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Session 47 PD
Making the Case for Economic (Risk) Capital and Risk-Adjusted Performance Measurement Frameworks

Track: Risk Management

Moderator: Hubert B. Mueller

Panelists: Hubert B. Mueller
Kevin J. Reimer
Jose D. Siberon

Summary: A number of insurance companies have recently implemented, or are in the process of implementing, economic (risk) capital. These programs are being implemented because of concerns with the existing regulatory and accounting frameworks and/or companies' desire to have a capital framework which is more consistent with their risk profile.

MR. HUBERT B. MUELLER: My name is Hubert Mueller, and I'm a consultant with the Tillinghast business of Towers Perrin. My two fellow panelists this morning will be Kevin Reimer from ING and Jose Siberon from Standard and Poors (S&P).

This session is all about economic capital. If you have been to prior SOA meetings, you might say, "What's new about this one?" What we've tried to do is give you an update on things that we've seen happening in the marketplace over the past six to 12 months from a market perspective, which I will start on, and from a company perspective, which my fellow panelists will cover. We will present a case study of internalized economic capital. We will also discuss the rating agencies' perspective on economic capital and the link to enterprise risk management (ERM). I'm going to start off by giving you a view of what we've seen happening in the marketplace, and how economic capital links to ERM.

The two topics I'd like to talk about are what we have seen in the marketplace in terms of recent trends of economic capital and how risk-adjusted performance

Note: The chart(s) referred to in the text can be found at the end of the manuscript.

measurement tools link in with economic capital.

First of all, Chart 1 might be familiar to you. When a company talks about determining economic capital, this involves an analysis of a risk profile curve for a selected risk. That could be variable annuity guarantees, that could be catastrophe risk for a property and casualty (P&C) insurer, that could be morbidity risk for health insurers or anything else. Typically, you're going to rank the distribution of results for a simulation of 1,000, 10,000 or even 100,000 scenarios, from worst to best result.

When you calculate economic capital, you look at the tail risk, which is the left part of the curve, and there are different ways to look at economic capital. Some companies will say, "We're going to use this specified percentile," which could be the 98^{th} or 99^{th} percentile. That will define a certain level of capital. A lot of the rating agencies will look at it that way. If you have a financial strength rating of A or AA, they'll look at it as though you're an A-rated or AA-rated bond, which has a certain default allowance each year.

What you have to do to get from that number, which is an annualized figure, to the right risk tolerance level would be to ask, "What's the duration of my business?" If the duration of your business is 10 years, and if you're A-rated, which might be about a 10-basis-point annual default for a corporate bond, you can essentially multiply those 10 basis points by a factor of 10. Alternatively, you could do 0.999^{10}, which if you do the math comes out to be about the 99^{th} percentile. That would mean if you're A-rated, you want to be at the 99^{th} percentile of capital.

If you are BBB-rated, that means you're further out on the right, maybe only at the 95^{th} percentile. If you're AAA-rated or want to be AAA-rated, you'd have to hold capital based on the 99.95^{th} percentile. That's the fifth-worst scenario out of 10,000. First of all, you've got to do more than 1,000 to get to that. It's number five out of 10,000, which is a pretty rigorous standard.

In 2002 and 2003, I led a subgroup of the SOA's Risk Management Task Force on economic capital. We did a survey in the fall of 2002 and found that only about a third of the companies had even heard about economic capital or used it. That proportion is rapidly increasing. We're going to hear some things about why that's increasing, too. This spring, we did a joint seminar with the SOA on risk and capital management. On Chart 2, it should say March 2004, not March 2003. We asked the attendees in an audience poll, "Have you calculated economic capital? If so, have you done it on it a company basis, on a line-of-business basis or both? If you don't, do you plan to do so?" There were about 100 people at that seminar. What is interesting to me is that in total, 60 percent of that group of people had calculated economic capital on a company basis, on a line-of-business basis or both. If you had done that same survey a year ago, you would have found that the portion was a lot lower.

What's impressive is that even from the 40 percent that had not used economic capital, another 25 percent were thinking of implementing it within the next one to two years. In total, roughly five out of six companies are currently calculating economic capital or will do so within a short time frame. Why is that important? Why does it matter? We're going to get into that in today's session.

When companies allocate economic capital, there are two ways to do it. The key thing is that if you are trying to determine the right level of capital for different lines of business, by putting two or more lines of business together, you're going to find some diversification benefits. That happens if you model annuities and universal life (UL), and that happens if you model life and health or life and P&C business. What you find is that in many cases where the scenarios are bad for one area of the business, they're good for another. Hence, you have some natural hedges.

Companies typically allocate the benefits from that diversification to the corporate level rather than at the line-of-business level. It might look something like Chart 3. For each line of business, if you calculate your economic capital, and compare that with your actual capital, which might be based on some regulatory formula such as risk-based capital (RBC), you find that your numbers are going to differ. They are going to be either higher or lower. That's because RBC is based on industry averages. Nobody is exactly at the average. There is an average for the market, but you're either better or worse. You could be better or worse for different lines of business, depending on what kinds of products you sell.

If you aggregate that at a company level, what you typically find when you do this exercise is that the total economic capital across all lines is less than your economic capital for each line added up, which you'd expect because you have some diversification. Often, it's also less than the regulatory capital, the RBC capital. Then you're faced with the question of what do you do if they are different? How do you manage this? How can you make that work? What companies typically do then is say, "We hold the lines to the economic capital, and the difference, the excess between what we have to hold as a company and what we need as economic capital is where we might think about some leverage. You can do things like use a letter of credit or financial reinsurance, which incurs a lower cost than if you hold each of the lines to the full level of capital.

If you think about it, if a line of business has to reach a target of 12 percent, each dollar of capital is costing them right now about 8 percent a year. That's because if you're targeting 12 percent with your capital, but you're earning only 4 percent after tax, or maybe even 3 percent after tax depending on what you're investing in, it's costing you 8 percent to 9 percent a year. However, if you can leverage at least parts of it out at the corporate level—and I know Jose is going to give me some counter on that when he talks, but that's his perspective—what you find is that you can get some leverage for that capital at a much lower cost, which decreases your overall cost of capital as a company.

Companies use economic capital in many ways. This was another question that we asked at the March seminar. Quite a few of the participants (25 percent) said they do use economic capital because they think it's a better way to manage their overall business. Typically, economic capital is used for capital management (23 percent). I thought this answer was good, too: To determine the right level of capital (20 percent). Like I said earlier nobody is right at the industry average. You want to know what the right level of capital is for the risks that you have as a company. There are lots of reasons to calculate economic capital, and there are lots of ways you can use it. If you look on the banking side, a lot of them are scrambling right now because of Basel II, and they have to calculate capital for operational risk.

I would agree that in the insurance industry, we've done better at calculating capital for financial risks than we have done for calculating capital for operational risks. Yet if you look at the failures of the industry, most of them are based on operational failure. You can go back all the way to Barings Bank, General American or others. Most of those were operational failures, not financial failures. It's interesting that as an industry, we have not caught up to the needs of the marketplace, which is to have an economic capital model in place for both the financial risks and the operational risks. There are companies that are doing it, and I think Kevin is going to talk about that a little bit in his comments.

There are a lot of reasons to do this. An example is Solvency II. The International Actuarial Association (IAA) is working on a capital model that will be rolled out worldwide where companies have to calculate the right amount of capital that they have to hold for solvency purposes using internal models, rather than industry-average models. Whether or not that's going to come to the United States at some point is a different question. At least internationally, this is going to be implemented somewhere in the next two to three years.

You've got the Office of the Superintendent of Financial Institutions (OSFI) in Canada. It has been regulating segregated funds, which is the Canadian equivalent of the variable annuity products, using the C-3 Phase II-type regulation that we've been discussing in the United States. We will have C-3 Phase II, even though that was moved into next year (2005), for those of you who don't know that. I think everybody knows it's been delayed into the next year. Don't put it aside and say, "I'll look at that next year," because what you'll find is that the rating agencies want to see that this year. They don't care when it's enacted. You as a company have to fess up and say, "What are we doing about those risks? How do we manage the capital, and how do we manage the overall risk in that business?"

Don't just put it aside and say, "We don't have to do that until the end of next year." By the way, at the end of next year, you're not only going to get a new regulation for capital, but you're also going to get stochastic variable annuity reserves. The Commissioner's Annuity Reserve Valuation Method (CARVM)

regulations for variable annuities will most likely be effective next year. It's a bit of a double whammy. If you're prepared, you shouldn't have to worry. We also have other things such as GAAP Standard of Practice (SOP), which I think has been discussed in another session, so we won't spend time on that. Using economic capital for pricing and risk management is also good business practice. You want to be able to determine what the right amount of capital is for the risk profile of a certain line of business.

Sometimes, there's this discussion about what the right level of capital is. Is it regulatory capital? Is it a rating agency capital? Is it company-based economic capital? What you find is typically when companies calculate economic capital models, and Kevin is going to tell us about that, they tend to be company-specific, and they tend to be tailored to their specific risks. It's a prospective modeling approach. You model lots of different scenarios and lots of different what-ifs. You calculate the tail risk, and that's how much you're holding.

Regulatory capital, which I said before tends to be based on industry factors, is not company-specific, tends to be a formulaic method and is retrospective, and I will contend that at least in some areas, it's insufficient. That's why we have C-3 Phase II; otherwise, we wouldn't need that. If regulatory capital were perfect, we wouldn't need C-3 Phase II. I think there's some reconciliation in the wings for the rating agency. I've spoken to all the major rating agencies over the past few weeks on this topic, and all of them have told me that they are more than willing to look at what proprietary models companies have to determine the right amount of capital. It's not just an industry approach anymore. It becomes a lot more company-specific.

Next, I would like to talk a little bit about risk-adjusted performance measurement. I would say a lot of the current performance measurement systems don't adequately reflect risk. GAAP ROE certainly reflects GAAP equity, but it's not economic capital, and generally the GAAP ROE would not reflect the cost of capital. Economic value-added (EVA), which is commonly used in the industry and typically is defined as ROE less cost of capital, tends to have a much more short-term focus like one year out rather than longer into the future.

We find that insurance companies, especially best-practice companies (often the multinational, larger companies and at least the medium-sized companies); tend to use risk-adjusted return on capital (RAROC) as a measure to evaluate performance on a risk-adjusted basis. Some of the benefits of doing that are you can set a target rate for each unit that's relevant to the risk that it faces, and you can set higher risk targets for companies that are going to have more volatile results. Just as you would think that if you invest in equities versus bonds, ultimately over time you're going to get a higher return, but at a higher volatility. It's the same thing.

In the insurance industry the RAROC concept is evolving as we speak. Traditionally, the way it was defined was to say RAROC is ROE and is based on GAAP earnings

over GAAP equity. That was then adjusted over time to say that it's adjusted earnings over economic capital. Some work has been done over the years, and there are some publications. What we've seen evolve over the past year is companies that use it say, "RAROC as we use it is defined as the change in economic value over economic capital." I think that's also how ING is looking at it. Kevin may want to speak on that topic later on.

Where's the EVA if you solve for this? You find that it's defined as this RAROC formula, which is the change in economic value over economic capital, less the hurdle rate. The hurdle rate can differ whether you're a public company or whether you're a mutual company, and for some companies the hurdle rate might simply be the cost of capital. If you look at some of the analyst reports, they'll say, "How does management add value?" Management adds value if the RAROC is higher than the cost of capital that the company faces. It's a simple concept if you think about it. In some of the mutual companies, we find that it might just be that management determines the arbitrary rate of return because they might not have the same public scrutiny.

Once you set that target rate, what you can use it for is to help you define which of your units are underperforming. Looking at the example in Chart 3, at the end of the day you are only here. If you can find which ones are underperforming, you can then change the picture and say, "Where can I turn it around, and which ones ultimately do I have to shut down?" Capital is a scarce resource nowadays, and it's become more scarce with some of the recent market volatility. You can ill-afford to just sit there and let it run.

Those are my introductory comments. I'm going to introduce Kevin now. Kevin Reimer is a senior member of ING Institutional Markets in Denver, a strategic business unit of the ING Group, which most of you know is one of the world's largest financial service organizations. He's been responsible for a variety of activities across that unit, including new business and alternative structure product development within a principle protection framework. Some of his projects have included principle protection, a fund of hedge funds, private equity and credit-enhanced vehicles as well as credit derivatives. He's also in charge of the sales staffs within the business unit and ensures that they price consistently across all product lines of business, which I think is good. He's actively involved in the risk management committee in that unit.

Prior to joining ING, Kevin held various positions within the investment division of Clarica, formerly Mutual Life of Canada. While there he was also involved in creating leading-edge tools for asset/liability management (ALM), option and derivative valuation, funds transfer pricing, portfolio management and risk management. He holds a bachelor's degree in mathematics with distinction from the University of Waterloo, Ontario. He's an FSA and a CFA.

MR. KEVIN J. REIMER: I'm going to speak a little bit from my company

perspective. I'll give a brief introduction to what ING is, how ING looks at economic capital, why it wants to look at economic capital and what some of the primary ways of measuring performance within it are. I'll give more detail on the risk types that ING looks at for economic capital, try to get into some of the issues that ING has experienced with implementing it and then try to talk a little bit more about the Institutional Markets business units.

To give you a quick idea of what ING is, and you might get a flavor of some of the challenges that do occur in implementing economic capital at ING, as Hubert said it is one of the largest global financial services organizations. It has almost a trillion dollars in assets, and that's primarily split among insurance, banking and asset management. On the insurance side it's got the whole gambit through retail and wholesale divisions of life, health and P&C. On the banking side there's retail and wholesale, as well. The company has approximately 115,000 employees and operates in more than 60 countries. In other words, it's a big company.

ING grew through acquisitions. It was primarily founded through two Dutch companies, a bank and an insurance company, that merged in 1991. Prior to that, those individual companies went through other acquisitions, and that trend has continued throughout the last 13 years. There's quite a bit of history and a lot of different systems, methodologies and ways that people look at things throughout the world. To give you an example, in the United States alone, after the acquisitions of Aetna and ReliaStar, there were over 21 different legal entities. That was before we started consolidation. Being an aggressive insurance company, that will probably be down to 20 in the next 10 years. We'll see how that goes!

Along the same lines, you can imagine the hundreds of hundreds of legacy systems that are at each of these companies on the bank, insurance, asset and liability sides. It is a monumental task to bring these things together. So why does ING think economic capital is important? ING feels it needs performance measures that support the efficient use of capital. It's focusing on value creation within the group, so a lot of the measures include things that Hubert was talking about, such as return on economic capital, return on embedded value, value of new business and internal rate of return.

You need to effectively allocate capital across the different business units. The same is true within the whole organization, and that means across banking and insurance, among different business units within banking and insurance and across geographical boundaries. Remember that ING is active in 60 countries, and the diversification benefits that occur need to be determined at various levels, at different risk types and at different product types. We need to be able to ensure that we can allocate capital based on the risk of the businesses, so the riskier the business is, the more capital that should be allocated to it.

One of the primary objectives that ING has lends itself well to the risk-adjusted capital framework, and that's capital protection and capital deployment. By using

and managing capital, there should be an economic benefit from it. First of all, you should be able to have less lazy or inefficient capital lying around. You should be able to see where that is. Second, if done correctly, you should be able to allocate the capital to the business units that have the best risk-adjusted ROE, which is what Hubert discussed.

Economic capital, or RAROC, is becoming a standard for the banking industry, driven by the Basel II requirement discussions that have been going on. ING, being in banking, insurance and asset management, wants to roll economic capital out to all of its different operations. We'll get into a bit more detail later, but RAROC was initiated in the banking side of ING in the mid-'90s, and on the insurance side there was a pilot project starting in '99 and it has been continuing. The idea is to implement it through all the insurance businesses this year.

We do think there is some growing pressure from external counterparties to show that you can manage and optimize your capital. From a rating agency or a regulator's perspective, the question is does the company know the sources of its risks and the need for capital? From the shareholder and the analyst point of view, does the company know where it's generating the value on the capital that's entrusted to it? Managing capital starts with identifying three different things. The first is your actual capital you have available. How much capital does the company have to meet its needs? The second is required regulatory capital, or how much capital a company must have. The third is required economic capital, which is how much a company should have to achieve the target of true risk-based solvency.

Economic capital aligns the capital you have more closely with the actual risks that you're undertaking with your businesses and as a whole organization. It allows you to benefit at the business unit level from reducing your risks and optimizing your risk-adjusted returns. Interestingly, one of the things that it does take away from the business units is their incentive to be innovative and arbitrage the rating agency or regulatory capital. It's not like we would ever do that, though! Regardless, it should end up in a more efficient and effective allocation of capital in the end.

We think credit should be given by analysts to those that are managing their economic capital well and know the sources of risks. This is probably not true right now since economic capital is in its infancy. I think as it becomes more and more mainstream, it will be the flipside where companies that don't do it will get penalized.

Let's talk a little bit about measuring performance. Historically for ING a lot of the key indicators were things like earnings growth, ROE, value of new business or internal rate of return. Some of the drawbacks of these indicators are that earnings growth doesn't say anything about the quality of those earnings. If you're using GAAP equity for the "E" in the ROE calculation as Hubert was alluding to, it might not accurately reflect what true risk you are taking on and what capital you need to

support the business, and it might not be consistent with your product pricing assumptions. Lastly, the value of new business is a single-period point in time measure, and it doesn't tell you how that value is going to be emerging over time.

ING is looking at improved measures. One that we use is return on economic capital, which is the annual measure of performance. This links earnings performance with the risks that are inherent in the business. We also use return on embedded value, and that's the annual measure of long-term performance. It's defined as the change in total embedded value divided by the beginning embedded value. If you're measuring the return on economic capital and return on embedded value correctly, anything above the cost of capital should add to shareholder value, and anything below it will detract from it.

Return on economic capital is a one-year measure, and return on embedded value is a multiyear measure that looks at the present value of any management decisions made, changes in assumptions or changes in the market. What this takes into account and effectively balances are both the short-term and long-term focuses in performance measures. Being a European company, return on embedded value is a big driver of stock valuation and is looked at intensively in Europe.

Getting into a bit more detail on the ING capital project, on the bank side economic capital is pretty much like RAROC and does coincide with what the Basel II requirements are. It's been implemented since the mid-'90s, so we've had several years of experience on it. While there's always room for improvement, the indications are the businesses do like using it. They are starting to use it more from the point of view of pricing and performance measurement decision-making. It goes to show you that once the businesses understand, accept and begin to use it, it gets integrated in day-to-day decision-making and becomes part of the underlying culture of the organization.

Given the success of RAROC on the bank side, there's more pressure from the insurance side of the businesses to implement economic capital similar to what the bank is doing to maintain consistency among all the different businesses of ING. Again, we started with a pilot in '99. Our business unit was part of that pilot. There are a lot of complexities in dealing with it from the insurance side. I'm sure you know that if you've ever looked at a banking book and compared it to an insurance book, there are different assets, different liabilities, different time horizons to look at, different liquidity parameters and different liquidity time frames. ALM practices are different, as are pricing evaluation techniques, regulations and accounting.

As a whole, the economic capital framework for ING takes into account the objective of capital protection and capital deployment. The executive board takes into consideration all the different stakeholder views, whether they be from a risk versus capital standpoint or risk versus reward (sometimes those are conflicting views), and then sets targets and constraints to push down to apply across all the different business units. At the highest level within ING, there's something called a

Risk Policy Committee. You can think of that as a chief risk officer function above the whole group. Reporting into this committee are lots of different other committees, such as Corporate Insurance Risk Management, Corporate Credit Risk Management, Corporate Market Risk Management, Corporate Control & Finance and 20 other committees that report up into this one. From a business unit and a personal perspective, when trying to get products approved that means a lot of extra red tape, and a lot of people need to be convinced that you're doing the right thing for the group. I think that's par for the course for a large company. ING recognizes this and is trying to improve on its approval process.

There are eight risk types that we use in ING to calculate economic capital: market, credit, business, operational, mortality, morbidity, P&C and transfer risk. Economic capital is calculated for each of these individual risks at each business unit level. That gets you a stand-alone economic capital level. At the group level they take in the diversification effects at that point. Those effects go across the business units and across risk types.

Getting into a bit more detail on the risk type descriptions, market risk is obviously the variations in the value of portfolio because of the changes in things such as interest rates, equities and currency. We run stochastic scenarios for that. A market value of assets and a market value of liabilities are determined on a consistent approach based on these various scenarios.

From a credit risk standpoint, credit risk is the risk of default of assets or credit migration, and the key for credit risk is diversification. The economic capital for credit risk is currently calculated at the parent level of ING, both as a stand-alone and on a diversified basis. The hope is to push this down closer to the business units at some point. We're using KMV portfolio manager as the tool of choice to calculate that, bringing in the diversification effects. You do find at times that KMV capital could be higher than regulatory or rating agency capital based on the KMV diversification effects depending on what the portfolio looks like. There are some business units like ourselves right now that are currently using KMV Portfolio Manager. However, to get the real value of the tool for ING, you'd have to know the rest of the ING Groups' portfolio makeup to use it for economic capital with diversification benefits taken into account. As you can see, there are a few logistic problems that you could encounter when trying to use this tool for business and pricing practices.

Regarding the operational risk point of view, this is the risk of loss that's resulting from inadequate or failed internal processes, people or systems. The capital's measured using global incidence industry data, and that's scaled to ING's size. What you do is come up with lots of statistics that are used to create distributions that take diversification into account. There's also a qualitative scorecard measure that's used to supplement this.

On the business risk side, that's defined as the loss of value because of experience

differing from expectations. So it's pricing risk differences, changes in volumes and the mixes of the business among other things. Examples would be expenses or persistency. This is done more on a deterministic approach. For example, you'd increase expenses by a factor or stress test lapses. Some of the other risk types that we include are mortality, morbidity, P&C and transfer risk. Transfer risk is mostly currency, payment risk and counterparty risk.

What are some of the issues with implementing economic capital at ING? Some of the things you need are a clear process and tools for the businesses. You must be able to use it for pricing and decision-making. You also need to understand the results. It can't be just a black box that's calculated at the corporate level, and you hope that all parties understand it and buy into it. You need to have everyone buy in and be an advocate for it. One of the things that helps that is if your performance measures are linked to economic capital. If that's the case there's obviously more of an incentive to engrain it in the whole culture of the businesses so everyone can start using it as a day-to-day process.

One of the issues we had is balancing the differences between economic capital and requirements for the rating agencies and the regulators. The one thing is if you're pricing for economic risk, that should be your ROE hurdle for the calculation for the business units. If regulatory capital is greater than the economic capital, as Hubert was saying, should we be funding that at the group level? That's one of the things we're looking at. I think that's probably the way it's heading right now. The flip side of that is if other companies are using potentially lower requirements from a regulatory or rating agency capital standpoint than your economic capital, how are you going to compete with them in pricing? That's an issue we need to look at, as well.

Another one is mapping to local accounting. Because economic capital is market value-based, how do you link that with Stat and GAAP? Which measures do you want to use as constraints, and which one should be more as objectives? Whenever you are throwing another measure or target into the mix with GAAP and other measures that you have, it's obviously going to be a lot harder to manage and run the business.

From a market risk perspective how do you handle the different businesses within ING—differences between the bank side, the insurance side, trading versus hold-to-maturity, market basis versus book basis and long-term versus short-term focus? That's probably not just for market risk; it's just more prevalent for market risk. It goes across all the different types of risks. In the end you probably need to take those into account when monitoring and managing the businesses.

Sometimes risk isn't evident when you look at a one-year focus. For example, if you were writing 3 percent minimum guaranteed products back in the early '90s when rates were 9 percent, if you go out a year and shock interest rates, you might not see any capital need for those guarantees at that point. But if you do it right with

the market value of liabilities projected out over that year, you should be able to find something there that reflects the true risk on a product over time.

From a credit risk perspective it should be based on the marginal impact for the consolidated risk profile. However, if the risk is assessed at the group level, which we have right now, it makes performance management, managing the business and decision-making a lot harder.

It's the same with diversification benefits. If they're calculated at the group level, you need tools to take them into account at the business unit level, and then the question becomes do you allocate diversification benefits back to business units or retain them at the group level? That affects decision-making for the business and pricing.

You have to realize and be ready for the fact that this type of undertaking changes the culture and decision-making framework within your organization. ING had a lot of resistance on the insurance side over the years in trying to implement it. There were a lot of changes to try to help that along. At some point you need to put a stake in the ground, try it out and see how it goes. It's the 80/20 rule. You can modify it later if needed. The key there is to make sure that you recognize there could be mistakes, and there could be things that you didn't expect. Don't penalize the business units for unwanted results because then the model could be hated as opposed to accepted later on.

There's a lot of education that needs to go on with your business and senior financial leaders. It is a business transformation project. Currently it seems like it's been left up to the actuaries within ING, but it's got to be an overall business process.

We need to recognize that resources are an issue. There's a lot of information that needs to be supplied to the group and then results need to be analyzed later on when you do get it implemented. Recognize this and plan for it because the business units aren't seeing this as a replacement for the day-to-day tasks. It's something else on top of those tasks.

Let's quickly talk about Institutional Markets. This should lead in well to Jose's presentation. Institutional Markets is a strategic business unit in Denver. It's got a balance sheet of about $10.1 billion. We issue guaranteed investment contracts (GICs), funding agreements, municipal contracts and a couple of things Hubert mentioned as far as fee-based businesses and principal protection wraps on fund of hedge funds. For the spread-based component of the business, the assets are invested for all insurance entities out of ING Investment Management in Atlanta. Our portfolio is a typical makeup for a spread-based GIC portfolio: corporate bonds, private placements, collateralized mortgage obligations (CMOs), commercial mortgages and derivatives since we run a floating rate book from a portfolio management perspective. The investments are managed in Atlanta on an individual

basis. Denver is where all the risk-adjusted return requirements and capital management take place.

Our objective in Institutional Markets is to maximize risk-adjusted return on required capital. Since at least '01 this required capital has been primarily economic capital-based. We do view risk management as a cornerstone of our business both from our pricing and business philosophy standpoint. It's important obviously to understand all of our risk in the business: interest rate, credit, operational business and liquidity. We think our risk management and business practices lend themselves well to S&P's Financial Products Company (FPC) capital model. We were the first GIC issuer to implement this model.

We think this model is linked a lot more closely to what the actual risks are that the underlying company is taking. It is much closer to economic capital than the traditional life company capital model. You get credit for your risk management discipline and your practices that you have in risk management.

We find that we're able to make better decisions having the rating agency capital linked closer to economic capital. It took us about two years to prepare for the FPC model. What that did was allow us to be at the forefront within ING and the insurance companies to be ready to implement economic capital on our end. We found that by pricing and managing the true risk profile, we were able to implement things like true indifference pricing across all different markets, almost like implementing banking concepts such as funds transfer pricing. Obviously the profitability and risk/reward contribution of business lines are better understood by looking at this in greater detail.

In summary, why measure economic capital? We feel that a framework is needed to measure and manage it and then deliver on this adjusted value. We also think that there will be greater pressures through external parties to make sure that you can manage your capital well. We do feel that companies that do use economic capital will be rewarded with higher share prices, less scrutiny and greater comfort from the rating agencies and regulators. There are obviously many issues to consider when looking at a company such as ours when implementing economic capital, but you can get through it. It's taken a lot of time, but I think we're getting close. The one thing that will help is the gradual convergence between the regulatory capital models and your internal risk capital models. The FPC model is an example of that.

MR. MUELLER: Our next speaker is Jose Siberon, who works in the New York City office of S&P. He joined S&P in the fall of '00, and his primary responsibilities there include analyzing and rating insurance companies, structuring deals that contain insurance risks and maintaining and updating S&P's proprietary life insurance capital adequacy models. We really have the expert from S&P here to talk to us today.

I've known Jose for a number of years now, and having worked in the SOA in a

volunteer capacity as well on this topic, one of the things that I'd like to point out is he was one of the people, as is Kevin, who worked with me and a few others in developing this so-called specialty guide on economic capital. If you haven't seen it yet and are interested in the topic, you can get to it from the main SOA Web site if you go to Sections and Risk Management and then go to Economic Capital. There's a specialty guide posted there. For those of you still taking the exams, the specialty guide is going to be on the fall exam syllabus. I think it's an easy-to-read document. We tried to make it as basic as possible.

http://rmtf.soa.org/specialty-guide-ecv1.5.pdf
http://rmtf.soa.org/sg_ec_appendix2.pdf
http://rmtf.soa.org/sg_ec_appendix3.pdf

Jose has been assigned to be part of the North America Insurance Criteria Committee, which is the group that discusses the company ratings and also is responsible for any new criteria related to the insurance group from North America working with the global counterparts on criteria issues. Before joining S&P he was part of the actuarial executive development program at Prudential, where he worked on a wide range of assignments, including pricing and valuation, financial projections and modeling, ALM, financial reporting and project management for some of the underwriting and strategic planning organizations there. He holds a bachelor's degree and master's degree in electrical engineering from Purdue. He is an FSA and a CFA.

MR. JOSE D. SIBERON: I'm glad to see so many people that attended yesterday's session on investment risk, and hopefully this provides a little bit more guidance on economic capital and risk management. Today I'm going to talk mainly about the criteria on capitalization, how we view capital at S&P, how we go into the future by implementing new ways of modeling capital (Kevin already mentioned the financial capital model), advanced analytics projects that we're working on with companies and a little bit about capital optimization projects. The handouts contain an appendix with a lot of slides and information for you to take home and read.

One thing I want to mention is that we recently changed the outlook for the life insurance industry in the United States from negative to stable, which is a positive development for companies that were under a lot of pressure at least from the rating side. Now they can concentrate on those long-term projects like economic capital and risk management, and demonstrate that they can sustain the next wave of risk in the future.

Here's a definition of how we model capital:

> Standard & Poor's applies models to a company to determine the amount of capital and liquidity that we expect the company to hold against potential losses that could be incurred for the financial market, credit, operational risk

exposure and liquidity risk relating to a specified business activity or a book.

Capital is held by insurance companies to support all the main risk that has been mentioned everywhere and serves as a cushion to absorb adverse losses that might not be adequately priced for or might not be adequately reserved for. For Standard & Poor's, it is a tool that serves as a starting point to analyze an insurance company. The insurance companies have a lot of complex risk, and you need some kind of tool to help you put all those risks together on simple summary table and measure where the company's risks are coming.

The ultimate goal for our analysis is to get the rating right. We don't totally concentrate our analysis on capital because we have many other factors to consider to come up with a financial strength rating. Insurance companies manage their returns, manage their product development and manage their business use models.

There are some big differences between the objectives of regulators in measuring risk-based capital (RBC) versus Standard & Poor's objectives versus the internal company management objectives. The RBC model is a tool used to measure solvency for regulatory purposes. The rating agencies, however, want to see which companies they need to look at and which companies are closer to bankruptcy. In other words, Standard & Poor's concerns are the company level of financial strength in addition to solvency. When the regulators are concerned enough about the capitalization of an insurance company, hopefully Standard & Poor's has downgraded the rating into the non-investment grade level.

One of the things that some companies have decided to do as of late, probably through risk management and assessment, is to say, "Downgrade us from AAA to AA because we don't want to hold AAA capital." One company did this, and it's interesting that it would come up with that conclusion given that we didn't want to lower the rating. The company lowered the capital on purpose to get a lower rating because it thought that there was would be in a better economic situation.

We have to remember as actuaries that these models are statistical tools and include a lot of assumption, whether they are factor-based, Monte Carlo models or econometric models using supercomputers. At the end of the day, the users of the models have to make a judgment call, and there are risks that cannot be quantified. Even ING, for example, when it started the FPC, thought the new capital required that we calculated was too low, and judgmentally ING increased the capital requirements that came out of that model. The judgment call was done from the management point of view.

MR. REIMER: That wasn't our choice.

MR. SIBERON: In general you have to keep in perspective that these capital models are tools, and you have to complement the results with your own analytical judgment. We take into consideration the quality-of-capital, the top-line growth and

its effect on capital. There is one issue that we disagree with in terms of what Hubert presented earlier. The model is retrospective, but we analyze capital prospectively as an ongoing concern corporation. So mainly, what happens is that insurance companies grow slowly. You see single–digit growth for most life insurance. But we are starting to see some substantial growth for fixed annuities and variable annuities. Those lines of business grow in double and triple digits sometimes.

We tried to implement a RAROC approach and tried to understand prospectively *pro forma* the capital model. If you grow your fixed-annuity line 50 percent, which is going to take a lot of capital, how much capital are you going to need for that growth to maintain the same level of RBC? The companies have to prove to us they have the capital from the statutory earnings capacity, or that they plan to have capital infusion from the capital markets or from its parent company. The level of capital can be debated between the company and Standard & Poor's. It is a huge exercise that we go through every year with the companies.

We run into some problems with modeling the risk-based capital of some companies. For example, there is a concentration of risks that sometimes is hard to get the data. The data might not be available or aggregated. Many companies are learning to aggregate risks. In the past, it was hard to get the information from the companies in terms of aggregation of risk. That is changing and hopefully will continue to change. Regarding the fraud and legal issues, there's nothing that is in the marketplace that is a separation of risk that you can easily quantify is industrywide or company specific.

For management, as we see a continuation of companies going from mutual to public, and now probably 80 percent or more of the assets are from public companies, they are getting a lot more pressure as they're learning how to be a public company in terms of optimizing their ROEs and optimizing their capital. If they have too much capital, the shareholders want back every single extra dollar through dividends or share buyback. There is a movement of ERM to prove what risks are available and what capital is excess capital. At the end of the day, they want to improve the ROE. No matter what tools you provide to them, shareholders are looking for ROE.

Having said that, equity analysts and shareholders might not always think about what we think about on the credit side. We are credit analysts, so we prefer a little bit more capital in case of a rainy day. Those companies who continue to optimize capital take their chances if they don't keep a little bit of a cushion for that extra mistake or that extra risk they didn't recognize. There are many options out there. Getting back to what Hubert mentioned, they are provided as a tool or to help the insurance industry to provide capital between what the economic capital internally says compared to the risk-based capital level required to maintain a rating target. There are hybrids, where we give a certain amount of credit for equity capital. There are a lot of CAT bonds, reinsurance transactions and continuing capital

structures. This is becoming more interesting as of late because bankers are trying to push these instruments to insurance companies.

Back many years ago there was a push by many bankers on this, but the covenants in the contingent capital structures were not adequately structured to satisfy our concerns. What they changed now is they put triggers that force management at a rating level, let's say BBB, to take the capital from the contingent instrument. If you don't understand what a contingent capital structure is, companies raise capital from the capital market, put it in a trust and leave it there in case they need it. They don't put that capital back into the operating company. They leave it in a trust. If something bad happens, they already have that capital. They don't need to go to the capital markets and raise capital. What happens is that many management teams don't exercise that option. They don't necessarily put it in and take it out of the trust when they need it.

Now they put in triggers that force management to get the capital if ratings go below certain level. It is not a judgment of management. The companies have to put that capital in, and the capital will be available to support the policyholder liabilities. With those triggers we're starting to accept those capital contingency structures as capital for the operating companies (with a limit).

The traditional model is used to measure the different levels of capital we require for different rating levels, and we have ranges. Right now we're working on a global project that tries to provide a more standard view around the world among London, Asia, Latin America and the United States of the appropriate risk factors that should apply in different economic and regulatory environments. We're trying to maintain some consistency across the globe. One of the things that we're using as a check is the company-specific proprietary models and the RAROC approach to see if a company is required to hold, for example, 6 percent at a BBB level. If a company is expecting a target spread of 75 basis points, that would result in a RAROC of 10 percent or 12 percent. Is that an adequate return? Did it price for 12 percent? If so, 6 percent sounds a little bit reasonable as a capital requirement. We're starting to work with the companies in terms of understanding that integration between capital and earnings, similar to what ING is doing.

The definition of total adjusted capital is simple. It is similar to the RBC in the U.S. regulatory requirement except that we exclude goodwill and allow a certain amount in hybrids to be included in total adjusted capital, but not the full amount. If you hold a surplus note from your parent company, we allow only 30 percent of that to be credited as capital in the operating company. In Europe there are other factors that we add or adjust for. The key point is that we look at capital in aggregate as a corporation.

For example, ING used to have 21 legal entities. We first looked at ING as U.S.-consolidated entities of 21 insurance companies and then started to look at the legal entities to make sure that they have the minimum capital requirement. The

main capital at an AA rating for ING has to be above 160 percent capital adequacy ration on a consolidated basis. It could be 125 on each legal entity, but on a consolidated basis it has to be 160. That is different from the regulatory requirements because we want to make sure that it is well capitalized as a group. The regulators don't care much of the group, well, they might, but they don't pay as much attention in the United States because there are different regulators for different domiciles of insurance companies across the corporation.

In addition, we look at two types of capital. There is soft capital versus hard capital. Two years ago, we started to calculate both types of capital measures trying to differentiate the companies that have 150 percent RBC S&P capital, but if you look at a comparative amount for their peers, some of them have 150 percent because of the soft capital (a lot of intangibles). We wanted to differentiate companies that have adequate levels of risk-based hard capital.

There are other adjustments. There is surplus relief. All these adjustments are trying to bring more company-specific approaches and also compare the different companies with each other. As Hubert mentioned, a good rule of thumb for a BBB level in terms of coming up with factors is the 95th percentile, and then we gross that up depending on whether you want to maintain A, AA and AAA of capital. In Europe and the United States, we have C-1, C-2, C-3 and C-4, similar to the RBC, and in P&C there's a C-5. It's important to mention that the regulatory capital model, which a lot of companies use as their economic capital model or the indication of what is adequate capital for them, could mislead companies if they're starting to deal with rating agencies because those differences between the models have been growing in the last few years.

Both of them started in early 1990s and were based on many studies from the American Academy of Actuaries and other actuarial associations to come up with the risk factors. We use similar factors, but as we started to learn about different economic environments, changes in the cycles, different product risks that are coming into the marketplace and company-specific modeling techniques with technology, some of the models are starting to deviate from each other substantially. If you think that you have a 250 percent or 300 percent RBC and are adequately capitalized for the rating level, you might be surprised that you might not be. It might be a little bit too low. Sometimes you might be a little bit too high. In the appendix, I included a list of some of the typical things that are different between the two models.

Where we are moving next? As Kevin mentioned, we have a model that we started implementing with financial product companies. It was mainly focused on derivatives, and it started with derivatives many years ago. We started to add insurance types of risk, such as GICs and funding agreements, but those are more financial products and spread businesses without a lot of mortality, morbidity or lapsation of policyholder behavior. We started to implement GICs with withdrawal options to have some kind of policyholder behavior. With that liability optionality,

we thought we could start implementing something similar to single-premium deferred annuities (SPDAs) and annuities. Many of the companies that we went to and said, "You can implement this model for your original business," reponded that assets are managed on an aggregate basis, including GICs, group annuities and funding agreements. Therefore, we have started to implement the group annuity models.

The FPC model is more a cash-flow-based, detailed analysis that requires much data from insurance companies. That is usually a one-time exercise. After that, we monitor it quarterly, and it is usually a data dump from the company's system and their risk management reports into our input page. We are able to keep track of the different changes that affect the risks every quarter as opposed to annually. We also go into the company's management and discuss its ability to manage this type of risk, which might be a little bit more intense than the life insurance type of long-term risk.

Standard & Poor's has performed an analysis of funds, of hedge funds in terms of looking at the assets risk. This is not only for the FPC, but in general Bermuda companies and reinsurance companies are starting to invest money in hedge funds and fund-to-funds. S&P has a market value group outside of the insurance group. It is knowledgeable about quantitative matters to analyze the different volatilities using Monte Carlo techniques. They rate hedge funds. They are able to assist us in terms of measuring the risk in a more detailed analysis. We used to charge 20 percent or 30 percent for this risk. Now some companies are getting 10 percent or 11 percent depending on their portfolio diversifications.

In the FPC, we use DV01s, key rate durations and contingent capital, as I mentioned earlier. There's a big issue between the different structured finance solutions in that the banks are helping insurance companies in terms of providing capital assessment. For example, for XXX or AXXX, some of the solutions that are presented to us, the key issue is operational leverage versus financial leverage. You might not understand how big operational leverage is, but it's huge. Financial leverage can impact the holding company, the parent company borrowing capacity and financial flexibility and capacity to access the capital market. If we view some of the capital transactions as operational leverage, that leaves a little bit more room for the insurance companies to raise more debt and at the same time alleviate some of the capital needs of the operating company.

There are different benefits and shortcomings. I'm going to skip this to go into the dynamic financial capital model (FPC). The FPC is trying to model a little bit more about the real risks in the company. How do they correlate with each other, especially market risk with hedges that are implemented, the different derivatives that some companies are implementing nowadays? We probably implement a similar methodology with the C-3 Phase II if the companies are providing information and we can understand it and model it ourselves. If so, we probably can understand a little bit better how the companies are hedging some of those

risks. We also look at the relationship with the credit market operational risks and the way that the companies manage and process those risks.

There's a big difference between handling complex models versus simple models. I think we need both. We need the traditional model and the dynamic model. The traditional model keeps everybody in perspective. It gives a little bit of a chance to compare companies with each other, but you also need to handle the needs and the demands from insurance companies in terms of advanced risk management, the ability to demonstrate that they're not industry averages, and that they can handle the risk better than their competitors. You have to keep in mind that compound errors can come up with those complex models. You have to leave a little bit of margin for error.

It can result in a better view of the risk management capabilities of a company that goes beyond quantifying and giving credit for the capital model. With some of these companies like ING and others, we have a better understanding of their management processes and their products.

The increased sophistication of risk management results in a demand that forces us to go into this direction, and there probably are more advances in this model so that it's going to be able to quantify some of the additional risks that might not be easy to model. We're looking for companies to give us more information, technology and tools to do that.

When we are reviewing the RAROC approach of performance measures, we encourage more companies to do what ING is doing. It's harder to understand at the beginning for external parties what a RAROC of 10 percent means or how you get 10 percent in one line of business and 6 percent in other, while corporate is getting -200 percent. It's a starting point, and there are a lot of assumptions and discussions. We're setting up meetings with those companies to focus on understanding the operational performance measures, but they've been able to tell us a little bit more about their business through these quantitative approaches.

I'd like to touch on ERM. We have hired a new ERM manager specialist in the banking side, which is also going to produce knowledge transfer into the insurance analytical department of Standard & Poor's. We are establishing a lot more discussions with the companies in terms of how they're handling their risks. I think this will be a key competitive advantage for some companies and a key differentiator for others. We are now in a more stable economic environment, and the difference between companies will be how they handle and understand risk, and how they can optimize their performance given that everybody probably will look a little bit better than in the past.

The goal will be to implement this process in the future for an insurance group. Sophistication doesn't mean good! We are starting to demand that insurance companies prove to us, not just tell us their stories. They must prove to us through

either quantitative or though the bottom-line results. It's good to have diversification effects, but if you always have a one-time hit in your earnings from being in different businesses that you should not be in, that's bad diversification. At the end of the day, we'll probably understand and give credit to the diversification, but you have to prove it through the bottom line; otherwise, it's going to be hard to give the insurance companies credit for it.

I'd like to finish with some of the quotes that we put together in terms of ALM as an example of what we see in the marketplace and why we think that some companies are on the wrong side of it. We see quotes like:

"Hedging is too expensive." Doing the cost benefit doesn't matter, which I understand, but it's also a way of insuring yourself for the future financial strength of your company. Just as the insurance companies sell insurance, they should learn that sometimes they have to buy insurance for themselves. It might cost them a little bit of the profit margin, but at the end of the day, it could be a competitive advantage in a negative economy cycle.

"We match duration, so we have a low interest-rate risk." One person who works with us in the insurance group who works on advanced analytical modeling and came from the banking side, he hates to hear that because he thinks that some insurance companies are still in the '80s, where duration was a big issue. Now you have to look beyond duration and understand all your risks, different parts of the yield curve and different spread management.

"Spread management is to maintain a constant target spread." Spread management goes beyond your pricing. It's to understand how you look at your credit quality and how that credit quality could affect your credit's curve and the yield curve together. Some companies are sophisticated in managing their spread. When you talk to them you see the difference between the average company and them.

"ALM is a way to measure and protect the economics of the business. A company does not have a plan on selling anything for ALM to be effective." Also in this line they say, "We manage ALM because it's our long-term perspective, and we can move the credit rates. Typically we don't have to worry too much about ALM. Essentially it's too expensive." That's the same person who mentioned that it would cost you about $300,000 to hire a good ALM expert and that could save you millions of dollars. It's not that expensive to manage it and to do it effectively.

He has proven to many of us that sometimes you can implement derivative swaps, which cost you nothing. At the end of the day, you can end up with the same return and lower risk if you do it effectively.

MR. MUELLER: I promised you we would have 10 to 15 minutes for questions, so we're following up on our promise. Who wants to start with the first question?

MR. SIBERON: I disagree with Hubert in terms of the survey because we did a survey for the insurance companies asking how many people measure economic capital, and a low percentage of the insurance companies do so. Some companies answered yes, but then when we asked them, "What is your economic capital?" They said, "The S&P capital." So we said, "What we mean is what do you internally try to measure as economic capital?" We didn't get as many responses. I would like to know, "How many people in this audience who work in insurance companies do measure economy capital?"

MR. MUELLER: (counting hands) A fair proportion.

MR. SIBERON: About half.

MR. MUELLER: Maybe the attendance for the capital management seminar was a little biased.

MR. SIBERON: What I'm thinking is that the people who do work on measuring economic capital are far away from the people who answered the survey. I think management needs to talk to some of the people involved in this process.

MR. MUELLER: I've got two questions to start off the discussion. The first one is for Kevin. Kevin mentioned that return on economic capital and return on embedded values are also used as measures for the incentive compensation, or at least you alluded to that. How was that set up, and how did you achieve buy-in from senior management?

MR. REIMER: I think what we're trying to do is head in that direction because right now it is still in its infancy, and we haven't implemented it across the board. There are a lot of key issues that are still outstanding. One of them is how do you measure the return piece? There's a lot of good work done on the economic capital piece, but how do you measure the return consistently across all the businesses? I think the goal is to consistently do pricing based on these measures and get incentive compensation based on them. We're not there yet, so we're not sure where the buy-in is going to be. The idea is you need to align your incentive compensation for people to get the buy-in. That's what you're going to see on the bank side of ING at least.

MR. MUELLER: We've seen that, too. I think that's a key factor if you want to achieve buy-in.

I have a question for Jose. I noticed that in Europe, S&P is using 50 percent of the value of the in-force value as one of the measures of total adjusted capital. My question is, "Is this something that S&P is planning to use in North America as well?"

MR. SIBERON: We recently revised our global perspective of capital. I think one of

the differences is that the statutory total adjusted capital and GAAP are the same thing for most of Europe. In the European model, Standard & Poor's gives 50 percent credit for the value of in force (VIF). It's more of a GAAP measure. With the statutory basis that is used in the United States, it's harder to give credit to VIF. How does that translate to statutory? In general, if we look at the RAROC approach, we might use statutory capital, with an adjustment for GAAP, and that could be one of those adjustments.

MR. MUELLER: But if the company were to calculate and release the embedded value results to you, would you consider that? Would that be one of the factors?

MR. SIBERON: Yes. Hubert gave us the training on embedded value, and in Europe it's important in terms of a measuring tool—to look at the financial strength of a company is to understand its embedded value. Also in Canada, we use embedded value analysis to understand the financial strength. We also have a lot of discussions with some of the European-based multinational companies. They present to us the different embedded value calculations. I think it's becoming more important in the United States, but the insurance companies in the United States haven't embraced it yet. It's harder for us to use it when 80 percent of the companies haven't presented to us embedded value and haven't even calculated embedded value. I think it will be driven more by demand if insurance companies start to present embedded value to us. It will be easier to use as a rating factor then.

MR. MUELLER: There's some incentive to do it. You heard it. Who wants to start the questions from the audience?

MR. MIKE HUGHES: My question is for Jose. I think if I saw correctly your soft total balance sheet requirements were adjusting for DAC. Is that correct?

MR. SIBERON: Yes, we adjust for any non-cash items.

MR. HUGHES: If you had a proper economic model, a stochastic model, for example, wouldn't that already take into account the recoverability of the DAC?

MR. SIBERON: Yes, that's more for the traditional model, and we don't publish that result. We used that as a relative measure for which companies are using more intangibles as a way of accounting for capital when compared with others. There's a big difference among companies. In the United States there's not a lot of difference because statutory requirements don't allow you to account much for goodwill or other intangibles, but in Europe it could be a big difference between some companies. We don't publish that the soft risk-based capital model shows 150 percent versus your hard capital model, which shows 80 percent. We don't publish the 80 percent, but if you're at 80 percent, and everybody else's hard capital risk-based capital ratio goes down from 150 percent to 125 percent, there will be some discussions with management to understand why they are so different from their

peers. It is a tool to differentiate companies in terms of their use and quality of capital.

MR. DALE MENSIK: This is a little off topic, but in the EU consolidation conversations, it sounds as though they're having a lot of discussions about the appropriate level of capital for EU countries and whether they would apply these same standards for reinsurers that currently exist for direct companies. If anybody on the panel is aware of those and would like to comment, I would appreciate it.

MR. MUELLER: I know a little bit about that. The fact is that in Europe there's no formal regulatory solvency model in place for reinsurers. Reinsurers in a lot of different markets, including Germany and Switzerland, where some of the largest rating insurers are, including your parent company, do not have a formal regulatory framework. There's a lot of liberty as to how the reinsurers manage themselves, and because there were some cases of near failures, or at least significant counterparty exposure, the regulators in Europe have said, "If we regulate the direct companies, we've also got to do something about the reinsurers." Counterparty risk is becoming a lot more of an issue.

You've got some reinsurers in Europe that have been having financial issues and financial difficulties. What I do know is that the current intent is to have a solvency two-time framework apply for both the direct writers and the reinsurers. Obviously this is not effective yet. This is in the process of being discussed. In fact, Sam, you might have some views on that since you're on the international committee. Is anything on that being discussed? No? I don't want to put you on the spot.

MR. SIBERON: Reinsurance is a tricky business globally. Standard & Poor's (the rating agency) have become the quasi-regulators because there's no other main regulatory environment that's looking at their capital in aggregate. Some of the larger reinsurance companies have been downgraded in the past few years and this action has taken some regulators by surprise.

MR. MUELLER: That's something the reinsurers have in common with the banks. There are no more AAA-rated reinsurers.

MR. SIBERON: It's very complex. I don't analyze any of them, and I don't want to, either, because there are so many treaties that the analysts go through, and they have to analyze those treaties and review them every year or every quarter. Some of the treaties are almost impossible to quantify in terms of what the risks are and what risks they are actually transferring. Is there a risk transfer, no risk transfer or partial risk transfer? It's hard to know what they'll end up with, and we try to do our best.

MR. MENSIK: It's challenging because it seems that the reinsurance exporting countries—Germany, Switzerland, Great Britain and Ireland—are outvoted by companies with direct writers. It's an interesting environment.

MR. MUELLER: Yes, that's true.

MR. SIBERON: We're seeing a lot of pressure from life companies in terms of buying power with reinsurers in the United States, especially, where there are only two or three, and the counterparty exposure has increased substantially. From that point of view, counterparty credit risk is an issue. But so is the earnings power. If you're depending a lot on your reinsurer, it's going to be tricky to understand how your pricing is not going to be affected in the future. In addition, the margins of direct writers might be deflated in the future if the reinsurers are no longer going to give you a lot of the low mortality pricing that they did in the past few years. They're tightening their prices and their underwriting, and they have more buying power because they say, "If you don't want to deal with me, there's nobody else to deal with."

MR. MUELLER: Yes, that's definitely something we've also seen in the marketplace. Not just over here, but also in Europe, with fewer players in the marketplace the rates are hardening. It's not only because mortality improvements are not as good as the reinsurers were predicting, but also because there are fewer reinsurers in the market. In fact, I would say that you're going to see in the next year or two years further consolidation in the U.S. and North American reinsurance marketplace. You're going to get fewer companies rather than more.

MR. SAM GUTTERMAN: I noticed in the Appendix that the S&P model doesn't take into account the covariance adjustment compared to U.S. regulatory requirements. There's been some discussion about diversification. Could you expand on the correlations of risks, what this diversification factor is, and what it constitutes?

MR. SIBERON: Standard & Poor's is looking into it as it continually looks at different things that can be improved in the model. Standard & Poor's is going to continue to look at correlation credit or correlation factors. Correlations among insurance and assets risks are hard to understand especially after the past few years that the markets have shown some correlation among either the liability side or the asset side. The asset side is a little bit easier to quantify, and we have in S&P different departments that can probably provide a lot of input on that.

Right now the way that credit is given for asset diversification (at least indirectly) is through having a lower equity charge. I think you've seen the equity charge of 15 percent, which is only one standard deviation. That's not near the 95th percentile or the 99th percentile required for investment grade ratings. It was indirectly given a little bit of correlation benefit for equity. You have to invest in equity to get the benefits, and U.S. companies have limitations in this asset class. The liability side is more challenging in some companies, especially global reinsurance companies. Some have said, "I have P&C risk and life insurance risk, and when a building falls down, does it mean that a lot of people are going to be having death benefit claims?" These are different types of claims patterns.

In the past few years, you have seen that some multi-line companies had experienced asbestos issues at the same time that they had investment losses on the life side.

MR. MUELLER: Kevin, do you want to comment on that from a company side?

MR. REIMER: I think ING's point of view is from the economic capital standpoint. This is one of the pieces that is still probably a black box. The diversification effects are calculated at the group level so you get a little scared not knowing what your capital is at the business unit level, and then it suddenly comes back to you from the group, and here's your percent that you need to apply to it for the diversification effect. You don't know where it's coming from and how to allocate it among the different risk types and across the different levels of the organization.

The United States doesn't get its own diversification effect that could be applied then to a business unit and then bringing that down even further to a product basis where I mentioned principle protection on a hedge fund wrap. Hedge funds are traditionally supposed to be uncorrelated with interest rates and with the equity market and therefore should be a good diversifier. What happens in the tail is a good question. Nobody seems to know that. You try to go over to the group and say, "We'd like a diversification factor for this product so we can apply it to our pricing and our capital models." No one gets back to you on that. There's a lot of work to be done on that.

MR. SIBERON: We do it through qualitative assessment. The analysts have to write a project on diversification of that corporation when they do the analysis. You have to think about diversification, but more as qualitative aspect.

MR. MUELLER: I have one closing comment on that. We have seen some companies, including some large ones (MetLife has been outspoken on that) that try to calculate the correlation effect, the diversification factors, for matrices of 250 by 250 elements. If you allow for a diagonal, this means something like 30,000 factors that you have to fill in. A lot of those are zeroes or ones, but there's a quite a number of them, probably a few thousand, that some of the larger companies have started or have completed calculating. It's a significant undertaking as you do it, but it would include all financial and operational risk.

MR. SIBERON: I heard that one large bank has developed a correlation matrix of 5,000 rows by 5,000 columns.

MR. MUELLER: Yes, but I think that's too much. If you think about completing the matrix at the beginning and end of the year, that could employ a whole department for life.

Chart 1

Determining EC involves an analysis of the risk profile for a selected risk tolerance level

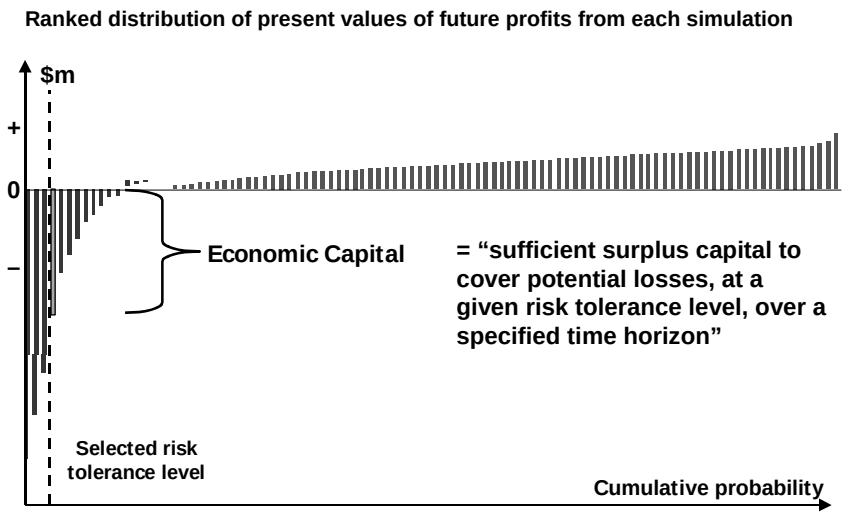

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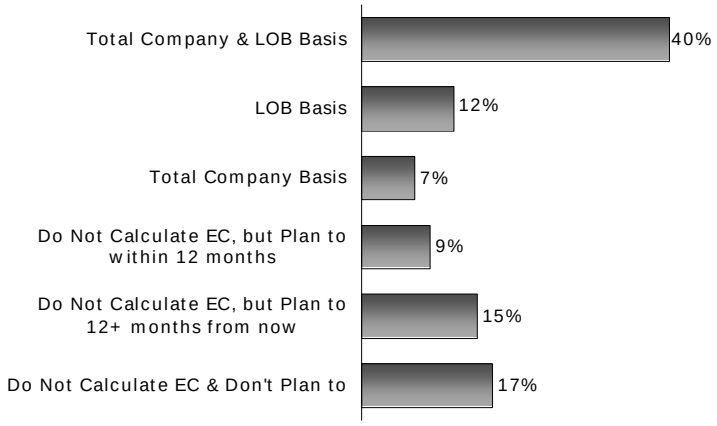
Chart 2

Many companies calculate EC on both a total company and a LOB basis



Source: SOA/Tillinghast Risk & Capital Management Seminar (March 2003)

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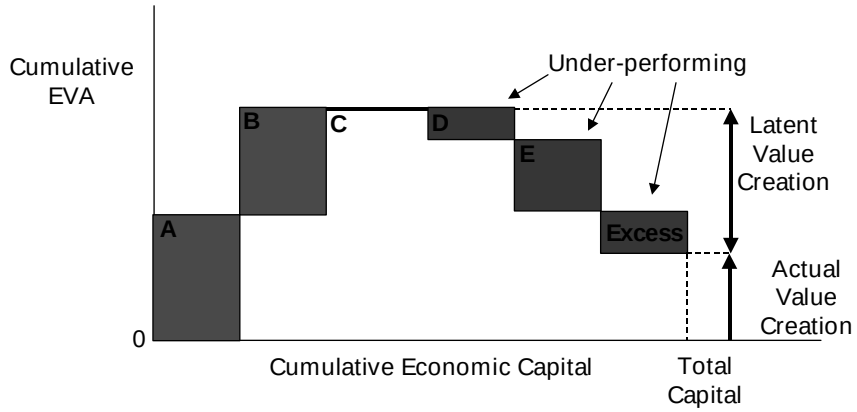
Chart 3

RAROC can help identify under-performing business units ...



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