



SOCIETY OF ACTUARIES

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Modeling Economic Series Coordinated with Interest Rate Scenarios

by Steven C. Siegel, SOA Research Actuary

The SOA's Committee on Finance Research recently made available the results of a research study that explores economic series and provides an Excel-based tool for generating future economic scenarios. The study, which was jointly sponsored by the SOA and CAS, was conducted by the team of Kevin Ahlgrim of Illinois State University and Stephen D'Arcy and Richard Gorvett, both of the University of Illinois.

The genesis of the study was a request for proposals issued by the sponsoring organizations in May 2001. Both sponsoring organizations issued the request for proposals due to the motivation generated by the importance of this topic to the actuarial profession and the broader insurance community.

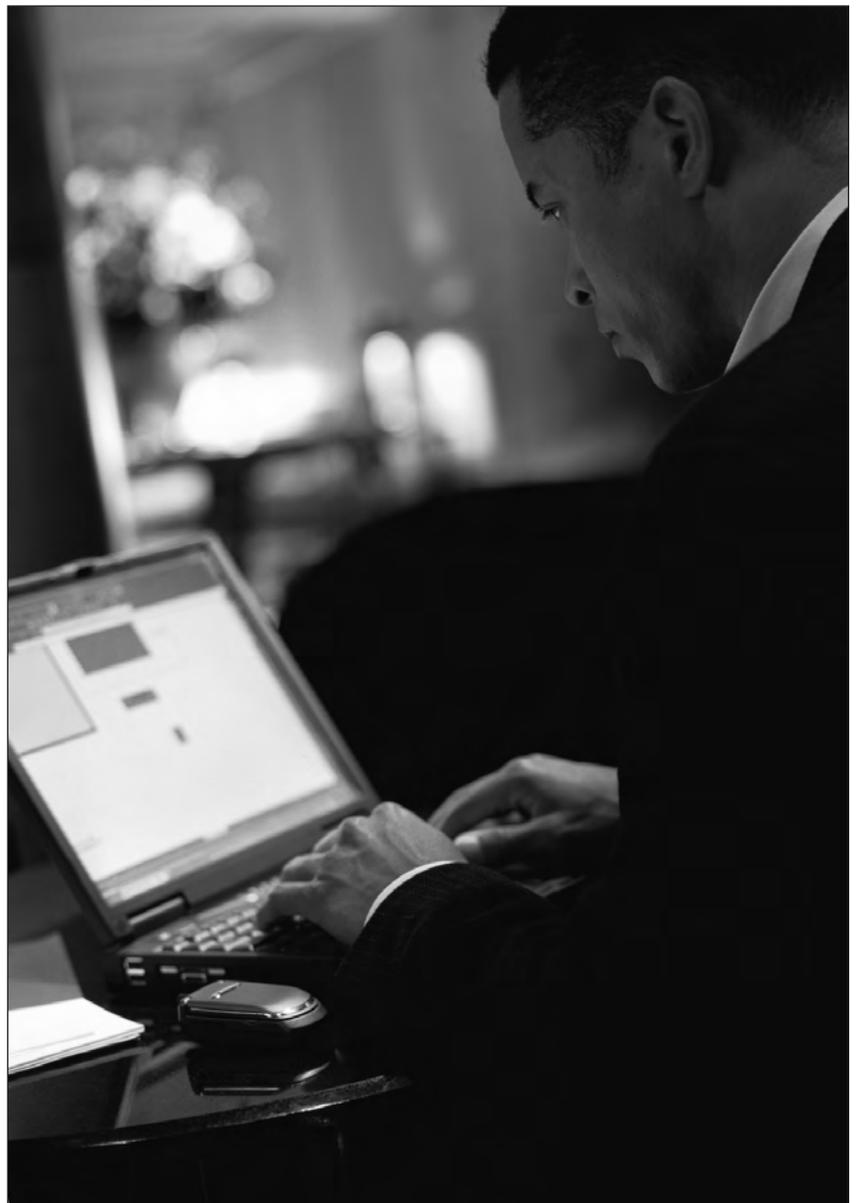
In particular, the generation of scenarios is critical for regulatory, rating agency and internal management tests of an insurer's potential future operating conditions. An example of a direct application of scenario generation is cash flow testing to assess an insurer's cash position over a wide range of future economic and financial possibilities. Scenario generation is also critical for Dynamic Financial Analysis (DFA), an area of continued interest by many within the actuarial community.

Besides the essential need for generation of economic scenarios in these settings, the sponsoring organizations were also deeply interested in further advancing the state of the art in scenario modeling. Specifically, the interaction of economic variables including interest rates, equity price levels, inflation rates, unemployment rates and real estate price levels among others is an aspect that bore considerable interest. Although previous models may have performed very well for any one of these economic variables, the goal in this effort was to realistically model the correlation of all of them. Given this lofty charge, the model resulting from the study should be viewed as a demonstration of concept, rather than as a standard for use by actuaries or to supplant the use of other models.

Key aspects of the study included a comprehensive literature review of relevant articles, derivation of the underlying theoretical calculations to be generated by the model, and development of the Excel workbook to program the calculations. Reviewers representing both the SOA and CAS provided feed-

back to the research team throughout the course of the study. This included suggestions for appropriate articles for the literature review, guidance on issues that would be of specific interest to insurance companies such as the New York 7 tests, and the choice of the particular interest rate model.

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Steven C. Siegel, ASA, MAAA, is a staff research actuary with the Society of Actuaries in Schaumburg, Ill. He can be reached at ssiegel@soa.org.

The complete material can be downloaded from the SOA Web site in the Finance Research projects section at: <http://www.soa.org/ccm/content/areas-of-practice/finance/mod-econ-series-coor-int-rate-scen/>. Because of the complexity of the calculations and the statistical nature of the information outputted, an Excel add-in, @RISK, is needed to utilize the workbook. @RISK is available for purchase at www.palisade.com. The workbook includes default values of appropriate parameters. However, these can be changed by the user for purposes of updating for new or additional data, sensitivity testing of parameter values and other user needs.

For users that do not wish to purchase @RISK, the research team has included an appendix in the form of an Excel spreadsheet that contains hundreds of scenarios of financial and economic variables generated as output from the model. The appendix, which is approximately 30 megabytes, may either be downloaded from the SOA Web site or is also available as a CD-ROM by writing the SOA office.

As with all projects, the SOA Investment Section Research Team would love to hear your feedback on this project and thoughts for future efforts. Please feel free to contact me at 847-706-3578 or ssiegel@soa.org with your ideas and suggestions. ☺

CHAIRPERSON'S CORNER

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and our primary motivation for this is to recruit investment professionals to join our section. We think this would bring significantly more value to our current members, allow for more breadth and depth of session content at meetings, and allow actuaries to have greater visibility with investment professionals.

- Revising the Investment Actuary Symposium. This seminar will be held in New York in the spring of 2006 and we will start our planning process for this symposium within a couple of weeks. This symposium will have multiple tracks of sessions that will appeal to a wider range of attendees than we have had in the past, such as portfolio managers, risk managers, ALM practitioners and others who have a need for up-to-date information on investment related topics. We view this symposium as our signature event for the year and we will be interested in recruiting members for speaking at this event!

- Getting more input from our members, so we are in the process of developing a survey (yes, another dreaded survey!). This will be a key tool that we will use to get input from all of our members.
- Developing the value proposition for non-SOA members to join our section and determining what that might mean for our current members, for future activities, and so on.



Michael J. O'Connor, FSA, MAAA, is a consulting actuary with Towers Perrin in Minneapolis, Minn. He can be reached at Mike.OConnor@towersperrin.com.

Some of the key issues that we are working on include:

How can you help?

There are a variety of ways that you can help respond to these issues! In one way or another, we need more volunteers for committee work, for research activities, for session ideas, and definitely for speaking at the many sessions that we sponsor. With our section's increased responsibilities, we need more volunteers to help us.

This is clearly a time of transition for the Investment Section, and we welcome your input, thoughts and volunteerism to help us meet the many challenges that lie ahead of us. Thanks for your support. ☺