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Risk Management: A Comparison of the Banking and Insurance Industries

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Moderator: DAVID N. INGRAM

Panelists: JACK L. GIBSON
NEAL T. OSWALD†
JEFFREY W. M. RABB

Recorder: DAVID N. INGRAM

Summary: This session provides an overview of risk management techniques used in the banking and insurance industries. Recent trends have caused the differences in practice to diminish. Is the insurance industry ahead of or lagging behind its banking counterparts? What can we learn from banking services? Panelists discuss and compare the risk management practices used by insurers and banks.

Mr. David N. Ingram: Most of us would agree that it's too late to start counting the lifeboats if we have already struck the iceberg. On the other hand, many would also agree that there's even some risk involved if you just pull the covers over your head and stay in bed. The realm of risk management lies in between those two statements. Everyone's in favor of risk management, and everyone thinks that it means something different. This session will provide several perspectives on risk management, from two countries and two separate industries. Banks and insurance companies face many of the same risks and some different risks. As you'll see, some different and some similar approaches to risk management have been developed. One of the things I take issue with, though, is the program asks, "Is the insurance industry ahead of or lagging behind its banking counterparts?" I hope you weren't drawn to this session solely by that statement, because I think that that's the wrong question, and certainly it isn't one that we're going to seek to answer here

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†Mr. Oswald, not a member of the Society of Actuaries, is a Partner with Ernst & Young, Inc., in Toronto, Ontario in Canada.

Note: The charts referred to in the text can be found at the end of the manuscript.

today. We just hope that we're going to be able to share risk-management practices from both industries, so that we can each leverage off the strengths of the others.

We have three good speakers. Neal Oswald is a partner at Ernst & Young in Toronto in the International Capital Markets practice. Mr. Oswald has extensive financial services, risk management, and corporate treasury consulting experience. He has consulted for a wide range of public and private sector clients in the areas of asset/liability management, financial risk management, risk-adjusted performance measurement, and system selection. Neal has presented to many financial audiences and authored a number of articles on risk management and performance measurement. Also joining us is Jeff Rabb, who's a senior consultant at Ernst & Young in Toronto. He also works in the International Capital Markets Consulting Practice in asset/liability management, internal funds transfer pricing, and debt capital markets projects in Canada and abroad. The third presenter is Jack Gibson, who is a partner in charge of the New York office of PriceWaterhouseCoopers. He is involved in its life actuarial consulting practice and has extensive demutualization experience. Recently, Jack was named chairperson of the Task Force on Banks and Financial Institutions, a task force that is under the financial practice area of the SOA. The role of this task force is to explore and develop opportunities for actuaries in providing financial and investment management to banks, banking institutions, and integrated financial services providers. The task forces will focus on the use of risk management and risk measurement best practices by those financial institutions to optimize company value. We don't plan to use the entire time with prepared remarks. Please plan on helping us by sharing your thoughts and questions. We'd particularly appreciate it if you would share your experiences in risk management from your job. Without further ado, I'll introduce Neal and Jeff, who will start off the presentation.

Mr. Neal T. Oswald: I'm primarily a banking guy, and I practice in risk management. Jeffrey is primarily an insurance guy. It was really interesting trying to prepare for this presentation so that Jeff and I could actually agree on the terms that we were going to talk about. We've tried to make it a bit entertaining for you. We've also tried to highlight some key issues in the differences between the way banks approach risk and the way insurance companies approach risk.

Mr. Jeffrey Rabb: Why are we discussing this topic? I think the main reason is because industries are converging. We have convergence through consolidation, and also through capital market discipline. The financial reporting is consolidating, and we also have technology and risk management. There's more of a move to a market-value valuation and converging of product mixes. There's bank assurance now for banks and insurance companies are selling more annuities.

Mr. Oswald: What is the commercial aspect? You're seeing Ernst & Young, for instance, combine its banking and financial services practice with its insurance practice to bring those disciplines together. You're also seeing software vendors enter the market to provide risk management solutions that are not industry-specific.

Mr. Rabb: We're also seeing a convergence that we're all aware of, which is the convergence of the capital market and actuarial principles.

Mr. Oswald: We're going to talk about business drivers for banking and insurance. Then we'll talk about risk management perspectives of banking and insurance, and we'll give you some observations on where we think the industry's going. I liken this discussion to the fact that we're playing two games. Jeffrey has a baseball bat, and I have a hockey stick. I'm playing on ice; he's playing on grass. The referee of world markets is telling us to play on the same field. So we're going to have to start playing each other's games in banking and insurance. You're seeing that already through bank assurance, and through some of the bank financial institutions offering some insurance-related products.

What is different about a bank business perspective versus an insurance business perspective? Banks focus primarily on current costs against known revenues. The term or tenure of their products is generally much, much shorter than an insurance company's. That being said, they focus on near-term results or historical results. They don't focus on the 30-year life.

Mr. Rabb: Neal is going to be taking the approach of a traditional bank, selling bank products, and I'll be taking the approach of a traditional insurer, selling traditional insurance products. Many of your companies are going to be somewhere in between selling traditional and bank products. Your product will be either more to the bank model, if you're a stock company, perhaps, selling annuity products, or you could be more to the other side, if you're a small mutual or a mid-sized mutual selling whole-life policies. No one is going to be on the right or the left; there are going to be all spectrums of answers, and we're trying to show the contrasts. For example, with a traditional insurer, there might be more of a focus on solvency. But with all insurers, they are modeling future events, which is a bit of a difference from the banks that look at the near past, and revenues and expenses. Insurers are looking at the future and including that in their balance sheet.

Mr. Oswald: The thing to take away is that, with banks and insurance, each of us focuses on cash flows. Each of us focuses on risk and measurement tools to model the uncertainty of those cash flows. Each of us focuses on value or shareholder value. So the end game is the same. The road we take to get to that end game is different.

Mr. Rabb: We're showing a generalized diagram of a traditional insurer and a traditional bank. As I said before, these two visions are merging as insurers sell more annuities and banks try to enter into the insurance arena. One key difference with insurers is they pay benefits contingent on future events to widows and orphans, as we all know, so solvency is a key issue.

Mr. Oswald: A bank is primarily legislated to protect depositors. That traditional business is going away, through disintermediation and through securitization. It also focuses on managing its loan losses. That is also going away, as more large multinational corporates enter the market directly. The traditional business of banking is becoming far more liquid and far more subject to change than ever before. Banks also focus primarily on managing their own liquidity and their own expenses. They concentrate on managing their expenses.

Mr. Rabb: Insurers consider their expenses carefully, and they're focusing on ongoing profitability and corporate governance for two reasons. One is the small initial capital invested by the customer makes the ongoing profitability a real concern for all of us. The long product development and sales cycle of one to two years makes it difficult to respond to market demands. Those time frames are compressing, with technology improvements, but it does make product profitability or ongoing profitability a concern and a focus all the time.

Mr. Rabb: On the income statement, the key items or the larger items seem to be the interest income and the benefit payments. Investable assets are a real concern to all of us. The one advantage we have over the banks is we can control the asset structure. The banks tend to have to get whatever assets are sold to them, whereas we can actually go out there and buy different asset structures. Fee income is going to become critical for our future success, as we're all aware now.

Mr. Oswald: Contrast this to the accounting paradigm or the measurement paradigm that banks operate under, versus the measurement paradigm that insurance companies are under, when insurance companies have to present value their assets and liabilities, and they're measuring this way, that changes their behavior and makes it different than banks. Banks basically trade their balance sheet. They will settle their loans and they will securitize their receivables. They will cycle things through their balance sheet. Because of the regulatory paradigm an insurance company operates under, it's more difficult for it to do that. You can see already that because we start from these different positions, the risk management activities of a bank and an insurance company will not converge directly. They're going to converge ultimately, but they're not going to converge for this reason.

Mr. Rabb: For many mutuals, though, a focus on earnings is a year-over-year target. This makes the earnings and solvency target short term for two or three years. This isn't true for stock companies that do focus on quarter over quarter earnings and ROI. There still is a focus on earnings and long-term solvency for both. The sources of income are going to be different from the banks, as we have reserve changes and mortality and morbidity gains in addition to fee income and spreads. Investment gains are a big issue for all of us because of our large investment portfolios.

Mr. Oswald: Banks call investment portfolios "loan substitutes." When they can't originate enough loans, they ship it into investments. When they want to manage their earnings to minimize their volatility, they buy more investments. You can see that the paradigm for a bank is somewhat different than an insurance company. You also have a quarterly focus on earnings. In the Canadian banking situation, there is a merger in which four of the largest banks are going to be merging into two; each pair of banks has had an undue interest on their last quarter's results, so much so that they have stopped making strategic decisions. They're actually focusing on just managing their earnings. Imagine, from a risk-management perspective, if you have to just focus on what's going to happen to you this quarter over last quarter over next quarter. That changes your focus and it changes the skill sets you'll deploy against risk management as well. We're going to get into that a little later when we get to the risk management perspective.

Mr. Rabb: One of our objectives is to set out a framework for discussion later on. It's not like we're trying to impart lots of knowledge. This is a forum to discuss the topic.

Mr. Oswald: Now, if you have a risk-management function at a bank, and you are modeling interest rate scenarios and shocks, you would actually model a 200-basis-point increase in rates. That would show you that you have a certain amount of value-at-risk, or you'd have a certain amount of earnings-at-risk, or you'd have this much market value of portfolio equity at risk. Your liabilities would not change in value. They would if it was a real shock, but in the modeling scenario it does not change in value. In the accounting paradigm, the reporting paradigm does not require a bank to change the value of its liabilities as a result of a scenario.

Mr. Rabb: This is in contrast to insurers, where, if you have excess risk, you may have to increase reserves above the statutory minimum. This in turn would reduce your surplus and impact the income statement. Hence, we have a different focus. We focus more on valuing liabilities, and I would expect the volatility of earnings must be more of a concern for banks.

Mr. Oswald: If you actually end up with a reduction, or an increase in risk above certain levels, capital adequacy rules would require you to change your business practices to get your capital ratios back into line. There's nothing new there but you'd end up with a change in your capital ratio because you wouldn't have sufficient coverage for your capital under the guidelines and rules. I couldn't understand why an insurance company would actually change the value of its liabilities in response to a market rate scenario that wasn't there. That was a surprise for me.

Now we're going to change gears a little bit and take you through the differences in the way banks and insurance companies approach risk management. We'd like to just define market risk, credit risk, and operational risk. Banks try to manage all those risks. They try to manage them discreetly, but also collectively on an enterprise-wide basis. They have a market risk management function, a credit risk management function, an operational risk management function, and they bring that information together at the top of the house to have an enterprise-wide risk management approach and a group that is responsible for enterprise-wide risk management.

Mr. Rabb: Neal, I believe the same thing is happening. Market risk is handled by one area, and credit risk would be handled by the people selling that credit. If it were a bond, it would be in the bond area. If it were in mortgages, it would be the mortgage area. That would all roll up into an ALICO committee or a similar structure. The credit risk problems could also have a loan default committee as well, but I think the same thing is happening. It just doesn't have the same amount of consolidation, if I understand what you're saying.

Mr. Oswald: I think that's true, Jeffrey. Many people are implementing organizational-wide data warehouses and technology platforms to bring together dissimilar transaction-based data in an aggregated way to model the risk across the organization in the banking community. Risk managers can actually tell people to stop doing business. They can actually undertake a hedging transaction. They actually shut down a business. That's a little bit of a different paradigm.

Mr. Rabb: I think we also have the risks of mortality and morbidity, which are probably managed more functionally by product line, and if you include those risks along with the market risks, I think that makes it a bit more defragmented. Bringing those together is very hard. I think there are some models where the entire balance sheet is modeled through different scenarios, but there are many interrelationships there.

Mr. Oswald: The business benefit to banks of having integrated risk management is that they'll actually bring together the risks and actually accept a higher degree of balance sheet risk than they would otherwise accept if they did it in a fragmented way. Banks will actually bet the bank, to some degree, to take on additional risk because they have better measures. You can think about two curves. If you have a good understanding of your risk, your risk tolerance related to that will actually increase. Banks actually move up in their ability to take additional risk because their risk tolerance increases because they have better information systems supporting their risk. Their risk is simpler.

Mr. Rabb: I think an important point is that the risks are simpler and shorter term. Insurers have a difficult time finding natural hedges, especially if you're just selling a lot of insurance. If you have a mix of insurance and annuities, you do have some natural hedges, but often the regulators will stop you from recognizing those in your balance sheet. Segmentation might complicate it because you might have your liabilities supported by mortgages, and operating the two separately can be a problem. I know many companies have introduced fund transfer pricing to address that issue, and it has been implemented for annuities, but I don't think it has been implemented for other lines that I'm aware of.

Mr. Oswald: Chart 1 is a hierarchy of reporting, targets and limits. I use this chart to talk to banks and other entities about how good they are at managing their strategic, tactical, and operational risks. We've actually rated the two industry groups here. I know it's pretty arbitrary, but we thought it would be fun. We'll start operationally.

Mr. Rabb: I think actuaries get an A on modeling risks, and we have very sophisticated models at the transaction level. Modeling mortality and morbidity risk is something we've been doing for 100 years or more. Interest rate risk is something new, but most insurers are handling that as well, so I think at the operational level, we get an A.

Mr. Oswald: I give the banks a B+ on this. Banks take a lot of shortcuts. Their products are simple. They don't have to get down to the detail the way an insurance company does. They can pool a bunch of deposits and mortgages together and they can characterize the risk as relatively homogeneous. They can use that to model. They don't have to go down to the same transaction level that insurance companies have to get to.

Mr. Rabb: I think tactically, I had trouble with this one, but I gave insurers a B, partly because insurers do have a longer-term focus than a bank, so relatively speaking, we have a little more trouble on the tactical side. Sometimes there's a

lack of natural hedges, too, because of the long-term nature of the products, which makes it a little more complicated to actually implement.

Mr. Oswald: I gave the banks a B+ here because banks actually do a lot of tactically based strategies to manage their risk. They will actually undertake a change in the way they do business to manage their risk, and they have the information at hand to enable them to change the way they do business. They will change their underwriting process. They will change the pricing on some of their deposits. They'll change the pricing on some of their loans. They'll target certain customer groups. They'll take advantage of market opportunities to change their risk profile. You can only do that if you have reasonably good information, and can characterize the risk of your balance sheet, both existing and anticipated, in a very structured way. So I give them a B+ here.

Mr. Rabb: You know, Neal, when you say it that way, I think that insurers are doing at least that. When you put it in those terms, I would think that anyone here would say, we're doing that. The only problem might lie with the product life cycle, and actually pricing a product can take months to a year, and that might draw back a bit.

Mr. Oswald: Give the banks a B here, and that's because they're actively managing their balance sheet portfolio and balance sheet risk. What we're seeing is that people do strong scenario analysis about what would happen if we did this, to our business, in terms of short-term earnings, in terms of long-term earnings, in terms of balance sheet structure, in terms of capital required. Banks are actually doing a lot of what we call strategic balance sheet management, albeit it's for a much shorter time frame than for an insurance company. But they're actually doing it in an integrated way across the organization by many jurisdictions and many subsidiaries as well.

Mr. Rabb: I think there's a lot of problems with implementing that at an insurance company. Much of it is because of the different types of risks and how they're interrelated. There's the lapse risk, the morbidity, and the mortality risk. There are also all the market risks, the credit risk, and the operations risk. Putting those together and modeling those coherently is a real challenge for insurers, and making decisions on those is even tougher to do as a management team because of the complexity of the calculations.

Mr. Oswald: It wouldn't be right for us to comment on the risk-management practices of banks and insurers and not comment on how you're organized differently. Banks generally have come at this from the capital market side. They have set up committee structures across the bank that bring the finance groups, the

trading groups, the product development groups, and the sales and marketing groups together with the executive groups to actually focus on this and manage it in a very structured way.

Mr. Rabb: What often happens with insurers, is the asset/liability modeling (ALM) experience is coming from the finance area or from the product development area. The capital markets expertise and smarts has to be learned by the ALM person. Communicating with the investments area becomes critical, and often the make-or-break point of the ALM. ALM often becomes an asset/liability measurement, much more so than management. I guess what some people say is they're not able to pull the trigger. They can't trade.

Mr. Oswald: Both banks and insurers need to understand their customer risk better. So neither of them have done a very good job of understanding what their customers want and need and what is going to affect their risk profile.

From the Floor: Could you comment with regard to how banks are regulated versus insurance company regulations?

Mr. Oswald: I can try. Banks are regulated in terms of capital adequacy. They're required to maintain certain capital ratios. They're also required to maintain a certain quality of earnings and a certain amount for liquidity, at the federal level, but they do not have to do much more than that. It's a very, very short-term regulatory framework.

Mr. Rabb: This is in contrast to insurers who have a very long-term outlook for their life insurance products anyway. The product is sold, there's very little capital exchanged, yet insurers must make a lot of guarantees, over the term of the contract. There are a lot of issues related to solvency and the company's ability to pay those final obligations 20–40 years later.

Mr. Oswald: I would also comment that all regulatory agencies have trouble in the area of risk management. I've met some bank regulators who don't understand risk, and I've met some insurance regulators who don't understand risk. I think that neither of them does a very good job of understanding risk. I know that's fairly provocative, but I hold that opinion.

Chart 2 is the asset/liability management continuum. We had a whole series of these continuums, but we thought this would be the best one to show you in terms of where banks and insurers are heading. The left side of the chart shows how, as you move up the continuum, you need to have increasing information systems to support your risk management activities. We see banks actually starting to do a lot

of shareholder value-based analysis, shareholder value-added optimization, and balance sheet modeling.

Mr. Rabb: I had a lot of trouble with this chart, partly because with different products, I think we're at different stages because of technology, because of complexity, and because of many other reasons. I think for traditional insurance, we're probably at the simulation analysis area or balance sheet modeling. When you get into annuities, I think some companies are at the shareholder value-added analysis, and actually doing optimizations looking at which assets optimize the value, especially for countries that are using a market-value approach. I do believe that enterprise-wide risk management is going to be difficult, partly because of the system fragmentation at insurers. There are a lot of different systems and bringing everything together to look at the whole picture becomes very difficult.

Mr. Oswald: Ask yourself where your company sits on this continuum in its risk-management activities. Then ask yourself how we are organized to support risk management. Then compare that against what you know your leading banks and insurers are doing in terms of integrating the risk management function across the organization. So basically, position yourself against some of these charts.

Mr. Rabb: I think for a traditional insurer, the focus is on surplus and earnings to support surplus. This trend is definitely changing, as insurers are demutualizing. Earnings are very important to those insurers that are already stock companies. Contingent cash flows can be an important issue for insurers, as it's a huge element of leverage for them. Small changes can have huge impacts on the income statement, and investable assets is definitely a concern, investment income has to be there or the company may not meet its revenue targets.

Mr. Oswald: In the order of risk management importance. Banks focus on earnings. Insurers focus on earnings, but they're defined differently under the accounting paradigm. So it's the same focus, but it's a different measurement paradigm. Banks focus on ROI, then volatility and then consumer behavior. We have to deal with all of these issues collectively as an industry group. So a risk manager in a bank may have a different degree of emphasis and priority, but he'll be looking at the same sort of things.

Mr. Rabb: The product optionality and understanding that optionality is a big concern for insurance companies. Consumer behavior is becoming more of a thing to look at. I think it's understood, but not at the same level of granularity as it is at the bank. I think the banks do understand how deposits work, and how they can invest to maximize those returns a little bit better than some insurers.

Mr. Oswald: A bank would take on a deposit, and then position against it, based on its interest rate outlook. An insurer would have to take that whole deposit in a reserve against it, and therefore not have any room to position against it. It is a different way to run the business. We're just trying to get to another continuum in terms of return on assets, return on equity, risk-adjusted performance measures, and shareholder value analysis. The acronyms in the third box of Chart 3 stand for risk-adjusted performance measures (RAPM), return on risk-adjusted capital (RORAC), risk-adjusted return on capital (RAROC), risk-adjusted return on risk-adjusted capital (RARORAC).

You take two parts of a calculation—a numerator and a denominator. You normalize the numerator to get normalized return, and you can do that for a bank or an insurance company. You have a denominator, which is a capital allocation methodology based on risk. It can be a regulatory-based framework, but it usually is a risk-based capital allocation methodology. Banks manage the return for risk very, very well. So they manage the numerator and they manage the denominator. Banks are getting fairly sophisticated about allocating capital, in terms of capital for market risk, credit risk, operational risk, legal risk, and all the other risks. So they're getting to performance measurement methodologies that optimize shareholder value. Now, Jeffrey's going to comment where insurers are on that.

Mr. Rabb: Many insurers are using risk-adjusted capital for their annuity products. With insurance, it's a little bit tougher. I would have to say that we're probably in the RAPM box for a lot of things. It is a little bit misleading to say we are in the ROE, but I believe we are a little bit behind the banks, as it's more difficult to use risk-adjusted capital for all of our products. It's not a matter of, being behind the banks; it's more difficult to do for many of our products, so we're a little bit behind because of that. I know that's kind of circular and doesn't really make a lot of sense, so I'll stop.

Mr. Oswald: The reason is the bank's products are fairly homogeneous, so if I want to get to normalized earnings, and normalized capital allocations, I can do that. Whereas if you look at your insurance products, I don't know whether you can define normalized earnings, or whether you can define normalized capital allocation. If you can do that, then you can get to the same stage as banks. As Jeffrey said, there's just so much fragmented information there, and there are so many dissimilar products, and so many options and uncertainty embedded in your products, that getting to the normalized return and normalized risk is a very difficult calculation, and subject to a lot of estimating.

Mr. Oswald: See, I listen. We wouldn't be talking about risk management if we didn't hit the value-at-risk (VAR) issue head on. There is VAR, stress testing, and scenario-based testing. Banks use a lot of VAR. They also use a lot of stress tests. They also use a lot of scenario-based modeling. The use of one tool exclusively is an inappropriate answer, notwithstanding long-term capital.

Mr. Rabb: Many of us use sensitivity analysis and stress testing. We are more often talking about Monte Carlo simulation. It's very difficult for us to use VAR or covariance VAR because of the non-linear cash flows that we're looking at. Behavioral models are complex and often rare. Mortality and morbidity certainly does add a dimension of complexity for us.

Mr. Oswald: If you talk about the data requirements to do stress testing, to do scenario-based modeling, and to do value at risk, while they would start at the same point at the base level, the precision and accuracy required for each of those various approaches would be different. Banks have an easier time, given the homogeneity of their products, to do that. They haven't perfected it yet, so I'm still busy working on it. Insurers, though, have a much more difficult task of getting the raw material data to do the modeling.

Mr. Rabb: It's a very resource-intensive operation, as all of us know. And one of the complicating factors is that the financial reporting often does the cash flows for us, and there are often delays in getting our resulting cash flows to do the analysis we need to do.

Mr. Oswald: The point to highlight there is most banks do not rely on their financial reporting function for risk-management information. They have separate stand-alone systems and infrastructure to model their risk. It's an important distinction. We've been trying to drive home a few themes. Banks really analyze their relatively simple risks fairly well compared to insurance companies. They look at relatively short-term and simple products. They have aggregate models that run very quickly. The models are consistent, usually, with a capital markets theory, which you can't necessarily buy through a life-insurance contract. And they're beginning to focus on the behavior of their customers. That's where banks are right now in terms of their risk management activities.

Mr. Rabb: I think the insurer focus is on a long-term solvency perspective. When you go into segmentation, you lose some granularity. It's very difficult to differentiate the returns and the profitability of the different subcomponents of the product. Funds transfer pricing helps, of course. The products are long-term, very complex, and often have many embedded options. The financial reporting is complex, and the models, as we all know, are very large, complex models based

on, quite often, seriatim data or transaction-level data, making the models very resource intensive. There is a trend to using model offices, but of course, calibration becomes the problem there.

Mr. Oswald: In terms of a conclusion, people have broadly based data warehouse technology supporting their risk-management functions, which are independent and have an organizational-wide mandate to manage enterprise-wide risk in a bank. Do insurance companies have that? They are probably getting there. We're still going through a lot of conversions through consolidation. We're going through convergence due to capital markets discipline being applied to the insurance industry and the banking industry. We're converging through financial reporting in terms of *FAS 133* and in terms of market-value disclosures and market-value reporting. We're also converging through technology. You've got analytical models that you did not have two years ago that will analyze risk better than anything else that was previously built. If you're building your own risk management system, don't. Use the models that are out there from software vendors and third parties. Get your own data in order, and then leverage off the existing technology for modeling and simulation. We also have a convergence through risk. We're all living with the same risks to some degree.

Mr. Rabb: Can banks learn from us? I think so. Mr. Reddington was probably the founder of immunization theory back in 1952. It wasn't until the Brenton-Woods agreement collapsed that interest rates became volatile and his theories became used. James Tilley, Phelim Boyle, Robert Reitano, and David Becker are all very prominent. In addition, Al Brender and Harry Panjer have both contributed.

Mr. Oswald: I just want to close on where we see ALM heading, because it's going to converge and the industry is going to become more standardized around how they do ALM. There's going to be an increasing expansion of risk coverage and methodologies across the industry. You used to have proprietary models to measure and monitor and control this; now you're getting software vendors actually building software for modeling annuities, modeling life contracts, and modeling options. That convergence of technology applied to this industry will allow you to think about your own business problems, rather than build the best model. If you spend a lot of time doing the last iteration of the last derivation of the last software model, by the time you finish that, your market will have moved away from you. Don't spend your resources there. People are moving to a data warehouse, and doing a lot of mapping programs, and a lot of data capture programs that are bringing things together. So you do not have to spend a lot of time these days writing code to map data. There are pieces of software out there that take data off legacy systems very quickly, which allows you to get the data into a concentrated spot where it can be modeled for risk.

Markets are changing more rapidly. We're seeing the Citigroup and seeing a lot of people buy banks and buy insurance companies. These markets will converge. Markets are getting less forgiving, so if Company A is the slightest bit poorer at managing its risk, the market will adjust that company's capitalization in a nanosecond. Risk management is becoming a core competency. It's going to affect your shareholder value. You'd better invest in it. Risk management units are becoming increasingly overwhelmed with the data and information required and with the modeling required. I think that there's a chance for people to take a real leadership role by concentrating the talent. If we have functional units of talent in an organization that understands risk, concentrate them and become a center of excellence for risk management in the organization.

Mr. Jack L. Gibson: What I'm here to talk about is focused on a broader use of risk management techniques, at least compared to what I've seen in many insurance companies. I come from an insurance perspective, but PriceWaterhouseCooper has been asked more often to bring to bear talents from different disciplines and risk-management expertise. We are trying to put our finger on what it is that banks are doing well that can be better carried over to insurers. I'm going to talk about the need for a more integrated approach and the broader use of risk management. I will be talking about a case study of insurers and a vision for the future. This vision is being realized by some, but not nearly enough of the companies represented in this audience. I doubt that there is a company that believes that they're doing enough for risk management and enough on an integrated basis. Some are doing very little, and that needs to change. Finally, I am going to talk about some things that I think we as actuaries collectively will need to do in order to serve the broader financial services community as we go forth into the 21st century.

I'll start out with a risk map that was developed by my company (Table 1). I've also seen a similar listing in the *Dynamic Financial Condition Analysis (DFCA) Handbook*. My title says, too many risks, too little time. The problem that we often have as actuaries is that we understand too much. We see all these risks, and we understand the kind of risks that can hurt us. We understand the interrelationship. And then we have two problems. One is that we oftentimes run out of time to do the proper analysis with proper accuracy. Even when we conquer that, or even when we take a shot at conquering that, we oftentimes are unsuccessful in communicating with our senior management and giving managers the information in a way that they can actually use it. The key, and in many ways I guess what I could describe as the Holy Grail, is to integrate fully the risk management process with the processes of financial management and strategic planning. In risk management, there are areas like VAR that have been discussed, and risk-adjusted performance measures. On the financial-management side, there are financial planning and cost allocation methods. In strategic planning, there are competitive

analyses and strategic plans. We need to do a better job at dealing with the commonality of those three areas and focus more on the area of capital allocation and optimal use of capital.

**TABLE 1
RISKS TO BE MANAGED**

Primary Rate Risk Correlation Risk Foreign Exchange Risk Prepayment Risk Asset/Liability Mismatch Volatility Basis	Market Risk	Financial Risks
Default Risk Recovery Risk Exposure Risk Collateral Risk Spread Risk	Credit Risk	
Individual/Company Risk Industry/Economic Sector Geographic/Country	Concentration Risk	
Market Liquidity Risk Funding Risk Cash Withdrawal Risk	Liquidity Risk	
Mortality Risk Interest Guarantee Risk Expense Risk Surrender Value Risk Policy Loan Interest Guarantee Risk	Actuarial Risk	
Compliance Risk Strategic Risk Operational Control Risk Management Adequacy Risk Systems Risk Financial Reporting Risk	Management Risk	Other Risks
Reputation Risk Taxation Risk Legal Risk Disaster Risk Fraudulent Information Risk Regulatory Changes	Event Risk	

There are various projects that are completed for strategic or regulatory reasons. One of the problems is that each one is too often developed for only one specific purpose. There's a business plan, there's new product development, and there are cash-flow testing requirements, or perhaps some broader risk scenario testing that is done. It specifically looks at risk and solvency and general investment strategizing. A question for those of you who are representing a company is, who does these different projects? What kind of sharing of information is there? I don't mean that I ask you for information and you give it to me. How are you, in a truly integrated way, using the information and giving it back to the other areas in a way that promotes integration of ideas and alignment of goals? In addition, how is this being dealt with in the various lines of business? Oftentimes, you may have one or two lines of business where you're quite effectively integrating these processes, and in another line, you're just throwing your hands up in the air and not dealing with it effectively. What is true, though, is that each of these projects requires very complex analyses performed by diverse groups within the company. But there is often this limited interaction that I've been talking about among these various teams.

As a gross oversimplification, when the business planning group comes in and makes its presentation, it will say, "We have a company here to rate; we have the current year actual, and next year's projected on a GAAP-ROE basis. The business planner may be projecting or providing quite a bit more information, but you could think of it as a representation of what the senior management team is really hearing, and what it means to them. Similarly, for the new product development process, it's often a fairly simple conclusion that the new product development team may be drawing. I have a product; it has a reasonable market; and from a profitability standpoint, it's just a question of whether I can achieve the immediate profitability objectives in terms of my return on equity objectives. The cash-flow testing results, while they may have a fair amount of variety, are often not all that interpretable, in a very broad sense. What you're showing is something specific to one or a subset of all your lines of business of the company. It's looking at projected statutory surplus, and it's looking at it over a 30-year period, and so giving information in a form that is not readily usable by senior management or by other divisions within the company. The CEO often gets a simple yes or no answer to questions posed during the presentation. Does the company expect to meet its GAAP profitability objectives? If the answer is yes, then the president is happy. Is the expected return on new business greater than the company hurdle rate? If so, the president will give the go ahead and implement those new products. Are the company's reserves adequate, as indicated by the cash-flow testing scenarios? If so, the president will think that must mean that the company is solvent and is a company in good standing. He'll say, "Thank you very much for your risk analysis; I'll see you next year."

Now let's talk about what this CEO doesn't know. He doesn't know what could cause his projected profitability to change, and to what magnitude. What are the key risks; what are those drivers to new business profitability, and how will that impact total company profitability. Should this CEO be concerned that cash-flow testing results vary significantly by scenario? How does he measure how much volatility is too much? Finally, what actions can be taken to optimize the overall value of the company on a risk-adjusted basis? So if I put this into the form of a mission statement, it would say, "Can a company modify its current strategic decision process to focus on the expectation as well as the expected volatility of total company value, allowing this company to make decisions which optimize value on a risk-adjusted basis?" This, of course, is the essence of investing.

An investor wouldn't think about going out to the market and looking just at total return. I recognize that we have always tried to achieve this. We're not doing enough, and even if we, as actuaries, feel like we got it, in many cases, our CEOs are not getting it. This, again, is a vision for most companies. I do believe there are companies that are doing this, but there aren't enough that have an integrated team, which includes actuarial, investment, marketing, the controllers group, and other teams as well. They use this as a supplement to existing strategic decision processes.

This third one is a key. It builds upon the company's current financial forecasting and modeling capabilities. I'm going to be talking about that later, but I'm absolutely convinced that we're not looking for a better mousetrap, per se. You've all expended too much time and too much expense and too much energy and too much expertise in getting a lot of these details right. You're not using them in all the ways that you can. These results must be summarized for presentation at the CEO and senior management level. Once again, these are the two critical aspects where I don't think we do enough.

Now, as an illustration of projection model mechanics, if you have a good cash-flow testing model or some other financial project model, (which may vary by your line of business), you can use that as a start. If you don't have a good model for a specific line of business, it may need to be enhanced. You then need to add capabilities because the typical cash-flow testing model does not allow you to use it as a vehicle for assessing the overall company. Many companies will need to fold in GAAP forecasting capabilities along with statutory and put in new business at the right kind of levels. They must look at the total company, all assets and liabilities, not just the assets backing the liabilities. It's a rather daunting list, but I also want to stress the need to live with simplifying assumptions. You need to develop a capability that has simplifying assumptions, but that is designed in such a way that you can recalibrate the model from time to time and allow the model to learn from

actual results. If you can set up a model that can be tested against actual, and that you can use to gauge your progress and the accuracy over time, you can take what would hopefully be a much simpler approach to the modeling than you otherwise would take by just having to be totally and theoretically correct. You need to select an appropriate or a small profitability measure or a small number of measures. This is key from a communications standpoint. If you're looking at too many things, and you're trying to quantify volatility across too many items, you're not going to be able to communicate the results, and they're not going to be implementable.

You can use a chart as a tool to help demonstrate to senior management, in a graphical way, how those returns change if there's a change in strategic decisions. The strategic decision might be something like a change in investment philosophy. It could be a number of things, it could mean going after a different new business marketplace. You could break down these results in terms of mean and standard deviation, but I also think these graphical techniques have a lot of promise, with the obvious statement that in order to show something graphical, you're going to have to live almost exclusively in a two- or three-dimensional world. While we actuaries can handle looking at these three-dimensional graphs, technology just hasn't gotten there to get a lot of your senior management over that. And so what you're going to need to do is look at one or a couple of risks at a time, and use a series of graphical techniques to get your points across. By using this process, this has the potential to become a common process and a baseline for all decision-making, enhancing understanding at the senior level, and enhancing understanding across groups. It allows everybody to focus on total company value on a risk-adjusted basis, and it provides your company with a better tool for judging performance. Performance could be by line of business on a risk-adjusted basis, and it can allow you to segregate investment performance from product-line performance. It allows the alignment of cross-team goals and also has obvious applicability to incentive compensation.

I have focused on the insurance community trying to say what I think can be better about it. It is with reference to our banking brethren. Let me present to you my view of the facts about banks in the current situation as well as the perception. The facts are that banks do have a longer record of integrating the risk management process into the value optimization process. It obviously is true that in many cases, a lot of the bank products, but not all of them, are simpler to model, project, and analyze than certain categories of insurance liabilities. When you look at it on a broad basis, there clearly is some truth to that statement. Banks do have a shorter time horizon, and they analyze their risks daily. That leads to perhaps the most important fact: banks have more frequent opportunities to learn from past experience. They have developed these models, and then they can recalibrate them daily, or monthly, or quarterly. This is a great challenge to us. We see all this

complexity and it takes very long for the risk reality to play itself out. That's a very big stumbling block here, and one that we're not going to deal with easily. What the banks have been able to achieve, in many cases, is quite important for us to appreciate and put our finger on.

So the perception ends up being that the risk experts at banks are more adept at integrating the risk management into their overall process. That perception is particularly important when we look where the world is headed. The broader financial services community includes insurance companies, commercial banks, and investment banks. It obviously is going to include an ever-increasing cadre of integrated financial services providers. These financial services providers will have to deal internally with dramatically different categories of risks among the business units, and multiple historical approaches to measurement and the analysis of risk, as well as these differences in time horizons that we've been talking about. There are also the globalized firms, which in addition to the complexities I've already listed, also have to deal with sometimes dramatically different accounting and regulatory environments.

How can actuaries best serve these firms? How could actuaries win the effort to be the leading risk managers of these firms? I think it's tough, and I think we're really going to have to work on it. First, we need to understand better than we already do exactly what banks are doing, and how they're taking this wider approach to the integrated risk management approach. Then we need to achieve a balance between identifying and analyzing all the risks in a highly theoretical and at least theoretically accurate basis. We must also focus on and summarize the key risks. Finally, we must better bridge the communication gap, where that communication gap is across multiple dimensions. I've talked about the importance of communicating to senior management. It's also important for us to be able to communicate with our own investment areas, with which many companies still struggle. We must also communicate with other financial services firms or providers. These could be firms within your newly integrated company over time.

I am the chairperson of the SOA's Task Force on Banks and Financial Institutions. We've recently broadened our mission statement to deal with many of the issues and quandaries that I've been talking about at this meeting. It's a fantastic time for us to inject some new thinking and some new interest in this task force. I really think we could use a lot of additional support to get some thought, leadership, and guidance behind this task force. I must simplify, summarize, and stratify. I don't say this in order to minimize the importance of actuaries looking at and analyzing and really taking a careful look at risk. If we can't summarize it, if we can't break down the results and we can't communicate those results to senior management, all

the knowledge in the world is not going to do us any good when we need to be truly influential within our companies.

Mr. Ingram: I'd like to open the discussion up to comments, questions, and stories.

Mr. Allan Brender: We have tools that we don't use well enough. We developed, particularly in Canada, dynamic solvency testing originally. *The Dynamic Financial Condition Analysis Handbook* was mentioned, and the chairman of the committee is Jim Reiskytl. The problem is that, in the United States, there's no one that's going to make companies do it. I think that's the great tragedy. It's not obvious to me how there's a way to get this into the corporate culture. The great advantage we had in Canada is that, first, the professional was in a position to force people into it, and the regulator loves it and has bought into it in a great way. The CEO gets exactly the kind of stuff that you were talking about, Jack, in terms of detailed scenario analysis, lots of what-ifs, and lots of in-depth analysis on a very consistent basis. This comes from someone who, by law, has the authority to go to the board whenever he wants and talk about all of this stuff. I think that's exactly the kind of thing you want. We have one regulator who regulates both insurance companies and banks, so he regulates all financial institutions. He loves dynamic solvency testing, or DST. If you say, "Why don't we have it for banks?" then he will say, "Why not?" He just can't politically force it on them yet. There is a movement going on within the SOA, but as I say, the problem is the implementation. The casualty people are doing a better job. They call it dynamic financial analysis. They're developing it with stochastics built in. They have annual meetings on the subject, which attract more people than the equivalent of our spring meetings would, at least relative to their size. It's a really active thing. I think that they will get it into practice within their industry a lot faster than on the life side, but that's just my perception. With respect to communications, one of the things that we said when we were developing DST in Canada was we realized that, for this thing to work, everyone has to talk to each other. We thought that this would, in fact, improve communication, and I think that's the experience. You get the asset people talking to the liability people and all the different product people talk to each other. It really changed the kind of information that's available and the way people operate. I think that the big challenge for actuaries will be to find ways to change the corporate culture and to get to the point where management realizes that you're not doing something because you're jumping through regulatory-required hoops or hoops that the profession makes you jump through. Instead management will begin to realize, after awhile, that they're getting some really good information out of this stuff. I think that has grown over the last six or seven years that we've had this requirement. People have begun to see that this is really worthwhile.

Mr. Gibson: I think the regulatory angle is a good one, and I am familiar with the Canadian structure. One way we can get to what I talked about is through a regulatory channel. If your company can put its finger on this before its competitors, it will have a tremendous arbitrage advantage. That would be true for a Canadian company as well. Different companies have better success at really integrating the process and really communicating it and using the information. I come at this more from a standpoint of, forget the regulation. You, as a company, owe it to your shareholders, for those of you that are stock companies. There are very few companies out there that are not, or at least soon will be. And that's really where I come from with respect to that perspective.

Mr. David A. Ricci: This is a tremendously current topic we're discussing, particularly in light of what may be perceived to be swiftly declining barriers between banks and life insurers. In fact, I think that's primarily where this is going to add value. As you were discussing the properties of banks and the properties of insurance companies, I thought of an actuary's perspective. Ever since I can remember we have focused on the liability end, even when we were doing cash-flow testing. We have these models that bring things down to thousands and thousands of cells. Jack, your point on simplification is very well taken in that regard. I think it's essential to distill the important aspects of the risk so, you can deal with it appropriately and quickly. Second, you can communicate that to senior management. On the bank side, since the assets and liabilities are more or less derived from the same source, it has always been data detail from the asset side of the ledger. As such, the capital needs approach from both organizations has been virtually mutually exclusive. Like it or not, we're going into a world where a lot of this is going to be commingled. The essence of bringing out the best parts of both is essential.

Mr. Ingram: Value-at-risk was mentioned. In banks and insurance companies, how is value-at-risk being used when it is used best, and how is it being misused?

Mr. Rabb: Those banks that use value-at-risk in the best way have other measures to augment value-at-risk. They use value-at-risk for measuring normal market conditions and stress and scenario analysis for measuring abnormal market conditions. They make a distinction between value-at-risk as a quick-look tool, independent of their very formal and structured risk management scenarios that they also run for their boards of directors. So value-at-risk is one measure, supplemented by stress testing, and supplemented by scenario analysis.

Mr. Oswald: VAR is basically a simple measure of risk, based on your historical estimates, and the stress testing is still needed for regulatory purposes as well as for your own board of management.

Mr. Gibson: I think there are certain lines of business in which looking at multiple scenarios and looking at confidence intervals has been done by insurers for a very long time. What's done at the banks (other than with scenario testing) doesn't have direct applicability to the insurance industry, where you typically do need some form of scenario testing to get any real accuracy to the calculation.

Mr. Michael R. Hoag: You talked about banks having separate risk management financial reporting systems. Are there any problems with reconciling the numbers that are coming out?

Mr. Rabb: Do they always equal? No, they don't. Of course, there are significant problems with the risk databases, or risk data warehouses being different from the financial reporting databases. Understand that the hierarchy of reporting and roll-up in a financial reporting database is different than the hierarchy in reporting and roll-up in a risk database. At points of control, you need to make sure that your opening positions are the same, and that their raw material data records are the same. Then, from there, you will deviate. I know one financial institution that actually sets up a whole VAR risk-modeling situation, and then they actually go back and verify their VAR calculation from the central unit against the trader's estimate of VAR. That provides a fairly good, effective control because as you're affecting people's compensation, people tend to pay attention and to make sure the VAR calculations are right. In an ALM sense, as you do all the modeling for asset/liability management, they're finding other uses for that data, like product profitability reporting, business scenario planning, tax planning, etc. So you're finding financial types actually overlaying the risk types to make sure the data has integrity. You're getting to a point where the risk databases are becoming used by a broader community of people. Therefore banks are spending more time making sure they have full integrity in those databases. It's a very good question, and you're right; they need to make sure it has some sort of link in reconciliation control.

Mr. Ingram: I'll offer another question to the panel. Fifteen or 20 years ago there was a vast wave among insurance companies of segmenting their assets to go with their liabilities. I have a two-part question. Was there any such activity that took place within banks? Second, do you still think that, in places where it has taken place extensively in insurance, that it improves risk management or hurts it?

Mr. Rabb: Many banks, a few years back, went into a large exercise for line-of-business reporting, so they actually took their corporate general ledgers and corporate management information systems and installed new hierarchies to get line-of-business reporting, to get return-for-risk type of measures. While you don't have segmentation or immunization like you do in an insurance company, where you actually take the assets and directly match them, you do have the books of

business in a bank that are differentially measured, discreetly. Then, those discreet measures are added up to equal the whole results of the bank. It's not the same type of exercise as segmentation, where you're just trying to match the risk. You're actually segmenting your balance sheet for enhanced performance measurement.

Mr. Oswald: To accomplish this in an insurance company, we'd have to take the mortgage line of business and separate that out, treat it as its own line of business, and have performance measures as a performance center. What often happens is the mortgages are dispersed amongst the different portfolios, and the assets of those mortgages are backing the liabilities. It's hard to put all those mortgages back together again to come up with your performance measure. Measuring the profitability of the product becomes commingled with the credit risk of the mortgages, the returns on the mortgages and the discounting that's going on. Everything is lumped together. There are mechanisms to change that, which is called funds transfer pricing. That's the same mechanism the banks use, and that can split those risks up, so that your mortgage area is measured for its performance, and your product area or liability area is measured for its performance. For the most part, segmentation of the mortgages would be along all the lines of business.

Mr. Gibson: Dave, I think the one question you asked was, net, net, did the segmentation of assets help overall risk? Obviously, the answer is yes in many lines of business. It presents extra challenges. One of the challenges is being dealt with by the Fair Valuation of Liabilities Task Force, and there has been a meeting, a call for papers, and a book. There is an upcoming second meeting and a second call for papers. I think there's a lot of overlap between the things that we're talking about and the things that we're grappling with from a risk management standpoint. There are techniques that are being thought through right now on the fair valuation issue. There is a lot of overlap there. There's also obvious overlap, to the extent that anything like a fair valuation initiative is put through, as far as accounting and regulatory concerns. That is because there's obviously an interplay between the regulatory capital requirements and regulatory reserves and the overall risk management exercise.

Mr. Oswald: One way that segmentation can hinder the recognition of the structure that the company has in its assets and liabilities is the fact that segmentation of your insurance and your annuities, as an example, can have natural hedges. However, recognizing those can be a problem, and the regulators may not let you take advantage of that. The way banks have it structured is those natural hedges would come into play.

Mr. Rabb: If you have a central unit that concentrates your interest rate risk, or your market risk, or your credit risk, through a funds transfer pricing mechanism, then

that unit is charged with managing that risk, and the product units are left to manage their product relationships and their customer relationships. You end up with the highest and best use of resources managing discreet components of your balance sheet. So you end up with a mechanism for which risk is concentrated, and then it is given to a central unit to manage, independent of the product units.

Mr. Brender: Just a couple of remarks. There was a question about time horizon value-at-risk. In terms of relative time horizons for worrying about things, one thing you should realize is value-at-risk was brought in originally to look at banks' trading portfolios. The time horizon is 10 days. It's mostly five days, which is a long way from anything that any insurance company ever worries about. The difference in time horizons is a difference in the way you do business and the kind of business you're doing. Value-at-risk probably makes a lot of sense when you're just talking about trading.

When you're talking about insurance, is there value-at-risk? I claim there is. It's embedded, for example, in the Canadian approach to valuing annuities. The time horizon isn't ten days or five days; it's 30 years. The basic thing that we're trying to do is look at the value of the assets you need to back a particular book of annuities. We're trying to look at the value of different packages of assets, depending upon different interest rate paths. The whole idea is, if you can generate enough paths and really create a distribution, then you pick your reserve to be at some percentile of a distribution. Your best estimate should be the mean, and the rest of it is the provision for adverse deviation, which is really the value-at-risk. So that's what it all comes down to. We're doing a lot of that stuff, and there's a problem that actuaries are going to get snowed by what's all en vogue. If you actually look at some of the value-at-risk stuff, it's pretty primitive. The assumption is that everything is normal, and that's far from the truth. We tend to get snowed by a number of those things. I

It seems to me that all of this is telling us that, on all sides, banks and insurance companies are building decent models. Whether you buy them outside or whether you have them inside and build them on your own, modeling is becoming an incredibly important issue. Everybody reinvents the wheel, and a lot of us don't do it well. There is a move toward the way we build models and different technologies for models and so on. We ran an SOA seminar in December 1996. I think it was the first seminar on modeling, and my plug is that we're going to be running another one December 14 and 15, 1998 in Orlando. It's all about modeling. Much of the emphasis is on solvency modeling in Canada, and what the casualty people and other people are doing. There is modeling being attempted for Social Security. We're going to be hearing all about that stuff, plus the modeling aspect in the new SOA syllabus.

Mr. Ingram: One of the obvious key things in modeling is assumptions. I just want to get the reaction of the panelists on assumptions that are used in any of the risk assessment models. How good do you feel the assumptions are that we use on the capital market side of the assumptions? What about the assumptions on the customer behavioral side of the modeling that's done?

Mr. Gibson: I think this can be a very difficult and problematic issue. It makes me think of the risk map that I showed you at the beginning of my presentation, and the way you can get yourself turned all around worrying about all the things that you don't know, or you don't have a very good way of estimating. The only technique that I've found that's useful in this regard is to take assumptions that you don't have a very strong basis for, and try to bound the answer.

Let's take a reasonable range of possible assumptions and test the boundaries. You can often find that a large number of these things that you don't know a lot about don't have a lot to do with the conclusions you're drawing. It causes you to focus on a much smaller universe, or a smaller handful of risks and assumptions that you're uncertain about. You can have other techniques to expend more company effort to pull together some good thinking on that. This is a tough issue, and it limits the ability to really do an overall risk analysis. I guess the only other statement I'd make is it also means that when you have these ultra-theoretical 50-million-cell models that have this theoretical perfection, it just takes a couple of assumptions, for which you don't have a lot of good data, to make it be quite limiting. So it's another reason to not spend a tremendous amount of calculation time or software development time to try to develop a model that can be implemented and interpreted.

Mr. Kurt K. Von Schilling: As part of the presentation, there were some references to risk-adjusted capital. What tools and methodologies are in existence to determine risk-adjusted capital for the various risks in the various products, and how does an aggregate of risk-adjusted capital relate to regulatory capital?

Mr. Rabb: That's a good question. The banks have methodologies to actually derive their capital allocation. We went into a bank, for instance, and we had to come up with capital allocations in under 30 days, to actually get them to an economic value added (EVA) type of measure. We basically sat in the executive in a room and did continuums of where things placed on risks. We applied their collective 2,000 years of business judgement to the problem to get what their best estimate is of the capital that was allocated. That judgement was better than any empirical research we were going to do, and it got us to the answer we needed to get to for them. I know we're predisposed, in this community, but I think there's a lot of good judgement that can get you to a quick answer and that you can refine in

subsequent editions. I would just work that angle first, rather than trying to get to the final answer.

George Patton once said, "A good plan acted on today is better than a perfect plan acted on tomorrow," and I support that 100%. It is similar in the area of risk. A good answer that bounds the risk is better than a perfect answer that never gets there. How does it relate to regulatory capital? One of my bank clients has a measure of risk capital, a measure of economic capital, a measure of book capital, and a measure of regulatory capital. This client does not try to reconcile the three or four. He knows the basis under which they're all derived; he knows what they mean, and so, if they're solving a corporate finance problem, they use their economic capital. If they're solving a regulatory issue, they use their regulatory capital. And I know you can try to reconcile them all, but I don't think that's a reasonable task. I don't think there are merits to going down that route. What you have to do is validate your assumptions by which you get to your capital allocation, and play ball in the community in which you operate. That's what I would do.

Mr. Ricci: Isn't it important to know the difference between regulatory capital and required capital, when you're dealing with, say, rating agencies and strategic thought types of things?

Mr. Rabb: Yes, most of my banks clients would argue that they're forced to carry more capital than they would like to carry, if they just operated their business as a private concern. In dealing with the rating agencies and their shareholders, they'd like to somehow get this capital out of their balance sheets so they can show a higher return on capital. There are fiduciary reasons, and corporate good-governance reasons for maintaining regulatory capital at regulatory levels. Regulators like it and the public likes it. I agree that the regulatory capital is different from economic capital. If we get really good at this, we'll be able to show surplus regulatory capital due to risk. One of my bank clients is working on an integration of market and credit risk measures to get their market risk capital and credit risk capital down. They can make an argument to a regulator and a rating agency that this capital is not necessary, and they should adjust their rating agency measures. So it is going that way.

ROA
Asset Growth
Cost/Income
Ratios

SVA
SV Created
SV Destroyed