BOOK REVIEW

The book "Financial Economics" by ten authors, edited by Harry Panjer and published by The Actuarial Foundation, is a major textbook with ambitious aims: "Since the 1950's, the field of financial economics has built on the Nobel-Prize-winning works of Markowitz, Merton, Miller, Sharpe, Black, and Scholes. Their work spawned an entire field of formal treatment of investment management and asset and derivative pricing. This book coves many aspects of actuarial economics in the context of discrete time, with a bridge to continuous time. It is aimed at actuaries, financial engineers, and others with comparable skills, and it focuses on a broad range of applications. Recognizing the interrelationship of all financial services and products, the authors provide applications in insurance and pensions in addition to the usual bond, stock, and options applications in most books in this field."

Given the reputation of the authors: Phelim Boyle, Samuel Cox, Daniel Dufresne, Hansulrich Gerber, Heinz Müller, Hal Pedersen, Stanley Pliska, Michael Sherris, Elias Shiu, and Ken Seng Tan, and the editor, and given the total number of pages, (XXXI + 669 = DCC), the production of the book was not a risky business. It covers most of the material in common finance textbooks, but it does more: it contributes substantially to the application of these techniques in insurance. This is done in most of the 11 chapters; here is a list of the titles and the insurance specific contents of the chapters:

1. Financial Markets (Insurance and Annuities)
2. Derivative Securities (Reinsurance; Securitization of Insurance Liabilities)
3. Interest Risk and Immunization
4. Equilibrium Pricing
5. No-Arbitrage Pricing Theory
6. Options and Other Derivatives (Insurance and Pension Examples)
7. Term Structure Models (Single Premium Deferred Annuities)
8. Portfolio Selection (The Asset Liability Model)
9. Investment Return Models (Insurance and Pension Applications)
10. Option Pricing in Continuous Time
11. No-Arbitrage Pricing Theory – Advanced

Appendix A: Probability Background

Appendix B: Answers to Selected Exercises.

Particularly interesting from this respect is the part on securitization of insurance liabilities including a discussion of insurance options and catastrophe bonds; in chapter 6 the pricing of options contained in certain insurance products and in pension plans; and valuation of SPDA in chapter 7. In addition to the asset liability modeling for life insurance in chapter 8, we find portfolio optimization under shortfall constraints as well as expected utility maximization, two approaches which are becoming more important in insurance risk management today.

Also in chapters without explicit insurance applications, there is emphasis on actuarial concepts. E.g., we find a detailed discussion on the difference between physical measure and risk-neutral measure in chapter 4.

There are 216 exercises with numerical answers for most of them, if required. The technical level of the text and these exercises requires a basic education in mathematics, the book is "more mathematical than most MBA-level texts but at a lower than of some well-known books in the field" of mathematical finance. But also readers who are unable to solve all the 40 problems in the Appendix A will understand large parts of the book.

"It is suitable for a two-semester course at the early graduate school level", it is an excellent book for self study, and it might as well serve as a source for general actuarial training and examining in the field of financial economics. At first glance, the layout is professional, expensive, and perfect. At some places, however, the book looks less perfect: on p. 463, reference numbers are missing, and formula (8.11.1) needs additional spacing. Exercises 8.1 and 8.2 are a bit strange: in 8.1 the covariance matrix of three linearly dependent random variables is given in numerical values, and the reader is asked to show that it is singular. In 8.2 a (3,3) matrix is given, and the reader is asked to find a negative eigenvalue, which is possible but hard: the value is $-0.00101028\cdots$. But this does not diminish the joy of reading the book.

For readers with a strong mathematical background who are not both, experts in finance and experts in insurance, the book is more than worth reading, it is worth studying. And the book is worth its price.