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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?
- How is segment information used for models and forecasts, particularly for satisfying New York's Regulation 126?

MR. DANIEL J. KUNESH: I'm a consultant with Tillinghast in Chicago. We'll have two speakers for this session. I will start with a general introduction to the topic of asset segmentation. Our second speaker will be David Creswell, Assistant Vice President and Actuary at CUNA Mutual Insurance Group in Madison, Wisconsin. David's company is currently going through the process of segmentation, and he's going to discuss the thought process he and his associates are going through. Our third speaker will be Scott Hartz, Senior Associate, Financial Officer, of the John Hancock Mutual Insurance Company in Boston. John Hancock has established asset segmentation for various lines of business. Scott will share his expertise with us.

The topic of asset segmentation is not new, yet a large number of companies either do not segment their asset portfolios or segment in a very simplistic manner. Segmentation is the process of allocating existing and future assets to different liability segments of the insurance operations. These segments may comprise major business units, lines of business, or even product categories themselves. The investment manager, the valuation actuary, business unit heads, pricing actuaries and EDP systems people should be involved in the decision process.

A key aspect of segmentation is setting an investment policy which is responsive to the objectives of the business units subject to segmentation. We must implement an investment strategy that is consistent with the company's investment policy and is responsive to the needs of each segment. There must also be an appropriate interface between the investment, product development and product administration areas of the company.

Before asset segmentation is undertaken, the following issues must be addressed:

1. The purpose must be clear and understood by all business unit heads.
2. The type and number of liability segments must be defined.
3. Investment policies by segment must be established and analyzed.

In determining why a company should segment its general account portfolio, management should assess and clearly understand the many uses and benefits of a segmentation program. Let's take a closer look at some of the purposes of segmentation. Historically, investment income has been a key element of profit for life insurance products. The segmented asset portfolio helps the company focus attention on how well a given product or product line has performed. Mutual companies that pay dividends to policyholders may have gone through such an analysis. Segmenting assets by major product line more clearly focuses on prior performance. Another important use of asset segmentation is its prospective application in product pricing. This is particularly true for universal life, pension funds, and a variety of new generation annuity products such as two-tiered annuities, index annuities and CD annuities. Pricing actuaries will attest to the importance of measuring investment performance under various scenarios. Asset liability matching is also an important issue. Segmentation efforts enhance this matching process particularly where there can be significant variations in the duration of product liability streams. Its use can be expanded to New York Regulation 126 filing, target surplus analysis, and ultimately to satisfying the valuation actuary in his upcoming responsibility to sign an expanded actuarial opinion wherein both asset and liability streams must be measured.

Insurance is a business of risk, whether that risk be mortality risk, investment risk or other risk. This risk must be measured if return to shareholders and policyholders is to be properly analyzed. Segmentation enhances risk return analysis and often assists management in determining whether certain investments should be made. Similarly, segmentation of assets can help in the process of measuring return on equity. As stated earlier, investment performance is an important element of profit. The level of investment income that can be obtained from a portfolio of assets can vary significantly based on investment policy and investment strategy. These variations in investment income can have a significant impact on return on equity analysis. The investment manager, the line of business manager, and the pricing actuary all contribute to decisions about which assets are to be allocated to each segment and future investment strategies. Careful analysis of the results of a segmentation program can give invaluable insight into the performance of these investment professionals. And finally, segmentation enhances the ability of a company to match risk with return. Accordingly, any compensation arrangement based on profit performance can be enhanced by an effective segmentation program.

Segmentation may also improve the reporting of investment income in financial statements. Allocation of investment income and capital gains by line of business is required in the statutory and GAAP financial statements. Under GAAP, appropriate allocation to business segments can be an important item of disclosure. Similarly, under the FAS 97 model of GAAP accounting, investment income is a major element of revenue. Where line-of-business data is important, an effective segmentation program can enhance

the accuracy of revenue reporting. Also, embedded value analysis can be greatly enhanced by an asset segmentation program. An embedded value approach measures the value of a given product, product line or the company as a whole. Careful analysis of asset performance by segment can produce meaningful results.

No process is perfect, and segmentation does have its problems. Let me cite four examples. First, many believe that there is a chance of losing economies of scale if too many segments are defined and if investment objectives are so diverse as to keep the investment manager from taking advantage of major investment opportunities. The second problem is the cost of set up and the substantial cost of administering a segmentation approach. Third, some people also feel that segmentation results in increased liquidity. The liquidity demands of each segment may actually impair the overall investment performance of the investment manager. Finally, many companies will share investments, going through a process of asset tagging, thus allocating the same assets to two or more segments. There is some question as to whether this strategy reduces the investment manager's ability to react to the marketplace.

Let me outline for you some requirements of an investment policy. First, it must establish limits on the credit risk to be assumed by each segment. This must be coordinated with the risk structure of the insurance product being offered. Second, the policy must develop duration targets for the various assets, and these targets must relate to the duration of liabilities. Needless to say, a company must have appropriate asset/liability testing capabilities. Third, the investment manager must be able to forecast future investment rate movement and determine potential impact on the objectives of the various segments. Fourth, the investment manager, in tandem with the various business unit heads, must define an appropriate level of asset hedging. And finally, each business unit head must identify certain performance targets that the investment manager must meet to accomplish the objectives of each respective business unit. Hopefully, Dave and Scott will explore the importance of devising an investment policy.

MR. DAVID L. CRESWELL: I'm going to be relating the experience and the thinking within my particular company as we have been going through the segmentation process. I am going to look at why we went into segmentation, what segments we established, how we allocated assets to segments, and how we set investment policy in the past. Finally, I will discuss how segmentation and actuarial tools add value to investment policy.

When the question of segmenting the asset portfolio came up, we were allocating investment income using an investment year method where each line of business shares in each investment year generation proportional to the change in reserve in that line of business for that year. We were managing to differentiate the lines that add more reserve during years when a higher investment yield is available. We wanted to better manage the matching of asset and liability cash flow timing, and we wanted the constraints that such management imposed on us to be reflected in the allocation of investment income to the lines of business. For example, if the liabilities of a given line of business could be safely backed by long-term assets, we wanted that line of business to be the one to reap the benefits of the higher return. On the other hand, if a line of business had imprudently used long-term assets to back their liabilities, and negative cash

flows force the sale of those assets, we wanted that line to experience the full consequences of the sale. In addition, we wanted those lines whose liabilities could safely be backed by assets with higher cash flow timing risk or with higher liquidity risk to have the benefits of the higher available return.

But there was some feeling in my company that segmentation would also allow us to seek higher yields with higher default risks specifically to back liabilities in lines of business where competition seemed to necessitate this strategy. In addition, we believed that the mechanics of segmentation can facilitate a tighter administration of credited rates, monitoring of profits, and can be of use in cash flow projections.

The choice of the number of segments is going to inevitably involve trade-offs between the desire to have economies of scale in the investment operations versus a desire to have distinct investment policy whenever the nature of liabilities differ. The trade-off between these two is a difficult one to reconcile. In addition, the express desire of the management of a specific line of business might be able to strongly influence the decisions of what segments are set up, even beyond what is objectively justifiable.

One way to reconcile these differences is through a synthetic segmentation approach. Under this method, lines of business share in several asset pools, possibly on an investment year basis. This can allow differentiation between many different lines of business or products with a limited number of pools. Often these pools are managed individually, and thus, the economies of scale in the investment operations are not sacrificed to any great degree. We looked at the alternative of using duration-based pools. We decided against this, because we felt that pools based only on duration would ignore other important variables, including cash flow timing and cash flow timing risk. Instead, we decided to go through formal segmentation, but with a very limited number of segments.

Our parent company is set up with a pension segment and a nonpension segment consisting mostly of credit and group insurance coverages. Our subsidiary is set up with a universal life, an annuity and a traditional life segment. Finally, in our property and casualty subsidiary, we have segmentation between individual property and casualty and commercial property and casualty. So, you can see that the decisions are very unique to the company involved.

We felt that a corporate segment should be set up in each company. This segment would be a balancing item so that each line of business can be backed by assets with an admitted value equal to their liabilities and with all the assets in a segment having a competitive risk return profile on a statutory basis. The corporate segment, with assets equal to the sum of surplus plus Mandatory Securities Valuation Reserve (MSVR), includes all assets that have a substandard statutory return. Our corporate assets include real estate, stock in subsidiaries and other assets that we hold for corporate reasons. If the corporate assets are greater than the surplus plus the MSVR, negative shares of the more competitive risk return assets are used to balance out the corporate account. The lines of business are then allocated more than 100% of the competitive risk return asset, and therefore, are not directly affected by the existence of the corporate assets.

I should also mention that our insurance subsidiary stock is included in the parent company's annual statement corporate account, but when we're doing internal reporting for the insurance group, we replace the insurance subsidiary stock with the actual assets backing the insurance subsidiaries' surplus and MSVR.

How, then, do we allocate assets to the segments initially? For the initial split we find that regulatory constraints force us to closely approximate the presegmentation split of the assets in terms of yield, average life, quality, and mix by market segment. We did this as best we could within each investment year, and then were able to demonstrate a reasonable overall fit for each of the four parameters.

Now, to set the stage for discussion of what value our tools can add to investment policy, I want to talk about how investment policy has been set at our company in the past. We have had considerable collaboration among investment people, actuaries and marketers, but with limited tools for translating the different concerns of these people into a common base. In the absence of measuring tools, the chief investment officer has tended to be admittedly conservative. Being only human, he has sought to make decisions that he would be able to defend. On the other hand, we hypothesize that a chief investment officer with a weaker personality than the marketing officer, and lacking tools to provide solid evidence, might cave in to the marketing concerns and follow an overly-aggressive investment policy.

Many decisions made at our company were guided by political feasibility. As an example, the chief investment officer felt that the current environment called for a more aggressive investment policy. But in the absence of solid evidence, he chose only to institute this policy on the pension line of business where strong support from the pension line management allowed him to build a consensus behind such a policy.

With that kind of policy in the past, how can our tools add value and make that policy more scientific? I'd like to reduce the goal of adding value to investment policy to its essence through three steps. First, the investment policy should serve only financial goals. Any asset that is a contradiction to this belongs over in the corporate account. Next, capital asset theory tells us that financial goals are reduced to a question of risk return trade-offs. And finally, though our return may be either profit or ability to credit higher rates, I think all of these can be equated to profits in the traditional sense. This I believe to be true because whether the risk and return are seen to adhere to the policyholder or the company, if a return more than compensates for the risk, then it enables both parties to be better off financially. Therefore, it does equate to a higher profit in the traditional sense. And thus we can say adding value to investment policy is accomplished through an evaluation of various risk and return trade-offs available to the company.

The risk in an insurance company is usually loss of surplus. A company can choose to risk additional surplus either through direct investment or through increasing the risk applicable to existing surplus. Direct investment of surplus would include the surplus strain from new business, investment to improve distribution or administrative capacity, and mergers and acquisitions. Additional risk to existing surplus can come either from an increase in business or from a more aggressive investment policy. Any increase in

risk can and should be judged using equivalent measures of expected profit and risk. One such measurement tool is marginal return on equity, where equity is the surplus invested, plus the surplus required to cushion against risks. This cushion needs to be measured on a companywide basis to be real. Then marginal profit is the excess of profit earned, measured on a realistic basis, over that which could be earned by conservatively investing the surplus. And the marginal return on equity is the marginal profit divided by the marginal change in equity. The marginal return on equity needs to be evaluated relative to a hurdle rate, the minimum rate that a venture needs to achieve in order to be seen as financially attractive.

Using an aggressive investment policy as an example, the expected marginal profit would be the increased yield differential minus the expected additional C-1 and C-3 risk losses. The marginal change in equity would be the additional surplus needed to cushion against possible higher losses.

A common definition of required surplus is the amount of surplus needed such that the estimated probability of insolvency is below some figure, commonly 1%. The best tool for measurement of this probability is a Monte Carlo sampling model integrating the C-1, C-2 and C-3 risks. Our strategy to develop such a tool involves first purchasing a C-3 risk model, then adding our own C-1 and C-2 risk. We also use our own interest scenario generator. Using this model, run-time becomes a severe limitation. To run the thousand scenarios, we first run a very simplified model of our assets and our insurance cash flows. Then we take the 40 worst scenarios and look at those on a more complete model of the company. Finally, we look the 10th worst of the thousand scenarios. The beginning surplus that's needed to maintain solvency throughout the 10th worst scenario is designated as required surplus, and it measures all of the different risks.

To apply this concept to managing the C-3 risk, we want to be using the same risk-versus-profit standard we used to judge all other risks. Then ideally, we want to reflect the different effects the lines of business have on the company's ability to capitalize on higher yields with additional risk. For example, consider the risk the company takes when it invests long term. Different lines of business are going to have different marginal effects on that risk, and we want the lines of business that have a low marginal effect or even a negative marginal effect on that risk to be the ones to profit from the higher return.

Intuitively, I believe the best way to put these goals into effect is to manage within each segment, but then to have that management subject to a corporate overview. To accomplish this for a given segment, we start with the existing assets. We want to choose a strategy for new acquisition of assets and possibly for the churning of existing assets. As a first step, we use duration and convexity measures along with judgment to make a first pass segmentation which we think would minimize the C-3 risk. Then we use this first pass strategy, along with several alternatives, to see if we can reduce the C-3 risk even further. We also see whether we can generate additional expected yields which justify additional risk. By testing alternatives, we attempt to optimize the risk return profile within a given segment.

We know the marginal effect of a more aggressive investment policy on the company-wide required surplus tends to be less than the effect on the required surplus for a given segment. This is because there is less portfolio effect in terms of risk sharing. Thus when we're testing different alternatives within a segment, we're going to be using a lower hurdle rate than the hurdle rate that we use normally; we know the marginal return on equity is higher in reality than our measure within the segment. The marginal return on equity will be higher because the marginal effect on required surplus will be lower looking at the company as a whole, and it's important to remember we are trying to maximize the financial benefit to the company.

Given this artificially low hurdle rate, we repeat this process across all of our different segments, attempting to optimize the risk profit within each segment. We check to see if, in aggregate, a more or less aggressive acceptance of risk makes sense. Our criteria is the effect on required surplus and the relationship of marginal return on equity to our real hurdle rate. If we find that a more or less aggressive stance is called for, we adjust the hurdle rate we used within the segments and reiterate. It goes without saying that this process does not lead to one right answer. I will be interested to see developments of a more rigorous approach, but we believe the art of C-3 risk management can be enhanced through these means.

The next issue is about management of the C-1 risk. The risk and return trade-offs to the company of C-1 risk are not materially affected by the liability structure. They're not materially affected differently by different lines of business. This is not entirely true in terms of effect on required surplus, because a more profitable line of business shields our surplus from a given level of default risk, and therefore, would influence us toward a lower marginal change in required surplus. The implication is a more profitable line of business can justify a more aggressive investment policy. I'm not sure there is any practical application of that in the insurance industry. The industry tends to be more aggressive when margins are slim, but the theory says you can be more aggressive when margins are higher. I think we're led inevitably to the practical conclusion that C-1 risk should be managed using companywide rules. These rules should indicate what additional yield is needed in order to justify each additional move up in risk and should be based on hurdle rates that are common to all the risk profit analysis within the company. This does not give us hard and fast rules. The rules are flexible according to the available return in the marketplace. However, these rules should be constant across all segments. When another move down in quality adds too much to required surplus relative to the expected return, that move is inadvisable regardless of what segment we're looking at. Until that point is reached, all segments should avail themselves of the higher marginal return on equity available by moving down in quality.

I think there's been some justifiable criticism of using risk-based required surplus as measured by the company and ignoring the surplus necessary to satisfy regulators and various rating bureaus. The crux of the problem is the measurement of required surplus is really made to serve two different purposes. One is the measurement of risk for the sake of measuring risk, and the other is to measure a key constraint on the growth of the company. In order to devise a more integrated measure of profitability which takes both of these into account, I think we first need to decide on what percentage of the risk-based required surplus we're going to use as a risk premium. The risk premium is that

amount of additional profit that is necessary to compensate us for taking on additional risk. In our company we use a 5% figure at this time. If we're going to put surplus at risk, we need to earn 5% more than we would earn on a risk free investment.

Therefore, it's only the excess of our marginal profit over the risk premium that is measuring the extent to which the company is financially better. We use the term marginal value added for the excess of marginal profit over risk premium. We seek to maximize this within certain constraints. One key constraint is actual surplus in the company; we can't let the maximum of these required surplus measures exceed actual surplus. We feel this marginal value added, divided by maximum required surplus, gives us what may be the most meaningful profitability ratio and the most meaningful form of return on equity. We plan to use this for investment and other risks, hopefully putting all risks on a level playing field.

MR. KUNESH: Next will be Scott Hartz who will share his experiences from a company who has gone through the segmentation process.

MR. SCOTT S. HARTZ: I will be discussing the benefits and some of the problems we've encountered with investment segmentation at John Hancock over the past nine years. I'm going to divide my talk into three pieces. First, I'll start with the motivation for segmenting. Then I'll talk about some of the organizational changes we've made in order to get the maximum benefit out of segmentation. And finally, I'll discuss some of the problems and how we've either solved them or learned to live with them.

The impetus for segmentation came initially from the group pension lines when they entered the GIC business and became acutely aware of the risks. The investment year method of allocating assets did not allow the necessary fine tuning in the asset portfolio. So initially, the GIC business was in a separate account. Segmentation was not an option at that time. It was not allowed by New York State. The late 1970s and early 1980s made us aware of the benefits of customized asset portfolios for the other lines. Cash flow and investment strategies differ by line of business. Premium dollar from group insurance contract will be paid out as a benefit within a year, but premium dollar from a traditional life insurance contract will probably stay around longer. And so, obviously very different investment strategies are needed for different lines of business. In addition, interest rates went up during this time period. There is more focus on the investments in the portfolio. The interest rate used for pricing had a large determinant on the competitiveness and profitability of the company. While the original reasons for segmentation were to manage the assets and the liabilities more closely, there were other benefits that arose out of segmentation. One of the most important was accountability. We split into profit centers some time after segmentation, with each profit center manager accountable for his or her bottom line. Unless the profit center managers had control of their assets, they were losing control over a big portion of the bottom line. While we put the profit center construct into place after segmentation, I don't think it would have worked as well had we not been segmented.

Now let me turn to how we restructured ourselves to get the maximum benefit out of segmentation. First, we created investment working groups, one for each segment. The working groups were to take care of the day-to-day business in the investment segment.

The group brings the investment area and the product areas together on a regularly scheduled basis to discuss asset and liability management issues. One of the keys to the working group is the asset/liability manager, also called the portfolio coordinator. He chairs the meetings of the group, and therefore must have expertise in both the product and investment areas. In fact, many of our portfolio coordinators at Hancock are actuaries. I personally worked as portfolio coordinator for the traditional life insurance and the group insurance lines. The other players in the investment working group are the portfolio managers and representatives from sales, pricing, underwriting and financial reporting. Finally, there is the profit center manager who is the customer in the total relationship. Due to the importance of the investment process on his bottom line, the profit center manager is typically very involved in this process.

First and foremost, the working groups set investment policy and investment guidelines. Investment policy at John Hancock is very broad and applies mostly to the general account as a whole, whereas the investment guidelines are designed to handle the specific needs of the individual segments. Guidelines can include, for example, average life targets and individual segment liquidity requirements. At Hancock, we go through an annual review of investment policy and investment guidelines. The review starts with the portfolio coordinators. They discuss the general investment policies that are appropriate for the general account and see if changes are necessary. Then the coordinator will meet with their working group and come to a consensus on a general policy and also what more specific guidelines are needed. Once a consensus is reached, recommendations will be brought to the investment operating committee which is chaired by the chief investment officer and made up of the investment department heads and profit center managers. The investment operating committee decides the operating guidelines, but the investment policy must be voted by the committee of finance.

Another role of the working group is to provide investment information to the product people and the profit center manager. At the start of each meeting, each investment manager will go through the developments in his department and in his market. The most important issue is the current interest rate environment, both the level of treasuries and the spreads over treasuries. Usually the BAA spread is quoted, because it is where we do most of our investing. We'll also look across the yield curve for relative value.

Other information we provide relates to the investment instruments the investment bankers are creating. Some are useful; others do a good job generating investment banking fees but do little else. A few of the more important ones are listed here: futures, swaps, equity notes, Congressional Budget Office (CBOs), and collateralized mortgage obligations (CMOs). The instruments and the acronyms used to describe the instruments are endless. We'll also provide information on diversification, quality, yield, commitment rates, and investment income. Typically, we look specifically at the bonds and show the sector distribution. We look at the mortgages in real estate and show the property types, the regional distribution. We also discuss quality, which has become a very sensitive issue. We try to provide constant updates on the quality of the bond and mortgage portfolios using both our internal rating system which is comparable to the rating agency system as well as using the NAIC designations.

Another role of the working group is to manage the cash flow. For a GIC-type portfolio, this means daily tracking of GIC sales and investment commitments, making sure the account is duration matched and cash flow matched. When gaps open, we'll use futures, interest rate swaps or other hedging instruments. For the traditional lines of business, we want to have enough liquidity to meet our policyholder obligations, but we don't want too much cash building up and depress our portfolio. We have to anticipate our investment needs, because there is a time delay between the decision to invest and when the investment is executed. There is the time to find an investment, the time between when they commit to an investment and actually investing in the typical private placement and commercial mortgage markets. Another consideration is the variability of cash flows. Occasionally, cash flows are larger than expected. A decision must be made to either let cash build up, to hedge the build up of cash using futures, swaps or options, or to buy an investment which might have a lower yield. Those decisions are best made with the input from the working group.

Some of the other responsibilities of the working group include compliance with regulations and internal guidelines. For example, the working group has the necessary product and investment expertise to perform the scenario testing required for Regulation 126. Occasionally a working group will also add a member of corporate actuarial to assist with compliance. Other issues are New York and Massachusetts state investment limitations and investment limits promoted by the committee of finance. Most of these limits are based on total general account assets. We assign one portfolio coordinator the responsibility of monitoring compliance, but we also produce compliance reports by segment because the reports provide good portfolio management information. Also, some of the requirements such as liquidity are segment specific.

The last responsibility of the working group is the incentive compensation plan for investment professionals; the setting of our investment performance goals for the year. This is certainly the most hotly debated topic in the working group. The portfolio coordinator often plays the role of moderator. The reason for this is the investment professionals typically want to be measured on a market value basis. They want to be measured similarly to other money managers. They would prefer to be measured on their market value return, and compare that return to an appropriate external index, the Standard & Poor's (S&P) 500 for equities or the Shearson Lehman Bond Index for bonds.

The profit center manager, on the other hand, is worried about his bottom line. He wants a goal based on net investment income and capital gains, which are book-value type goals. We're constantly at odds, and usually we try to compromise. As portfolio coordinators we have our own goals in mind: (1) to get through this process without anyone getting killed, (2) to make the goals fairly simple, and therefore easy to communicate to senior management.

The discussion that develops, although it is heated, is very beneficial to the working of the group. You get to the bottom line of what the profit center manager is looking for in terms of investment performance, and what it will take to keep the investment professional at the company.

Now I'd like to discuss some of the problems we've encountered with segmentation. The first issue is corporate purpose assets. One example is our subsidiary complex which may eventually produce a great rate of return, but none of the accounts are willing to invest in a subsidiary with no return for the first five or 10 years. We also have charitable investments which have a below market rate of return but produce goodwill for the entire company. No one segment is willing to support goodwill for the entire company. The final one is our home office in Boston. It earns a below market rate of return, because the rents to John Hancock businesses are subsidized. Dave mentioned a corporate segment as a method to handle these assets. We didn't do that when we segmented nine years ago, but I think we'll eventually set up a corporate segment. What we do now is allocate these investments on a modified investment year method. We use current year cash flow to allocate the current year's acquisitions, but then we use total assets to allocate the shortfall in investment income which results from the corporate purpose assets.

Other problems arise when segments ignore their impact on the total company. A good illustration of this was the employee stock ownership plan (ESOP) market. When you lend money for an ESOP, 50% of the income was tax-free. An ESOP, therefore appeared to be an attractive investment. To the extent we were taxed at a marginal rate of 34%, they were. But as we started to approach the alternative minimum tax situation, our marginal tax rate dropped, and they were not as attractive. We needed some coordination between all accounts. This lack of coordination is one of the big problems with segmentation. To solve this problem, we have a portfolio coordinator who is responsible for communicating with the corporate tax area. He monitors the situation and informs the other portfolio coordinators how much appetite the company has for different types of investments.

Other problems arise from competing goals. One of our corporate objectives is to maintain our Triple A ratings from Moody's and Standard & Poor's. It is obviously a goal of the segments, but one to which they pay a little less attention. Occasionally, the corporation is trying to unload some foreclosed real estate at losses, and yet a profit center is looking to improve gain from operations through investment performance. These conflicts cannot always be resolved, but good communication will allow the portfolio coordinators to integrate corporate investment objectives with profit center goals.

Other problems arise from allocation of investments. Occasionally, we'll get a good investment and all the segments will want to participate. We have corporate rules, based on cash flow, which determine the segment order for allocation of investments.

Another problem can be negative cash flow. If cash in a particular segment drops below zero, and it is perceived to be a short-term problem, we have an automatic mechanism whereby the segment will borrow from all the other segments at the going short-term rate. If the problem is suspected to be long-term, that segment will negotiate for a loan with another segment.

Economies of scale are frequently mentioned as a problem of segmentation. The company as a whole should be able to invest in larger and fewer investments and take on

more risk than would be prudent for the smaller segments. We try to mitigate this problem in several ways. First, we share deals on a selected basis. We try to share only those deals that can be split up and sold separately. Bonds fit in this category nicely. Mortgages do not. Typically this is not a problem, because mortgages are not very liquid and tend not to be sold. A problem arises, however, if a mortgage runs into trouble. After foreclosure, each segment gets a piece of the real estate which eventually it will want to sell. The problems arise between segments concerning when to sell and for what price. We try to share only the large deals that could not be prudently taken on by one segment. Another way to mitigate the problems of economics is through pooled accounts. Pooled accounts have their own set of problems, but they can be very useful at times. We haven't used model accounts frequently, with one notable, or notorious exception. We put together a public high-yield bond pool. We do regret this decision now, but at the time it was a good solution because some of the smaller segments could not prudently invest in high-yield bonds and get adequate diversification. I think we'll probably be using this concept in the future for other asset types.

Another problem is transferring assets. The first attempt at segmentation is seldom perfect. Some fine tuning is often required. Sometimes a line of business allocated to Segment A has characteristics more similar to the liabilities in Segment B. We have transferred lines of business on a number of occasions. Typically, the accounting involves transferring the assets which belong to the line of business from one segment to the other at the end of the year. This transaction is a book value transfer, and for equity purposes we prefer to make market value transfers. So, we balance the transactions with cash to make both accounts whole. The problem is determining the market value of these assets. Typically, they are illiquid assets such as private placements, commercial mortgages, and real estate. It is hard to get market values on these types of assets. Usually, the two working groups will have to get together and reach an agreeable solution.

People often talk about the slow decision making that comes around with segmentation. We found, for the most part, this is not the case. Each working group has an investment manager who's responsible for the investments for that segment. They make investments based on predefined parameters and only report back to the segment investments which have been made. Occasionally, however, deals with special features or deals that are outside the parameters of the account arise, and the portfolio manager has to describe the deal to the working group. This does slow down the decision process. We think this is good, because it makes for a more thoughtful decision process. It has taken us a little while to change the culture from one of doing deals and then finding a home for the deals, to making sure the deal has a home before the deal is executed. This is definitely the direction in which we want to head.

I'd like to conclude by stressing three points. First of all, there are many benefits to segmentation. It puts the assets under the control of the profit center manager. More and more, the profitability of a given profit center will depend upon the investment performance. Unless the profit center manager is an integral part of the investment process, he's not going to have control over his bottom line.

Second, at Hancock, we have kept all of the portfolio coordinators in one area, and we think that's been beneficial. While the portfolio coordinators do feel an allegiance to their particular investment segment, there's a lot of synergy that results from having all the portfolio coordinators in one department. Many issues that one particular segment faces will be faced by another segment down the road, and we're in constant communication. We don't have to reinvent the wheel every time a problem arises. In addition, each portfolio coordinator has their areas of specialty. I personally work with financial futures. We have people who work with interest rate swaps, people who value embedded options, others that are specialists in investment regulations, and we each service all the other accounts in our own areas of specialty. This allows us to leverage our skills.

And finally, the corporate concerns can be communicated or monitored through one department.

MR. STEVEN A. SMITH: I have two questions. First, my company is a stock company, and one of the reasons that we want to have segmentation is to understand GAAP earnings. This implies starting with the book value of assets equal to the net GAAP reserves. But we also have Regulation 126 and other statutory concerns. The first question is, how do you, with the least effort, do both jobs at once? One possible solution we thought of was taking the GAAP capital and surplus, and somehow allocating it back to the individual lines to bring them up from statutory surplus to GAAP surplus. Has anyone thought of anything that was better, neater or quicker?

MR. GERALD A. LOCKWOOD: I'm not sure I have the answer. But I've given thought to this matter, and we have discussed it in my company. Our current thinking, and this is a suggestion for which I would like input from others, is that we're operating under a statutory environment where our assets must be equal to our statutory liabilities, plus our required benchmark surplus or target surplus. As a result, when you move to a GAAP environment, you end up with your assets still equal to statutory liabilities plus target surplus. Your net GAAP liability is the liability piece, and the redundancy in the statutory reserve plus the target surplus becomes the GAAP equity.

MR. HARTZ: I think that works fine if you are going to split up at least part of your surplus that's required surplus and put it out into segments. We don't. We keep all the surplus in the corporate account. Your approach would help with the GAAP problem.

MR. KUNESH: Jerry, I've seen exactly your approach applied in two or three instances in the last year.

MR. LOCKWOOD: Let me go on to my second question. It's relatively easy to identify and allocate the investment income from initial assets. What kind of special techniques do you use for new assets when you get to the end of a quarter? After the close of the quarter, we have to have our GAAP reserves by something like the fourth day or fifth day. How do you allocate the cash flow from all the new assets and/or the transfer assets when you have to put out your GAAP financial statements in about eight or nine calendar days?

MR. HARTZ: I'm just glad we don't have to put out GAAP reports eight or nine days after the end of the quarter. I don't have an answer for you.

MR. JONATHAN E. MILLER: I have a possible suggestion -- synthetic segmentation. Set up a pool of assets, with segments owning shares of the pools. You can do a fast allocation on your projected cash flows, possibly with correction during the quarter, and then use the short-term interest rate on your corporate or surplus segment as a balancing item. This will provide a good estimate.

MR. LOCKWOOD: We see the problem as the location of new assets. Fifteen days or 20 days after the close of the quarter, you can tag the new assets. I was wondering if people do it more frequently than quarterly.

MR. ANDREW H. JACOBS*: In our fund, the fund manager buys an asset and allocates it directly to the fund. The only aspect where we have a problem is cash itself. We have one pool of cash and each segment has an amount that is owed from that pool of cash. We allocate the income on cash monthly based on the size. Any amounts left over are allocated based on premium income.

MR. LOCKWOOD: I just have one other question. How do you coordinate corporate objectives and segments in investment decisions?

MR. HARTZ: We find it very helpful to have all the portfolio coordinators in one area. We talk to the chief financial officer (CFO) area about the total corporate concerns. The investment policy typically lays out the total corporate objectives, and then within the working groups, we allow the profit center manager to put his own distinct twist on it. We do have some portfolios that are a little higher quality than others because the profit center manager is a little risk adverse.

MR. RODNEY C. WILTON: I have one short question and a longer one. I was wondering, are the portfolio managers working full time on that job?

MR. HARTZ: It varies by investment department. In the bond department we do have some full-time portfolio managers. They do double duty on more than one account. In our commercial mortgage department, it's really become a second job to them.

MR. WILTON: We're on the notional fund which is a type of synthetic segmentation. One issue is rebalancing the pools. If at some point your company's underweighted in one asset class such as commercial mortgages you may have a window of opportunity where you can rebalance. This can be accomplished either by putting a large portion of your cash flow into commercial mortgages or by selling some other type of assets and buying commercial mortgages. At Royal Maccabees, we didn't allow the lines to effectively sell other assets and buy mortgages. What was your approach to it?

* Mr. Jacobs, not a member of the sponsoring organizations, is Vice President-Actuarial of Canada Life Assurance Company in Toronto, Canada.

MR. HARTZ: I can't think of a specific instance when something like that came up, but if a working group wanted to do something a bit out of the ordinary, it would be addressed at the working group level. We do sell public bonds on an ongoing basis, but we're often given rough guidelines. For example, if operating leverage is low, bonds cannot be sold at a loss. If something major is contemplated which is going to materially affect the total company's balance sheet, the working group will propose this to the investment operating committee. If it fits within the investment policy of the company, we usually go forward.

MR. ALAN J. ROUTHENSTEIN: I have a question for Scott. Is the portfolio manager the person responsible for making hedging decisions? How do you coordinate with the investment people who actually get involved in the transaction, or do you make the decision independent of the investment department and the product actuaries?

MR. HARTZ: Well, I can speak best to futures. In the GIC portfolio, where we do the most hedging, the portfolio manager for the GIC portfolio tracks the duration matching of that account. When a mismatch opens up, the portfolio manager makes the hedging decision. He'll call me, and I will actually do the transaction. My capacity in working in financial futures is actually to do the transactions, and also to educate other accounts about the hedging tool.

MR. ROUTHENSTEIN: What about other specialties like options and swaps?

MR. HARTZ: Swaps are also done in my area. Most of them are done for the GIC account, and so the GIC portfolio managers decide what hedging tool to use. He will call us and have someone in our department do it. Again, we act more as consultants. We let people know hedges are available, we try to describe what they are, and then we'll actually do transactions. We don't necessarily make the decision to use these devices. We leave that up to the working group.

FROM THE FLOOR: This is a question on capital gains or losses by segment for Scott. I'm assuming you have your assets set equal to your liabilities at book value. How do you account for capital gains and losses? Does the difference flow in and out of a corporate account? Can you keep track of them over time?

MR. HARTZ: Right now we do not have a corporate account, and so assets are not equal to liabilities. Each account has its own surplus. Some lines of business actually have negative assets because they have negative surplus. The capital gains and losses just flow right through to the segments.

FROM THE FLOOR: So, each segment kind of has its own little piece of surplus which absorbs the gains or losses.

MR. HARTZ: That's right.

MR. JACOBS: My question is along the same lines with regard to not having a capital account, and the surplus being within each individual fund. Do you feel that there's a problem on appropriate investment of the surplus, especially the free surplus that is most

likely being invested in the same way as the liabilities which may not be giving the best return to the company?

MR. HARTZ: I would say, yes, there is a problem. One of the big advantages of the corporate account is you can then place the corporate purpose assets in there, and it's very clear where your surplus is invested. It's not so clear letting each account have their own surplus and having their own corporate type assets. Many of them have more corporate assets not equal to surplus, and it does make it a little harder to manage the surplus.