Seminar
"Stochastic Modeling – Theory and Reality from an Actuarial Perspective"
20-22 November 2013 | Dublin/Ireland

Organised by the EAA - European Actuarial Academy GmbH in cooperation with the Society of Actuaries in Ireland

1. Introduction

As recently as the mid-1990s, most models used in financial analysis of insurance were deterministic. Based on sets of static parameters and assumptions, these models largely ignored random fluctuations that were likely to occur. Sensitivity analyses were performed but were generally limited to a fixed number of defined scenarios. This deterministic approach is rapidly being replaced by stochastic modeling that can better inform insurers on pricing, financial planning, and capital assessment strategies. Huge advancements in computing power have made it possible for actuaries and financial planners to better understand the increasingly complex risk profiles of insurers' evolving product design.

This seminar is based on the book "Stochastic Modeling – Theory and Reality from an Actuarial Perspective" (copyright © 2010 International Actuarial Association) which intends to provide actuaries with a comprehensive resource that details current stochastic methods, provides background on the stochastic technique as well as their advantages and disadvantages.

2. Participants

The seminar is suited for actuaries, actuarial students and other professionals involved and interested in actuarial modeling in life and non-life.

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3. Purpose and Nature

The seminar will cover a wide range of topics presented in the book "Stochastic Modeling – Theory and Reality from an Actuarial Perspective". The first day of the seminar will focus on risk management and actuarial modeling issues. The day will start with an introduction to stochastic modeling, including a practical discussion of when stochastic models are appropriate or necessary and when they may not be. The day continues with a case study designed to be of interest to actuaries in all practice areas.

The second day (and the morning of the third day) of the seminar will be split into two separate sessions, one that will focus on life actuarial issues and the other will focus on non-life actuarial issues. In the life session, the lecturers will present stochastic models for interest rates, mortality, and morbidity, among other risk factors, and will demonstrate how these models can be developed, calibrated, implemented and reviewed. This will also involve detailed case studies illustrating the use of stochastic models in life and health business.

In the non-life sessions, the lecturers will present an overview of stochastic models, including triangle based, frequency / severity, catastrophe financial and dynamic risk models, and will demonstrate how these models can be developed, calibrated, implemented and reviewed. Building on this overview, the lecturers will then take you through a deeper look at the Mack and ODP Bootstrap models and discuss the calculation of one-year reserving risk. As with the life session, the early sessions will focus on the technical aspects of stochastic models and the later sessions will be a case study format intended to demonstrate the practical application of these models.

The third day will continue the separate life and non-life sessions in the first session. In the second session, we will again have a joint session to discuss a concluding case study.

All participants will receive a copy of the book "Stochastic Modeling – Theory and Reality from an Actuarial Perspective" which is presented by the International Actuarial Association (IAA) in collaboration with Milliman. A guide for practitioners interested in understanding this important emerging field, this book presents the mathematical and statistical framework necessary to develop stochastic models in any setting (insurance or otherwise). Sufficient mathematical detail is presented but no advanced background in mathematics or statistics is required.
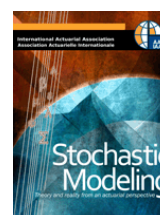
4. Lecturers

Andrew H. Dalton
Is an Actuary in Milliman's Philadelphia office and a primary author contributing to Life sections of the book "Stochastic Modeling – Theory and Reality from an Actuarial Perspective". Andrew's professional experience includes work on actuarial appraisals for mergers and acquisitions, asset and liability analysis, cash flow testing, and economic capital for life and health companies. Andrew is a Fellow of the Society of Actuaries and a Member of the American Academy of Actuaries. He holds a Masters Degree in Business Administration, concentrating in Finance and Statistics, from the Leonard N. Stern School of Business of New York University.

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Mark R. Shapland
Is a Consulting Actuary in Milliman's Atlanta office and a primary author contributing to Non-Life sections of the book. Mark's area of expertise is non-life insurance, particularly pricing (personal and commercial lines), reserving (including reserve variability and asbestos liabilities), individual risk and association-type dividend plans and premium rates for large accounts, reinsurance, data management, and dynamic risk modeling. Mark has international experience, having worked in Europe for four years, as well as shorter assignments in many other countries. He also has extensive experience in the development of actuarial software tools and is the lead actuary for the Milliman Reserve Variability software development team. Mark is a Fellow of the Casualty Actuarial Society, an Associate of the Society of Actuaries and a Member of the American Academy of Actuaries.

Jeffrey A. Courchene
Jeff's area of expertise is international property and casualty insurance: particularly reserving, reinsurance analysis, mergers and acquisitions (M&A) activity, advanced pricing techniques, and dynamic financial modeling. Jeff has extensive experience in matters related to both personal and commercial lines of business in the United States, United Kingdom, Middle East, and continental Europe. His experience includes leading the review of reserves of various European (re)insurers as part of due diligence assignments, leading dynamic financial modeling projects both in the United States and Europe, and contributing to Milliman internal Solvency II working party as an author and presenter. Jeff is a Fellow of the Casualty Actuarial Society and a Member of the American Academy of Actuaries.

Dr. Florian Ketterer
Florian graduated in mathematics from the University of Karlsruhe and got his PhD from the University of Marburg. He began his career at Generali Germany, where he worked on stochastic modeling. After 2 years at Generali, he moved to Milliman Dusseldorf. Florian consults his Clients on Least Squares Monte Carlo, Replicating Portfolios and Prophet model implementation work such as asset modeling or liability tariff options.

Dr. Mario Hoerig
Mario specializes in modelling financial and insurance risks of life insurance. He advises his clients on risk aggregation, asset modelling, Solvency II implementation, and calculation of MCEV. Mario has given several talks on risk aggregation techniques such as Least Squares Monte Carlo at actuarial seminars.

5. Language

The language of the seminar will be English.

6. Preliminary Programme

Wednesday, 20 November 2013

	Joint Session (Andrew Dalton)
12.00 – 12.45	Lunch
12.45 – 13.00	Registration
13.00 – 13.15	Welcome and opening of day 1
13.15 – 15.00	Introduction to Stochastic Modeling – when should it be used?

Technical Background for Stochastic Modeling:
> Stochastic Techniques
> Monte Carlo Simulation
> Binomial Models

Introduction to Interest Rate Models

15.00 – 15.15	Coffee break
15.15 – 17.00	Interest Rate Case Study

> Selection of interest rate generator
> Calibrating the model
> Discussion of principal components analysis
> Generating the scenarios
> Option pricing examples
> Participants will work on Excel-based examples

approx. 19.00	Dinner

Thursday, 21 November 2013

	Life Session (Mario Hoerig / Florian Ketterer)
08.45	Opening of day 2
08.45 – 10.45	Theoretical background of Mortality models and Lapse models

> Mortality models
> Lapse Rate Models

10.45 – 11.00	Coffee Break
11.00 – 12.45	Case Studies: Mortality and Lapse

> Case Study 1: Mortality
> Case Study 2: Dynamic Policyholder Behavior
> Policyholder Behavior for Traditional and Unit-Linked Policies
> Policyholder Behavior and Economic Balance Sheet

12.45 – 13.45	Lunch
13.45 – 15.00	Introduction to Risk Aggregation Techniques in the Solvency II Context

Modern Approach: Least Squares Monte Carlo (LSMC)
> General Introduction
> Fitting of Polynomial Liability Function
> Validation of Results

15.00 – 15.15	Coffee break
15.15 – 16.45	Case Study: Economic Capital via Least Squares Monte Carlo

Application of LSMC to a Stochastic Model
> Choice of Risk Drivers
> Interpretation of Risk Dependencies: Interest Rates vs. Lapses
> Evaluation of Probability Distributions

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Comparison to Standard Formula

Non-Life Session (Jeff Courchene / Mark Shapland)
08.45	Opening of day 2
08.45 – 10.45	Introduction to Non-Life Stochastic Models
	Non-Life Claims Models
	Triangle-based Models
	Frequency/Severity Models
	Catastrophe Models
	Non-Life Financial Models
	Non-Life Dynamic Risk Models
10.45 – 11.00	Coffee break
11.00 – 12.45	A Deeper Look / Hands On Approach (ODP Bootstrap)
12.45 – 13.45	Lunch
13.45 – 15.00	Applications of Stochastic Modeling (Non-Life Insurance)
	Case Study 1 (Reserve Variability)
15.00 – 15.15	Coffee break
15.15 – 16.45	Applications of Stochastic Modeling (Non-Life Insurance)
	Case Study 2 (GLM Bootstrap)
	Case Study 3 (Solvency II)
approx. 18.00	Social Event (we will meet in the hotel lobby)

Friday, 22 November 2013

Life Session (Andrew Dalton)
08.45	Opening of day 3
08.45 – 10.15	Applications of Stochastic Modeling (Life/Health Insurance)
	Case Study – Long-tailed health insurance
10.15 – 10.30	Coffee Break
10.30 – 12.00	Applications of Stochastic Modeling (Life Insurance)
	Case Study – Economic Capital for Multi-Line Life Insurance Company
12.00 – 13.00	Lunch

Non-Life Session (Jeff Courchene / Mark Shapland)
08.45	Opening of day 3
08.45 – 10.15	Applications of Stochastic Modeling (Non-Life Insurance)
	Case Study 4 (Back-testing and Validation)
10.15 – 10.30	Coffee Break
10.30 – 12.00	Applications of Stochastic Modeling (Non-Life Insurance)
	Case Study 5 (Predictive Modeling & Pricing)
12.00 – 13.00	Lunch
13.00 – 14.45	**Joint Session (Florian Ketterer)**
	Joint Life/Non-Life Case Study focusing on senior management perspective
14.45 – 15.00	Concluding remarks (EAA)

Attendees are encouraged to bring a laptop computer with Microsoft Excel installed.

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7. Fees & Registration

Please register for the seminar as soon as possible because of the expected demand. If there are more persons interested in this seminar than places available we will give priority to the registrations received first. Please send your registration as soon as possible by using our online registration form at www.actuarial-academy.com.

Your registration is binding. Cancellation is only possible up to 4 weeks before the first day of seminar. If you cancel at a later date, the full seminar fee is due. You may appoint someone to take your place, but must notify us in advance. EAA has the right to cancel the event if the minimum number of participants is not reached.

Please always give your invoice number when you effect payment. Bank charges are to be borne by the participant. We will send you an invoice, please allow a few days for handling.

Your early-bird registration fee is € 870.00 plus 23 % VAT until 20 September 2013. After this date the fee will be € 970.00 plus 23 % VAT.

8. Accommodation / Venue

The seminar will take place at the Stillorgan Park Hotel, Stillorgan Road, Dublin 18, Ireland.
Tel: +353 (0)1 200 1800
nwaldron@stillorganpark.com
www.stillorganpark.com/

We have arranged special prices for accommodation:

A single room costs € 99 per night including breakfast. This price is valid for bookings out of our allotment "EAA-Seminar" by 22 October 2013. Please note that the number of rooms is limited. We kindly ask you to book your accommodation directly with the hotel and to note the hotel's cancellation policy.

9. CPD

For this seminar, the following CPD points are available under the CPD scheme of the relevant national actuarial association:

Austria: 15 points
Belgium: 15 points
Croatia: 15 hours
Bulgaria: 12 points
Czechia: 2-3 points (individual accreditation)
Estonia: 15 hours
Germany: 15 hours
Ireland: 15 hours
Italy: approx. 4 credits (GdLA individual accreditation)
Netherlands: approx. 14 PE-Points (individual accreditation)

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Russia: 40 points
Slovakia: 8 points
Slovenia: 50 points
Switzerland: 15 points

No responsibility is taken for the accuracy of this information.