Organised by the EAA - European Actuarial Academy GmbH in cooperation with Den Danske Aktuarforening.

1. Introduction

Compared to 20 years ago the current economic environment is characterised by a much lower interest rate environment and unprecedented changes in the regulatory landscape. As a result, insurance companies have started to considerably change their products and along with much higher computing power, new methods for valuation are achievable which were not practical some years ago.

As a consequence, both the changed regulatory environment (Solvency II et al.) and the low interest rate environment, ALM has become a must for all life insurance companies offering guarantees. Moreover, companies are seeking more profitable niches, where risk is proportionally better rewarded and where the interest rate risk is reduced.

The above trends need a commensurate tool box available to actuaries and risk managers, both for product design and also for product valuation/monitoring. This seminar aims to cover modern modelling techniques in greater detail in such a way they can be readily applied to concrete situations.

2. Participants

The seminar is open to all interested persons, such as actuaries, risk and capital managers, controllers from all type of insurance companies, also consultants or supervisors. A basic
understanding of pricing and valuation of insurance liabilities and market consistent valuation is of advantage but not necessary. It is expected that the participants have an understanding of elementary calculus and elementary probability theory as normally covered in the first two years of a mathematics programme.

3. Purpose and Nature

The aim of this seminar is to get an understanding of how product valuation and the corresponding risk management in life insurance companies works and to be able to apply the theory in the concrete context. On day one we will focus on the Markov model and its application to real world problems. The aim of this first day is to acquire the necessary tools (both theoretically and practically) to apply them on day two to more complex situations. It is worth pointing out, that besides being able to understand the underlying mathematics, considerable focus is placed on the concrete design and modelling of certain products’ aspects. Hence, from this point of view, the Markov model can be considered as a very strong modelling framework, which helps actuaries to get results in a quicker and less error prone fashion.

During day two we will focus on some complex insurance products such as Long Term Care and Variable Annuities and will show how mathematical models can be used to value and risk manage these products.

More specifically, the aim of this seminar is to:

- Understand the general concept of how modelling and controlling is performed using Markov Models
- Be able to implement Markov Chain Models in a structured way in a productive environment
- Understand the modelling and the risks intrinsic in Long Term Care Insurance
- Basic understanding of Variable Annuities and the respective valuation approaches
- Understand the modelling and the corresponding risk of Policyholder Behaviour.

The seminar covers the following topics:

- Definition of Markov Process and Chapman-Kolmogorov equation
- Understand how products are modelled
- Understand how products are valued and how the controlling is performed
- Understand how to concretely model product; how to model policyholder behaviour
- Understand the risk intrinsic to (adverse) policyholder behaviour and how to quantify it

The key focus of the seminar is to put theory into practice. This means that the seminar is split into two sections, one where theory and concepts are presented, followed by a concrete application and implementation. The former section will be based on my book “Stochastic Models in Life Insurance” (published in the EAA Series of Springer). In the practical part we will use our own laptops either by means of excel or python (we expect that python 2.7.8 [freeware] from www.python.org is installed on the participant's laptop). Solutions for the exercises for the practical part will be made available.

All participants receive a copy of the book “Stochastic Models in Life Insurance”.

www.actuarial-academy.com
4. Lecturers

Michael Koller joined the Prudential Group in September 2011 as Group Risk Director - Risk Advisory and Technical Analysis. Prudential plc is an international financial services group with significant operations in Asia, the US and the UK. They serve more than 23 million insurance customers and have £457 billion of assets under management.

Michael was previously employed with Aviva plc as Europe Chief Risk Officer. He was responsible for embedding operational risk management, de-risking Aviva Europe’s entities and implementing financial and ALM risk management for Europe.

Prior to joining Aviva, Michael was Chief Life Actuary with Partner Re. He has also held senior positions with Swiss Re and began his career at the Federal Institute of Technology in Zurich, where he is still a professor of mathematics.

Michael has a PhD in mathematics and is a certified pension scheme expert. He is a professor at the Federal Institute of Technology in Zurich, regularly lecturing life insurance mathematics and has written two books about risk management and insurance mathematics.

Michael is married with two daughters and his leisure interests include classical opera, black and white photography, skiing and walking in the mountains.

5. Language

The language of the seminar will be English.

6. Preliminary Programme

Monday, 11 May 2015
08.45 - 09.00 Registration
09.00 - 09.15 Introduction & welcome (EAA)
09.15 - 10.30 Introduction in Markov chain models (chapters 2,3,4 of the book)
10.30 - 10.45 Coffee Break
10.45 - 12.30 Thiele's differential equation and examples (chapters 5 and 6 of the book)
12.30 - 13.30 Lunch
13.30 - 15.00 Workshop valuation and life insurance examples, including policyholder behaviour
15.00 - 15.15 Coffee Break
15.15 - 17.00 Profit analysis and Embedded Values (chapter 10) including Examples approx. 18.30 Dinner

Tuesday, 12 May 2015
09.00 - 10.30 Workshop – Long Term Care; product design, analysis and implementation
10.30 - 10.45 Coffee Break
10.45 - 12.30 Introduction to Unit Linked Insurance with Guarantees (aka 'Variable Annuities') and policyholder behaviour (chapters 8 and 12 of the book).
12.30 - 13.30 Lunch
13.30 - 15.10 Workshop dynamic policyholder behavior and utilisation in VA based on Markov Model.
15.10 - 15.15 Concluding remarks, closing of seminar (EAA)

All attendees are encouraged to bring a laptop with Microsoft Excel to the seminar.
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. All 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 € 790.00 plus 25 % VAT until 11 March 2015. After this date the fee will be € 970.00 plus 25 % VAT.

8. Accommodation

The seminar will take place at the
Phoenix Hotel Copenhagen
Bredgade 37
1260 Copenhagen K
Denmark
www.phoenixcopenhagen.dk

We arranged special prices for accommodation. The special price is 1,400 DKK per night, including breakfast, VAT and environment fee. It is valid for bookings till 30 days before the seminar out of our allotment. Our allotment includes a limited number of rooms. Kindly book your accommodation directly with the hotel, and note the hotel’s cancellation policy.

Book your hotel room here:
Danish http://www.phoenixcopenhagen.dk/arpbe/web/da/login/48572040

9. CPD

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

Austria: 11 points
Belgium: 11 points
Bulgaria: 12 points
Czech Republic: 2-3 points (individual accreditation)
Denmark: 11 hours
Estonia: 11 hours
Germany: 12 hours
Hungary: 12 hours
Italy: approx. 4 credits (GdLA individual accreditation)
Netherlands: approx. 11 PE-points (individual accreditation)
Russia: 40 points
Slovakia: 8 CPD points
Slovenia: 50 points
Switzerland: 15 points

No responsibility is taken for the accuracy of this information.