuation.

MR. BOGARDUS: We have business units. We don't have any corporate anything anymore. We think of corporate entities as being

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excess baggage. The Chief Executive Officer is the extent of it. The valuation and investment actuaries and everybody else report to the head of the business unit. The investment department does not, but the investment actuary does. Therefore, there is a lot of communication directed toward the same goals all of the time to make as much money, expand the size of business and whatever the needs are.

MR. STEVE D. SCHULTZ: I am surprised that no one has said anything about the importance of getting the treasurers department and the accounting division involved in investments and matching investments with the appropriate lines of business. A few years ago, Massachusetts Mutual instituted segmentation, and it was in such a hurry to do this, that it didn't take care to get the treasurer or the accounting people involved. There was such a mismatch during the first few years of operation that, at the end of 1983, the insurance segments' assets exceeded the sum of the liabilities and the surplus by a hundred million dollars. Since then we have had to form a Segmentation Committee, which is chaired by someone from the accounting division. By having weekly meetings, for the past year and a half, we have finally managed to straighten out some of these misallocations. Another area where getting the accounting people involved has been important is in keeping track of particular securities in the administrative system. About a year ago, practically half our securities had some kind of error in our administration system. As an actuary, I have been surprised at the accounting methods for some of our securities.

MR. MAGINN: As a treasurer, I will respond to that first. In our organization it is a little easier because the treasurer's function is a part of the investment department, and we are responsible for all the day-to-day cash management. In this respect, the point that you make about the accounting area is critical. As yet, we have not perfected an accounting system that will give us accurate and timely information on what I would describe as the liability cash flows. Unlike United of Omaha, all of the securities accounting is done in the investment area. We happen to use a packaged system put out by Information Systems of America (ISA). It is not perfect, but is highly accurate. We work very closely with our accounting and tax areas also in the life company. The actuarial department basically is working closely with the tax, accounting, and investment departments because we are using actuarial's figures, which it has drawn from marketing forecasts, its reserve calculations, and so on, in order to determine what the required investments are. The actuarial department does not have an ability to reconcile that with the actual cash flows because of deficiencies in our accounting system. I agree that the communication, which goes on between the accounting area and the treasurer's area, is extremely crucial. We are attempting to time our investment activities fairly closely with the actual sale of products so that we are earning the rates upon which the credited rates are based. That takes careful coordination of actual cash funds available for investment and a good idea of the sources of the cash funds available for investment (i.e., what product lines generated those cash flows).

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MR. STENSON: It is more complicated to account for the segments separately, but the focus that you are enabled to put on each business or cluster of businesses is the advantage.

MR. EASLEY: Traditionally, actuaries have been familiar with the accounting and the line areas in terms of the contract administration and have expressed concerns of where there is a problem in terms of the recording of liabilities. The valuation actuary is going to have a new interest and a new system there.

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