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Strategic Management of Insurance Company Risk

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Summary: Corporate risk management has become one of the latest hot issues in the business world. The actuarial role is one of understanding and managing risk. This session provides varying perspectives on corporate approaches to the macro management of risk. Areas such as risk identification, asset/liability management structure, and secular trend analysis will be discussed.

Mr. Craig R. Raymond: Senior management is talking about it. Boards of directors read about it in all the magazines that tell them what they're supposed to be worried about. I think, in general, nobody really knows what risk management is, but everybody thinks they need to care about it. It was this thought process that led to this session. What we will do is present you with some varying views of how insurance companies are approaching the idea of an overall corporate risk management function and what some of these issues are specifically. Our first speaker is Helen Galt. Helen is a company actuary at Prudential. She's responsible for normal corporate actuarial-type functions, as well as being the head of Prudential's risk management unit.

Ms. Helen Galt: I'm going to talk about risk management with emphasis on how we at Prudential have changed our thinking about the subject of risk over the last couple of years. Those of you who are hoping for a presentation on risk

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calculations with many differential equations will be sorely disappointed; I will talk about this more from a management point of view. I'll cover where we were two years ago; why we decided to change our approach to risk management; what kinds of risk management actions we've taken to date; how we plan to measure risk going forward; and what's most important, why we think that good risk management is a strategic tool rather than just a defensive exercise.

I don't want to imply that we have all of the answers or that we're managing risk in an ideal way. It takes a long time to put an effective risk management system in place, and a lot of what I will talk about is theory rather than applied practice at Prudential. I hope that you will be able to relate some of what I'm going to say to what's happening in your own companies.

What elements does a company have to have in place to bring together an effective approach to risk management? First, I think you need to have an idea of what your risk management objectives are. A knee-jerk reaction may be that the objective of risk management is to minimize risk, but that probably isn't the right answer for an insurance company because a large part of what we do is assume risk. Second, a company needs well-articulated risk management policies and processes. You can think of policies and processes as kind of the Ten Commandments—the shalts and the shalt nots. That also implies some sort of organizational structure; it's not necessarily a separate risk management department, but it is some kind of organizational framework, so that everyone knows who has been assigned the accountability for managing risk. A couple of years ago, Prudential had a very ad hoc approach to managing risk in terms of objectives, policies and processes, and organizational structure. We were also afflicted by what I call a silo mentality, which flowed from the fact that the company was being managed as a confederation of autonomous business units. Finally, we had an outdated risk measurement system, which was not going to meet the needs of our new senior management.

Ideally a company's risk management objectives should be very clearly defined. One way of doing that is to quantify your objectives—for example, by stating a goal such as, "Our objective is to manage our risk so there's less than a 5% chance that this year's earnings will deviate by more than 10% from our average earnings over the last five years."

You may not be able to calibrate your business processes with such statistical precision. What you can do, though, is make sure that the risks that you're taking make sense in relationship to your business strategy. Two or three years ago the plans being submitted by Prudential's business units didn't have much discussion of risk. It's almost as if we expected to operate in defiance of the laws of nature and the marketplace.

While it's critical to link risk management objectives to business strategy, it's just as critical to make sure that your risk policies are comprehensive and comprehensible to the people on the front lines who are making real-time decisions about what risks they're assuming. You may not be worried about a rogue trader losing $300 million in one day, and you may not be worried about another major hurricane wiping out your annual earnings, but the cumulative effect of vague policies and limits on risk can be just as devastating.

To bring these examples a little bit closer to home, two years ago Prudential did have credit and interest rate risk limits in each of its separate investment portfolios. However, it had no enterprise credit or interest rate risk policies or limits for disasters such as earthquakes or other natural catastrophe exposures, or limits on investment in residential real estate. Finally, no one was in charge of managing risk, at least not in a comprehensive way. If I were to ask a couple of years ago who was responsible for regularly collecting, monitoring, and acting on risk management reports for each business unit or for the company as a whole, I would have had a hard time coming up with a list of people who would raise their hands and say that they were responsible for all of that.

A particularly dangerous phenomenon in the company with a great deal of separate business units is an attitude that whatever risks business unit A is assuming has little or no relationship to the risks that business unit B is assuming. I call this the silo mentality, and it used to be symptomatic of the way that we dealt with risk. While we made some attempt to add up the risks associated with individual business units, we made no attempt to look at market or credit or interest rate or insurance risk across our business units, even though, in many cases, they were dealing with the same counterparties and were subject to the same market forces.

To wrap up my recounting of history, I'll comment briefly on the risk measurement system that we had been using for about a decade. Our attributed risk measurement system had been developed in the mid-1980s, and it was conceptually similar to the approach used for risk-based capital. It used the same risk categories (C–1, C–2, C–3, C–4) and it applied Prudential-developed factors to various items on our Prudential GAAP balance sheet. We felt that it did address some of the shortcomings of risk-based capital (for example we did recognize the mortality risk associated with annuities). In addition, we applied this model to all of our businesses rather than dumping our noninsurance subsidiary risk into the C–1 category. We used these attributed risk measures as a way of determining the minimum amount of capital we needed to support each of our businesses. However this approach also has a number of shortcomings. Because it was based upon applying factors to balance sheet items, it tended to obscure what was driving our risks. It wasn't particularly helpful for answering "what if " questions, and our business units

tended to look at attributed risk calculations as something they did seriously once a year and didn't worry much about otherwise.

Prudential's current chairman is from the banking industry. One of the first questions he asked after he had been on the job a couple of months was, "What's our interest rate risk exposure if the yield curve shifts up by 50 basis points?" "Beats the heck out of me" is not a good answer when you're trying to impress your new chairman. He also wanted to know where was his 4:15 report. Some of you may be aware that at least one major bank puts a complete risk exposure report on its chairman's desk at 4:15 everyday. We thought that "4:15" had something to do with income taxes. Clearly, we were not operating in a state-of-the art manner with regard to risk management.

So how did we begin to tackle some of these risk management issues? One of the first critical steps was to nominate a group to worry about risk. So the corporate risk analysis unit was formed with the mission of identifying risk, particularly enterprise-wide risks, maintaining our risk measurement system, and publishing periodic reports and special studies about Prudential's risk exposures. Note that this unit's job initially was to worry about risk, not necessarily to do anything about it. Nonetheless, this was a significant step towards recognizing that a more comprehensive approach to risk should be on the corporate radar screen. As you'll see, the emphasis is much more on risk management. One of the first tasks the new Corporate Risk Analysis unit did was to begin collecting risk exposure information for the Enterprise Risk Report. The primary purpose of this report is to summarize the company's financial risks, meaning the company's market, credit, insurance, and interest rate risks across the whole company.

I think that this report has provided some real value in a couple of ways. First, it shows risk exposures across all of our businesses. Second, it compares our risks against those of major competitors or against other industry benchmarks. I think it also provides value by simply drawing attention to, and educating people about, the subject of risk.

We distribute this report quarterly to about 100 company executives, and we try to add special reports or new features with each edition. Because we consider most of the information in the Enterprise Risk Report to be proprietary and confidential, I can't show you specific pages, but the following is a partial table of contents from the last edition, which should give you a better idea of what's included.

ENTERPRISE RISK REPORT
Table of Contents (partial)

First, any report of this length needs an executive summary, where we highlight key pieces of the report.

In the Enterprise Risk and Capital section, we show both historical and projected data on amounts of risk and the amounts of capital on both our internal risk measurement systems as well as on a risk-based capital basis and a rating agency basis.

The biggest section of the report focuses on asset-related risk, with much emphasis on risk concentrations.

There are several other pages of the report, which aren't shown in the preceding report that compare Prudential's asset profile to those of major competitors.

The insurance risk section of the report shows risk statistics related to our life and annuity, health, and property and casualty lines of business. Again, we compare our experience to whatever industry data is available, and we highlight any trends that may be of interest.

At this point, the C–3 section of the report does not reflect all of the devices that Prudential has to control interest rate risk, particularly at the investment segment and trading desk level. What we do have is snapshots of our interest rate risk over time as well as a graphical summary of our year-end asset adequacy testing results. We also show the test that our Treasurer's area uses to monitor Prudential's liquidity position.

Finally, the report may contain one or more special features. In the last edition, for example, we included a special section on some of the newer risk-financing techniques that are appearing in the marketplace, such as act of God bonds that can be used to mitigate catastrophe risk.

As we have assembled information for the Enterprise Risk Report, interesting questions have been raised. The fact that the report raised these questions doesn't necessarily mean that we ended up concluding that we had a problem in each of these areas. In fact, we concluded the opposite for several of the categories. But the important point is that at least these questions were finally being raised. You'll notice that I haven't said anything yet about business and operating risks which may be the most serious risks that the insurance industry faces these days. There's a separate management and control structure at Prudential that deals with identifying and managing these kinds of risks. The job of my unit is to find a clever way of attaching a price tag to business and operating risks, but that's one of those famous "phase three" projects. We're not quite there yet.

One of the characteristics of a wise risk manager is to look for the kinds of things that can bite you badly. In spite of the not-so-subtle warning signals sent by Hurricane Andrew and the North Ridge earthquake and the aggressive steps that we took to decrease our homeowners' insurance exposure in certain counties in Florida, we still didn't have a good handle on our total catastrophe exposures at the beginning of 1995.

So with the help of an outside consultant, we did a comprehensive study of Prudential's catastrophe risks. This study modeled the effects of three different severity earthquakes in three different regions, as well as three different severity hurricanes in Florida, the Gulf Coast, and the Northeast. The model that we used for this study is considered to be one of the best in the industry. The study considered all kinds of exposures, not only direct property and casualty losses associated with our property

and casualty operation, but also the probability of defaults on our commercial mortgage portfolio, declines in investment real estate values, as well as business interruption and extra expense associated with a major disaster.

As a result of this study, we finally imposed specific limits on our property/casualty exposures, and we reached agreement with our realty group about selling off some of our precariously positioned real estate. We also began looking at some creative ways of laying off some of our asset/liability exposures to natural catastrophes through restructured reinsurance programs or capital markets alternatives.

Another issue that we've dealt with is Prudential's total exposure to other financial institutions. In particular, Prudential's general account, Prudential Securities, and until we sold it, our Home Mortgage Company all had dealings with some of the same financial institutions—for example, the big New York banks and investment houses. Now those relationships could take the form of long-term debt holdings, commercial paper, repos and reverse repos, interest rate swaps, foreign exchange transactions, futures, letters of credit, or other instruments. The notional amount of some of those exposures was huge, but of course that isn't a good measure of the real credit risk. So the first step was to convert those notional exposures into credit equivalents and then see what that told us.

The result of this exercise was to impose credit limits with a structure as depicted on Table 1. (Again, we consider these internal limits proprietary).

We have separate limits for short- and long-term exposures, which vary according to the Prudential credit rating assigned to the bank or financial institution, and we have an overall limit for short- and long-term exposures combined, which is less than the sum of the two sublimits. There have been a couple of major challenges associated with putting these limits in place. The first has been the complexity of collecting all of the data that you need from different parts of the organization. The second challenge has been to determine how to ration capacity when Prudential is bumping up against a limit for one of our major partners.

TABLE 1
COUNTERPARTY CREDIT RISK GUIDELINES

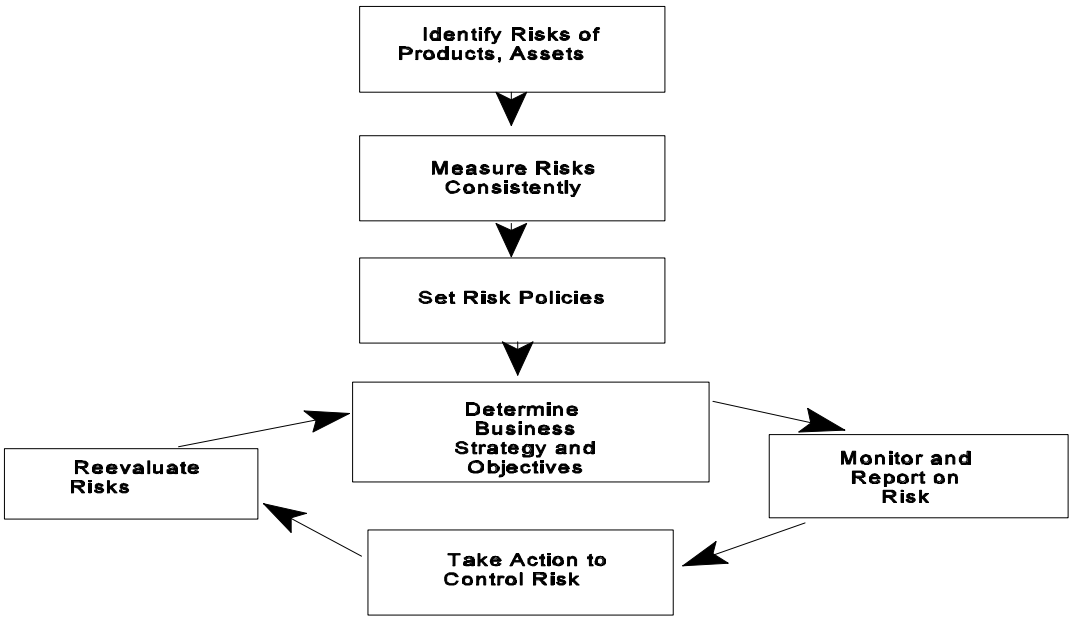
	Short-term Guideline		Long-term Guideline	Overall Guideline	Sublimit Aggregate
S1	X	A++	X	X	X
S2	X	A+	X	X	X
S3	X	A	X	X	X
Below	X	A-	X	X	X
		B+	X	X	X
		B	X	X	X
		B-	X	X	X
		C+	X	X	X
		C	X	X	X
		C-	X	X	X
		D	X	X	X

We've also taken some other practical risk management actions. We've agreed on an enterprise limit for foreign exchange exposures, and we did some hedging in order to ensure that we're living within that limit. Like most other companies, we put into place controls on the use of derivatives. Risk managers have been appointed for the Prudential general account and for Prudential Securities. One of the first priorities of the general account risk manager was to impose limits on investments in foreign countries, stratified by the relative riskiness of their financial markets. In general, we've taken a number of actions to reduce asset risk in our general account portfolio, along the lines that I'm sure many of you have taken to increase your risk-based capital ratio. Last but not least, we've taken major steps in reducing the volatility of Prudential's earnings by selling two of our most volatile subsidiaries: our reinsurance company and our home mortgage company. The sale of the home mortgage company also reduced some of the geographic risk concentrations that I had mentioned earlier. So what do all of these actions add up to? I think an increasing awareness of the sources of the company's risks and an increasing willingness to manage them.

Now with the experience of the last couple of years behind us, what kinds of risk management activities will we be focusing on going forward? First, put risk management activities into a broader strategic context and second, describe briefly the value-at-risk approach that we plan to use for risk measurement.

Chart 1 is what I call a consultant's diagram of the risk management cycle. The elements of this cycle are quite straightforward and, in fact, I've already touched on most of them: risk identification, measurement, policies, monitoring and reporting on risk, and taking action to control risk.

CHART 1
STRATEGIC RISK MANAGEMENT



What's important about this diagram, though, is the way it's drawn, because it implies that how you identify and measure and think about risk should be important inputs into your business strategy. It also implies that what you learn about risk through the monitoring and reporting and control processes should provide important feedback in terms of reevaluating a company's risks and, therefore, reevaluating business strategy.

Identifying risk really shouldn't be just an inventory process; it should be a strategic process. If a company consists of a portfolio of businesses, then the risk aspects of that portfolio should be carefully considered and balanced in order to assess the returns and the volatility of the returns that those businesses are going to result in. Similarly, individual products within each of the company's business lines should be evaluated in terms of the financial and operating and business risks of those products before they are put on the balance sheet. Obviously, you can't make those risk/reward evaluations without a good set of risk measurement tools and some conscious decisions about the company's risk-taking policies in order to serve as a benchmark for evaluating business decisions. What kinds of risks and amounts of risk is the company willing to take and not willing to take?

Here's another way of thinking about how risk management aligns with business strategy. The chairman of Prudential states our general financial objectives very simply: pay strong dividends, regain a solid AA rating, and grow key segments of our business. The role of effective risk management is to help achieve those objectives by first ensuring that your risk bets have been placed on businesses or product lines that can create the greatest value, assuring that value is protected, and then focusing on containing both the short- and long-term volatility of earnings and surplus. Obviously the key strategic decision is making the right bets in the first place, especially given the long-term nature of many of our lines of business.

Lately, we've been talking about the concept of smart risk. Now what is a smart risk? It should be one that fits with your overall business strategy. It should be one that flows from an area where your company may have a competitive or comparative advantage or where it can build such an advantage. A smart risk is one you understand, one that you can afford, and one that you think you're going to be appropriately awarded for taking. A dumb risk is the opposite of those things.

Both the central corporate organization and the individual lines of business have a role to play in assuring that a company is taking smart risk, so that value is being created and protected in an intelligent way. At the enterprise level, decisions have to be made about the appropriate overall level of risk in relationship to capital and how that risk should be allocated among major lines of business. There should also be an expectation about returns on risk. The individual lines of business can also practice both strategic and practical risk management by focusing resources on the right products and product lines.

One of the characteristics of smart risk is a risk that you understand, and that requires a bottom-up as well as a top-down perspective on risk management. You may have your grand strategy correct, but if you don't understand the underlying components of risk and how to manage them, you're going to blow it in the execution phase. That requires dissecting the drivers of risk and managing those risks prudently in order to deliver the level and quality of earnings that your senior management is looking for. You have to examine in detail what I'll call the drivers of risk in your asset portfolio and the drivers of risk in your liability portfolio. I think actuaries are particularly well suited to identifying and quantifying these risks because of a lot of the pricing and cash-flow modeling work that we do. In addition, we can get a significant amount of help, at least on the asset side, from consultants and people in the investment world. Similarly, we have to know what the underlying risks are that are associated with our liabilities. However, the modeling process here can be much more challenging than for assets. There may not be as many historical data to help us understand the volatility of the underlying risk drivers. Although the sophistication of our models is getting better, the under-

standing of our underlying assumptions is at least as important. How confident are we that we understand what drives customer behavior? What happens when a basic parameter changes, such as using a different distribution system?

In spite of these challenges, we at Prudential are working on a new risk-measurement framework that builds on the idea of understanding risk drivers and the volatility of those risk drivers. I'll describe this framework very briefly.

Note in Table 2 that we've divided risks into several major categories that don't look too dissimilar from the C–1/C–4 structure. The approach that we are taking is to apply value-at-risk concepts in an insurance company environment. Value at risk is very widely used in the securities, brokerage, and banking firms as a way of measuring risk. A basic definition of value at risk is that it's an estimate at a certain confidence level of the potential loss and economic value that your company may experience over a specified period of time because of the volatility of a risk driver. In other words, it's how much value you can lose before you can fix the problem.

TABLE 2
WHAT ARE THE UNDERLYING DRIVERS OF RISK?

FOR LIFE INSURANCE
- Mortality rates
- Lapse/withdrawal rates
- Expense levels
- Policy loan utilization
- Premium paying levels for rate-sensitive products

FOR ANNUITIES
- Mortality rates
- Lapse/withdrawal rates
- Expense levels
- Annuitization
- Level of subsequent deposit

Two Additional Sources of Risk
- Customer behavior
- Changes in the distribution system

The steps in a value-at-risk calculation are easy to say, but not necessarily easy to do: taking inventory of your various sources of risk; identifying the underlying risk drivers; calculating the economic value of each asset and liability using some sort of discounted cash-flow analysis; determining how much that value could change if one of the underlying risk drivers changes—for example, if the five-year Treasury rates go up by 50 basis points, we call that the sensitivity of the asset or liability to change in the driver—then estimating the range of normal fluctuations that you would expect to see for each of the risk drivers. So raw value at risk associated with a particular driver is the product of the sensitivity of your assets or liabilities to that driver and the volatility of the driver. Then the last step, of course, is to take into account correlations among the drivers to obtain adjusted value at risk.

All of this is very easy to say, but it's much harder to do. But we think that there are a number of advantages to this kind of approach. We think it's going to give us better insight into what's driving our risks because it does force a detailed risk identification and quantification process. Value at risk is more consistent with the way the rest of the financial services industry looks at risk, so I think we can gain from some of the insights being developed at banks and brokerage firms. This approach can be used as a useful mechanism for allocating risk capital among businesses, and it can serve as a basis for risk-adjusted performance measures.

There are a few minor challenges associated with this approach. It does rely heavily on models and assumptions that you put into those models. Of course, that isn't much different from much of the other work that we do. It can't substitute for judgment. I think that most of us know better than to be too much in love with our models, but it doesn't hurt to remind ourselves every once in a while of their limitations. Value at risk is usually based upon normal volatility of the parameters. It does have to be supplemented with stress testing or other kinds of analysis. We already do one form of stress testing when we do asset adequacy analysis. Looking back into history and replicating some extreme events is another way of approaching stress testing. In addition, you can't ignore the kind of key ratio analysis that stock analysts or rating agencies apply to your business.

Value at risk also presents some practical implementation issues in terms of collecting the volatility data and doing the modeling necessary to yield results. It does break new ground for many insurance products. There are many single pay deferred annuity models for sale or for rent but, so far, we haven't been able to find people who have many other models developed for doing this kind of analysis.

I hope that this presentation has piqued your interest in the subject of risk management. I think that actuaries have a great deal to offer in this area, and I hope that you will take the opportunity to get involved.

Mr. Raymond: Helen, that was great. Our next speaker is Mary Gottschalk. Mary is the director of Treasury risk management at Arthur Andersen. Mary is not an actuary or an accountant. She does consulting work, primarily specializing in asset/liability management for financial institutions, including banks and insurance companies.

Ms. Mary Gottschalk: As Craig said, I've done a great deal of work in both the banking and insurance industries, and I have spent many years on asset/liability management. Over the years, I have found an unspoken assumption that the model for asset/liability management comes out of the banking industry, which has been using asset/liability management for 20–25 years. The banking industry's model

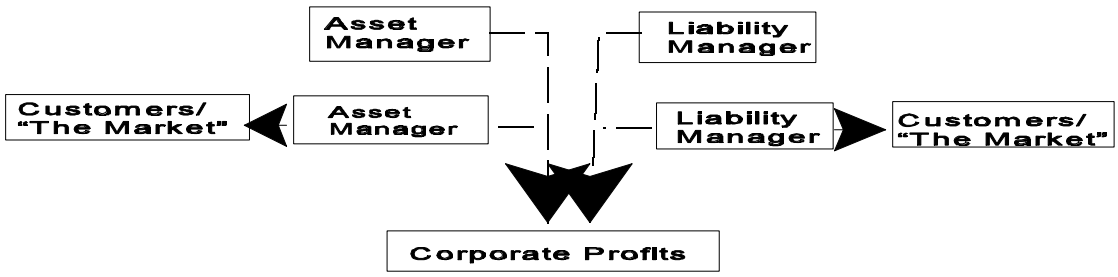
seems applicable to the insurance industry in many ways, and yet the insurance industry is very different.

I'd like to address some of the critical elements of the asset/liability management model as it applies to the banking industry; look at the ways in which it may be applicable to the insurance industry; and discuss the reasons why, from a strategic point of view, you need to consider these issues.

I will describe a model, not a mathematical model, but a logical model, that looks at the balance sheet from an asset/liability management point of view. Whether you're in a bank or an insurance company, you have managers who take care of specific products or business units. The performance results of those product managers will show up in the bottom line in profits.

What I'll do first is discuss the banking model as shown in Chart 2. In this model, your asset managers for residential loans, auto loans, installment loans deal individually with customers. On the other side of the bank's balance sheet you have liability managers money market funding and long-term debt whose performance results also show up in the bottom line. The significant point is that all of these results flow into a corporate profit pool for which no single product manager or group of managers is explicitly responsible. Individual performance is measured at the product or business unit level. There's no association of any single manager with the corporate result. Profits are "owned" by a neutral corporate entity.

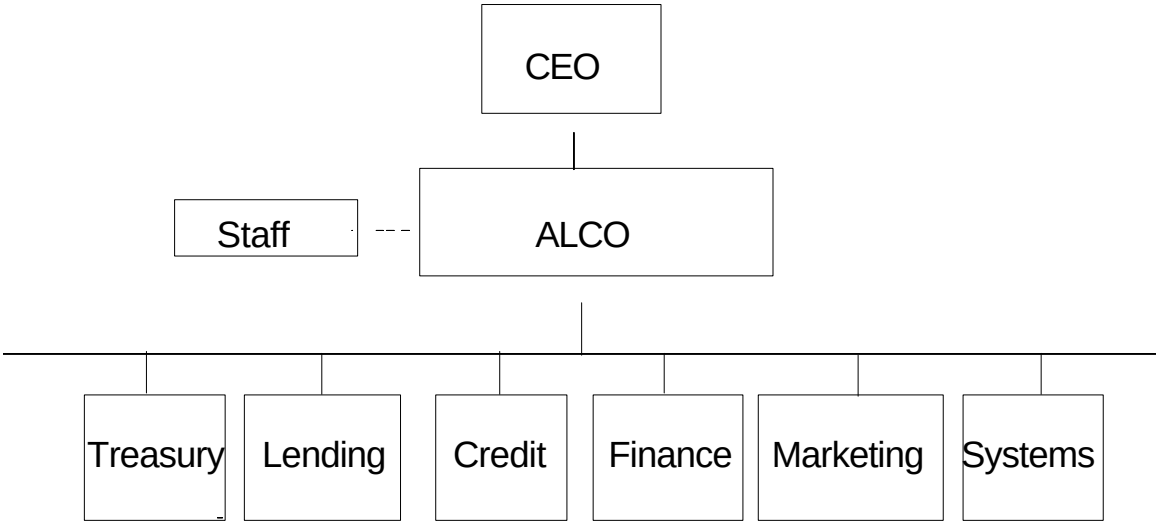
CHART 2
THE BANKING MODEL



When you turn to the way in which financial risk is managed as in the asset/liability management process, you typically find a very flat structure. Chart 3 is an illustrative model, and I'm not suggesting that every single bank organizes its asset/liability management process in exactly this way. The point, however, is that the perfor-

mance of each product manager feeds into the asset/liability management process in the same sort of way. All product managers are equal.

CHART 3
ALL PRODUCT MANAGERS ARE EQUAL



Now let's turn to the insurance model as shown in Chart 4, which is very different than the previous model because asset managers do not necessarily operate autonomously. Their performance does matter to the liability managers, in part because asset strategies affect liability strategies, and in part because the profits from asset management are recognized in the bottom line of the liability company. There's a fundamental need for the asset/liability people to talk with each other about liability product development and pricing strategies. You cannot have the degree of autonomy in an insurance company that exists in a bank. Ultimately, the liability company wears the performance of the investment division from a legal, regulatory, and rating agency point of view.

These issues have implications for the way in which the asset/liability management process is structured and, as shown in Chart 5, you don't normally get the kind of flat asset/liability management structure that comes from a group of autonomous business managers. First, in an insurance company, you often find that liability managers have a strong viewpoint about the kinds of asset risks they want to take. Second, if the liability operation includes many lines of business—in essence a portfolio of liability-based risks—there may be a coordinated liability risk-

management strategy. On the asset side, portfolio managers are far too often viewed primarily as order takers, and the investment committee may not necessarily set broad asset strategies.

CHART 4
THE INSURANCE MODEL

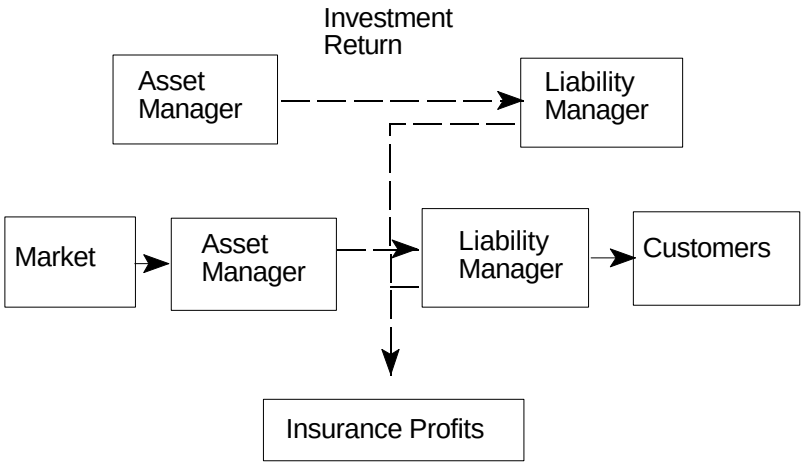
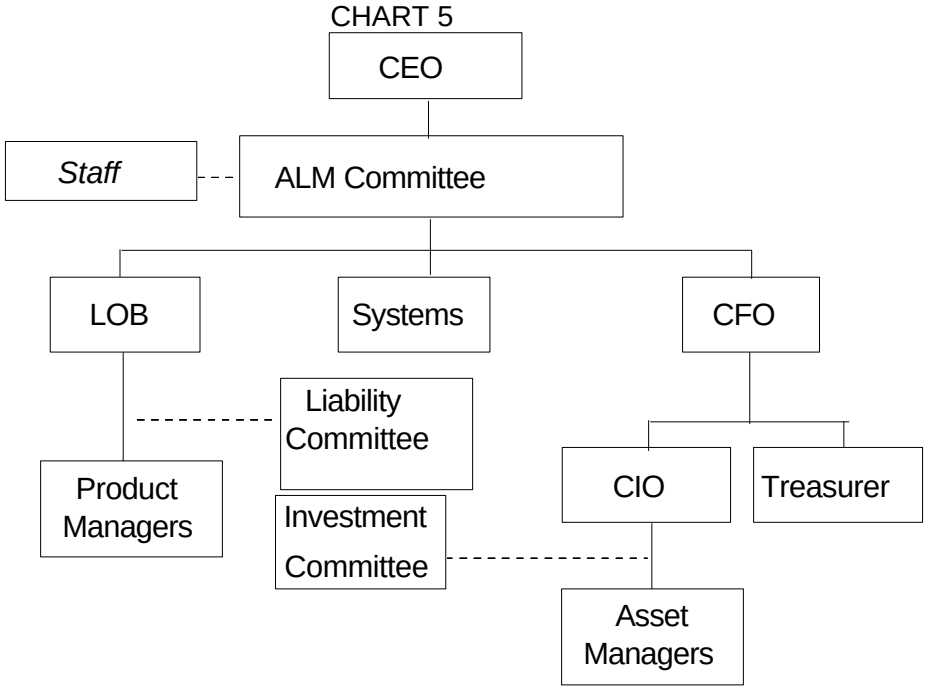


CHART 5



How do you build an asset/liability management process in which the liability committee and the investment committee work together, when they have different management structures and the financial results of the asset performance are

"owned" by the liability side? One of the helpful distinctions here is the one that exists between asset/liability management and asset/liability matching. They reflect very different perspectives about managing risk.

Asset/liability management deals with risk at the corporate level rather than at a business unit or product level. It looks at product or business unit risk in terms of its impact on strategic objectives at the corporate level. Is the objective stability of earnings? Is it growth in earnings? Is it return on equity (ROE)? The focus is on managing an array of products—both liability and asset products—to achieve the corporate goal. In our bank example, the product manager is responsible for customer selection, product design, or product pricing. But the asset/liability management process clearly recognizes that the asset manager doesn't control the cost of the funds he or she lends out. Similarly, the liability product manager can't control the earned yield on the funds he or she provides. In a bank, the asset/liability management function effectively takes those funding and investment risks that the product managers can't control, and aggregates them at the corporate level. Thus the corporate asset/liability management function is responsible for managing the "mismatch risk" of the balance sheet as a whole.

By contrast, the insurance industry's concept of asset/liability matching focuses on risk at a product-by-product level. It seeks to identify the financial market characteristics of a given liability product, and invest the funds in a "matching" asset product which has offsetting risk characteristics. There is an assumption that when you match assets/liabilities in this way, you have eliminated risk when you aggregate the asset and liability portfolios at the corporate level.

In reality, this assumption is often wrong. The liability manager can specify what asset product he or she wants, but he or she cannot control the ability of the asset manager to actually invest in the desired way. The initial asset strategy that supports product pricing and product structure may be very good, but the liability manager cannot ultimately control asset performance. That, in essence, is the same as the mismatch risk managed by the bank.

That aggregate mismatch risk can arise in a number of ways. For example, in both a bank and in an insurance company you'll have credit standards and policies for managing credit risk. Insurance companies tend to have fairly high credit standards and to price liability products based on those standards. In general, there are procedures for ensuring that any single product-based asset portfolio complies with the credit standards. Unfortunately, given the high standards and the size of the credit markets, many companies have a very significant credit concentration at the corporate level—and the products in the aggregated portfolio are not priced for that risk. In other words, there is a risk at the corporate level that nobody is managing.

A related issue is the need to maximize returns, subject to risk constraints. This is a key issue. When you match the liability risk profile with a similar asset profile, you are ignoring the questions of relative returns and of pricing for risk. As Helen said, one of the roles of an insurance company is to incur risk, but in applying the principles of pure asset/liability matching, you're ignoring one of the basic principles of your own business. From my perspective, asset/liability management encourages you to look at the cost of eliminating risk or, alternatively, the value of that which you should take.

Why does all this matter? This question takes us to the theme of this discussion, which is strategic risk. One of the reasons it matters is that if you are matching assets/liabilities on a product-by-product basis, the probability is very high that you're going to end up with less than optimal returns and that you are leaving money on the table. One factor in suboptimal performance results from the ineffective use of staffing resources, as portfolio managers are less likely to develop significant market sector expertise. Another factor is that the operating costs of managing many different individual portfolios tend to be high. First, take the bid/asked spread as you buy in one portfolio and sell in another. Second, there are significant operating costs of maintaining a lot of different product-based asset portfolios, many of which may look relatively similar, but are managed separately. Finally, it's hard to track performance, to figure out how much of the bottom line of the insurance business is due to good planning and how much is due to good execution. Do profits reflect the ability of liability product managers to get higher margins than expected or investment returns that were higher than anticipated? Did investment returns fall short of projections because the asset manager made poor investment choices, or because the cash flows projected by the liability product manager were not realistic, or because market rates dropped more quickly than anticipated? Were profits up because the asset portfolio had a higher credit risk profile or longer duration than anticipated in the pricing or crediting strategies? When you're dealing with a simple asset/liability matching program, it's hard to think clearly about these issues.

These things matter for a critical reason. The insurance industry is changing, as the people in this room well know. The products are changing, particularly on the life side, where changes in the demographics and health of the population have moved the insurance companies increasingly into investment-type contracts and away from morbidity and mortality products. As a result, interest rate risk is becoming an increasingly significant feature of the products that you're selling.
Another issue is that the financial markets have changed. Ten or fifteen years ago, if you wanted to manage the risk characteristics of a liability product, you had to buy an asset that had similar cash-flow characteristics. With the growth of the derivatives markets, however, you can replicate any set of cash flows by using derivatives

or structured finance. You may replicate a desired exposure by diversification of a series of different products that will give you the risk profile you want. This is one of the areas where there's money left on the table, because the most efficient pricing in the market is not necessarily the matching product.

The final and perhaps most important point is that your competitors are changing. Whether or not you think that the banks' asset/liability management model is right for you, you need to think about it because banks are your competitors and they are using it. If they can avoid leaving money on the table, if they can more effectively price their products, they are going to set the level of competition over the next ten years. From my point of view, there is some urgency for the insurance companies to think about how to apply the banks' asset/liability management model to their own operations.

What I'd like to do now is give you a perspective on how you move from asset/liability matching to asset/liability management. I don't want to underestimate for a moment the complexity of the systems and procedures needed to do this. But what you find in a matching situation is that a liability product, for example, a single premium deferred annuity, is matched against an asset portfolio that may include bonds, money market instruments, and mortgage-backed securities. Then you take another product—say a guaranteed investment contract—that also has its own portfolio with bonds, money market securities, and mortgage-backed securities; it may have money market investments; it may have corporate bonds. Each of these portfolios, in Helen's terms, becomes a silo, with little or no coordination from an economic or market expertise point of view between the individual portfolios.

The alternative is to set a formal benchmark, a statement of the assumptions about the desired asset profile. The benchmark is predicated on specified cash flows and assumed yields based on a market index. By using a benchmark, you can separate the earnings contribution of the actual asset portfolio from the contribution of the benchmark or "shadow" portfolio. You can separate what actually happened from your expectations.

Having once established the "shadow" or benchmark portfolios, you can aggregate the risk profile of all the "shadow" portfolios, and reclassify them by asset class. In other words, you take all the corporate bonds out of the individual portfolios and put them into a bond portfolio, with its own performance benchmark based on a bond index. You set up similar performance benchmarks for other portfolios: equity, money market, asset-backed securities. When the aggregation is complete, the risk profile of your asset classes must match—within whatever the risk limits at the corporate level are—the aggregate risk profile of the liability products. Again, I don't want to underestimate the procedural difficulty of the task, but conceptually,

the systems are available to manage the aggregate risk profile of the liabilities against the aggregate risk profile of the assets.

Whether or not you actually want to use benchmarks to set performance incentives is a separate decision. Although some may want to do it, others feel that setting up performance incentives will undermine the working relationship between the liability product managers and the asset class managers. The point is not that asset/liability management and benchmarking must be imposed in a formal way, but that it gives management a way of judging performance and assessing where the strengths and the weaknesses of the business really are. It allows each portfolio manager to judge how well he or she is doing, which is critical. The liability manager can judge whether or not he or she is generating sales and margins that he or she expected. It allows the asset class managers to determine whether or not they are achieving the returns they set out to achieve. It facilitates a tighter and more focused management evaluation of the whole risk management process.

This has been a helicopter view, but I hope I have given you food for thought. The key in all of this is that your competition is using very sophisticated asset/liability management procedures. If you don't begin to think about managing risks in the way that the competition does, there are some real concerns about the competitive position of the insurance industry over the next 10 or 15 years.

Mr. Raymond: Our last speaker is Nelson Strom. Nelson is the corporate actuary at Allstate. As part of Nelson's responsibilities he's very heavily involved in the risk management structure and function at Allstate.

Mr. C. Nelson Strom: A great deal of what I have to share with you is very similar to what you've seen in the prior two speakers' presentations. I think this means that we're all on the same track, but in slightly different ways. My intent is to give you a high-level view of what Allstate is doing.

One of the outcomes of effective risk management is that it increases shareholder value. For example, when we went public a couple years ago, our price came out at $27 a share, and then it decreased a little bit. One of the concerns of the marketplace was our risk exposure to natural disasters—earthquakes and hurricanes—and the volatility it caused in our earnings. When Hurricane Andrew went through Florida, that only cost us between $2 and $3 billion, but if the hurricane had hit about 20 miles further north, our losses would have been multiples of those numbers and possibly could have jeopardized our ability to stay in business. As a result of our weather exposure—we're called the weather channel stock—people interested in our stock kept a watch on the weather channel from September through October to see the hurricane activity coming from Africa.

Over the last few years, however, we've been diligent in managing our risk exposure to natural events. In Florida and California, many actions have taken place. Our activities are public knowledge and the price of our stock over the last year or so has doubled due to risk management and other process improvements. So there are significant rewards to the company and to your policyholders and stockholders if you do a good job at risk management.

Let's discuss a little bit about what the life company looks like. Actually, we have seven different profit centers, and they're based on different distribution systems. One you've probably heard of is the Allstate agent; another is Dean Witter. We also have direct response, pensions, and structured settlements profit centers. Finally, the last two profit centers are a company called Lincoln Benefit Life and another called Surety.

Table 3 shows our major products within our distribution systems by various financial measures. If you look at the reserves column, note about 90% of our business is annuities. If you look at the premium column, note about 74% of our business is annuities. But when you get to the capital and operating income columns, annuities are about 50%. This profile shows that we have significant investment risk. Finally, note we make a little over $300 million. The total corporation makes in the $2 billion range. The corporation wants our operating income to show steady growth, be stable, and not cause us problems. So risk management is important for our fulling those requests.

Our definition of risk management is as follows: "The purpose of the risk management team is to manage the interrelationships among the life company's assets, liabilities, and exposures to risk from external forces so that they bear a prudent relationship to available capital." It identifies our risk management team and its purpose. Let's highlight a couple areas in the definition.

- Team—This group takes a company-wide perspective on issues. We have 30 plus segments that are well managed at the profit center level, but we think we are suboptimizing our results and need to consider a wider perspective.
- Interrelationships—The desire is to make sure the many and complex relationships among ALLCORP, the life company, the profit centers, the investment department, and outside constituencies work together.
- Bear a prudent relationship to available capital—We're talking about our need to understand risk, what our tolerance is for the various risks we face, and whether we are getting paid appropriately for the risks we take.

TABLE 3
LIFE COMPANY PRODUCT TYPES
AND KEY FINANCIAL MEASURES – DECEMBER 31, 1995

MAJOR PRODUCT TYPE	RESERVES %	STATUTORY PREMIUM %	CAPITAL %	OPERATING INCOME (AFTER TAX) %
Flexible Annuity: Credited Interest Rates Resettable ● Single Premium Deferred Annuities ● Flexible Premium Deferred Annuities	35	36	32	32
Fixed Annuity: Credited Interest Rates Fixed at Issue ● GICs ● Annuity buyouts ● Structured settlements	38	30	22	22
Separate Accounts: Market Appreciation Credited ● Variable Annuities ● Variable Life	14	11	2	3
Life Products: Flexible and Fixed ● Interest-sensitive life ● Traditional life ● All other	13	23	44	43
Total	100	100	100	100
	$28.1B	$4.9B	$2.6B	$326M

We have the universe of all financial risk we face. Our focus is the risks in the life and annuity business. Our goal is to manage the risks we face through policies, strategies, and management processes. Policies are the rules of the game, the strategies are how we play within the rules, and, finally, management processes are the processes that will allow us to fulfill our strategies. Table 4 provides more detail on what we mean about our policies, strategies, and management processes.

TABLE 4
MAJOR RESPONSIBILITIES AND PERFORMANCE STANDARDS

		MANAGEMENT PROCESSES			
POLICIES	**STRATEGIES**	**MEASUREMENT**	**COMMUNICATION**	**ALM**	**OTHER**
Identify/define/ set measure-ments for risk	Develop for risks managed at company level	Establish processes/ measure/analyze	Periodic operating committee updates	Asset allocation	Education
Reflect ALLCO RP risk exposure policies	Strategy oversight for risks managed at other structural levels	Integrate into financial management conversations (FMP)	Changes in processes	Interest-Rate Risk	Pricing and required capital
Tailor exposures by structure level	R & D	Conceptualize futurist scenario	Results of measures/action steps	Credit Exposure	Production software data and analysis tools
Establish risk tolerances		Measure of success for process	ALLCORP risk management	Risk Minimization	Other risk management processes
Define/set internal control mechanism		Benchmark best practices			

- ALM—Under management processes we have identified ALM because that's the most important risk team.
- Policies—Our policies include understanding the risks and defining them, having good measures for them, and then understanding their context in the total corporation. Tailor exposures by structure level means, where should the risk be managed? Would it be at the corporate level, a profit center, or product level? Something like persistency might be at the product level, whereas credit risk might be at the corporate level.
- Strategies—Some are managed at the corporate level. For those developed at the profit-center level, this team performs oversight. R & D is an important responsibility that is often low on the priority list and therefore missing in many risk management processes. We spend so much time on our day-to-day issues, we don't examine what can be done better or differently, nor do we determine what we are missing.

The risk management team's responsibilities include being a decision-maker, a recommendation-developer, a facilitator, and a provider of inputs. Most of our time is spent making recommendations, being developers of strategies, or facilitating issues. As we review our roles, we don't see ourselves building a large team, but more a virtual kind of organization, where we would draw from people from the rest of the organization. Initially, our area was set up to be a couple of people. We

will add a couple more people, but we will draw from all parts of the company on an ad-hoc basis. I think this approach creates a better ownership of risk management throughout the corporation.

How did we go about developing risk policies? We had a technical or an ideal approach, which would have been great if we could have done it, but I think we would have solved world hunger before we did it this way. The other approach was the practical way, which I will describe. First, we had to identify our risks. Table 5 shows a breakdown of risks that you'll see in all the books. Everybody's are slightly different. These are intended to be our base-level risks. Life interest-rate risk isn't included because it's the sum of a couple of these things. For example, interest rate would include base risks such as call prepay cash-flow risk, liquidity risk (interest rate stressed), plus some others. The key is to capture all your risks in some format. This list comprises 37 items, and as you read in different articles, you'll see different types of this material.

TABLE 5
LIFE COMPANY RISK EXPOSURES

ASSETS	BUSINESS	MODELING	LIABILITIES	PORTFOLIOS
Credit Risk	Economy	Completeness of risks analyzed	Mortality/morbidity	Liquidity risk (normal situations)
Event Risk	New competitors	Methodology	Expenses	Liquidity Risk (Interest Rate Stressed)
Price Volatility	Market allowable profitability	Accuracy (Actual vs. Expected)	Antiselection (structure risk)	Run Risk (abnormal market conditions)
Expenses	Mode of distribution	Interpretation of results	Fraud	Tactical asset allocation
Antiselection (structure risk)	Product concentration		Non-interest sensitive lapse	Duration Mismatch
Strategic asset allocation	Technology		Interest sensitive lapse	
Fraud	Risk reduction tool knowledge/usage		Product profitability related to external indices	
Call/prepay cash flow risk	Fraud			
Concentration risk	Regulatory			
	Tax			
	Accounting			
	Rating agency			

What was our risk process? Chart 6 depicts our old process. We had about 35 different financial management conversations that occurred weekly, monthly, quarterly, or whenever risk management was discussed. These were very ad hoc with no owners and no defined process. Furthermore, I'm not sure we translated data to information very often. We weren't sure if we were complete, but it's the sort of thing that if you start throwing enough arrows at the target, one of them is going to hit it. Hopefully, we covered all targets. What we needed was a more defined process.

CHART 6
PICTURE OF CURRENT RISK MANAGEMENT PROCESS

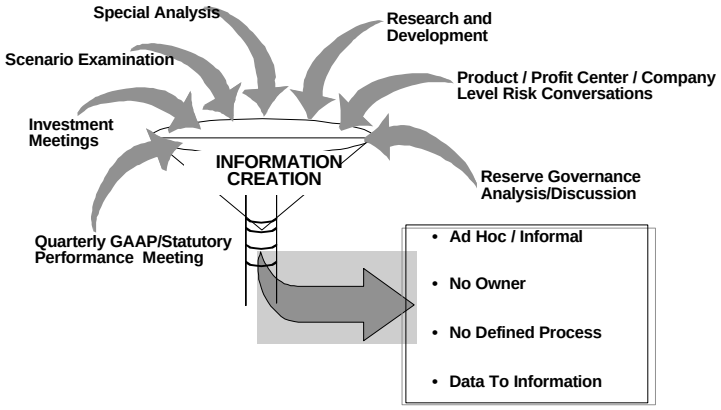


Table 6 shows what we were ("From") and what we wanted to be ("To"). The "From" describes a company that managed risk on an individual, micro-managed basis and really didn't bring the information together well at the company level. What we wanted to get to ("To") was a process with owners, structure, profit center, and total company focus, with a company team managing the total process.

Chart 7 shows a high-level process design of our approach that identifies customers and customer requirements and defines the process. Our primary customers were the operating committee of the life company and the ALLCORP risk management team. What were their requirements? They wanted to make sure that our major risks were identified, the risks were measured periodically, and that we had owners for our processes.

We wanted to end up with a well-defined policy for risk with owners, defined measures, defined strategies, and action plans. Another important outcome was we didn't want our risk management to be a silo. That is, we didn't want to create new processes independent of current processes; we wanted to make sure that was integrated within all our management conversations. Furthermore, we knew we

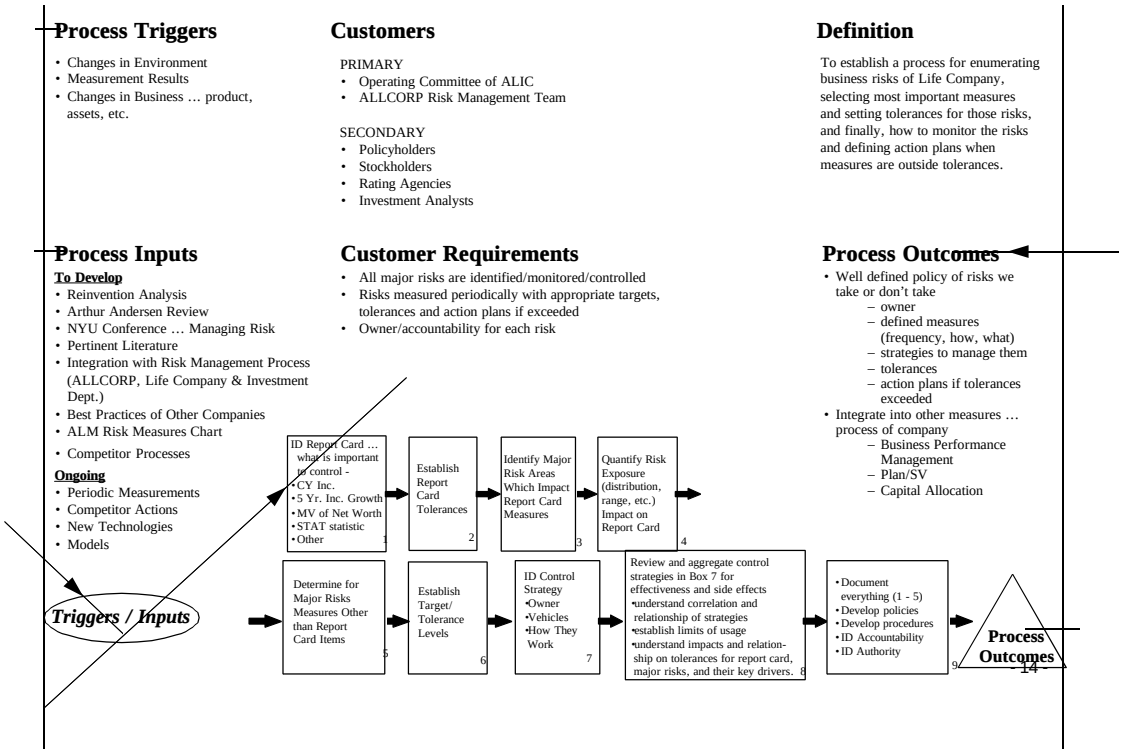
were going to have to revamp some of those conversation, so we didn't look at 1 risk in 35 different discussions. We wanted to be more focused and more efficient. Another part of the high-level design was process triggers and inputs.

TABLE 6
RISK MANAGEMENT PROCESS

FROM		TO	IMPLICATIONS
• Decentralized • No clear process or owner • Profit center focus	(Process)	• Integrated with company profile primary • Owner clearly defined	• Operating committee must have information • Team spirit
• All modeling at a segment level • Company level totals available as a rollup	(Technology)	• Company modeling is possible as a direct process, not a roll-up	• Strategies are set in the aggregate
• GAAP operating income exclusively • Profit center focus • Company P & L roll-up	(Management Systems)	• Mix of leading/lagging indicators • Focused on risk/reward • Specific to the responsibility and authority of each area	• Change thinking and compensation systems
• Segment-specific responsibility • Liability focus • Distrust of those outside your profit center/department	(Culture)	• Manage segments to further company strategy • Company-wide integration of risks • Interdependent businesses with trust in each other	• Team perspective required • Operating committee must have good data
• Each profit center is seen as good manager of its risks	(External Relationships)	•Company is seen as good manager of risk	• Present ourselves as one company with many approaches
• Each profit center head works with senior management alone	(Structure)	• Leadership teams work together as one team	• Each leader has a responsibility to manage his or her area within company strategies

A key to our process design was the process flow boxes that are at the bottom of Chart 7. What we wanted to do first was determine what were the important report card items at the company. It could be operating income, net income, (ROE), assets under management, life insurance in force, or whatever. Those are the key measures that are found in box 1. We would then discuss with management and find out what its feeling was for tolerance within these report card items. How much could it vary before significant management concerns arose? That's box 2. Box 3 is what were the major risks that affect these report card items? In box 4 we wanted to map all those report card items and all those risks to find out what variances existed. Box 5 developed a measure for each risk. Based on outputs of boxes 4 and 5, box 6 determined the company's risk tolerances for each risk measure. Box 7 deals with determining control strategies and selecting an owner for each risk who would keep the risk within control limits. Except that's not very easy. That might be a goal in the long run. What can we do in the short run?

CHART 7
RISK MANAGEMENT FRAMEWORK—MEASURES, TARGETS AND TOLERANCES



In our short-term process, we started with our risks. We listed the risks that we thought were discussed in the conversations, and we picked the most knowledgeable person or persons regarding those risks. We interviewed these experts and asked them if the discussion was qualitative or quantitative and whether the level was zero, one, or two. Zero meant nothing happened, one was sort of a soft talk, and two meant they really had a handle on the issues. We asked them whether anything had ever come about as a result of their discussions? Was there any action taken? Finally, risks were identified for each conversation. Was that list complete? Were there some other risks not on the list that they'd like to add? The next step established a process for the person who became on owner of a particular risk. Thirty-five risks are a lot to tackle at one time, so we developed a list of guiding principles for priorities. The last step was to assign owners and, hopefully, arrive at our ultimate goal.

Below are our guiding principles for risk prioritization where the company tolerance policy is to be developed. First, we wanted a limited number, perhaps six or so, that would be material and be related to how we manage our business. The risks needed to be measurable and controllable. We needed to consider risks that might not be all big for the life company, but when added to risks in other parts of

ALLCORP were significant. Finally, for rating agencies or investment analysts, did we cover their concerns within the ones we picked?

- Limited in number—not for all risks
- Material
  - has significant impact on business results
  - key report card measures.
- Related on how we manage the business and make choices (credit risk vs. volatility risk)
- Measurable and controllable
- Alignment with ALLCORP guidelines and policy statements.
- Aligned with requirements of external constituencies (rating agencies, investment analysts, etc.)

The following is a brief description of the risk handbook that we are going to create. Each risk might have these six sections. We thought this might be too much data, so for certain risks we're only going to ask that the risk is defined and measured. So for some of our risks, we will only identify, define and measure. For the others, we will develop all sections. So far we haven't completed any of this yet. It's a work-in-progress.

Process to Create Risk Handbook

- Identify: Create a list of life company risk exposures
- Define: Describe each risk exposure, including key drivers and interrelationships to other risk exposures
- Measure: Quantify each risk exposure using any measures available, including internal data and external industry data, trends, etc.
- Report Card Items: Select risks that have significant impact on and can be directly mapped to key financial results (operating income, net income, ROE, etc). Estimate the effect and variability due to the risk exposure.
- Set Policy/Tolerance Ranges: Define the policy (appetite for risk) at the life company and profit center levels in terms that are meaningful, understandable, measurable and actionable.
- Management Process: Define process and subprocess owners, ongoing measures and reporting of results, and guidelines for developing and implementing alternative strategies.

When we develop the plan for any report card items, whether it be operating income, net income, or whatever, we currently develop single-point estimates.

In the future, we hope to give management a distribution of the report card results so that it gets a feeling that it isn't 100% certain that we're going to reach that single-point estimate.

Based on management's tolerance for risk, we will be able to determine what parts of our distribution are outside its comfort zone. For those parts, we'd "sculpt" our financial results—add some caps/floors or do whatever is necessary to bring our distribution of results within management's risk-tolerance levels. When we do that, we will also probably lower your returns a little bit, but that's part of the game of maximizing the risk/reward equation.

I think it is fair to say that each of today's discussions are on the same track, but you need to tailor the work process to what's best for your company. Your company has to reach a point where focusing on risk management is important, and you need to focus on the important one. Finally, this effort will be a work in progress for many years to come. It's a very dynamic and constantly mutating topic that's very difficult to get your hands around.

From the Floor: I have a question for Mary Gottschalk. I found your presentation very interesting, very informative. I would like you to elaborate on the impact of the organization's distribution philosophy. In other words, most banks, in my opinion, are asset driven and most life insurance companies are liability driven. This puts another dimension on the whole discussion.

Ms. Gottschalk: I think you're correct in the sense of which side of the balance sheet drives the process, but I think I tend to look at it as simply just a mirror image. The fact that one is liability driven and one is asset driven doesn't fundamentally change the way in which I think about managing two sets of risks at the corporate level.

From the Floor: Indeed, but it allows you to open up the cap you have control over.

Ms. Gottschalk: I'm not sure that at the end of the day it matters where you start the process. What you're trying to do is make sure that they're both working together in lockstep. I don't think that it really makes a fundamental difference in the way you think about the risk. The practical applications are very different

Mr. David L. Creswell: We know that when you have different risks in different areas, and if you're looking at the total of these risks, you know the risks are far from additive. You talked about what you would tolerate in risks in different areas. I didn't pick up on any nuance of the fact that the risks are not additive, that you may have three risks of equal amount, but when you put them all together it's only twice any single one or even less. I wonder if there are any comments you can give on that?

Ms. Gottschalk: My perspective goes back to what Helen was talking about with value at risk. You may want to manage each risk individually within its own parameters. The point of managing risk at the corporate level is that it enables you to recognize not only that you don't want all of those risks to approach their "limits," but also that in the real world they probably don't. Their ability to take advantage of correlation and covariance is one of the benefits of diversifying the portfolio.

Mr. Strom: I agree with you 100%. We are trying to do some modeling work to understand risk correlation and covariance. We want to develop a corporate model for the assets and liabilities of the company, then move around risk measurements. We haven't done this on a stochastic basis because of complexities, but we are doing it on some deterministic runs. We are still in the neophyte stages.

Mr. James A. Wiseman: I wondered how you could say that a life insurance company should manage its risks in a similar manner to a bank, when banks naturally have a massive duration mismatch between its assets and liabilities, whereas an insurance company doesn't. The insurance company has a very long liability, and the bank has the short liability and the long assets. The bank is being paid to manage a massive mismatch. How can the insurance company attempt to compete in that arena? That's not what it's supposed to be doing.

Ms. Gottschalk: There's no question that the fundamental structure of a bank tends to be mismatched—liability short and asset long. By contrast, the insurance industry has tended to match duration or maturity. But the point that I was trying to make was that the risk profile you manage is your choice. The banks use derivatives and internal transfer pricing systems to reduce or increase that mismatch to whatever risk profile they want to carry, and then they set the pricing/return objectives to ensure that they will be compensated for that risk.

I would make the same argument for an insurance company. When you say duration match, what you're really saying is that you will pay any price not to carry the mismatch risk. From an economic point of view, I don't think that's what you really want to say. I think what you want to say is how much risk do I want to carry and what do I get paid for it.

Mr. Wiseman: So we should start competing in mismatch?

Ms. Gottschalk: No, I don't want to make a recommendation that you should. My recommendation is that you at least look at the question. You may decide not to, but you ought to understand why you have chosen not to do it. My experience suggests that insurance companies don't look at that question carefully enough.