

The third paper in this section, by Sotirios Kollias, is concerned with the European insurance markets. The paper's largely descriptive first part is followed by a detailed prescription for integrating the European market. The discussion paper by Steven Skalicky briefly replicates Kollias's descriptions for Asia, Latin America, and Eastern Europe.

The last two papers are from the public policy arena. Gerrard Brannon heuristically addresses the issues of "reserve regulation, consumer protection, solvency guarantees, and purchase inducements in the form of tax benefits" for the U.S. life insurance industry. He concludes not with a call for specific reform nor by applauding the current system, but urges caution in the continuing regulatory formulations that seem inevitable.

The last of the major papers is Scott Harrington's "Public Policy and Property-Liability Insurance." Harrington adopts a market efficiency approach to consider solvency and rate regulations, as well as the insurance industry's exemption from some antitrust provisions. He concludes that "federal exemption into solvency regulation is not compelling, and could ultimately lead to an increase in the total cost of insolvency. Second, state regulatory control of insurance pricing is inefficient.... Third,...change in the industry's exemption will not alleviate market problems" (pp. 239-240). The discussion papers responding to Harrington's analysis were the most lively and entertaining.

In sum, the book presents an excellent overview of many of the current research and political issues facing the life and property-liability insurance industries today. It is written on a level that is comprehensible to the noninsurance academic, while at the same time presents views of the insurance industries that are consistent with the most current academic research.

Reference

Joskow, Paul L., 1973, Cartels, Competition and Regulation in the Property-Liability Insurance Industry, *Bell Journal*, 4: 375-391.

BOOK REVIEWS

Introduction to the Mathematics of Demography, by Robert L. Brown (ACTEX Publications, 1991).

Reviewer: A. Hoque Sharif, ASA, University of Waterloo, Ontario

Demography—the statistical and mathematical study of human population—is now widely taught in social science, bio-science, and in bio-statistics. But the subject is no longer restricted to social science. The techniques of mathematic demography are now widely used by demographers, epidemiologists, actuaries, economists, and reliability engineers, biostatisticians, labor economists, and other population scientists. From the sociologist's point of view, demography is entirely descriptive and qualitative, while others consider

it purely mathematical. As the author indicates in the preface, *Introduction to the Mathematics of Demography* is a happy compromise between a qualitative presentation and quantitative analysis. It could be considered an elementary book or a launching pad for advanced mathematical demography.

Demography has been a part of the education program for actuaries for many years. The Society of Actuaries uses the book as a textbook for course 161, Mathematics of Demography. The author, R. L. Brown, is an actuary and an associate professor in the Department of Statistics and Actuarial Science at the University of Waterloo, Ontario. Currently, he serves as vice president of the Society of Actuaries. The author's dual perspectives of the professional and the academician are reflected in the book.

Introduction to the Mathematics of Demography does not present new results, but it reshapes the materials to a deliberately new design. The presentation is especially well suited to actuarial students. A large number of examples will aid any reader in gaining a better understanding of the covered materials. Like mathematics, one can learn mathematical demography by doing problems. Unlike many of its predecessors (e.g., Spiegelman, 1955), it contains some exercises consistent with the learning-by-doing approach. The book is not like Keyfitz and Beekman (1984), which has no explanatory examples but rather a large number of exercise problems. As a free-standing textbook, sufficient didactic materials are provided so that the text can be the sole guide for any reader. The elementary mathematics and meticulous explanations make the book readable to anyone having some introductory knowledge of probability, calculus, and algebra. The whole book could easily be covered in a one-semester college course.

There are eight chapters and three appendixes. Chapter 1 describes the method of collection and demographic statistics, the sources of errors in data, and possible correction for these. This description leads to the definition of mortality and fertility demographic rates in chapter 2. Life table functions, including a section each for the continuous case and fractional ages, are defined in chapter 3. The construction of life tables from census data is covered in chapter 4. As examples, the construction of the 1985-1987 Canadian life tables and the 1979-1981 U.S. life tables is described. Chapter 5's description of stationary population theory is similar to that in Bowers et al. (1986). Lexis diagrams in the examples make the covered materials easy to follow. Although the presentation is somewhat sketchy, chapter 6 introduces stable population theory followed by projection matrices and population projections in chapter 7. The final chapter, "Uses of Census Data," is devoted mostly to the issues involved with population projections and funding social security. The uses of census data in other areas are not covered at all.

The concise presentation has considerably reduced the size of the book. Its numerous examples will make it a worthwhile text for learning mathematical demography well into the future. The references at the end of the book will

satisfy any jovial reader's appetite for advanced mathematical demography. Finally, in my opinion, the book is well suited for a learning student as well as for a professional reference.

References

- Bowers et al., 1986, *Actuarial Mathematics* (Society of Actuaries).
 Keyfitz, N. and J. Beekman, *Demography Through Problems* (New York: Springer-Verlag).
 Spiegelman, M., 1955 (rev. ed. 1968), *Introduction to Demography* (Cambridge, Mass.: Harvard University Press).

BOOK REVIEWS

Fundamentals of Risk and Insurance, Sixth Edition, by E. J. Vaughan (John Wiley, 1992).

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Some time ago, I went to a formal dinner for the incoming students of the executive MBA program at our university. One student, who manages a travel agency, asked me what I teach. When I mentioned insurance, she looked surprised, "You mean insurance is something you have to teach at the university?" Risk management and insurance is not well perceived among the unconverted!

As educators of insurance, it is our job to put the word out to students. One outstanding educator, who has done precisely that for many years, is Emmett Vaughan, and his main tool has been his very successful book *Fundamentals of Risk and Insurance*. It is very difficult to write something new about the sixth edition of such a book. In this review, I will concentrate on some specifics of the book and compare and contrast these to educational devices used by other competing textbooks in the market.

The book is categorized into three sections: Ten chapters are devoted to general discussions of insurance-related topics, twelve chapters examine life and health insurance, and eleven chapters cover the risks associated with ownership of property and legal liability. Curiously, in the table of contents, only two sections are mentioned. In the body of the text, however, the third section is clearly spelled out.

Insurance is a truly interdisciplinary subject. At the very minimum, law, economics, statistics, accounting, and decision theory play useful roles in risk management and insurance. This book carries the range of flavors from different disciplines, and, consequently, it is more encyclopedic than many other competing textbooks. This feature has an advantage: instructors can pick and choose different topics to their taste. There is less need to rely on supplementary material. Perhaps its more complete treatment of most topics is one of the reasons for its popularity. This textbook is the standard text for the course leading to Certified Financial Planning.