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Windy City Hosts Investment Actuary Symposium

by Max J. Rudolph and Peter D. Tilley

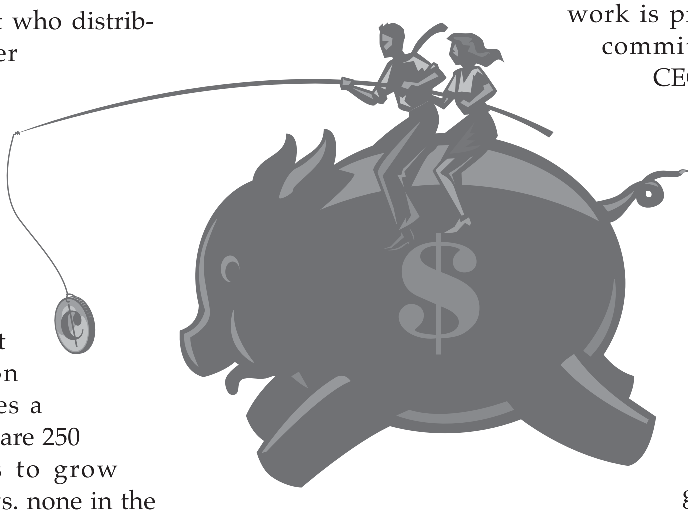
At the largest Investment Actuary Symposium (IAS) to date, 160 attendees enjoyed a wide variety of topics and speakers on November 7-8, 2002. In a successful experiment, the IAS offered two networking receptions on both the previous evening and the night of the full-day event. Next year, the day-and-a-half seminar will be held in Toronto November 10-11 and will be co-sponsored by the SOA and CIA. The Canadians have run equally successful seminars in the past. It looks to be a very good opportunity to network with actuaries and other investment professionals that normally don't interact on a regular basis, as well as learn about a variety of investment topics.

The co-chairs for this seminar were Frank Sabatini of Ernst & Young and Max Rudolph of Mutual of Omaha. Many thanks go to all the speakers and committee members, especially Jay Glacy, for recruiting the general session speakers. Look for the session handouts on the SOA Web site.

General Session: Economic Outlook

Speaker: Dennis Gartman—The Gartman Letter

The opening general session featured Dennis Gartman, an economist who distributes a daily newsletter discussing a wide variety of markets. He is hesitant to share his opinions…NOT. He doesn't believe in efficient markets, or in most government statistics and thinks that European regulation gives the United States a huge advantage. There are 250 pages of regulations to grow asparagus in Belgium vs. none in the United States. If you raise pigs, you are required to play with each of them, individually, for at least eight minutes a day…with toys. He is very bullish on stocks, mentioning manufacturers of things that hurt your foot when you drop them like cars and steel. Mr. Gartman expects baby boomers to save a huge amount in the next 10 years now that their kids have moved out and they have survived a major blow to their existing assets. He also predicts a six-hour war in Iraq, followed by a glut of oil that will drive the price below $10 per barrel. In his estimation, Russia wins in this scenario now that they are building infrastructure to move the oil. While Mr. Gartman was very entertaining, it will be interesting to see how his predictions play out.



State of the Art Risk Management

Speakers: Wayne Stuenkel, FSA, MAAA—Protective Life and Harry Miller, FSA, MAAA—ING

Both Wayne Stuenkeland Harry Muller stressed the iterative nature of implementing risk management and said that it improves each year. Both stressed the need to coordinate risk management at the corporate level while leaving ownership of product risk with the business units.

Protective Life performs periodic interviews of each function down several management layers to get an understanding of the risks involved in a specific product line and whether they are being managed effectively. One tool they use is a two-dimensional grid likelihood (low, medium or high) and impact (LMH) to help prioritize their risk plans. Wayne's work is presented to the board audit committee and he meets with the CEO quarterly to discuss industry topics of interest.

Harry Muller stressed the communication aspect of the job, going beyond report creation to action oriented discussions detailing management choices. He spends most of his time generating principles, leaving it to others to determine specific guidelines. ING's ALM Committee (ALCO) meets quarterly with each SBU head, CFO and actuary. Their product line ALCO's meet regularly as well. Harry Muller focuses on graphs and statistical distributions of results (especially the shape). He focuses on making the

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risks being taken transparent and using clear, simple terms to describe results.

Dynamic Spread/Private Placement of Default Study

Speakers: Bill Pauling, CFA—Tillinghast and Peter Tilley, FSA, MAAA—Great-West Life and Annuity

Bill Pauling is responsible for his firm's global capital markets scenario generator. His presentation covered credit spread modeling considerations. While current credit yields are quite low, the spread over Treasuries is relatively high compared to historical spreads. Pauling showed historical spreads from Moody's covering 1977 to 2002, with separate graphs for Baa, A, Aa, and Aaa rated bonds. He then used the statistics from the historical data to develop a stochastic model for credit spreads using a Wiener Process with mean reversion. Using the transition matrix from Moody's study of public bond defaults, the risk of market value changes in the bond due to credit spread changes was analyzed. Bill concluded that, while defaults are a concern, downgrades are a more significant risk for investment grade portfolios.

Embedded value does a good job of measuring the company's actual economic value at a point in time, taking into account capital requirements but not future business.

Peter Tilley is a member of the SOA's Private Placement Bond Default Experience Study Committee. He presented the results of the most recent study covering 1986-1998. The study measures credit risk events, looking at the probability and severity of an event separately (similar to looking at the incidence of a claim and the average size of a claim for health insurance). The study compares private placement bond defaults to public bond experience published by Moody's and S&P500. Private bonds have higher incidence rates than public bonds for ratings that are investment grade, but the reverse is true for below-investment-grade bonds. The experience study committee believes that private placements show value relative to publics, possibly due to the extra monitoring on privates and the ability to negotiate with the borrower in work-out situations, where extra collateral may also be negotiated. Tilley presented two theses that were developed by the committee based on the study experience. First, defaults are higher on bonds with higher coupons. This is true even after adjusting for the quality rating of the bond. Second, there is a "seasoning" effect where bonds have low default rates just after issue (similar to the select mortality on a recently underwritten life insurance policy), default rates climb for a few years and then decrease again as the bond makes it through a seasoning period. This effect is evident even after removing the effects of the general economic environment. The full study is available on the SOA Web site at: *http://www.soa.org/research/86-98_report.html*

The committee strongly encourages companies to contribute data to the next round of the study, which will cover 1999-2002.

Embedded Value

Speakers: Charlie Ford, FSA, CFA, MAAA—CGU Life and Mike McLaughlin, FIA, FSA, MAAA—Ernst & Young

Charlie Ford discussed some of the implementation issues that he has run across with embedded value, while also sharing the basic assumptions and methodology. Embedded value does a good job of measuring the company's actual economic value at a point in time, taking into account capital requirements but not future business. For this reason, distributable earnings are often used in acquisition work.

Mike McLaughlin compared embedded value models to those being considered for fair value accounting and showed how to reconcile the two methods. He went on to share the natural extension of EV, stochastically generating results and performing analysis across the entire distribution of results. Companies that develop this ability first will be able to exploit this knowledge to their competitive advantage.

RBC C-3 Phase 2/Fair Value Developments

Speakers: Tim Hill, FSA, MAAA—Milliman USA and Mike McLaughlin, FIA, FSA, MAAA—Ernst & Young

Tim Hill shared the current status of the American Academy of Risk Based Capital C-3 Phase 2 project, which is developing capital requirements for equity based products like variable annuities. The focus, rather than developing factors, is to use a company's own product interactions to determine the appropriate capital level. While the current work focuses on products like GMDB and GLB, the leap to fair value is getting shorter. This represents another big step in that direction. The CTE method used is described quite thoroughly in a paper developed by the CIA (available on their Web site) and attached as an appendix to the task force's December 2002 report to the NAIC. It is designed to measure more effectively the impact of fat tails. Regime switching models have been used to generate equity scenarios.

Mike McLaughlin gave an update on international fair value accounting standards. The goal is to have financial statements that are useful, help to assess timing, amount and uncertainty, and inform the user about the effects of resources and claims against resources. Fair value helps to match both sides of the balance sheet using stochastic methods, making it more relevant than current methods. It should improve comparability between companies and provide early warning of a company's changing financial condition. As financial model experts, FASB's recent consideration of principle-based approaches would provide a great opportunity for actuaries. There are many open issues. This is a great opportunity to have input to methodologies that will be used for many years.

Understanding Equity Risk Premium

Speaker: Dick Wendt, FSA, CFA—Towers Perrin

Dick Wendt expanded on his award-winning article from the February 2002 Risks & Rewards. Much has been written recently regarding the equity risk premium (ERP), and adds new insights to the discussion. He compares the total return on the S&P 500 relative to 30-year Treasuries. He focuses on data since 1960 since the data seems to fit a distribution in that time frame much better. This is also comparable to the time the S&P 500 has existed. Within this period the ERP has been two-four percent most of the time. Wendt found that three percent + 30 percent x (three percent – ERP for the past five years) does a pretty good job of describing the results for the next 11 years, while admitting that 1999-2001 is unmodelable. This will skew the results over the next few years. He found that this formula agrees with real world experience, as the results revert fairly quickly to three percent.

Credit Risk Management

Speaker: Peter Davis—Ernst & Young

Peter Davis gave an overview of the functions of credit risk management, models that measure default risk and models that measure the credit risk in a portfolio. A common challenge in managing credit risk is our heavy reliance on external ratings, which may lag and may be inconsistent with the current market view of the credit quality of a bond. The infrastructure of managing credit risk is a constant circle of management, underwriting, approval, monitoring and administering. The management continuum runs from individual transaction management to proactive portfolio management. Market-based models for early warning systems are used to monitor bonds that are the "biggest movers," have the largest rating discrepancies, and are in high risk industries. There are several different approaches to modeling credit risk. Davis covered four different types of models and finished with a case study on a Collateralized Debt Obligation.

General Session: Enron—Secrets of Destruction

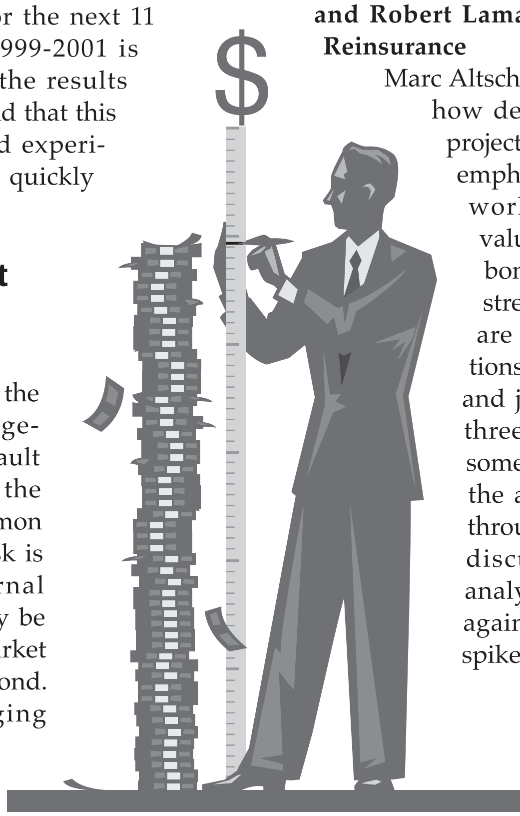
Speaker: Crista Boyles—Retirement Specialists Inc.

As someone who advises 401(k) participants from Houston, Crista Boyles brings a unique perspective to her research of the Enron meltdown. By focusing on the years leading up to the implosion and the parties involved, she was able to provide insights into how the management strategies of the 1990s could go too far and create a disaster. Since returning from the seminar I have read Boyles's book titled Enron Proof Your 401(k): Steps to Keep Your Money Safe. While the investment professional will find it a very easy read, so will the person looking for some guidance in their 401(k)

Pricing Implications of Default

Speakers: Marc Altschull, FSA, MAAA—Tillinghast and Robert Lamarche, FSA, FCIA, MAAA—RGA Reinsurance

Marc Altschull and Robert Lamarche discussed how defaults should impact pricing and projection work. They noted an increased emphasis on the salvage value of a bond, working in advance to estimate the value based on any assets backing the bond or mortgage. Altschull suggested stress tests with default scenarios that are high (four times annual expectations), doomsday (500 bps in year three) and junk downgrade (145 bps in years three and beyond). He also discussed some options for passing along (or not) the actual experience to policyholders through the credited rate. Altschull also discussed the need for UL dynamic analysis to include mortality selection against the insurer when interest rates spike and healthy lives lapse.



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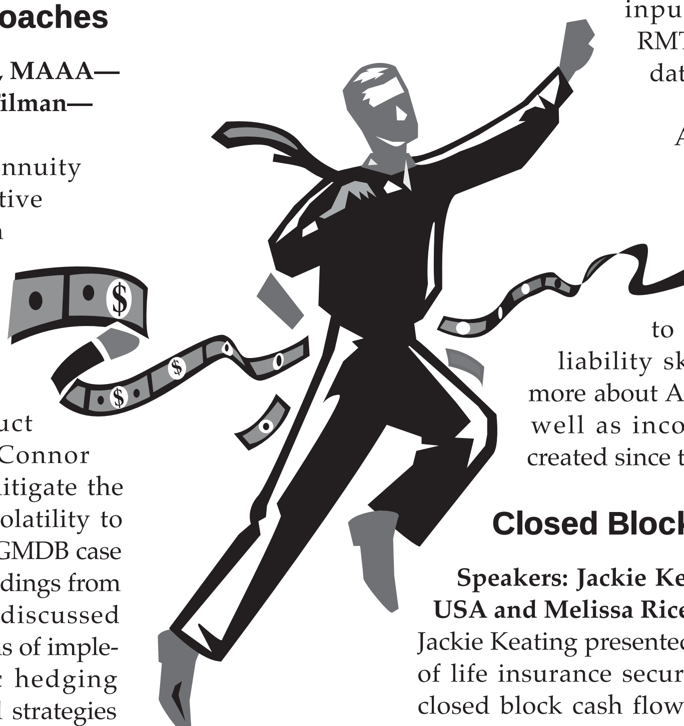
Lamarche suggested lower purchase limits for lower rated bonds due to the higher probability of default and lower recovery value. It's important to look at not only gross, but net yield as well. With a steep yield curve, he suggests investing at the long end of duration constraints.

Hedging Liability Risks: Micro and Macro Approaches

Mike O'Connor, FSA, MAAA—Tillinghast and Leo Tilman—Bear Stearns

Modeling variable annuity features is a very active environment. With increased scrutiny driven by equity losses and the resulting increased exposure for GMDB and other VA product features, Mike O'Connor discussed ways to mitigate the risk and lessen the volatility to insurers. He shared a GMDB case study, shared some findings from recent projects and discussed practical considerations of implementing a dynamic hedging strategy. He described strategies ranging from no hedging to sophisticated hedging, providing pros and cons of each.



Leo Tilman presented a new paradigm for insurers led by higher volatility, lower expected returns, fight for market share and riskier balance sheets. He described why economic recessions make book yield an even worse proxy for expected returns than in more stable economic times. Credit risk (higher concentrations and lower quality), prepayment/reinvestment risk, options on assets, volatility risk, more embedded options in liabilities and the resultant asset/liability gap are driving the need for a senior management position responsible for firm wide hedging.

Risk Management Task Force and ALM Specialty Guide

Speakers: Valentina Isakina, ASA, MAAA—Society of Actuaries and Warren Luckner FSA, CFA, MAAA—Benedictine University

Valentina Isakina discussed the activities and direction of the Risk Management Task Force. The RMTF's goal is to encourage risk management as a regular part of actuarial practice while providing the tools and recognition so that actuaries are considered first for these projects. By sponsoring seminars, developing educational materials and suggesting research projects, the RMTF with its 11 subgroups and 250 volunteers are well on their way to success. A buzz group session at the Annual Meeting in Boston drew 100 attendees and the SOA Strategic Planning Committee has requested input from the group. Check the RMTF Web site often to keep up to date on this active group.

Warren Luckner heads the ALM Specialty Guide Task Force. This guide is currently being updated, with scheduled completion date of early 2003. The specialty guide is designed to provide guidance to someone with basic asset and liability skills who would like to know more about ALM. It will update references as well as incorporate new fields of study created since the initial version of the guide.

Closed Block Securitization

Speakers: Jackie Keating, FSA, MAAA—Milliman USA and Melissa Rice—Goldman Sachs

Jackie Keating presented an example of the primary use of life insurance securitizations to date, transferring closed block cash flows to the capital markets, along with sharing other instances where life insurance cash flows either have been or could be securitized.

Melissa Rice described the transaction structure and motivation. The transaction adds value to the shareholders by increasing liquidity and flexibility, allowing the firm to redeploy capital to businesses earning a higher ROE. While debtholders have covenant protections, investors must balance the risks against the potential returns.

Leveraging Cash Flow Testing Models

Speakers: David Weinsier, FSA, MAAA—Tillinghast and Max Rudolph, FSA, CFA, MAAA—Mutual of Omaha

At this session, risk management tools were developed from existing models. David Weinsier shared a recent Tillinghast survey on cash flow testing. He described the primary differences from CFT models as using year-end data, best estimate assumptions, including target surplus, consolidated models, new business, refined and alternative investment strategies, stochastic scenarios and the need to use GAAP. Risk management can be greatly enhanced by using models that already have been verified for products like VA and long term care.

Max Rudolph stressed the need to focus on cash flows and automation for risk management work. He shared several graphical presentations to share results. As other speakers have done, he suggested that a corporate area has advantages looking at risk from above the silos and sharing best practices across the business units. He is concerned that companies don't seem to be using their models to measure the solvency risk from rising interest rates. The option-adjusted duration of a company is driven by the duration mismatch of its assets and liabilities and the leverage created by having a large market value of assets relative to surplus. A company that primarily sells SPDA with a multi-year mismatch would be especially vulnerable to this scenario.

General Session—Current Issues Faced by Investment Managers

Speaker: John Foehl, CCM, CFP—Summit Strategies Group

John Foehl provided background behind the recent investment environment, focusing on bonds, residential mortgages and equities. He discussed threats to equity-based alpha, including the large number of competitors, large portfolio sizes, reduced maximum percentage for a single holding and increased volatility. He discussed his views on real estate, private equity and hedge funds. Overall, he believes that a real return assumption of five percent provides a ceiling for future results.

Liquidity/FHLB

Speakers: Donna Claire, FSA, MAAA—Claire Thinking and Tom Grondin, FSA FCIA, MAAA—Aegon Institutional Markets

Donna Claire chaired the AAA's Life Liquidity Working Group. Liquidity is perceived as a much larger risk than previously due to the additional thought and research devoted to it recently. Negative publicity has surrounded off balance sheet guarantees, put options in GICs, unrestricted surrenders and derivatives. By anticipating liquidity risk exposures through stress testing, the risk can be managed. The New York circular letter is being used as a guide for an NAIC recommendation. Having a formal liquidity plan is encouraged. A good liquidity summary is that a company should focus on the risks associated with having too little liquidity and the costs of having too much. Each company's risk profile is unique. A feedback loop is mandatory.

Membership in the Federal Home Loan Bank system provides a source of liquidity not available elsewhere. Tom Grondin described how funding can come from overnight advances, Repo advances or long-term advances (over six months). In return the member purchases FHLB stock and pledge assets as collateral. While there are risks, the product provides a low cost of funds.

What Does a Chief Risk Officer Do?

Speakers: Zafar Rashid, FSA, MAAA—AIG American General and Philip Gath, FSA, MAAA—Nationwide

Many actuaries would like to be involved as their company's risk officer. This session discussed how this role can be implemented. As chief risk officer at AIG, Zafar Rashad described his role as including risk policy, governance issues and organization/ implementation. Risk policy focuses on defining objectives, risk prioritization, risk standards and establishing the firm's risk appetite. Governance includes policy approval (by management/ board), approval of risk standards and appetite, managing the reporting structure and risk committee management. AIG focuses on market, credit, pricing, legal/regulatory, operations and strategic risks. The CRO creates information to manage/control risks, facilitate appropriate risk/reward choices and maximize risk-adjusted shareholder value. The corporate risk management department provides centralized analysis where necessary, facilitates business unit risk/reward choices, provides enterprise wide consistency, selects global parameters and recognizes contagion/diversification (very difficult). Creating transparency encourages local management of risk and may necessitate some units taking more risk. A good objective for a risk management area is to "Use caution to enhance, not impede, progress."

Hedging becomes dynamic when positions are rebalanced regularly.

Phil Gath said that, although Nationwide has no CRO, a risk committee meets quarterly. Reports are created for discussion at these meetings, and minutes provide documentation. Recent meetings have discussed hedge funds, equity exposure, credit experience, annual line of business risk reviews, business disaster recovery, hedging and counterparty exposure. The lines of business must fully understand and be accountable for their ALM position. The enterprise helps out by facilitating development of modeling techniques and hedging tools. Line of business models at Nationwide are developed using one

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common framework in order to create total company risk profiles.

Hedging in Practice

Speaker: Dr. K. (Ravi) Ravindran—Annuity Systems Inc.
Dr. Ravindran discussed implementation issues involved in dynamic hedging. He described risk management as a control cycle including risk quantification, risk transferring and risk monitoring. Hedging becomes dynamic when positions are rebalanced regularly. He described an example where several hedging strategies were considered. He is working with the SOA to co-brand a seminar in spring 2003, so watch for details.

Regime Switching Generator

Speaker: Dr. Mary Hardy, FIA, ASA—University of Waterloo
Dr. Hardy presented regime-switching models to the group. This model works very well to describe the fat tails of equity returns in Canada and the United States, making it one of the popular models to use for segregated funds and VA capital testing. She has found that the 2-regime model using monthly data gives the best value relative to complexity. A teaching version of this model can be found at the SOA Web site. Simulations using this model move between two distributions. The distributions are not required to be of similar type. The base model is usually lognormal. The model moves between the two regimes using a Markov process. Regime 1 is low volatility, high mean and high persistence. Regime 2 is high volatility, low mean and low persistence. The model spends most of its time in regime 1. Regime-switching lognormal models with two regimes (RSLN-2) are intuitive, flexible, easy to simulate and a good fit for econometric data. Dr. Hardy describes these methods in an *NAAJ* article (April 2000) and has written a book (Investment Guarantees: Modeling and Risk Management for Equity-Linked Life Insurance—Wiley) due out in February 2003.

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Hedge Funds for Insurers

Speakers: Mark Hunt, FSA, MAAA—Hartford Life and Chris Rutten, FIA—MaxRe
Mark Hunt gave an overview of hedge funds, including examples of the relative value, event driven and directional strategies. For a portfolio, hedge funds can provide diversification benefits. While there are hurdles to overcome, insurers can apply hedge funds to specific opportunities. These include the surplus account, long duration liabilities and participating products.

Chris Rutten described how to implement a combination offshore business model with alternative asset strategies. He presented that, over the recent past, alternative asset classes have provided benefits for both diversification and risk-return results. He stressed the importance of manager and counterparty selection.

Canadian and other International Issues

Speakers: Ken Mungan, FSA, MAAA of Milliman USA and Charles Gilbert, FSA, FCIA, CFA of Nexus Generations
Ken Mungan described how globalization is creating opportunities for investment actuaries, since investment considerations are critical and knowledge transfer is key. A global strategy allows risk management to take diversification benefits to a higher level, expanded growth strategies and the ability to transfer knowledge across borders. He explained how you can take advantage of credit spreads that vary by nation and how actuaries can become active in equity risk management. He concluded with an example showing how ALM is used to determine reserves in Chile.

Charles Gilbert shared the results of a recent CIA survey on ALM practices in the Canadian life insurance industry (available on the CIA Web site). Respondents said ALM included risks due to interest rates, liquidity, equity, credit, currency and insurance pricing. While there is a wide range of practice on many fronts, ALM is being viewed as a value-added exercise. Most companies have created either a corporate risk management and/or ALM team, and many have a chief risk officer and ALM Committee. Almost all have a statement of principles and objectives for ALM. Most Canadian companies use both deterministic and stochastic scenarios, with modified duration, convexity, dollar duration, liquidity ratio, partial duration, economic capital and value at risk among the metrics used. Going forward, he reported that companies expect to improve their ALM process by providing more detail and making the process more formal. Other projects will include reviewing hedging strategies, improving models and a focus on universal life models.

Ask the Experts Panel

Speakers: Dr. Robert Reitano, FSA, MAAA—John Hancock Financial Services, Peter Tilley FSA, MAAA—Great-West Life and Annuity and Alton Cogert CFA of Strategic Asset Alliance
This very interesting discussion included dynamic assumptions, fair value and interaction of assumptions based on economic scenarios. For more details you will have to attend the seminar!