RECORD OF SOCIETY OF ACTUARIES
1990 VOL. 16 NO. 2

MEASURING INTEREST MARGINS -- PART 1 -- ASSET SEGMENTATION

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- What considerations prompt companies to establish new segments?
- How are investment policies set?
- How are assets allocated?
- When are companies allocating assets?
  - -- At the time of commitment?
  - -- At the time of acquisition?
  - -- Retrospectively after cash flow by segment is known?
- How are companies accounting for investment income by segment? Capital gains and losses by segment?
- How timely is information provided to segment managers?
- What problems have segment managers encountered in allocating assets?

MS. ESTHER H. MILNES: This is the first in a series of programs at this meeting about measuring interest margins. The program committee introduced this series concept to allow you to pursue this one subject. The series includes three panel discussions. This is the first one on asset segmentation. The second one will be on measuring investment results. The third one will be on measuring required interest.

The asset segmentation process is a complex one which includes setting investment policy and implementing investment strategy. Most significantly it involves the interface between investment areas and product development and administration areas.

Jake Auger will begin our panel on asset segmentation. Jake has been with Aetna since 1971 and received his FSA in 1976. He spent about 10 years in the pension and financial services area and was involved in establishing a separate account in which all new GIC assets were managed. That was Aetna's first experience with asset segmentation. After that he spent five years in corporate actuarial where, among other responsibilities, he managed the second phase of Aetna's segmentation of its life insurance company general account. At that time, Aetna moved from two segments to five segments. For the last three years Jake has been in Aetna's investment management group, as head of the portfolio strategy unit. There Jake is responsible for developing specific portfolio investment strategies for each of the major insurance lines' asset portfolios.

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MR. JAMES G. AUGER: I'm going to address five aspects of asset segmentation. I'll begin with the discussion of why a company would want to segment its assets at all. Then I'll provide a brief history of the evolution of asset segmentation at Aetna. That will be followed by a discussion of how investment policies are set for each segment, together with a discussion of how assets are allocated among the various competing segments. Finally, I'll conclude with some thoughts on the potential problems associated with asset segmentation. The opinions I express are strictly my own and do not necessarily reflect the opinions of Aetna investment management or Aetna Life & Casualty.

Why segment at all? On the surface it seems like a pretty silly thing to do, especially from the investment management side. Doesn't segmentation introduce inefficiencies into the investment management process? Don't more segments mean lost investment opportunities and increased investment expense?

Unfortunately, the answer to all those questions is probably yes. However, the reduction in investment opportunities and efficiency is likely to be more theoretical than real -- if segmentation is implemented properly -- and there are some real offsetting benefits to asset segmentation.

The first of these benefits is an improved ability to control investment risk. Segmentation facilitates the identification of investment needs (as defined by the cash-flow characteristics of liabilities and other corporate obligations). Segmentation also makes it easier to assure that the assets required to respond to those investment needs are acquired at the right time and in the right amount.

Second, segmentation facilitates the collection and reporting of management information critical to the successful management of investment risk. The systems required to support asset segmentation also make it possible to quickly identify the source of investment and insurance cash flows, eliminating much of the guessing about why current cash balances are what they are and what types of investments should be acquired with investible funds. The dedication of asset portfolios in support of specific business segments also facilitates the development of line of business profit and loss statements, clearly identifying which lines of business are winners and which are losers. More importantly, it also allows management to determine which lines are at greatest risk to future changes in interest rates and the specific actions that must be taken in order to reduce that risk.

Segmentation can also insulate major business segments from the effects of cash-flow variability experienced by other major lines of business. This is a major advantage if you work for a company where individual profit centers are responsible for their profit results. It was this desire to insulate major lines of business from one another, as much as any other desire, in my opinion, that provided the impetus for asset segmentation at Aetna. It definitely influenced the final form of segmentation that was adopted within Aetna's life company.

What does asset segmentation at Aetna look like, and how did we get there? Like most life companies, Aetna began with an undivided general account that allocated investment

income to each major line of business in proportion to its reserves. For an environment where interest rates were relatively stable, this system worked fine.

By the early 1960s, however, this system was placing Aetna at an extreme disadvantage when competing for pension fund dollars. Our noninsurance competitors were able to offer current yields on new deposits in contrast to the portfolio yield available under our products. The gradual but continual increase in yield since the end of World War II had produced a significant difference between our portfolio yield and the yield available on new investments. As a way of improving our competitive position, the investment year method (IYM) of investment income allocation was developed and implemented within the general account in the early 1960s.

Nonguaranteed separate accounts were also introduced about this time. They were an additional means whereby we could compete for new pension dollars on a more level playing field with our noninsurance company competitors. Together these two solutions worked reasonably well until the mid-1970s.

That period witnessed what I'll call the beginnings of a meaner, less gentle, economic environment. Interest rates were more volatile. Inflation rates were high, and our customers were becoming more sophisticated in financial matters. This was also the time that Aetna (and others) entered the GIC business in earnest. The investment risks were obvious, and the desire to manage those risks were strong.

Our initial efforts to manage the GIC business within the general account, employing the IYM allocation method quickly proved to be unworkable and too risky. Our immediate solution was to establish a guaranteed separate account in which all assets supporting new GIC business would be managed. The guaranteed separate account approach was taken because we were confident we could implement it. We were less certain that we could obtain regulatory approval to segment the general account in the way that would be necessary to manage the GIC investment risk.

We now know that this is possible, however, thanks to the pioneering effort of Equitable. In the early 1980s we implemented a segmentation of our general account that placed all of our GIC business in a single segment within the general account. Since that time, we have grown to six segments within the general account, most supporting various portions of the pension market. A separate segment is also held with respect to the company's capital and surplus assets.

Because segmentation does have some downside risk, some of which I've alluded to and which I'll discuss in greater detail later on, we have been fairly tough on ourselves in limiting the number of segments established. As a rule, we will establish a segment only if its investment needs clearly cannot be satisfied by any of the existing segments and if it is reasonable to expect that segment to grow to a billion dollars or more within a few years.

When a segment is established, the management of the segment's assets is governed by a statement of investment policy. The investment needs of the segment are determined by review of the liabilities that will be supported by that segment. General investment

policy is set by the insurance client. The execution of that investment policy, that is, strategies and tactics, is the domain of the investment area.

Let's briefly review the areas covered by the investment policy. To emphasize the need for investment operations to support insurance operations, the investment policy always begins with the description of the liabilities to be supported by the segment. All actions taken and all risk assumed on the investment side must make sense relative to the liabilities being supported.

The investment policy will specify which asset classes may be utilized and will place upper and lower limits on the percentage of total assets that may be placed in any permissible asset class. These constraints are influenced by both economic and accounting considerations, as well as the client's relative tolerance and preference for return versus risk.

Limits will be placed on the credit risk exposure that each segment may accept. Normally, the policy will specify an overall credit rating which must be maintained for the entire portfolio, as well as an upper limit on the percentage of total assets that may be invested in below-investment-grade securities.

A duration target will be specified in terms of a corridor around the liabilities supported by the segment. For example, the policy may specify that the duration of the segment's assets will remain within 0.2 of the duration of the segment's associated liabilities. This method eliminates the need to constantly revise the duration target as the duration of the liabilities changes, yet accurately reflects the client's risk tolerance for mismatch risk.

If cash is a suitable investment, the investment policy will specify the amount of liquidity to be held. Upper and lower limits may apply.

Diversification covers such matters as the maximum percentage of assets that may be invested in a single issue, issuer, market segment, industry group, geographical region and so on.

Another issue covered by the investment policy deals with investment pacing. Are forward commitments to be made? If so, to what extent? How much will be tolerated? Will attempts be made to forecast future interest rate movements, and will those forecasts be allowed to affect the timing of investment purchases? These are important issues which must be clearly addressed in the statement of investment policy.

The need for and means of achieving hedging must be addressed by the investment policy. Hedging is most commonly used in connection with the GIC business, where it is important that investment acquisition reflect the yields prevalent at the time that contract sales commitments are entered into. When contract sales run ahead of the volume of permanent investments available, some hedging activity to lock in the current yield is necessary if the risk is to be managed and controlled. The options for doing so in the cash and futures markets are spelled out in this part of the investment policy.

Finally, the investment policy will contain some performance targets whereby the success or failure of the investment management process will be judged. Normally, this will take the form of yield and/or total return objectives relative to a benchmark portfolio. The actual results relative to the benchmark are adjusted for differences in credit, duration, option characteristics and so on to make sure that the comparisons are fair.

The investment policy tells us which assets are appropriate for each segment. What happens when a specific asset satisfies the investment policy of more than one segment? That gets us into the area of asset allocation.

There are at least two aspects to this problem. The first deals with determining which permissible asset classes offer the best relative value at any particular point in time. In my opinion this is the more interesting aspect of asset allocation, but I'm not going to address it because it goes beyond the scope of this presentation. It deserves its own session, and I hope it will be included in the program of a future Society meeting soon.

The second aspect of asset allocation deals with determining how permissible and available assets are apportioned among the segments competing for those deals. There is no single, right way to allocate assets among segments. The key is equity. There must be a process in place that treats all the segments fairly. This can best be achieved by having a disciplined, nondiscriminatory allocation process articulated and implemented.

The precise allocation process implemented will be influenced by the form of segmentation adopted by a company. For example, if segmentation were initiated by creating several single asset class portfolios with varying duration targets, the allocation process might not involve assets at all. Instead, the allocation process might center on how to allocate investable funds among the various segments. This form of segmentation moves the allocation question, at least initially, from the investment side back to the liability side.

As I mentioned earlier, Aetna has segmented along major lines of business. Under this approach the investable funds are automatically allocated to the segment generating those funds. The allocation of new asset deals among these segments is governed by a concept based on unfilled investment load. The process begins by determining each segment's investment load for the upcoming month. The investment load represents the volume of new asset acquisitions that each segment expects to earn or to have to make during the upcoming month. As deals become available during that month, the segment with the highest percentage of its investment load remaining unfilled is allocated the next available deal, provided, of course, that the deal satisfies that segment's investment policy. For extremely large deals, amounts in excess of a stated level may be shared with other segments. This is done primarily to prevent one segment from becoming fully funded by an unusually large deal while other segments interested in similar deals continue to have a large percentage of their investment load remain unfilled.

Occasionally, we may underwrite a second mortgage or be involved in a refinancing or workout that involves some additional disbursements. In this situation the segment which holds the initial investment is given priority relative to the transaction.

I've tried to capture the spirit of our allocation process in these brief remarks. As you probably expect, the actual rules that govern the allocation process are much more detailed than what I've just described.

Let's move on to the final topic, potential problems with asset segmentation. If bigger is better, segmentation must be bad. This is probably the most common criticism offered by opponents of segmentation. The more we carve up our asset base into smaller pieces, the greater the chances that some investment opportunities and economies of scale will be lost. If segmentation is carried to extremes, I think this is a very valid criticism. However, if the segmentation process is carefully thought out and controlled, any loss of investment opportunities should be minimal. A greater risk of segmentation is the increase in investment and administrative expense associated with it. Segmentation can be very expensive. So, you'd better be sure you need the segments before you incur the certain expenses associated with setting them up and administering them on an ongoing basis.

Portfolio managers, being only human, have a natural tendency to want to avoid being caught short of cash. The existence of a large number of segments can dramatically increase the amount of liquidity held within a corporation. If not carefully controlled, the increased liquidity will adversely affect investment performance. A well-articulated liquidity policy and an efficient and equitable means of borrowing between segments can minimize these concerns.

If significant amounts of investments are shared between segments, much of the flexibility and insulation from other segments may be lost. Shared investments reduce marketability or require one segment to subordinate its interest to that of the segment that holds the majority position in the shared investment. The need to share large numbers of deals must be avoided. This can be done by limiting the number of segments established and imposing a minimum size requirement for each segment.

If strong allocation rules do not exist, the internal competition for specific deals can be quite intense and at times can get quite ugly. It is hard for me to envision that this type of internal competition for deals can be in the long-term best interest of either the company or its customers. The need for an equitable, disciplined allocation process is imperative. Any potential for conflict of interest between the company and its clients can be successfully avoided by having such a process in place.

If synergy can be realized, the whole will be greater than the sum of its parts. But segmentation diverts attention away from the whole and redirects it to the parts. From that perspective, it is less than optimal. However, the management structure of most companies is also less than optimal on a theoretical basis. Corporations often achieve superior results by clearly assigning accountability at lower levels within the organization. This often translates into management responsibility and accountability at the level of individual profit centers or strategic business units. While this may result in a theoretically inefficient structure, it is often the structure that practically produces the best results. Carefully thought-out segmentation plans will reflect this practical reality.

In summary, segmentation at either extreme is probably bad. However, properly implemented, asset segmentation can significantly improve a company's ability to manage its risk and enhance bottom line results.

MS. MILNES: Our next speaker will be Elliot Rosenthal. Elliot received his FSA in 1981 and joined the Life of Virginia in 1982 where he spent three years working in product development. In 1985, he joined Aon Advisors and has been there ever since working as an investment advisor. Aon Advisors is an affiliate of Life of Virginia which handles its investment management needs. Elliot will be talking to us about what he calls notational segmentation.

MR. ELLIOT A. ROSENTHAL: I am an officer of Aon Advisors, the investment managers for Life of Virginia. I will discuss my ideas of asset liability management, as well as how we manage it at Life of Virginia. The theoretical concepts behind asset liability segmentation or management do not seem that difficult. I can assure you, however, that the implementation and details are complex. The development of asset/liability management in Life of Virginia has been a team effort. The general perspective is that of the investment area. The insurance products that forced the growth were investment-sensitive ones: Universal Life, single premium deferred annuities (SPDAs), GICs. However, various parts of the company participated in its development, and all liabilities and assets are included. The techniques described for Life of Virginia work today; they may not work tomorrow; they may not work for others. Clearly, there are many ways to approach this subject.

I believe that attention has always been paid to asset/liability management. However, initially, the chief investment officer probably was the major guardian, and the job was not perceived to be too complicated. It was believed that the products which were sold created long liabilities and, therefore, long-dated assets were purchased.

The subject has become more complicated. Actuaries, rating agencies, regulators and investment professionals are all interested in the subject. Terms that now are used include: average life, maturity, duration, modified duration, options, option-adjusted duration and embedded options. Asset/liability management has received much attention today and is treated as a complicated subject. Both assets and liabilities have become more complex, so additional sophistication is required in dealing with the subject. In the discussion which follows, I will attempt to describe where Life of Virginia is today, some choices that we've had to make, our goals and what we believe we are accomplishing. I would note that our goals have continued to expand and that we don't believe our task is yet complete.

At Life of Virginia the asset/liability process is a notational one of segmentation in the general account. Thus, while all the assets in the general account legally support all the liabilities, in a management sense control of the whole is managed by controlling the parts. Liabilities are broken into liability segments, which have known and somewhat uniform characteristics such as duration and convexity. Assets are divided into asset portfolios, which are delineated by both asset types and by characteristics useful for allocation purposes such as duration. The result can be described in an asset/liability matrix, in which the entry in a cell states the amount of funds that a particular liability

segment has invested in a particular portfolio. At Life of Virginia the liabilities have been broken into seven liability segments plus a surplus segment. We have approximately 25 asset portfolios.

In Table 1 there are two product liability segments, Segments A and B. Segment C represents surplus. There are five asset portfolios with the fifth portfolio representing cash. Segment A's liability is $1,000 split between Portfolios 1 and 2 in amounts of $100 and $900. Segment B's total liability is $1,800, split between Portfolios 2 and 3 in the indicated amounts. Portfolio 4 has only surplus assigned to it. Let's skip Portfolio 5 for now and look at the total column. The total column shows the total liabilities and surplus assigned to a portfolio. The next column, Invested, shows the actual invested assets for the portfolios. The final column, Cash, is the difference between the assigned balances and the invested amounts. A positive number states the amount of funds that a portfolio manager has to invest for that portfolio, while a negative number is the amount that he has overinvested. Now, let's go back to Portfolio 5, the cash portfolio. From the balance sheet we know that assigned assets must equal assigned liabilities plus surplus. Thus, the $20 of surplus assigned to cash is the last entry and serves to balance the assets and liabilities.

TABLE 1

Sample Asset/Liability Matrix
Month End 30, 1990

	Liability Segments					
Asset Portfolios	Seg A	Seg B	Seg C Surplus	Total	Invested	Cash
Portfolio 1	100			100	100	0
Portfolio 2	900	1,000		1,900	1,850	50
Portfolio 3		800		800	810	(10)
Portfolio 4			500	500	500	0
Portfolio 5 (Cash)			20	20	60	(40)
Total	1,000	1,800	520	3,320	3,320	0

I'd like to discuss our goals and basic assumptions concerning asset/liability management. Four main purposes or goals currently exist for our asset liability procedures:

Goals of Asset/Liability Management

- Control of risk
- Systematic method of assigning funds to portfolios
- Allocation of investment income to product lines
- Projection of profitability or spread analysis.

Control of risk was clearly the initial objective of the asset/liability process. As interest rates became more volatile and our product lines more diversified, it became clear that not only would the spectrum of investments be diversified, but also new investment alternatives probably would lead to new products. Thus, it became critical to track the assets versus the appropriate liabilities. The procedure became useful in assigning funds to the various portfolios. I will discuss that aspect later. Once the system came into place, it was natural that it be used to report investment income and finally used to project profitability.

In attempting to achieve these goals I will list some concepts that I call starting points that guide our approach.

Starting Points

- The process is a broad brush attempt to control risk.
- The investment world has much unavoidable uncertainty.
- Those involved must have knowledge of the assets & liabilities.
- The process is an evolutionary one.

The first two points suggest that we will not depend on detailed models, because the assumptions that you have to make in a detailed model and the real world don't tie together. We do use models to understand the assets and liabilities, but we do not worry about the decimal places. We would suggest that the asset liability job should be concerned with controlling risk under major interest rate moves and not the smaller day-to-day fluctuations. We believe that knowledge of the asset and liabilities is critical because that allows one to understand the risks and to make adjustments in one's strategy as appropriate. That the process is an evolutionary one tells us that our task is not complete and that we continue to gain more from this process.

We use GAAP accounting. It was our good luck that when the system was being implemented Life of Virginia had recently been purchased. As a result, both the assets and liabilities had been revalued at current market. This permitted a book matching which had the market characteristics of all assets and liabilities being valued at consistent levels. Had this not occurred, extra partitions would have been needed to match the older liability lines (valued at lower interest rate assumptions) with the older, lower-yielding assets.

For the liabilities, we use net GAAP reserves or GAAP reserves minus the deferred acquisition cost. These numbers probably best mirror the real assets that a line has brought in. Assets are carried at their purchase GAAP value. Budgets are done on a GAAP basis, and product lines are reviewed the same way. The allocations tie into the balance sheet, which provides regular and continuous checkpoints.

Having talked about our goals, the matrix, and the accounting basis, I will now be more explicit about the actual partition criteria. Our basic desire is that the assets and liabilities be duration matched. We do allow for intentional mismatches where additional yields warrant the extra risk. We do not attempt to cash-flow match the assets and liabilities. We do study, and try to know to the appropriate degree of precision, the

duration, maturity, option characteristics, and yield and returns for the assets and liabilities. From this basis we go forward.

We have several reasons to put liabilities into different segments. Liabilities with different interest rate sensitivities need to be assigned to different segments. Thus, single premium deferred annuities are assigned to a different segment than structured annuities.

Liabilities which need to be invested in different assets need to be separated into different segments. From this criteria, traditional life liabilities become assigned to a different segment than those of the group life line, as some of the traditional life line is invested in its policy loans, while the group line is not so invested.

To obtain 100% credibility for the allocation of investment income, liabilities with similar interest rate characteristics may have to be put into different segments, so that the dedicated portfolios may be run for those liabilities. Thus would be the case for a line with a significant marketing section. It could be assigned a different segment and would thus be invested in separate, dedicated portfolios. The investment income reported for this line would then have extremely high credibility.

I would also note that, for companies with true product managers, lines may be broken out so that different risks may be assumed such as the writing of options or different credit risks. Again, a separate segment would be created for these liabilities.

Repeating the earlier comments, the assets have been broken into portfolios. The first divisions are by asset type, such as bonds, mortgages, preferred stocks, common stocks and real estate. These categories are further subdivided to develop relatively homogeneous groupings pertaining to duration and option characteristics. For example, long bonds are broken out from short ones, and growth stocks would be broken out from a new venture fund. Additionally, if liabilities exist for which management desires a dedicated portfolio, then separate asset portfolios need to be created for them even if that creates asset portfolios that are not mutually independent with respect to the assets.

I'll describe the formal allocation process for recordkeeping and income allocation and the process for getting the funds invested. We estimate the liabilities monthly. For the more active lines with larger and irregular cash flows, accounting reports have been set up to help with the estimates. For the more stable lines, the segments are simply estimated. Our investment services area reports portfolio balances.

On a quarterly basis, the allocation process takes place twice. The first time the procedure is the same as on the other month ends. The second go round, the allocation process uses the liability amounts developed by the corporate actuarial staff. Thus, quarterly, we tie back into the balance sheet.

While the formal allocation of funds occurs monthly, the investment department has a weekly meeting, discussing, among other items, cash flow and available investment. Additionally, feedback is given continuously concerning new sales and deposits. This feedback is passed on to the portfolio managers giving them direction as to which

portfolios to invest. Hence, though the allocation process formally occurs monthly, in reality it is a continuous process.

Which comes first in our scheme, the liabilities or the assets? Well, it depends. Ideally, one would like to see the assets and the liabilities coming in together. However, sometimes we have excess cash, and other times we borrow in the short-term markets to fund investments. We would not consider either position more risky. Portfolios exist for which we make all available investments without regard to specific liability growth because we know over time liabilities will grow to fund these assets. Typically, these are investments such as direct mortgages or private placements which must be made when they're available. Other assets, such as public bonds and listed stocks, can be made on demand. These assets typically would be bought as the liability levels increase.

These portfolios are assigned specific levels, and the amount that is not invested, is considered invested in cash. Thus, when the asset/liability matrix is filled in each month, some growth starts with the liabilities, and some with the assets, but finally each liability segment has a default portfolio where the last entry is made. Each default portfolio would be considered a cash portfolio.

MS. MILNES: Our final panelist is Gary Neubeck from the Portfolio Management Group of The Prudential. Gary joined The Prudential in 1977 and held various administrative management responsibilities in the Corporate Services Department. Since 1980, he has had investment responsibilities. Currently, he's responsible for the management of several of The Prudential's segments including the group life and health, small group, flexible annuities and defined contribution plan segments, as well as the general account portfolios of Pruco Life of Arizona and Pruco Life of New Jersey. These portfolios and general accounts total in excess of $15 billion in assets and contain all of Prudential's nontraditional individual life products. Gary will be sharing with us his perspective on asset segmentation at The Prudential.

MR. GARY F. NEUBECK: I will discuss segmentation and its effect on the day-to-day operations of our company. Segmentation was necessitated at The Prudential by changes in the market environment throughout the 1980s. The transformation was triggered by volatile interest rates, investor sophistication, an inverted yield curve and new product demands which resulted in intense market competition. Many of our newly developed products had explicit investment strategies that, with their growth, altered the risk return profile of the general account portfolio.

Let me give you a brief illustration of the differences among segments. I'll describe three segments: the individual insurance segment, the nonparticipating group pension segment that we call GPSA, and a collection of product lines that are grouped under the title of interest-sensitive segments.

Individual insurance has liabilities which are determined largely by policy claims and surrenders and policy loan activity. The duration of the liabilities is between six and seven years. However, the policyholders' ownership interest also implies an expected equity return. Thus, we have constructed an asset portfolio of long-term, fixed-income

instruments and equity investments with an effective duration that matches the liabilities and provides what we hope is an adequate return to the policyholders.

GPSA writes our GIC business and has fairly definitive cash flows with a duration varying by the liabilities GPSA sells. Liquidity needs are limited and cash flows are certain. Therefore, the risk of interest rate movements is GPSA's primary concern. Noncallable bonds are GPSA's investments of choice since the portfolio is cash-flow matched.

The newer interest-sensitive segments, such as universal life and SPDAs, have restrictions or impairments on transferability, customer participation in asset value changes and an underlying explicit or implicit interest rate guarantee. In this instance our goal is an intermediate bond portfolio with a limited amount of equity participation.

Each segment is measured separately in terms of annual returns, before and after taxes. The corresponding cash flows for each segment, cash flow from insurance operations, net investment income, capital gains and losses, principal repayments, tax payments and credits are all tracked by segment. We employ a management accounting system to measure income, which makes each of us more accountable to our clients and gives us a better gauge with which to judge our investment strategies.

Segmentation provides each segment or portfolio with an individualized support system. This system, however, is set up to maximize the parts rather than the whole. So, without recognition of such, suboptimization of the enterprise can occur. To offset the natural imbalances between the segments we had a pseudo-segment called the Corporate Account. Technically, the Corporate Account is the portion of the company's surplus deemed not to be required by the individual segments. The account provides a clearing-house of sorts. Most importantly, it is where risk is optimized and/or adjusted on an enterprisewide basis.

Esther has asked me to address some shortcomings of segmentation, some of which we have a good handle on and others of which we're still struggling with.

One hindrance we have is that we cannot trade assets between segments. This causes problems when, for example, individual insurance wants to lengthen duration and to do so wants to sell its shorter assets. Our GIC portfolio, on the other hand, has an appetite for short assets. The lack of intersegment trading prohibits the internal transfer. It does not make sense for the individual segment to have to sell to the marketplace when we have a need for the same assets internally.

Taxes are further complicated by segmentation. Each segment receives unique tax treatment based on its business, but differential taxation has the potential to make certain assets more or less attractive. Taxes would also complicate intersegment trading. If an asset is sold from one segment to another at a gain or loss, who pays the tax? Should the current market price be adjusted to reflect the taxable event? Should we create a book of internal tax credits and liabilities? Can we make a market in these tax credits? Trying to recognize the economic value of taxes can get us into some absurd scenarios.

Rollovers of current investments also cause us problems. To illustrate, let's again use the individual insurance segment. This time we'll throw in one of the shorter duration, interest-sensitive segments that invest on behalf of the defined contribution retirement plans, and both segments hold a portion of a deal where the issuer (borrower) wants to roll over its current three-years-left-to-maturity deal into a new 15-year asset. We'll be extending the maturity to 15 years, blending the old rate into the new rate and disbursing additional funds. Although the new security is within the asset allocation strategy for individual insurance, it's far too long for defined contribution plan (DCP). Now what do we do? Do we pay off DCP at the market value and roll the whole loan to the other segment? DCP would then get a gain or a loss which it may or may not want. DCP would get no benefit of the associated taxes, and it will be short an asset for which it will have to encounter origination expenses to replace.

Another impediment for managing under segmentation is asset selection. The cumulative total of each segment's expressed appetites for cash flows will not equal what the marketplace will deliver in any given year. There may be an overexposure to an issuer or an industry, or we may have an undesirable portion within a deal structure. To deal with this incongruence of cash flows, we have formed the Prudential Asset Sales and Syndication Group known as PASS. PASS helps manage the mismatches between what The Prudential as a whole originates and what the segments have an investment appetite for.

Another potential relief to mismatched cash flows is internal coupon stripping. We could take one security and strip off specific cash flows for the various segments. We've got several hurdles to cross before we can use coupon stripping, least of all is what to do with the unassigned cash flows and those flows that lie past call dates. A challenging and entertaining complexity of segmentation has to do with the simple economics of supply and demand. Our asset allocation process to segment is fairly dynamic, responding to changes in the market. However, one usual scenario is that demand is greater than supply for specific asset classes or specific durations. What it comes down to is a negotiation session. It is truly an exercise where one segment may forego its desired piece of one asset class for a larger share of another. Each portfolio manager rationalizes his desired asset allocations based on asset growth, shifts in underlying liabilities or the impact on the segments' crediting rate policies. As there are shifts in the underlying liabilities or the availability of asset changes, allocations are reexamined. Individual deals are allocated to segments at the time of commitment to the borrower, giving portfolios the opportunity to hedge the future disbursement even if the deal changes. We typically would not reallocate unless there is an adverse economic effect to any segment. Hedges, however, will probably have to be reset.

And that very briefly is how we look at segmentation right now. I've tried to give a brief review of how we implemented it and some challenges, both positive and negative, from it. We've found segmentation to be a very useful method to manage the investment process for an insurance company with diverse liability patterns.

MR. STEVEN A. SMITH: How do you go about keeping the amount of assets in a segment equal to liabilities for the segment? First, what liabilities do you use for this:

statutory or GAAP? Second, how often do you transfer funds to keep the segment balances at desired levels?

MR. AUGER: At Aetna the segmentation process centers on statutory accounting. A truing up of each segment really only occurs on a calendar-year basis although we also do some quarterly analysis. It's only at the end of the year that we know exactly how much we have in each one of the individual segments. We're trying to get better at that. We do make quarterly transfers of what we think the reported earnings on a statutory basis would be, and all of those would go into our capital and surplus account.

MR. ROSENTHAL: We use a GAAP basis. The cash item in our matrix is the mechanism for keeping asset and liability amounts in each portfolio in balance.

MS. MILNES: At The Prudential we do not make transfers to keep assets equal to segment liabilities. The asset balance in any given segment is accumulated historical cash flow in that segment. If a segment has insufficient assets, that is reflected in performance analysis, but we don't try to make a cash transfer to cover that. If there are insufficient assets in a segment, the assets to cover that must be in the corporate account. That restricts the investment of corporate account funds, since it is covering liabilities from a segment that might have a shortfall.

MR. SMITH: How do you keep track of capital gains? Do you put them in surplus? How do you keep them associated with the particular line of business, or do you?

MR. AUGER: Capital gains and losses stay within the segment generating the gain or loss. We have an internal accounting entry which basically reverses the capital gain in the period that it's incurred, and then writes it off on a paper basis over some period of time. If everything works out all right, the gain is written off at about the same rate that the investment income on the retained capital gain kicks in to offset it.

MR. NEUBECK: At The Prudential our investment management accounting system comes into play again. For bonds, gains or losses are amortized over the remaining holding period of that bond and stay within the same segment where the original bond was held. For equities, gains or losses are spread out over the ensuing seven years.

MR. SMITH: When you sell an asset and buy a new asset, how do you decide which line of business the new asset goes to?

MR. NEUBECK: At The Prudential the cash flow from the asset sale stays within the segment and is used to buy a new asset for that segment.

MR. ROSENTHAL: When we sell an asset, the amount in the invested column of the matrix would go down and cash would increase. To the extent that the product lines then have cash, they will have to make a new investment. It wouldn't matter whether you sell an asset or whether more liability cash flows come in. The same result would occur.

MR. AUGER: The same situation would exist within Aetna. The sale of the asset would just increase the amount of the investable funds within that segment, and from that point forward additional assets would be allocated to that segment based on its remaining investment load.

MR. RANDALL LEE BOUSHEK: I have a question directed principally to Mr. Auger but open to members of the panel. In alluding to the investment policy guidelines, you mentioned investment performance measurement. First, does that particular criterion vary materially across segments? And, second, if it does, how was it established, and, more importantly, how are those varying guidelines reconciled for consistency?

MR. AUGER: We have quite a bit of variation across the different segments. The investment performance targets are determined through painstaking negotiations with each insurance client. Most of this negotiation deals with the yield measure versus total return measure and which is more important to the client. Almost every segment we have has both a yield measurement and a total return measurement aspect to it, but the relative weightings are quite different. For some pension segments that are basically experience rated, the performance measurement is driven almost entirely on yield. The situation changes a little bit for some of the GIC business, and for some of our health areas. Where yield is not that important, total return will have a much heavier weighting.

A number of the segments have very specific guidelines for overall quality ratings. We're penalized for varying more than within a certain range around some agreed to parameters in terms of the amount of default risk that is expected or default costs that are expected. The investment performance measurement process can get pretty elaborate.

MR. CHARLES P. ELAM: I believe Mr. Auger mentioned borrowing between product lines. Maybe Life of Virginia does something similar as well. Could you comment on the terms of the borrowing and how you arrange it so that both parties feel they're getting a fair deal?

MR. AUGER: There is some automatic borrowing that takes place. All of the cash within the life company general account is managed as one pool. We know which segments the cash flow is coming from, but to the extent that we have a net cash balance at any particular point in time, that's all managed together. Suppose a particular portfolio finds itself short, and there's reasonable expectation to believe that it will be able to repay that within, say, a month to two months' time. And suppose there's another segment that has some cash and is not foregoing permanent investment. For this situation there's an automatic basis set up to determine how that borrowing takes place and what the cost is.

If it becomes obvious that a particular segment is going to borrow for a much longer term, then it becomes a matter of individual negotiation. The borrowing segment has to go to the segments that have cash and find out what their terms are. If the other segments agree, the segment with a shortfall may borrow from them. If not, the segment with a shortfall has to find some other way to settle its cash problems.

MR. NEUBECK: At The Prudential we also have one short-term pool. So, any short-term funds can be exchanged fairly freely. Any longer-term borrowing, however, is done on an individual segment basis. It's usually transacted through The Treasurer's Group. We may borrow commercial paper or we may do reverse repos or securities lendings of some type to bring cash in. The assets you obtain by overinvesting, we hope would earn a higher rate than our AAA borrowing rate. When we have the opportunity to do that, we'll go out and bring in some lower cost funds.

MR. PAUL A. HEKMAN: It's been interesting to see that you use different approaches. Some of you use GAAP. Some of you use statutory. But, in fact, of course, both systems are sort of a stylized way of approximating the assets that you need for a particular block of business. What you're really after, it seems to me, is the underlying cash flow of the liabilities that you're trying to support. You might be finding situations where the cash flow that arises out of a particular block of liabilities might be rather widely diverse from the actual amount of current assets. You might have a big difference between the reserve that you're holding and the number of assets that you really feel that you need to have to cover the cash flows on that particular line. Have any of you run into this kind of situation? And how have you resolved it? Have you just gone ahead and held the extra assets in those particular segments or how have you dealt with this particular issue?

MS. MILNES: At The Prudential we're holding accumulated past cash flows in each segment. We do compare this with what assets we feel we need in the segment, but we don't make transfers to cover any shortfall. When we try to answer the question of how much we need, we look at long-term cash-flow projections for the liabilities in determining that amount.

MR. ROSENTHAL: We haven't run into the problem yet. To the extent that GAAP reserves accurately predict future cash flow needs, we'll make additional investments as those cash-flow needs change because we make investments according to the amount of GAAP reserves required. All these systems are first approximation of how you want to have your funds invested.

MR. AUGER: We've had a situation where we felt that the cash flows generated by the assets that were allocated to a particular segment were more than sufficient to take care of the liabilities, but the statutory value that was assigned to those assets wasn't enough to cover the reserves. That led to some temporary transfer of additional assets into that segment, but it was more as a function of an accounting problem rather than some underlying economic problem.

MR. AARON GRANT HEMPHILL III: First, I assume that your method is approved by at least your state of domicile. Second, as your procedures have evolved over time, did you go back to the insurance department and discuss it for further approval? And, finally, what did the state insurance department think of a method based on GAAP accounting?

MR. ROSENTHAL: To that end, I'll answer first. I don't believe Life of Virginia has spoken to the insurance department about the method. It's one of notational

segmentation. As I said earlier, all the assets support all the liabilities. This is just a way of managing the funds. They're not participating funds.

MR. HEMPHILL: Well, my question relates to investment income allocation to lines of business in the annual statement. That method I think would be approved by your state insurance department.

MR. ROSENTHAL: I'm not familiar with the area.

MR. AUGER: Both our segmentation plan and the logical impact that it has on how you allocate investment income among lines have been reviewed and approved by both our domicile state, Connecticut, and by New York State. Whenever there are major changes we go back and get the approval again. We have tried to design our filing to anticipate various things that would come up and disclose what our actions would be under various circumstances to keep refiling to a minimum.

MS. MILNES: The same is true for The Prudential. The segmentation plan has to be approved, and we do file changes to it with New York and New Jersey.

MR. JOHN R. MCCLELLAND: Mr. Neubeck mentioned that a problem that they have is the inability to trade between segments. I wondered what Aetna's done about that and how you handle the problems that come up.

MR. AUGER: We have the same problem. There is no active trading going on between the segments. To a large extent the segments have investments that don't have readily available markets. So part of the problem is how to determine a true market value or market price for some of the securities that we might want to trade. So far not trading between segments hasn't caused enough problems to cause us to want to tackle some of these other issues.