The Actuarial Review

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Make Your Opinion Count in this Year's Election

PAUL BRAITHWAITE — As you may already know, this coming election the CAS Board is endorsing two major changes to the CAS's Constitution and Bylaws. These changes, which involve Career Associates' rights and the expansion of the Board, were recommended by separate task forces: the Task Force on the ACAS Vote and the Governance Issues Task Force. All of the proposed actions were suggested for compelling reasons and I encourage you to consider them carefully. 3

Vote No on ACAS Voting Rights

CLIVE KEATINGE — Two years ago, the Task Force on the ACAS Vote and the Task Force on Classes of Membership both reported to the CAS Board of Directors. At that time, the board voted to deal with ACAS voting rights and classes of membership at the same time. This was sound reasoning, and if the board had followed through on this, we might now be faced with voting on proposals to move to a single class of membership (and thus to stop granting new Associate designations) and to give existing Associates who have had their designations for five years or longer the right to vote. If this were the case, I would be an enthusiastic supporter of both proposals. However, because the board abandoned its original plan and decided to address the ACAS voting rights issue before the classes of membership issue, I oppose the current proposal to give Associates of five or more years the right to vote. 9

The "Continuing" Side of Education

THOMAS G. MEYERS — For many years, the CAS has been focused on improving the education process for our candidates. However, continuing education for our existing members also requires significant focus, particularly in light of recent developments within the profession. In January, the American Academy of Actuaries released a second exposure draft of revised qualification standards on continuing education that would apply to all CAS members practicing in the United States, regardless of whether the actuary is a member of the AAA. 15

Pursuing Reality

MARTY ADLER — Steve Armstrong is not shy. Five years ago this column described some of his adventures in improvisational theater. Now he is attempting to become a contestant on reality TV! Steve has always wanted to be on television, the big screen, or the stage. Apparently that is not as easy as passing actuarial exams. 21

INSIDE THIS ISSUE

CAS President Paul Braithwaite (left) congratulates Jon Holtan on winning the 2005 Hachemeister Prize for his paper, "Pragmatic Insurance Option Pricing," at the 2006 CAS Spring Meeting in Rajardo, Puerto Rico last May.

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Editor's Note

John P. Robertson, AR It's a Puzzlement editor

Congratulations to John Robertson, FCAS, long-time AR Puzzlement editor on the award his National Council on Compensation Insurance (NCCI) research team recently received for their paper, "What Can Workers Compensation Learn from Group Medical Insurance?" It was one of five winners selected from more than 30 published studies to receive the MarketScan award. In order to be eligible, the research must use MarketScan research databases to examine healthcare economics and medical outcomes.

The award was presented by Thomson Medstat, a health care information company that annually recognizes "innovative studies that use sophisticated methodologies or imaginative study designs in the analysis of MarketScan." "These winners were selected from a very high caliber field," said William D. Marder, senior vice president and general manager of Medstat. The other 2006 awards went to leading government, academic, and pharmaceutical organizations: the Centers for Disease Control, Rutgers University, Johns Hopkins Bloomberg School of Public Health, and Novartis Pharmaceuticals.

John accepted the award for NCCI's Actuarial and Economic Services division at a special awards dinner hosted by Medstat in Philadelphia. The award-winning paper was authored by John, director and senior actuary, Dan Corro, senior research consultant, and Derek Schaff, ACAS, senior actuarial analyst of NCCI's AES division.

Their study compared the prices of medical services and the costs of treating certain injuries within the first three months following injury between workers compensation (WC) and group health (GH) for five states. Findings included:

- Prices paid by WC for individual medical services are similar to prices paid by GH.
- WC pays slightly less per service in three states with medical fee schedules.
- WC pays slightly more per service in the two states without medical fee schedules.
- WC costs more than GH to treat injuries within the same diagnostic group, mostly driven by utilization differences.
- WC has more intense and costly treatment early on as compared with GH; the cumulative difference declines slightly over two years.
- GH has a greater proportion of low cost treatments than does WC.
- Cost differences between WC and GH are less for acute and trauma-related injuries like fractures than for chronic and pain related injuries like back pain. Cost differences are greater for injuries subject to surgery.

The paper is available in the "Research and Outlook" section of NCCI's Web Site, www.ncci.com. AR

San Francisco Opens Its Golden Gate for the 2006 Annual Meeting

By Patrick B. Woods, Chairperson, CAS Program Planning Committee

From grand, sweeping views to neighborhood color and character, from glimpses of history to world-class dining and shopping—San Francisco is home to a little bit of everything! Beginning on Sunday, November 12 and running through Wednesday, November 15, it will be home to the 2006 CAS Annual Meeting. As always, there will be a variety of sessions covering actuarial topics of interest and ample time for casual discussions. The meeting site is the Hyatt Regency San Francisco, a four-diamond hotel, located on the stunning Embarcadero waterfront.

If actuaries are not reviewing insurance statistics, then 8.134 times out of 10, they are reviewing sports statistics (judgmentally estimated). To feed the insatiable need for statistics, our featured speaker has won an Olympic gold medal, an Olympic silver medal, and an Olympic bronze medal, and he is the 2006 World Sprint Champion and the 2006 Eric Heiden Athlete of the Year. As most of you have figured out, it is Joey Cheek, who in February 2006 left an indelible mark in Olympic history not only by winning medals, but also by making a remarkable gesture of donating $40,000 to Right to Play. His donation announcement in Torino was quickly followed by his call to action to others in support of the people of the Darfur region of Sudan. His generosity inspired corporations and individuals alike; to date hundreds of thousands of dollars have been raised for the region. Cheek's continued work to call attention to Darfur has earned him a spot on *Time* magazine's 100 Most Influential People list in the May 2006 issue. An enthusiastic and talented public speaker, Joey is not shy about sharing his Olympic experience, the challenges he has overcome and most importantly, "What I've learned along the way that is far more important than a medal of any color."

The general session topics will be chosen from the following list:

- Update on California Regulatory Issues
- Lloyds of London—Status and Structure
- Finite Reinsurance and Risk Transfer
- Enterprise Risk Management—Threat versus Opportunity
- Catastrophes—How did we do in 2006? What's ahead?

Photo: Courtesy of the San Francisco CVB

Following is a small sample of the concurrent session topics planned:

- Actuarial opinions on risk of material adverse deviation
- Loss simulation model working party report
- Predictive modeling—applications beyond pricing auto insurance
- CAS Statement of Principles regarding Casualty Loss and Loss Adjustment Expense Reserves
- New continuing education requirements

The Annual Meeting will also feature a separate track of concurrent sessions on ERM. These sessions will provide a good basis for the education of attendees on this emerging topic. The sessions themselves will focus on the theory of ERM, ERM in other industries, recent developments, and case studies.

Last, but by no means least, the Annual Meeting will include two receptions and a dinner—an excellent atmosphere to catch up with old colleagues, make new acquaintances, and simply socialize with actuarial peers. Many solutions have come to light through some small insight gained during an informal academic discussion.

Downtown San Francisco is rich in culture and beauty—and the Hyatt puts you right in the heart of the action. Fisherman's Wharf, Chinatown, Union Square, Ghirardelli Square, and North Beach are all within five minutes of the hotel. For attendees who do not wish to venture out, there are views from every guest room. Another option is San Francisco's only revolving restaurant, the Equinox. The 13 Views Bar, which, oddly enough, offers 13 different views of Justin Herman Plaza and the Embarcadero waterfront. Join us and you will be sure to enjoy the flavorful atmosphere of one of America's best-loved cities. AR

Dear Editor:

The Actuarial Review sunk to a new low with C.K. Khury's article "Actuarial Aspects of Alito's Confirmation Hearing" ("In My Opinion, *AR* May 2006). The link between a judicial nomination and the actuarial paradigm is, to be generous, a massive stretch. The arguments Khury makes trying to interconnect the two processes are laughable. By the end of the article, it becomes clear that Khury's real intention was not to compare the two processes, but to use *The Actuarial Review* as a forum to share his personal political views.

What's even more shocking is that this article not only got accepted for publication, but that it got massive front-page billing as well. This scares me, as it shows that more than one person thought this article deserves to be the feature writing of the issue. It doesn't matter how popular Khury's political position is among CAS members. The inclusion of this piece was unprofessional and unacceptable. The article was just blatant partisan politics, plain and simple.

No matter how divergent a person's political views are to my own, I welcome and encourage everyone to get involved in the political process. I am always open to listening to new ideas and hearing different points of view. However, official CAS publications are not the place to hold a forum on these political ideas. One of the major goals of CAS publications is to educate people on insurance and actuarial issues. When *The Actuarial Review* decides to publish political articles poorly disguised as educational material, the paper and the profession lose credibility. Reputation is crucial to our success and future sustainability. Therefore, it is not prudent to willingly allow our society to get the reputation of being a political hack. It would better serve our interests to be seen as an unbiased, nonpartisan, professional organization. The inclusion of Khury's article sets dangerous precedent. I urge the *Review* to use better judgment and to be more responsible by never letting this happen again.

—Josh Feldman and Al Maroun, ACAS

Paul Lacko, *AR* Editor in Chief, responds:

Thanks for the letter. I wouldn't be surprised if quite a few readers agree with some of the points you raise. And I wouldn't be surprised if a lot of readers have to read Stan's piece again, as I did, to see how and why it elicited such a strong negative response from you.

"In My Opinion" is intended to provoke thought and discussion. The column is called "In My Opinion" for a simple reason: it is one member's opinion. That's all it is. And an opinion expresses a bias, by definition. There was no attempt to "disguise" this column's opinion, and the column is not meant to be"educational material."

Kudos for May's Puzzle

To the Puzzlement Editor:

I thought your May puzzle was excellent ("It's A Puzzlement," *AR* May 2006). As soon as I read it I realized it was a classic conundrum: easy to state, but seemingly impossible to solve. I attacked it in my typical fashion:

1. I showed it to Steven Fallon, in the next office, so that he could also have the pleasure of solving it and so that I could have the pleasure of needling him when I solved it first.
2. I thought about it on the subway going home, and realized that I must have misread a crucial detail of the puzzle, because otherwise it actually was impossible.
3. I re-read the puzzle several times, and realized that I hadn't missed a thing...rather, you must have misstated it.
4. The next day Steven told me that he had solved it. This was discouraging. Although I had never had any reason to doubt his veracity, my determination that the puzzle was impossible made me realize that Steven must be lying.
5. It occurred to me that you and Steven could be conspiring against me.
6. I realized that in the (unlikely) event that Steven actually had solved it, there must be something obvious that I was overlooking. Therefore, to vindicate my good name, I would be patient and the solution would occur to me.
7. I was patient for several weeks, but the solution never occurred to me.
8. I tried to get my sons involved in solving the puzzle for me, but they were not interested.
9. I gave up and asked Steven for the answer. He gave it to me, and I realized how easy the puzzle really is!

—Walter Wright, FCAS

Speak Up!

The Actuarial Review always welcomes letters and story ideas from our readers. Please specify what department you intend for your item—letters to the editor, news, Brainstorms, It's a Puzzlement, etc. Send your comments and suggestions to:

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Or e-mail us at AR@casact.org

A Tribute To Norm Bennett

On April 20, 2006, the actuarial community lost a good friend when Norm Bennett, FCAS, passed away. Norm wrote a column for *The Actuarial Review* for many years, a column he called "Maunderings" and, later, "Random Sampler." As the name implies, it was full of the rambling though brilliant insights of an actuary who had an unusual knack for seeing the humorous side of things. Although most of the columns focused on a single topic, they freely ranged, and with sometimes no return to the starting gate!

Dominick Elia recalled that Norm was a very literate man who seemingly wrote his column with a twinkle in his eye. In a November 1981 column, Norm wrote, "Somewhere I sense there are actuaries who must be having fun. The New York Insurance Department reported recently in its starchy fashion that a company of the American International Group had reduced its professional liability rates for sex therapists by 30%. Old Pareto and Poisson would be aghast. [Looking into] a practical and serious subject like the number of Prussians kicked to death by horses was one thing. A practical and sensual subject like the number of Americans brought down by libidinous liability would not have been dreamt a subject for pure mathematics. Yet I repeat. Some actuaries today must be having fun. But who? Who at AIG is enjoying the research and fitting the trends? With minus 30% indicated, someone [at AIG] knows something. My calls over there go unreturned."

Charlie Niles remembers being hired by Norm as a new actuarial student. "Norm heard that the accountants were tossing around a new acronym, GAAP, which stood for Generally Accepted Accounting Principles," said Niles. For actuaries, Norm coined CRAP (Commonly Recognized Actuarial Principles.) Norm freely mentored Charlie and even had a suggestion for newly minted Fellows: "The first thing new Fellows should do is get their teeth capped and go to Dale Carnegie." [October 1978]

Bill Bartlett recalls Norm as having an exceptionally keen intellect, with a passion for puzzles. One day Norm waltzed into the office, proud of having finished *The New York Times* crossword puzzle in 22 minutes. Norm would often devise a special challenge for himself, like completing all the four outside borders first. In July 76, Norm discussed why more actuaries did not send in solutions to the puzzle page:

"Where were the Ed Budds, the Gordon Barkers, the Charlie Nileses? I didn't know how Ed was on puzzles and I'd heard that Gordon was overwhelmed with all those prescriptions to fill, but as for Charlie, I. . . guessed that if I were to ask him why he wasn't working on problems of monkeys counting coconuts and dogs chasing their tails around rectangular fields, I'd get a predictably thought-provoking answer.

Dominick Elia recalled that Norm was a very literate man who seemingly wrote his column with a twinkle in his eye.

"He [Matt Rodermund] seemed to forget I was there and I left him muttering to himself in front of a portrait of a solemn Henry Flagler.

"Maybe the casualty actuary is fundamentally different. Maybe he fancies himself a man of words, not of numbers, dialogues instead of diophantines. . . .

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Editor's note: Due to space limitations in the printed version of The Actuarial Review, a longer version of this version of this article can be found online on the CAS Web Site.

Web Site News

"Personalization" is the Cornerstone of the New CAS Web Site

By Becky A. Jorgensen, CAS Communications Coordinator

A resource-rich Web site with an emphasis on "personalization" for registered users has been launched by the Casualty Actuarial Society (CAS) as a way to better serve CAS members.

Launched in mid-June, the new Web site provides a fresh, professional and modern appeal. Among the site's primary features are increased maneuverability and options that allow each user to create a unique and personal homepage.

"My CAS" is a feature that allows visitors to tailor their CAS homepage to deliver the content in which they are most interested. Users are able to specify topical areas of interest and geographic location, and their "My CAS" page will include press releases, newsletter articles, notices to members, research papers, and Regional Affiliate announcements based on that input.

In conjunction with the redesign, the CAS also launched a new online tool that helps users to better locate actuarial research articles. This new tool, the Database of Actuarial Research Enquiry, or DARE, allows users to find articles that hold the most interest for the individual. Users can search articles based on specific topics within the taxonomy of casualty actuarial science. In addition they can search by keywords or other criteria allowing for optimal accessibility.

"We invite the membership to take a close look at the new Web site, try out the new tools, and learn about the various options," said Terry Klodnicki, chairperson of the Committee on Online Services, the committee that oversaw the work on the redesign project. She added, "I am looking forward to creating my own personal homepage. The amount of content on the CAS Web Site has grown significantly over the years, and the personalization tool will make it easier to keep abreast of the topics most relevant to me. I am confident that the membership will benefit from the personalization capabilities and other enhancements." AR

In My Opinion

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"The next day Paul Singer mulled over this speculation for me. Two cups of coffee later he announced that maybe I was right but then again maybe I was wrong."

In January 1976, Norm was musing about the significant numbers of new women actuaries, and what that portended for the profession:

"I think we can finally forget that outrageous example of sexism which developed out of a Kentucky rate hearing – the notorious day of the mini-skirted actuary. The [Kentucky] Colonels never really understood the filing but the local newspaper [photo] featured junoesque Mavis Walters while they completely ignored the Knobby Knees of [John] Muetterties."

Norm gave us a cross-cultural lesson, and possibly the first incursion of French into the pages of *The Actuarial Review*, in October 1975:

"Cet article doit être écrit en francais entièrement. J'espere que mes colleagues franco-Canadiens comprenderont et m'excuseront de ne pas le faire de ne pas le faire. For our monolingual readers, the above sentences mean that we are going to talk about Canada and its intrepid little band of casualty actuaries…

"Actuaries in Canada until recent days fell into two classifications: transplanted English life [actuaries] with hyphenated names or two middle initials, or Carl Wilcken who reportedly suffered the loneliness and anxieties of a Maytag repairman…

"It has been my pleasure this past year to work with most of these men in Toronto at the newly formed Insurer's Advisory Organization of Canada…

"Originally the committee seated itself by apparent vested interest—French-speaking Canadians to the left, English-speaking Canadians to the right, Americans huddled between. There were brief moments of anxiety and embarrassment during our first days. A somewhat heated exchange in rapid-fire French between Yves Brouillette and the bearded scholarly Camille Dupuis, turned Chairman Hugh White pale until he learned it was only a question of which wine should be ordered for lunch."

Thanks, Norm, for the memories and for your wonderful columns. If you don't mind, we'll keep your "Maunderings" and "Random Samplers" with us on the CAS Web Site in their original 1970s and 1980s *Actuarial Review* wrappers. AR

Make Your Opinion Count in this Year's Election

As you may already know, this coming election the CAS Board is endorsing two major changes to the CAS's Constitution and Bylaws. These changes, which involve Career Associates' rights and the expansion of the Board, were recommended by separate task forces: the Task Force on the ACAS Vote and the Governance Issues Task Force. All of the proposed actions were suggested for compelling reasons and I encourage you to consider them carefully.

The Task Force on the ACAS vote was put together to examine voting rights, which have not changed since the inception of the CAS in 1914 when there was a much clearer distinction between Fellows and Associates. Due to the Task Force's report, the Board is recommending these three separate actions, which can be voted upon independently:

1. The unrestricted right to vote will be given to members either upon attainment of Fellowship or five years after their admission as a member, whichever should occur first.
2. The Associates who have been members at least five years can stand for election to the CAS Board of Directors.
3. The Associates who have been members at least five years can hold all officer positions with the exception of president, president-elect, and vice president-admissions.

In reaching these recommendations, the Task Force on the ACAS Vote, comprising both Fellows and Associates, considered several important factors. Most notably, the Task Force pointed out that Associates and Fellows in the United States already have identical practice rights granted by the American Academy of Actuaries. Also, the recent addition of Fellows by Mutual Recognition now means that these Fellows have voting rights while Career Associates do not. These facts and others led the group to promote ACAS voting rights.

The task force also examined potential negative effects of this change, such as possibly diminishing the professional image of the society. However, current Associates who have served as committee or task force chairs interacting with external parties observed that their status was not an issue. It was also concluded that voting rights would not deter Associates from pursuing Fellowship status since most members seek Fellowship as part of a personal career goal and not to attain a vote in the CAS.

The Governance Issues Task Force report to the board stated that broader input is always better in setting strategy and policy and suggested creating a class of appointed non-CAS members to the board. Our research found that prevailing ideas of good governance applaud this approach for associations and professional societies. Non-CAS members on the board will help derail inward thinking which can result with a board that has "grown up" in the CAS management process. They will help us to rethink some practices that have been going on forever for no better reason than that they have been going on forever. This change will position the CAS as outward looking and forward thinking, an image particularly appropriate for our profession.

... this coming election the CAS Board is endorsing two major changes to the CAS's Constitution and Bylaws... All of the proposed actions were suggested for compelling reasons and I encourage you to consider them carefully.

It is envisioned that the board would initially fill only two of the three positions by appointing one non-actuary

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Highlights from the 2005 ASTIN Colloquium

By Doris Y. Schirmacher, Member, CAS International Research Committee

Editor's Note: This article reviews selected topics discussed at the 2005 ASTIN Colloquium. See the CAS Web Site's "Research" section for a more detailed version of this article.

Papers and presentations from the 2005 ASTIN Colloquium held in Zurich, Switzerland last September featured well-known actuaries and academics. The subjects discussed spanned an impressive selection of topics, including corporate strategy, economic modeling, fair valuation and solvency, mortality and pension, premium calculation, solvency, and statistical and numerical methods, to name a few. Following are some highlights from the general session presentations and specific topics.

Special Lectures

Thomas Mack provided a quick overview of the chain-ladder and Bornhuetter-Ferguson techniques. He showed that the chain-ladder method has a sound stochastic foundation and one can calculate the prediction error for an entire portfolio. While many actuaries have seen the Bornhuetter-Ferguson method as a manipulated version of chain-ladder, Mack showed how to correctly (and independently of the chain-ladder) estimate the parameters in this model.

Hans Bühlmann gave a lecture on his view of the three fundamental issues of insurance: the collective, the reserve, and profitability. He emphasized that the mathematical modeling of the collective is crucial to clarify and quantify our intuitive notions about it. Also, in reserving actuaries must rethink the actuarial valuation and use sound financial concepts. In considering profitability, he stressed that assets and liabilities speak the same language (even though, until recently, actuaries have not been willing to recognize this). In conclusion, Bühlmann stated that while these might be the three fundamental issues of insurance, perhaps they should also be the "three fundamental issues for the actuary."

The underwriting cycle is well known to all actuaries, but so far no one has come up with theory that explains it all. Rene Schnieper's "Modelling the Underwriting Cycle," however, presents a model to help us understand the cyclical nature of our business.

Reserving Papers

It is well known that sum of chain ladder projections across multiple triangles is not equal to the chain ladder projection of the sum of the triangles. Carsten Proehl and Claus Schmidt presented a multivariate chain-ladder method that explores this issue. Under certain assumptions their techniques can be used to analyze portfolios consisting of subportfolios of risks. Werner Huerlimann revisited the methods of Benktander, Neuhaus, and Mack for credible loss ratio claims reserves. His method closely follows the model of Mack "Credible Claim Reserves: The Benktander Method" [*ASTIN Bulletin* 30(2)] but provides two key advantages: the optimal credibility weights can be easily computed and different actuaries would always come up with the same result provided they use the same actuarial premiums.

"JAB Chain: A Model-Based Calculation of Paid and Incurred Loss Development Factors," by Bertrand Verdier and Artur Klinger, uses information on both paid and incurred triangles to estimate ultimate losses. The authors argue that the incurred process may be informative to the paid losses but the paid losses should not give any further information on the incurred amounts.

Christian Roholte Larsen's model outlined in "A Dynamic Claims Reserving Model" is based on individual claim development and can handle seasonal effects, changes in the mix of business, claim types, and claim sizes. In particular, the model takes into consideration that the development of large claims is often very different from the development of small claims.

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CLIVE KEATINGE

Vote No on ACAS Voting Rights

Two years ago, the Task Force on the ACAS Vote and the Task Force on Classes of Membership both reported to the CAS Board of Directors. At that time, the board voted to deal with ACAS voting rights and classes of membership at the same time. This was sound reasoning, and if the board had followed through on this, we might now be faced with voting on proposals to move to a single class of membership (and thus to stop granting new Associate designations) and to give existing Associates who have had their designations for five years or longer the right to vote. If this were the case, I would be an enthusiastic supporter of both proposals. However, because the board abandoned its original plan and decided to address the ACAS voting rights issue before the classes of membership issue, I oppose the current proposal to give Associates of five or more years the right to vote.

As a society, we must first decide whether there is enough of a distinction between Associate and Fellow to warrant keeping the Associate designation prospectively. If we decide that there is, then I see no reason to start eliminating distinctions between the two designations. If we decide that there isn't, then we should affirmatively make the decision to stop granting new Associate designations. I believe giving existing Associates of five or more years the right to vote would be an appropriate part of this plan. However, I also believe the Fellows should be the ones to make the decision on whether to move to a single class of membership.

In addition, addressing the ACAS voting rights issue before the classes of membership issue potentially creates a more troubling issue than in moving to a single class of membership. The Task Force on Classes of Membership recommended that the CAS move to a single class of membership, Fellow, and "the transition rule most preferred by Task Force members, and therefore closest to a consensus recommendation, is one wherein we continue to offer the Associate designation for a limited period of time, not to go beyond 2008, and at the end of 2013, when all Associate members of the CAS will have held that designation a minimum of five years, automatically grant FCAS status to all remaining Associates."

This would probably require constitutional and bylaw changes, and so Associates could potentially be asked to vote on whether to eventually make themselves Fellows. As noted in the May 2006 *Actuarial Review*, there were at that time 962 Associates who had had their designations for five or more years and 2,787 Fellows. Thus, allowing these Associates to vote would have a material effect on the voting population.

...because the board abandoned its original plan and decided to address the ACAS voting rights issue before the classes of membership issue, I oppose the current proposal to give Associates of five or more years the right to vote.

The fact that the board passed a resolution in September 2004 that disagreed with this recommendation of the Task Force on Classes of Membership does not render this issue moot because the resolution is not binding on future boards. The earliest the CAS Board is likely to return to the classes of membership issue is 2007, at which point board membership will have completely turned over from 2004. The 2007 Board may have a different view than the 2004 Board.

Associates have clearly made significant contributions to the CAS and the actuarial profession, and I

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Don't Be Reserved! Sign Up Now for CLRS

By Scott Charbonneau, Chairperson, Joint Committee for the Casualty Loss Reserve Seminar

Now is the time to register for the 2006 Casualty Loss Reserve Seminar (CLRS), which will be held at the Renaissance Waverly Hotel in Atlanta on September 11-12. The CLRS is co-sponsored by the CAS, the American Academy of Actuaries, and the Conference of Consulting Actuaries (CCA).

The CLRS will again offer basic and intermediate reserving sessions, which are primarily targeted to those attendees who are not members of the CAS. Please pass this information along to those non-CAS members in your organization who would benefit from some reserving information (i.e., underwriters, agents, and brokers, among others).

With more than 50 sessions offered in a variety of areas, CLRS attendees will have the opportunity to learn the latest information on reserving issues unique to various lines of business, as well as financial reporting, international issues, emerging issues, reserve uncertainty, and methodologies and disclosures. Sessions will also focus on the impact of catastrophes and mass torts on reserves and reserving in the reinsurance world.

The deadline for early registration is Friday, August 25, after

which the registration fee of $750 will increase by $50. The final day to cancel and still receive a refund (minus $50) is Friday, September 1, and all requests must be in writing.

Don't miss this opportunity to participate in this seminar and enjoy the city of Atlanta. For more information on the CLRS sessions and registration, visit the online brochure at http://www.casact.com/coneduc/clrs/2006/.

Opinion

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support the proposals to allow them to serve on the CAS Board of Directors and the Executive Council. Any Associate on the board would have to be elected by the Fellows, and any Associate on the executive council would have to be elected by the board. This is entirely consistent with the proposal to allow nonactuaries to serve on the board, which I also support.

I have been observing the CAS Board for five years, and I believe the board almost always does an excellent job of analyzing issues and making appropriate policy decisions. However, in this case, I believe the board has erred by pursuing the ACAS voting rights issue before the classes of membership issue. I also believe that a few board members sensed this, when at the May 2006 board meeting, some sentiment was expressed for reconsidering the decision to move ahead with the ACAS voting rights issue this year. The discussion was abruptly quashed after someone pointed out that the marketing campaign to the membership had already begun, and that reversing course would make the board look bad.

I urge the Fellows to reject the current proposal to give Associates of five or more years the right to vote. Then, if the board comes back later with a well-thought-out proposal to move to a single class of membership that incorporates ACAS voting rights, I would be pleased to offer my enthusiastic support.

Update on the New CAS Journal

The editorial board of the new CAS Journal is working its way through a healthy supply of submitted papers in preparation for next year's launch. "Things are really coming along with interesting and practical papers currently going through our review process. I'm also looking forward to the unveiling of the Journal name and design this fall," says Journal editor in chief Gary Dean.

To be part of this exciting step in CAS history and submit your paper, please visit http://www.casact.org/pubs/newjournal.htm.

MICHAEL D. ERSEVIM

Great Moments in Actuarial History

1800 B.C.	Egyptians discover the power of the mystical loss triangle.
550 B.C.	Pythagoras publishes his treatises on the "Development of Workers Comp Permanent-Partial Cases."
549 B.C.	Feldblumius the VII dismisses Pythagoras' treatises as naïve since they "ignore the effects of inflation," but maintains that "Pythagoras is a great guy, even though his papyrus is garbage."
300 B.C.	The abacus is invented in Babylonia.
299 B.C.	The SOA puts its stamp of approval on the back of the first abacus.
298 B.C.	Texas Instruments develops a solar model, shrink-wraps it, and sells it for 30 shekels.
25 B.C.	The SOA gives its first actuarial exam. Caesar Augustus fails, but after a convincing appeals letter, is granted FSA status.
642 A.D.	The Library at Alexandria is destroyed. Countless actuarial study manuals are lost forever.
643 A.D.	ACTEX and CSM are founded.
1667 A.D.	Sir Isaac Newton invents calculus.
1668 A.D.	The first actuarial exam containing calculus is given by the SOA. Only Newton passes. Leibnitz gets a "5."
1914 A.D.	The CAS is founded. Historians coincidentally mark this date as "The End of the Dark Ages."
1915 A.D.	The CAS gives its first actuarial exams. Einstein boasts that he passed all of them, even though he studied "way less than 300 hours" for each.
1999 A.D.	Sholom Feldblum (CVII) nearly completes his goal of publishing all of his papers that critique all of the actuarial papers that came before him.
2000 A.D.	The CAS has to reorganize the entire exam structure and syllabus to accommodate all the relevant Feldblum papers.
2006 A.D.	The "Humor Me" section of the Actuarial Review finally surpasses the "mildly amusing" threshold and achieves the "actually funny" level as judged by co-workers of the humor editor. AR

What Do You Call A Group Of Actuaries?

Thanks to everyone who submitted their creative suggestions. Now I need you to vote for your favorite of the ones listed below, and feel free to "write-in" others you may think of. We'll publish the final tally in the November issue.

We received many interesting submissions, mostly of a mathematical nature (of course) such as: aggregation, accumulation, array, pool, nerd-herd (ouch, but true), addition, algorithm, abstraction, absolute value (although some may prefer to spell it "absolut").

Some were more statistical: sample, kernel, distribution, approximation, clustering, and average (hey, aren't we all *above* average?).

Some were actuarially based: surplus, reserve, redundancy, cohort, contingency.

And the random: affinity, avalanche, stealth, scramble, and murder (maybe we should leave that one for the birds).

But the most popular suggestions by far were:

1) Redundancy
2) Cohort
3) Contingent/Contingency
4) Array

So what do you say? Voting for a favorite is much easier than thinking of your own, so vote soon! (Only your first vote will count, so there's no point trying to stuff the e-ballot box.) You can send your votes to ar@casact.org.

The winning collective noun will be announced next quarter. We will lobby Webster's and OED to include the winner as a common usage definition, and we, as a profession, can work it into the vernacular.

Strangely, no one but me suggested an "adverse development" of actuaries (or conversely a "negative development" when we break up after a meeting—or is that positive development?).

From the President

From page 7

plus the American Academy of Actuaries-Vice President, Casualty. Academics, insurance executives, regulators, attorneys, and people with leadership experience in other professional societies would be considered to fill the non-actuary position. As our organization evolves and faces other strategic priorities in the future, the desirable background and skill sets of the appointed board members may change. For example, there may be a time where we want representation from China or India or someone in the banking or investment industries to help us better serve practicing actuaries in one of those areas.

The board is also recommending that the CAS Executive Director be officially recognized as a member of the Executive Council. This change would formally recognize what is happening in practice and would position the executive director role more in accordance with standard professional society practice

Originally, the CAS Board voted to address ACAS voting rights and classes of membership at the same time because we believed that both issues could be resolved simultaneously and in a relatively short time frame. The board subsequently learned that the classes of membership issue, due to the complexity involved in defining and implementing new or revised FCAS educational requirements, could not be resolved in such an ambitious time frame. The board further concluded the two issues can be addressed independently and at different times, despite that the two were initially coupled. Rather than continuing to defer ACAS voting rights, the board decided to move forward this year.

It is also important to note that when the board considered the classes of membership issue, it disagreed with the Task Force on Classes of Membership recommendation to grant the Fellowship designation to Associates if the CAS moved to a single class of membership. The Board passed a motion during its September 2004 meeting stating that if the CAS eventually moves to a single class of membership, the then-current Associates will either complete their remaining exams and become Fellows, or remain Associates until they cease their membership in the CAS.

You can read the detailed task force reports and find other information on the ballot initiatives on the CAS Web Site in the "Meet the Issues" section. In my view, these are important, positive changes that you should consider carefully. Since we are fortunate to be members of a very strong and successful organization, there is often a tendency to make no changes, thinking that everything is fine and that the existing organization has served us well. However, the world is rapidly evolving around us, particularly in the area of appropriate governance procedures. We continue to become a much larger organization with a more diverse membership than ever before. I therefore believe we need to be open to evolving in directions that better serve our members and the public. I urge you to learn about the issues and to express your opinion by voting in the upcoming election.

2005 ASTIN Highlights

From page 8

Reinsurance Papers

Actuaries interested in analyzing observed market prices for reinsurance should read "Benchmark Rates for Excess-Of-Loss Reinsurance Programs" by Verlaak, Huerlimann, and Beirlant. They use generalized linear and non-linear modeling techniques to analyze four years of reinsurance data for automobile third party coverage in the Belgian and Swiss markets.

Actuaries working on reinsurance strategy will be interested in "On the Optimality of Proportional Reinsurance," by Lampert and Walhin. The authors study how four proportional reinsurance covers (quota share, variable quota share, surplus, and surplus with a table of lines) affect the results of the ceding company based on actual claims data.

The underwriting cycle is well known to all actuaries, but so far no one has come up with theory that explains it all. Rene Schnieper's "Modelling the Underwriting Cycle," however, presents a model to help us understand the cyclical nature of our business. His model is based on the assumption that cyclicality results from changes in supply and demand for insurance.

Portfolio Optimization and Asset Allocation

Donald Mango presented his idea that insurance contracts have simultaneous rights to access (part or all of) the shared asset. "Insurance Capital as a Shared Asset" discusses the valuation of parental guarantees, how to determine capital usage cost, and shows how to price products and evaluate a portfolio mix using economic value added concepts.

Delong's paper investigates the use of stochastic control theory to find the optimal investment strategy for a non-life insurance company. He uses the standard Black-Scholes market setup (n-risky assets and one risk-free asset) but does not consider regulatory restrictions (no constraints on control variables). He concludes that higher initial reserves (via higher premiums) lead to more cautious investment in the future.

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Ensuring High Caliber Data

A Review of *Exploratory Data Mining and Data Cleaning*

By Tamraparni Dasu and Theodore Johnson [John Wiley & Sons Inc., 2003, $89.95]

Actuarial work relies on data. As such, ensuring appropriate data quality and availability is the concern of every actuary. The CAS research working party on Data Management and Information Educational Materials was formed to identify key educational resources on data issues for actuaries. The working party is reviewing the literature on the topic and this review is the first of several that will be published.

The primary topic of *Exploratory Data Mining and Data Cleaning* is data quality. In data mining circles this book is the reference of choice on data quality and its authors are invited to speak on the topic at many conferences. It combines a review of the most common methods used for screening data for quality with some novel approaches developed by the authors as well as providing a review of key data quality concepts along with data management concepts.

An overview chapter summarizes the topics covered in the rest of the book and presents the authors' philosophy towards data quality. The authors lay out the methods of exploratory data mining they will be using, including parametric summaries—measures of central tendency, dispersion, and skewness—and non-parametric summaries such as quantiles, histograms, and OLAP cubes. The authors believe in "end-to-end-data-quality," i.e., there are many stages in the data assembly process where data quality needs to be monitored and improved, such as data gathering, storage, analysis and integration. Their equation:

DATA + ANALYSIS = RESULTS

reflects, in equation form, the well-known adage "garbage in—garbage out." The authors are also proponents of measuring quality in order to promote data quality improvement.

The chapter "Exploratory Data Mining" presents graphical and statistical techniques largely from the exploratory data analysis literature. The prominent statistician John Tukey pioneered the methods of exploratory data analysis and gave the practice its name (see exploratory data analysis at www.wikipedia.org). These methods are widely accepted in the statistical community as a key activity within any statistical project and are widely implemented in statistical software.

Exploratory data mining is an application of exploratory data analysis to large databases that can be used to understand the structure of a database and to detect outliers (data glitches are often found by examining outliers). In this chapter, the authors introduce the novel concept of data depth. Data depth provides a measure of how far a record is from the center of the data or from typical data values. In order to construct such a measure, one needs a way to quantify the notion of "center" and the notion of "distance" from the center. The authors provide the Mahalanobis depth as one way to measure the data depth.

The authors believe in "end-to-end-data-quality," i.e., there are many stages in the data assembly process where data quality needs to be monitored and improved, such as data gathering, storage, analysis and integration.

In the chapter "Partitions and Piecewise Models," the authors discuss data cubes as a mechanism for exploring data. Data cubes are single or multidimensional tabular summaries of data. Statisticians have long used cross-tabulations, or slicing and dicing of data, to develop a high-level understanding of the

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Latest Research

From page 13

structure of databases. Among practicing actuaries, pivot tables are a common example of data cubes. In this chapter, the authors introduce the concept of data pyramids for comparing two databases for changes. Unfortunately, I found the concept a little difficult to follow, even after a couple of readings of the material. The authors also introduce two data mining methods that can be used to model nonlinearities and other data complexities in the chapter "Piecewise Regression and Naïve Bayes."

In their chapter "Data Quality," the authors detail all the mishaps affecting data that create quality problems. Sources of data quality problems include unreported changes in layout, unreported changes in measurement, temporary reversion to defaults, missing and default values, and gaps in time series. Being mindful of the sources of data errors, one can detect, remediate, and most importantly, prevent them.

The authors believe that in order to motivate improvements in data quality it is imperative that quality be measured, even when the measures are somewhat subjective.

As strong proponents of implementing data quality measures, the authors believe that in order to motivate improvements in data quality it is imperative that quality be measured, even when the measures are somewhat subjective. In developing their measurement approach, both static and dynamic constraints are described. Some of the metrics quantify traditional data quality components such as accuracy, consistency, uniqueness, timeliness, and completeness. Others capture features of data quality such as extent of automation (sample some transactions, follow them through the database creation processes, and tabulate the number of manual interventions), successful completion of end-to-end processes (count the number of instances in a sample that, when followed through the entire process, have the desired outcome) and glitches in analysis (measure the number of times and severity in a sample that data quality errors cause errors in analyses). The different metrics are weighted together into an overall data quality index using business considerations and the analysts' goals to develop weights.

The book's final chapter applies the authors' quantitative techniques to the detection, correction, and prevention of data quality problems and illustrates methods for detecting and correcting glitches. For instance, to address the missing value problem, the authors present techniques, such as data imputation, that can be used to create values that substitute for the missing data. The chapter presents an introduction to techniques for joining different data sets, including approximate joining techniques when exact matches are not found between the key fields of two databases. Finally and most importantly, the authors stress the crucial role of metadata, the information describing the data, and the ways of creating good metadata.

Overall, the book gives a thorough introduction to data quality, mostly delivered at a level that can be understood by the practicing actuary. AR

2005 ASTIN Highlights

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Risk and Measure Dependence

Copulas are used in most of papers in this category. In "Dependence matters!" Doreen Strassburger and Dietmar Pfeifer clearly articulate the often abused concept of correlation is not an appropriate dependence measure when risk aggregation or reinsurance of combined risks is considered. They show, via case studies using the concept of copulas, that several uncorrelated risks give rise to a broad range of aggregate sum distributions.

Another paper using copulas to measure the dependence between risks is by David Cadoux and Jean-Marc Loizeau. They investigate the capital adequacy of a French non-life insurer using Monte Carlo simulations. Their underlying model is based on copulas, which they fit to actual data and select based on a chi-squared goodness-of-fit criterion.

Castella Herve and Chiolero Alain also use copulas in their study of a reinsurance portfolio exposed to natural catastrophe risk. They consider analytic and empirical copulas along with another technique called event-induced dependencies (used in CAT models).

Learn More About ASTIN Presentations

Other papers presented at the 2005 ASTIN Colloquium are also worthwhile reading. All papers can be downloaded from ASTIN Colloquium Web Site at http://www.actuaries.org/ASTIN/Colloquia/Zurich/papers.cfm. AR

THOMAS G. MYERS

The "Continuing" Side of Education

For many years, the CAS has been focused on improving the education process for our candidates. However, continuing education for our existing members also requires significant focus, particularly in light of recent developments within the profession.

In January, the American Academy of Actuaries released a second exposure draft of revised qualification standards on continuing education that would apply to all CAS members practicing in the United States, regardless of whether the actuary is a member of the AAA. The proposed standards will substantially increase continuing education requirements for all U.S. actuaries. First, the proposed standard would broaden the definition of a Statement of Actuarial Opinion (SAO) subject to the qualification standards to include any "opinion expressed by an actuary in the course of performing Actuarial Services and intended by the actuary to be relied upon by the person or organization to which the opinion is addressed." This revised definition would encompass virtually all work done by an actuary in a professional capacity. Second, the proposed standard would require all actuaries making general statements of opinion to have 30 hours of relevant continuing education per year. Actuaries issuing specific statements of opinion (e.g., reserve opinions) would be required to have 15 hours per year of continuing education relevant to the specific statement, with a minimum of six structured hours (e.g., courses or seminars).

While these standards are a substantial change from the current U.S. standards (24 hours every two years applying only to actuaries making Prescribed Statements of Actuarial Opinion), they are still less stringent than standards that apply elsewhere within the profession. For instance, since 1994 the Canadian Institute of Actuaries has required 100 hours of continuing education every two years (with 24 structured hours). Additionally, in Mexico, continuing educations standards were recently strengthened, including the introduction of recertification exams!

The pace of change within the actuarial profession and our obligations to the publics we serve clearly require us to focus attention not only on basic education for new members but also on continuing education for existing members. Traditionally, the vast majority of CAS continuing education offerings have been lecture-type presentations with limited opportunities for question and answer. These types of presentations can be very valuable for presenting factual information or high-level updates of current events. But how many times have you gone to a presentation of the latest actuarial technique and walked out after 90 minutes with copies of a few PowerPoint slides and not the slightest idea how to use the technique in your day-to-day practice?

Continuing education for our existing members also requires significant focus, particularly in light of recent developments within the profession.

We need to make sure that relevant and efficient continuing education opportunities are easily available for our members. With respect to technical skills training, this probably includes "hands-on" training opportunities where members can bring a laptop and actually learn to apply new techniques to sample problems rather than just hearing someone speak about the new techniques. We also need to make greater use of technology to allow continuing education without the expense of traveling to an on-site meeting. This could include Web conferences or other types of distance learning.

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SABINE BETZ

The Swiss Solvency Test for Nonlife Insurance

On a gloriously sunny spring day by Lake Zurich, the Casualty Actuaries in Europe (CAE) held their spring meeting. Approximately 60 actuaries attended, including a significant number of Swiss actuaries. While there were presentations on a number of subjects, one of the main presentations was on the new Swiss Solvency Regime, as explained below by guest columnist Sabine Betz.

—Kendra Felisky, AR U.K. Correspondent

With the Solvency II standard still on its way, many European countries have already started to develop their own country-specific Solvency II standard. On the one hand, this gives them the opportunity to gain deeper insights into their country-specific risk issues and, on the other hand, these countries are hoping to influence the development of the overall Solvency II system in the direction of their country-specific model. Although the Swiss are not part of the European Union and therefore are not forced to take part in the Solvency II hysteria at all, there is a worldwide consensus on the need for an adequate risk measurement in the insurance industry. Solvency I has proved incapable of measuring the inherent risks in insurance companies.

Therefore it is no wonder that the Swiss regulator (Federal Office of Private Insurers or FOPI) designed a state of the art solvency model, the Swiss Solvency Test (SST). This development started in 2003/2004 and is now being tested on an industry basis in a second field test. The first field test was performed in 2005, when 15 life, 15 health, and 15 nonlife insurers took part. Since all large insurance companies and most mid-size insurers were participants, about 93 percent of the provisions in life and approximately 85 percent of the premiums in nonlife were covered. These percentages can be expected to be even greater in the 2006 field test, since now all life insurers with more than one billion Swiss francs (CHF) gross premium income, and all nonlife insurers with more than 500 million CHF gross premium income, are required to take part.

A few remarkable observations about the SST is that, despite its extensive mathematical requirements, the SST is well accepted in the Swiss insurance industry. It is even accepted by very small companies as it enables them to gain a lot of formerly unknown insight into their risk position. One reason for this acceptance is the fact that the SST was developed through close collaboration between the regulator and insurance company actuaries. Another reason is that the FOPI offers many predefined distributions and parameter values that can be used in the standard model, without having to perform a heavy analysis of the company's data. Another facet that gained "publicity" is the applied risk measure "Expected Shortfall" or "Tail Value at Risk," which is used because it is believed to better reflect the risk situation in insurance. The model also incorporates the concept of evaluating additional extreme scenarios, ranging from "mass panic in a football stadium" to "reinsurer default." This is quite a unique concept due to the variety and precise definition of these events. And last but not least, the cost of capital approach, with which the risk margin is calculated in the SST, is most likely to also be used in the Solvency II model.

So how does the SST work? The explanation below gives a rough overview of the SST concept for nonlife insurance and explains the standard model. Of course the FOPI not only allows, but encourages the companies to build an internal model, for which the requirements are currently being developed. The remarkable thing about the standard model is that it is already a stochastic model, which makes the SST unique compared to other countries, where the standard model is usually a deterministic model.

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New Fellows and Associates Honored at the 2006 CAS Spring Meeting

New Fellows, Row 1, from left: Dana Joseph, Sharon Xiaoyin Li, Julie M. Joyce, Thomas L. Cawley, **CAS President Paul Braithwaite**, Carolyn J. Bergh, Slywia McMichael, Christopher A. Pett.

Row 2: Xinxin Xu, William T. Jarman, Henry T. Lee, Joseph Hebert, Christine Cadieux, Chang-Hsien Wei, Denise L. Cheung, Edward P. Lionberger.

Row 3: Douglas H. Lacoss, Bobby Earl Hancock, Michael J. Blasko, Keith A. Rogers, Laurence R. McClure, Christopher A. Donahue.

Row 4: Phillip Jennings, Eric R. Clark, Peter Abraham Scourtis, Louise Frankland, Erik J. Steuernagel, Burt D. Jones.

Row 5: Luke G.C. Johnston, Thomas Marie Cordier, Kathleen Odomirok, Navid Zarineja, Hugues Laquerre, Andrea L. Phillips, Christopher A. Najim, Benjamin G. Rosenblum, James Anthony Heer.

New Associates, Row 1, from left: Sheri L. Holzman, Katherine Yukyue Lin, Kazuko Minagawa, Dolph James Robb, Eric L. Murray, **CAS President Paul Braithwaite**, Lovely G. Puthenveetil, Lang Zhang, Queenie W.C. Huang, Zhikun Wu.

Row 2: Sandra J. Callanan, Feixue Tang, HongTao Wang, Christopher James Platania, Samuel Robert Peters, Kimberly Ann Holmes, Marc-Andre Desrosiers, Alison Jennings, Lori R. Thompson, Angela Mcghee, Rocklyn Tee Altshuler.

Row 3: Rita Bustamante, Todd N. Gunnell, Bryan V. Spero, Vincent M. Franz, David J. Watson, Elizabeth Jill Clark, Jennifer Marie Lehman, Gregory R. Chrin, Christopher J. Cleveland, Nicholas J. Reed, Yazeed F. Abu-Sa'a, Stephen Jacob Koca.

2006 Reserves Call Papers Online

Look for the 2006 Reserves Call Papers on the CAS Web Site and in the 2006 Fall *Forum* this month. The CAS Committee on Reserves issued the call for papers in 2005. Papers relate to the reserving process and deal with the topics of opinion issues; best estimates, variability, and ranges; methodologies; unique or changing exposures; and other matters affecting reserving. Some of the authors will present their papers at the Casualty Loss Reserve Seminar, to be September in Atlanta on September 11-12.

Actuaries Abroad

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Two numbers have to be calculated and compared: The Risk-Bearing Capital and the Target Capital (see figure 1). The Risk-Bearing Capital is basically the free capital at the beginning of the year, calculated as the market value of the assets minus the best estimate value of the liabilities. This is the existing free capital that needs to be compared with the required solvency capital, the so-called Target Capital. If the Risk-Bearing Capital is greater than the Target Capital, the company is assumed to be solvent. If not, regulatory steps have to be initiated.

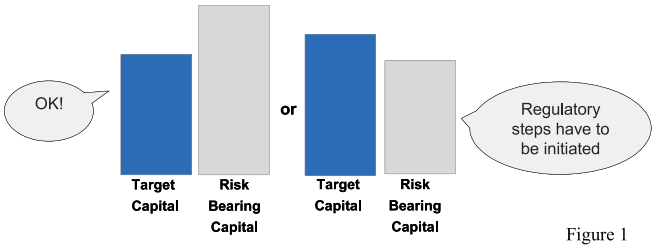

Figure 1

In order to find the Target Capital, one has to answer the following question: "How much capital do I need at the beginning of the year in order to be able to cover the liabilities at the end of the year with 99 percent probability?" This question can be answered by modeling the change in the free capital throughout the year, which is the same as the profit and loss (P&L) result, if all values are market consistent. As a risk measure, the 99 percent Tail Value at Risk is applied. So the main task here is to find the stochastic distribution for the P&L result of the upcoming year (see figure 2).

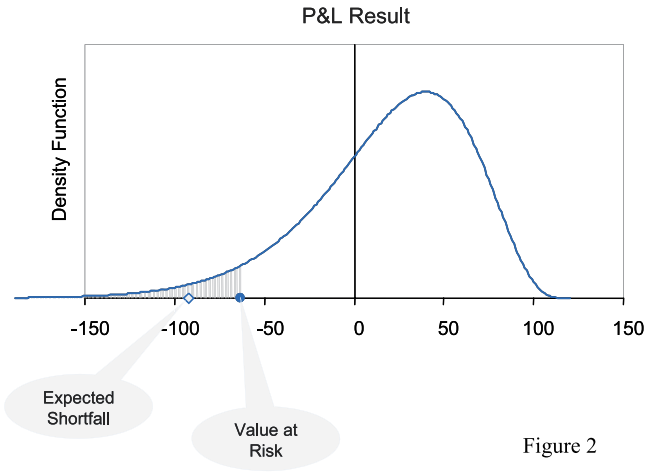

Figure 2

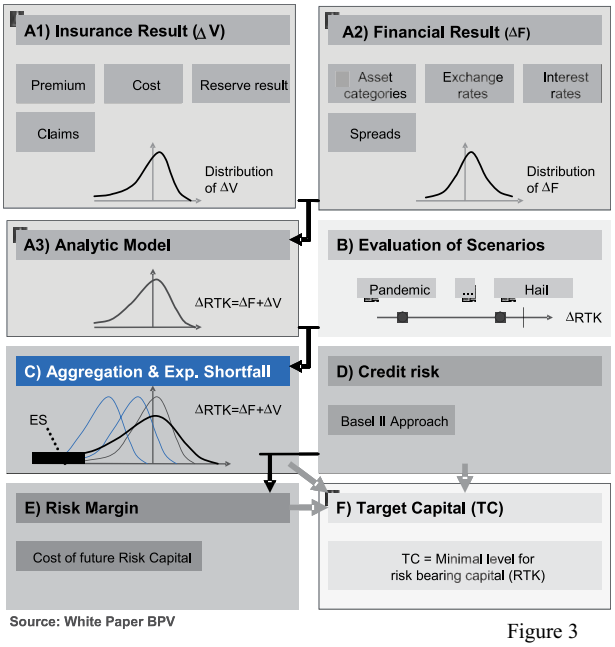

Figure 3

Figure 3 shows an overview of the various steps that have to be performed for the SST.

- The first step (A1) is to find a stochastic distribution for the underwriting result. This is the most complex part of the SST, because it requires finding separate distributions for attritional, large, and catastrophe claims, which then need to be aggregated. However, the Standard Model does make life easier by offering predefined distributions and parameters (e.g., large loss amount Pareto with Pareto parameters predefined for each line of business).
- The second step (A2) is to find the distribution for the asset result. This is easier because a Normal distribution is assumed and only the parameters need to be found. This is usually done by estimating the sensitivities of the different asset risk factors and combining these sensitivities with a predefined correlation matrix in order to find the standard deviation.
- The next step (A3) comprises the aggregation of the asset and the liability distributions to one so-called analytical distribution.
- Step four (B) is the evaluation of the extreme scenarios. Each scenario has a predefined probability of occurrence. For each scenario, one has to find the effect on the free capital if that scenario occurs. There are about ten extreme scenarios for nonlife insurers. Additional scenarios can be added for company-specific hazards.
- In the next step (C), these scenario losses have to be aggregated with the analytical distribution. The result is

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June '06 Courses On Professionalism Sold Out

CAS Offers Additional Course in August

By John Gleba, Chairperson, Committee on Professionalism Education

As many CAS candidates and their employers are now aware, the June 2006 Courses on Professionalism (COPs) scheduled for Chicago and Toronto were sold out in early April 2006. For several candidates shut out of the June courses, the June COPs were the last opportunity to attend the course before completion of all other Associateship requirements. In order to accommodate these candidates, the CAS set up an additional COP in August. This additional COP will be open only to those candidates who have met all requirements for Associate membership as a result of the spring exams and who would be eligible for Associate membership in fall 2006.

This was only the second time in 16 years that both courses were oversubscribed. In response to the situation this year, the Committee on Professionalism Education will be offering an additional course in June 2007 as well as another course in Asia in either 2007 or 2008 for international candidates. The committee will be discussing other options to address periods of increased registration, including possibly implementing online registration for December 2006 COPs.

The committee reviewed the historical number of CAS candidates who have been eligible to take the COPs at various points in time. Our review indicated that the number of eligible CAS candidates has been relatively constant and there does not appear to be a "spike" in eligible candidates. The committee and the CAS staff do regularly monitor the candidate "pipeline." Just last fall, in response to the recent fast growth in the Asian candidate population and the extreme logistical and economic hardship that coming to the U.S. for the COP imposes on them, the committee took the course to Hong Kong, and plans to do so again on a fairly regular basis, in addition to the regular U.S. courses.

Attendance at each COP is limited to a maximum 60 candidates to preserve the course integrity and to provide for a manageable group size to facilitate lively and relevant discussions. Over the last couple of years, the committee has worked very hard to upgrade and reinvigorate the general sessions, particularly now that the COP is the only place in the syllabus for students to learn about a half-dozen key Actuarial Standards of Practice (ASOPs) that once were part of the examination syllabus. The ability to engage the candidates in an interactive way in these general sessions has been repeatedly noted as key to the sessions' success. Expanding the COP to more than 60 candidates per session would erode any benefits obtained from this interactive structure. Additionally, increasing the number of candidates per site is often not feasible simply due to space and cost limitations associated with the various COP locations. Candidates do need to realize that these registration rules are not applied arbitrarily.

The ability to engage the candidates in an interactive way in these general sessions has been repeatedly noted as key to the sessions' success. Expanding the COP to more than 60 candidates per session would erode any benefits obtained from this interactive structure.

In order to ensure that a candidate does not get closed out of attending a COP in sufficient time to obtain their Associate membership, the committee recommends the following:

1) Candidates should register for the course as soon as they are eligible, regardless of the location. Candidates also need to remember that popular locations such as Las Vegas and Chicago sell out quickly. Candidates need to be flexible enough to travel to other locations, even if they are unpopular. In the event that a candidate's employer will only support attendance at a local COP, candidates may need to balance the potential personal cost of attending a COP sooner with the rewards of obtaining an ACAS designation on a timely basis.

2) Employers should be flexible enough to allow the employees to attend the COP as soon as they are eligible, rather than asking them to wait up to a year for the COP to come to a convenient location.

The COP has become a core ingredient of the professional education of both CAS candidates and members. We need to recognize its success, and the value of the efforts that make it a success, and constructively search for ways to expand as a result of a growing demand for its services. AR

'07 ASTIN Colloquium Registration Opens This Fall

Look for registration materials for the 37th ASTIN Colloquium this fall. ASTIN will hold their Colloquium June 20-23, 2007 at the Disney's Contemporary Resort in Orlando, Florida in celebration of their 50th anniversary. The Colloquium will include a joint day with the 2007 CAS Spring Meeting on Wednesday.

The 2007 ASTIN Scientific Committee is continuing to accept papers in response to its call for papers, (http://www.actuaries.org/ASTIN/Colloquia/Orlando/Call_Papers_EN.html). Suggested paper topics include risk management of an insurance enterprise, pricing risk, and liability risk. The complete call identifies a number of subtopics within these broad topics to provide ideas to potential authors. Papers on other topics will be considered by the Scientific Committee and may be accepted at the committee's discretion. Final form papers are due to the Scientific Committee by January 31, 2007.

The Colloquium's social program plans include an exciting trip to the Kennedy Space Center for all attendees on Thursday afternoon as well as the Jubilee celebration dinner on Friday night at Epcot. More than 250 delegates from over 30 countries around the world are expected to participate. We invite you to join us for this international educational event and celebration.

Disney's Contemporary Resort ©Disney

Please visit www.IAA-ASTIN.org and click on the ASTIN 2007 banner for more details on the 37th ASTIN Colloquium.

Random Sampler

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The CAS Professional Education committees are already looking at these types of initiatives and other ways to improve our continuing education programs. For instance, the Spring 2006 meeting in Puerto Rico featured focused education "tracks" on reserve variability and enterprise risk management that enabled attendees to gain greater depth in specific topics than is typically possible with our traditional meeting formats. The CAS Board of Directors and Executive Council are currently engaged in discussions about making substantial investments to enable further improvements in our continuing education offerings.

If you have ideas about how we can make continuing education more relevant and efficient for our members, we'd love to hear about them. Please feel free to contact me or any member of the CAS leadership or Professional Education committees.

Thomas G. Myers is the CAS President-Elect and the former Vice President–Admissions.

Actuaries Abroad

From page 18

a distribution function where the 99 percent Tail Value at Risk now can be applied. We then get a number for the Target Capital. It is not the final number, since the results of the two next steps first have to be added.

- Step D is the calculation of the credit risk. This is done according to Basel II and results in one number.
- There is the requirement of calculating a risk margin (step E), which is needed in order to handle the run-off risks of the company in case of insolvency. This risk margin is also one number and is calculated with the Cost of Capital approach.
- Finally the numbers generated by steps C, D, and E are added and we get our result, which is the SST Target Capital.

A further field test is planned for 2007. In 2008-2010 the SST will become mandatory. The actual need for covering the Target Capital with free capital will be enforced in 2011. These are exciting years for all actuaries involved in these developments and it will be interesting to see how Solvency II and SST will match and influence each other.

Pursuing Reality

Steve Armstrong is not shy. Five years ago this column described some of his adventures in improvisational theater. Now he is attempting to become a contestant on reality TV!

Steve has always wanted to be on television, the big screen, or the stage. Apparently that is not as easy as passing actuarial exams. Along came reality TV. He was attracted by the thought that he could be on TV as himself and participate in games that paid off nicely if he won. While the money was an incentive, he was even more intrigued about the strategic elements of the shows and what he could learn about himself were he to become a contestant.

After watching the first season of *Survivor* in 2000, Steve decided that participating would be an amazing experience. Season two was already cast, so he sent in the audition tape and application for season three in Africa. This was his first rejection. He next applied for *The Amazing Race*, where each contestant races around the world with a family member or friend, and *The Apprentice*, where one competes with corporate Type A people for a chance to work for Donald Trump.

Survivor and *The Amazing Race* each required a three-minute video with the application. *The Apprentice*, however, required an audition. He awoke at 4 a.m. one Saturday in March 2004 and took a taxi to the NBC Tower in Chicago to wait in line for the open casting call for season two. Arriving at 5 a.m. in his best business attire, he surmised that he was really late, as he estimated that there were about 500 people ahead of him in line. Apparently, the line had been forming since the day before. Steve immediately started bonding with those around him, who, like himself, were mostly people by themselves. They waited outside until about 2 p.m. before getting inside the building where they waited another hour. They talked to people who had already come out of the interview to try to figure out what to expect. They learned there would be a group interview of 12 people per table, who would discuss two topics. They also learned people were being asked questions concerning ethics in business, gender equality in business, defining success in business and the like.

The big moment finally came as they stood outside the door leading to the interview room. A man from NBC counted off, placing them in groups. Unexpectedly, the man skipped over Steve and the man behind him, placing them in a group of 12 contestants not even remotely close to the friends the two had made for the last ten hours. Slightly panicked, Steve introduced himself to the ten others in his group in the moments before the big group interview—already a twist in the game and he had not even interviewed yet!

Arriving at 5 a.m. in his best business attire, he surmised that he was really late, as he estimated that there were about 500 people ahead of him in line.

Six men and six women sat around a table with a casting director who asked them to introduce themselves in gunfire fashion, allowing only 20 seconds each. The casting director then lobbed the first practice question. The topic was same-sex marriage. Instantly, everyone started jockeying for position to extol the virtues or nonvirtues of the issue. Trying to be polite, Steve took everything in and got the last thought of the group out on the table, which was not only good timing, but also an original thought! Then, not wanting to jeopardize the chance to get out his thoughts for the next question concerning business ethics, he jumped at answering it first and did so explaining why he thought ethics

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25 Years Ago in *The Actuarial Review*

Who Are We?

By Walter C. Wright

In the August 1981 issue of the AR, both the "Guest Editorial" and the "Random Sampler" discussed the importance of defining "actuary."

Frederick W. Kilbourne, in his "Guest Editorial," wrote:

The definition of an actuary is more than a parlor game. The public has a right to know why we think we constitute a profession, and why they should care. Our identity crises will do us in if not resolved, for a tiny house, divided against itself and built on a swampy foundation, has a dismal future. If we are a unique and necessary profession, in what way are we unique, and why are we necessary? If we cannot clearly define an actuary, how can we say who is *not* an actuary? We need to decide who we are…

Several years ago, at a joint meeting of the Casualty Actuarial Society and the Society of Actuaries, I suggested a definition of the actuary as "that professional who is trained in evaluating the current financial implications of future contingent events." Clearly more melodious to the actuary than to the man-on-the-street, this definition follows from identifying the common thread in all the actuarial exams. Its heart can be expressed symbolically as QAV, where the first term represents the probability of the contingent event, the second its financial implications, and the third the transition to current value. Though its heart is technical, as are ours, its body can be seen to encompass essentially all actuarial work now being done—and much that is being left undone. Yet the definition satisfies the uniqueness test, apart from minor border disputes with economists and risk managers. It seems to me adequately to describe "who we are" though I recognize it may better to describe "who we might be."

C. K. Khury, in his "Random Sampler," wrote:

It seems to me man discovered the need for actuaries a century or so ago to keep the life insurance transaction on a sound footing. Today, that need has mushroomed into a number of different direction[s]: property, casualty, pensions, life, health, group, etc. All of these disciplines seem to have emerged in response to some *yet-to-be-defined* need...

We need to decode the word actuary and identify the need actuaries attempt to fill. My humble offering:

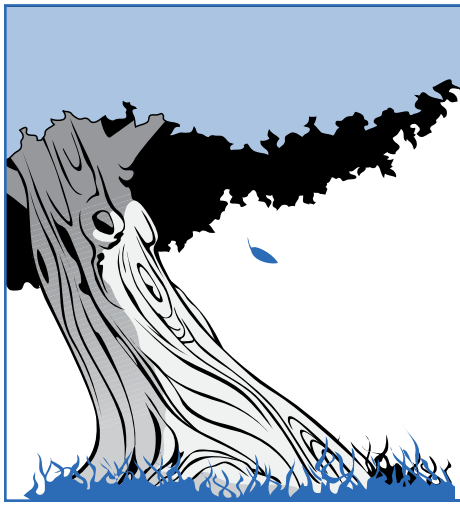
"Actuarial science is concerned with systems (for meeting society's need) to manage uncertainty."

Thus, an actuary could be described as a professional concerned with systems to manage uncertainty…

I believe we must make it our urgent business to agree on—and periodically update—what we're all about; what makes actuaries unique and necessary.

My personal prejudice is for us to seek the broadest possible definition and challenge the actuarial profession to fill the space better than any other group of professionals. All specialties can become special interest sections within the broad framework of the profession: the life section, the pension section, the property section, the reinsurance section, and so on.

If this framework is ever espoused, can reorganization of the actuarial profession be far behind? AR



CAS Professional Education Calendar

Bookmark the online calendar at www.casact.org/calendar

September 11-12, 2006
Casualty Loss Reserve Seminar
Renaissance Waverly Hotel
Atlanta, Georgia

October 4-5, 2006
Special Interest Seminar on
Predictive Modeling
Westin Copley Place
Boston, Massachusetts

November 12-15, 2006
CAS Annual Meeting
Hyatt Regency San Francisco
San Francisco, California

March 8-9, 2007
Seminar on Ratemaking
Hyatt Regency Atlanta
Atlanta, Georgia

June 17-20, 2007
CAS Spring Meeting
Disney's Contemporary Resort
Lake Buena Vista, Florida, U.S.A.

June 20-23, 2007
ASTIN Colloquium
Disney's Contemporary Resort
Lake Buena Vista, Florida, U.S.A.
www.IAA-ASTIN.org

Sherman's Reserve Runoff Ratio

Richard Sherman writes a regular feature for *Business Insurance* titled "Ask An Actuary." In a recent article, he discussed a reserving methodology he calls the Reserve Runoff Ratio. The method is intriguing, both in terms of the method itself, as well as the way it motivated interesting questions. The reader will find this column much easier to follow if you read his article first—it can be found at http://www.richardsherman.com/page.php/5.

Assume you are asked to estimate the reserve on a block of business comprising eight accident years, but you are not given complete loss development triangles. You only have the latest four diagonals of outstanding losses, plus the incremental paid in the last four calendar years. Note that this means you do not have either a complete paid triangle, or a complete incurred triangle. You can calculate traditional age-to-age paid and incurred factors for only three accident years.

At this point, I am torn between wanting to reject the assignment, and wanting to see how Richard is going to attack the problem. I've always been fascinated by problems in which it appears there isn't enough information, and this fits the bill.

As Richard says, "The runoff ratio method is based on the idea that for the older AYs there may be a fairly stable relationship between incremental payments during each CY and how much the case reserves decline over that same CY." Ignoring true IBNR for a moment, if the case reserves are exactly adequate, then the paid in a calendar period would exactly offset the drop in case reserves. Form the ratio between the incremental paid and the drop in case reserve, and call this the "runoff ratio." This ratio represents how many dollars of payments it takes to "dispose" of a dollar of case reserves.

In Richard's example, these ratios are reasonably stable beyond a certain age. Each dollar reduction in case reserve is accompanied, on average, by 1.50 in payments. For years beyond the certain age, the estimated reserve is simply the product of the case reserves and the selected runoff ratio. He goes on to show how to calculate paid and incurred tail factors from the older years, to apply to the more recent years where the age-to-age factors can be calculated in the usual way.

Returning to the issue of true IBNR, it turns out not to be a problem if the amounts are relatively small compared to the case reserves. This will often be true for older accident years. In those years, one still calculates the runoff ratio, it simply has a different interpretation. When true IBNR exists, the runoff ratio will exceed 1.00 even if the case reserves are precisely accurate. However, if the ratios are stable, the method will still produce an estimate of the total reserve, including IBNR.

I've always been fascinated by problems in which it appears there isn't enough information, and this fits the bill.

There must be a downside, and there is. If not, we would be in the odd position of arguing that we can throw away much of our data and still be able to produce as good an estimate as traditional methods. In the example given the ratio are remarkably stable beyond 36 months. What if they are not stable? It is not unusual to see case reserves increase between periods, even when there are payments. The ratio in this case will be negative. In fact, negative values are more common that not in the immature periods. This is not a problem when confined to the early ages, as those values are not used in the method. But if a negative appears at a more mature evaluation, it may indicate that the results are too unstable to use the method. Keep in mind that a

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Brainstorms

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negative should not even be thought of as an abnormally low value, but an abnormally high value. The temptation to exclude it as anomalous is not a conservative decision.

While negative values are a problem, at least they fly a red flag letting you know something is wrong. Potentially worse than negative values are values that appear reasonable but mask underlying problems. If case reserve adequacy is dropping, reserve runoff ratio may appear reasonably stable, yet too low.

It is tempting to want to address the true IBNR issue by asking for data on a report-year basis, or at least separating out the true IBNR. However, any company unable to supply complete triangles of paid and incurred is unlikely to be able to provide this level of detail.

I was initially surprised that Richard selected an average ratio and applied it to several accident years. Should one expect that, after a certain age, the ratio of ultimate loss to current case reserve will be the same? That sounds like a heroic assumption—it would be interesting to test this on actual data sets to see how it performs.

I've emphasized potential concerns with the method (and I'd like to re-emphasize that any practitioner should ask pointed questions to determine why more complete triangles are unavailable). I'd like to return to a more positive view—the method is ingenious, and, under the right circumstances, produces a plausible reserve estimate despite severe data limitations. It is interesting enough that I'd encourage actuaries not to use it only when the data is so limited, but to apply the technique as an additional view even when compete triangles are available. It may well prove insightful.

Nonactuarial Pursuits

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trumped all else in business these days.

After this second round of discussions, they all voted for the person they thought did the best job answering the questions and explained why he or she would be a great project leader. Steve received five votes, as did the man next to him, with two others receiving a vote each. Steve believes he was given so many votes because of his age (32 at the time, about six years older than the average contestant) and his work experience. Twelve years with the same company is atypical, so, feeling a bit old, but feeling good about the votes, he walked out and hoped for a phone call inviting him to the next stage. Unfortunately, no such phone call ever came. (He even answered out-of-area calls on his caller ID.)

He still enjoyed the experience because it was exciting to meet the people and bond with them prior to the interview and see how diverse their backgrounds were. At the interview itself, he was amazed at how rude people could be by talking over one another and trying to be the most outrageous in answering questions. He was glad he did not go against his character just to try and get the casting director's attention.

Steve has not given up, however. Having been an aspiring filmmaker for a while, he is gung-ho about a new reality show with Steven Spielberg, called *On the Lot* to find America's next great director. The application is not yet out, but he expects that a short film of sorts will be required. He will try to impress the producers enough with his amateur filmmaking on his Apple computer to compete with those who have gone to film school and know all the techniques. He has already made quite a few short videos for work. Good luck Steve!

Steve Armstrong's day job is senior actuary, product pricing, at Allstate Insurance

Chance Encounters

By Jeff Adams

Update on the Actuarial Foundation

Awards, Mentors, and Retirement

This quarter the Actuarial Foundation reports on the winners of two new awards, the need for mentors, and a new retirement planning publication.

ERM Research Excellence Award

The Actuarial Foundation presents an award for the best paper submitted in response to a call for papers, issued in conjunction with the ERM Symposium. This paper is recognized for excellence and for its significant contribution to the growing body of ERM knowledge and research. The Actuarial Foundation's first ERM Research Excellence Award and $4,000 prize was presented at the general session of this year's ERM Symposium to its first recipient, William Panning, for his paper titled "Managing the Invisible: Measuring Risk, Managing Capital, Maximizing Value."

To view this award winning scientific paper visit http://www.actuarialfoundation.org/research_edu/prize_awardArticle.htm.

Wynn Kent Public Communication Award

The Wynn Kent Public Communication Award is given out annually to recognize a member of the actuarial profession who has contributed to the public awareness of the value of actuarial science in meeting the financial security of society in the fields of life, health, casualty, pension, and other related areas. The intent of this award is to encourage actuaries to engage in activities that highlight the actuarial profession's role in financial security issues benefiting the public.

Anna Rappaport, FSA, MAAA, is the first recipient of the Wynn Kent Communication Award. Her contributions on financial risk issues and communicating the work product of the actuarial profession have been numerous.

For more information about the Wynn Kent Communication Award or to make a nomination, visit the Foundation's Web site at www.actuarialfoundation.org/research_edu/prize_award.htm#kent.

Kids Like to Work With Actuaries!

Actuaries are needed as mentors for Advancing Student Achievement mentoring programs in several areas: Chicago, IL; Washington, DC; Cleveland Heights, OH; Philadelphia, PA; Lexington, KY; West Greenwich, RI; Hillside, NJ; New York, NY; Pittsburgh, PA; Atlanta, GA; Phoenix, AZ; and Houston, TX.

For more information or to see if your help is needed in a community near you, please call the Foundation office at (847) 706-3535 or visit their Web site at www.actuarialfoundation.org/youth/call_for_mentors.htm.

Taking the Mystery out of Retirement Planning

The Actuarial Foundation is pleased to announce the availability of a new publication, *Taking the Mystery Out of Retirement Planning*. This publication, developed by the Department of Labor (DOL), focuses on a topic that is often overlooked, the transition period prior to retirement. The Foundation commends the DOL for focusing on the uncertainties and risks during retirement, the need to think about survivor benefits, and their analysis of the implications in delaying retirement. To download a copy of the booklet, visit www.actuarialfoundation.org/consumer/retirement-planning.html. AR

Third Annual Predictive Modeling Seminar Comes to Boston

By Chuck Boucek, Committee on Special Interest Seminars

Because the first two seminars were tremendous successes, the CAS will conduct the third annual Seminar on Predictive Modeling on October 4-5, 2006 at The Westin Copley Place in Boston, Massachusetts.

Predictive modeling, a process by which one uses statistical analysis of data to make predictions about future events, is firmly seated in the operations of many insurance companies. With the advent of external data sources, computing power, and advanced statistical methodologies, we now can find patterns not previously perceptible.

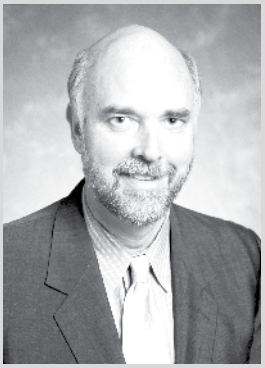
The evolution of predictive modeling in insurance began with the development of automobile underwriting models that employ credit data to improve decision making. Since then, predictive modeling has branched out in a number of different directions: marketing, pricing, fraud detection, retention, cross-sell analyses, and claimes reserving. Some models incorporate external data sources other than credit.

While focusing on business strategies behind predictive modeling projects, data sources, and model implementation, this seminar will also educate attendees and provide further discussion on predictive modeling techniques relevant to insurance companies.

Basic- and intermediate-level sessions will be offered covering such predictive modeling and analytic techniques as GLMs, CART, MARS, Neural Networks, GAMs, clustering, principal components analysis, bootstrapping, and model validation.

Complementing these sessions on techniques and analysis will be practical sessions on specific lines of business, applications beyond pricing and underwriting, predictive modeling project management and implementation, and predictive modeling data issues.

Venter Awarded Prize from IAA



Gary G. Venter

Gary G. Venter has been awarded the International Actuarial Association's (IAA) Bob Alting von Geusau Memorial Prize. A section of the IAA, the Approach for Financial Risks (AFIR), presents the prize each year for the best contribution to the ASTIN Bulletin on a subject related to AFIR.

Venter won for his paper, "Testing Distributions of Stochastically Generated Yield Curves." He received the award at the 28th International Congress of Actuaries in Paris last May.

Venter is a managing director in Guy Carpenter & Company Inc.'s Instrat unit in New York. He was recently named the associate editor-development for the new CAS journal.

CAS International Calendar

Bookmark the online calendar at www.casact.org/calendar

Aug 4-5, 2006
International Association of Black Actuaries 13th Annual Meeting
Crowne Plaza Ravinia
Atlanta, GA

September 14-17, 2006
4th Conference in Actuarial Science & Finance on Samos
Jointly organized with the Katholieke Universiteit Leuven, the Université Catholique de Louvain, and the Københavns Universitet
University of the Aegean, Department of Statistics and Actuarial Science
Samos, Greece
www.actuar.aegean.gr/samos2006

Sep 18-20, 2006
Seminar of the European Group Risk & Insurance Economists (EGRIE)
University of Barcelona
Barcelona, Spain

June 20-23, 2007
ASTIN Colloquium
Lake Buena Vista, Florida, U.S.A.
Disney's Contemporary Resort
www.IAA-ASTIN.org

Actuaries and ERM

By Arthur J. Schwartz

It may seem fairly obvious that actuaries are risk measurers. The most basic pricing or reserving approaches involve assessing future costs and applying, implicitly or explicitly, a load for risk—specifically, a provision that events may turn out differently than expected. Indeed, a key thrust of casualty actuarial science since the inception of the CAS in 1914 may well be stated as improving our measurement of risk for specific lines of business.

What is less obvious is that actuaries can and also should be corporate risk managers. A new branch of actuarial science is springing up devoted to risk measurement for the organization as a whole. New actuarial tools are being developed to study how different levels of risk affect the short-term and long-term value for the firm. While some of the previous modeling tools emphasized the detailed modeling of loss distributions, the new tools additionally incorporate the modeling of corporate financial value.

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What's the Difference?

The difference between DFA and ERM is that DFA seemed to emphasize the creation of sophisticated models for the corporation and the study of interactive effects between various financial variables, yet without any specific objective. For example, if severity increases, while frequency remains flat, how will that affect my future loss ratio, reinsurance program, and surplus? How will it affect IRIS ratios or RBC? ERM is uniquely suited to answer these questions. According to Bill Panning of Willis Re in New York, ERM builds on DFA by studying the specific combination of surplus and reinsurance that a) is optimally suited to the corporation's risk profile and b) that maximizes the value of the corporation to its stakeholders. Those stakeholders may be shareholders for a stock company or policyholders for a mutual.

Who's Best for the Job?

At first glance, it may seem that accountants are better suited than actuaries to model financial statements. Yet accountants are always looking over their shoulders and assessing the historical costs of the firm's decision-making, which is not always easy! Indeed a provocative insight is that the value of a firm today is a function of its cumulative past risk management decisions.

Enter the actuary! The value of ERM is to assess how the "net present value" (NPV) of the firm can be enhanced by making forward-looking risk management decisions. The NPV can be calculated by modeling a scenario (such as expected loss ratios, capital levels, investment returns, or varying reinsurance programs) and calculating the discounted present value of future cash flows. The ERM-oriented actuary can even assess how the firm would have fared in the past had it made different decisions on any one or a combination of these variables. Once the ERM-oriented actuary develops a plan, the implications need to be presented to management, feedback obtained, and the results communicated to all employees. Working in an ERM-oriented firm is dramatically different than working in a conventionally oriented firm. Each person understands precisely the roles played in maximizing the firm's value and how these actions enhance or reduce that value. AR

JOHN P. ROBERTSON

Win $1 Billion, Probably

Jon Evans created this puzzlement; it's more of a challenge than it might appear. Kelly is a billionaire casino owner. He offers his friend Edward a wager. Edward can bet any fraction from zero percent to 100 percent of an initial $1 (pennies are infinitely subdivisible). A highly weighted coin is flipped with only a one in 1,000 chance of coming up heads. Heads up pays 1,001 times the fraction bet and tails means the bet is lost. For example, if Edward bets 20 percent on the first flip, heads up leaves him with $200.20 + $0.80 = $201.00 and tails would leave him with just $0.80.

Kelly agrees to sequentially repeat the bet for a fixed number of times where each time Edward bets the same fraction of his total remaining wealth, net of gains and losses from the initial $1. Edward must pick the fraction and the number of bets before the betting begins and cannot stop the betting early or change the fraction bet once the betting begins.

Edward picks a fraction bet and a number of bets so that he has at least a 99.9999% probability of having at least $1,000,000,000 in the end. What fraction and number of bets could Edward have chosen? What combination of fraction and number of bets corresponds to the minimum number of bets Edward might have chosen?

In Memoriam

Norman J. Bennett, FCAS 1956
April 20, 2006

Barbara A. Seiffertt, ACAS 1976
April 20, 2006

Solution to Game for Four Students

The puzzle was that four CAS students, Paula, Quentin, Richard, and Sally, would win a prize if each one succeeded at the following task. One by one they are taken into a room where there are four curtains, numbered 1 to 4. Four cards, each with one of the letters P, Q, R, and S, one card with each letter, are randomly placed behind the curtains, one card behind each curtain. Each student is allowed to look behind two curtains of their choosing. If they find a card with the first letter of their name behind one of the two curtains, they succeed. If all four students succeed, the group wins. If any student does not succeed, the group loses. The puzzlement was to determine a strategy the students could use that would give over a 40 percent probability of winning.

David Uhland's solution is as follows. Associate the numbers 1 to 4 to the students and the letters on the cards in alphabetical order, so Paula and P are 1, Quentin and Q are 2, Richard and R are 3, and Sally and S are 4. Each student, in turn, first looks behind the curtain with the number associated to their name. If they see the card with the first letter of their name, they have succeeded. Otherwise, they look behind the curtain associated with the letter they find. For example, if Paula finds the letter "S" behind curtain 1, she then looks behind curtain 4. You can check that of the 24 permutations of the four letters, amazingly, the group will succeed in 10 cases, or 41.7% of the time. For those who remember their (mathematical) group theory, these 10 permutations are those that only involve "1-cycles" or "2-cycles."

Robert Ballmer, Rachel Berkowitz, Jon Evans, Steve Fallon, John Ittner, Rob Kahn, Ryan Knight, Jon Marshall, Karl Moller, Brian Montigney, David Oakden, Eric Savage, and William Wilder, also sent in solutions. AR

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