An Actuarial Summer: The 29th International Summer School in Lausanne, Switzerland

By Carlos Arocha

The Swiss Association of Actuaries has been conducting a "summer school" since the early 1980s. On occasion of the 1980 Congress of the International Actuarial Association, the Swiss organizing committee established a fund. After the event, the fund had a positive balance and the Swiss Association of Actuaries decided to establish a summer school with the proceeds. Nowadays, participants are charged a subsidized course fee. Here is my report on this year's summer school.

From August 15–19, 2016, the Department of Actuarial Science of the University of Lausanne hosted the 29th edition of the renowned Summer School of the Swiss Association of Actuaries. One-hundred sixteen participants (58 from Switzerland) coming from 28 countries attended this year's program: Quantitative Risk Management: Concepts, Techniques and Tools. The scientific directors were Paul Embrechts (Swiss Federal Institute of Technology, Zurich), Alexander McNeil (Heriot-Watt University, Scotland) and Rüdiger Frey (University of Economics and Business, Vienna). They were ably assisted by Marius Hofert (University of Waterloo, Canada). The faculty was just as international as the audience!

The course syllabus drew heavily from the second edition of the authoritative Quantitative Risk Management (QRM) textbook, coauthored by Embrechts, Frey and McNeil. The first edition came out in 2005, before both the 2007–09 global financial crisis and the Euro crisis that followed. The original 10 chapters were expanded to 17, and a bit more emphasis was given to insurance. Also, chapters were grouped into (a) Introduction to QRM; (b) Methodology; (c) Applications; and (d) Special topics, making it worthwhile to acquire the second edition even if one already owned the first.

The course covered 13 chapters out of 17, and the chapters that were not considered were either too specialized or not too critical for the understanding of QRM. It was already an ambitious goal to cover 13 chapters—532 pages of theory—but nonetheless time was well-managed and coverage was adequate.

It is worth noting that a similar course—with the same faculty—was held 10 years ago, when the first edition was published. It was evident that many years of teamwork and presumably a good deal of discussions among the professors, resulted in a well-coordinated, didactical flow. The lecture quality was just outstanding.

The five-day seminar schedule was launched with Embrechts' lecture on risk management concepts, where he made a persuasive case for managing financial risk. He then covered the topics of modelling value and value change, and risk measurement and analysis. McNeil and Hofert went on to present the empirical properties of financial data, and introduced financial time series. These lectures were complemented by a general overview of the R programming environment by Hofert, and a few R scripts to illustrate the material.

Day 2 included Extreme Value Theory (EVT) by Embrechts, who has taught similar courses at the Swiss Federal Institute of Technology. Embrechts is also the author of a textbook on EVT, and his experience in teaching that subject was evident at the summer school. The next topic was multivariate model

time-series models for multiple series of financial risk-factor change data, such as differenced logarithmic price series.

On Wednesday we looked at methods for measuring market risk in portfolios of traded instruments. The focus was on the statistical models and techniques previously introduced on Tuesday.

To honor a long-standing tradition, we enjoyed a nice excursion on Wednesday afternoon. The first stop was a visit to Charlie Chaplin's World, a museum and exhibit in the Vevey area. Then we visited a vineyard in Lavaux (Domaine Wannaz) where we tasted the excellent regional wines while having a magnificent view of Lake Geneva. It was a wonderful afternoon. The excursion was rounded up with a savory steak dinner at Hotel du Leman in the surroundings of Vevey.

On Thursday, the day after the excursion and dinner, and in a more relaxed environment following the social activity, Embrechts and Hofert expanded upon the material on dependence structures that was previously introduced. They also devoted time to theoretical concepts in QRM that fall under the broad heading of aggregate risk and integrated risk management. Convex and law-invariant risk measures were discussed. The afternoon session was devoted to credit risk, an omnipresent feature in the portfolio of a typical financial institution.

On Friday, we looked at one-period models for credit portfolios with a view towards credit risk management issues for portfolios of largely non-traded credit products, such as the retail and commercial loans in the banking book of a typical bank. The last lecture of the week covered counterparty risk management, a key issue for all financial institutions and the focus of many new regulatory developments.

One of the salient features of the course were the practical illustrations prepared by Hofert. He is the author of an R package that serves as companion to the QRM book. Having faculty who was part of a book project was ideal for the perfect summer school.

The last act, the closing ceremony of Friday, included the legendary keynote speech of Prof. Hans Bühlmann, the honorary president of the Swiss Association of Actuaries, pioneer of credibility theory, and an enthusiastic supporter of the International Summer School. It took a while to present certificates of attendance to more than 120 people, many of whom wanted to have their picture taken with the faculty. In these last moments of an intense week there was a general feeling of satisfaction about the learning experience. François Dufresne and his team of assistants deserve a hearty "thank you" for having once again organized a successful summer school. ■

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