

(i.e., models for losses corresponding to individual policies/policyholders), collective risk models (models for groups of policies or the dynamics through time of a portfolio of homogeneous policyholders), and risk theory (the analysis of when the stochastic process of premium inflows minus the [random] claim outflows for a portfolio of policies would be expected to exceed the surplus of an insurance company [ruin of the company]). However, even here, in the “classical” part of the text, the authors present more modern and advanced approaches and discussions (e.g., they present Panjer’s recursion formula for computing the distribution of certain random sums of random variables, a discussion of “stop-loss” premiums, and certain modern approximations for ruin probabilities and loss probabilities). In the view of this reviewer, this makes this text useful for introducing the student to the modern approach to actuarial methods while at the same time making the (very mathematical) subject have a quite practical side. These chapters could be used to create a course for students studying for actuarial exams while remaining up-to-date mathematically. They are also important for Ph.D.-level researchers attempting to become acquainted with the rigorous analysis of insurance problems while also being cognizant of classical approaches.

The real strength of the book comes in the subsequent chapters, which deviate from the “classical” subjects and hence push the student to the forefront of modern actuarial research. These would be useful for a graduate class in actuarial science. “Modern” topics include an examination of various premium principles relevant to insurance (Chapter 5) and bonus-malus systems using Markov analysis, as used in certain automobile insurance plans (Chapter 6). Credibility theory (Chapter 7) gives a rigorous analysis of how much weight to give to data, including the Balanced Bühlmann Model, the Bühlmann-Straub Model, and the Negative Binomial Model for the Number of Car Insurance Claims. Chapter 8 considers generalized linear models, and Chapter 9 applies them to the estimation of Incurred But Not Reported (IBNR) claims. Chapter 10 discusses the modern topic of ordering of risks, which is of independent economic interest.

Overall, this is a very good, important book that should be read by actuarial researchers and graduate students interested in the mathematical analysis of insurance problems. The exercises make it a useful text for teaching as well. I recommend it as a text and as a part of the researcher’s library.

*The Perception of Risk*, by Paul Slovic, 2000, in Risk, Society and Policy Series, London and Sterling, Va., EARTHSCAN Publications Ltd

Reviewer: J. Francois Outreville, United Nations Staff Mutual Insurance Society, Geneva

The study of risk perception began in the 1970s as an exercise in individual psychology. Almost every study of risk perception has found age, education, and gender effects. For example, men seem to be less concerned about hazards than do women, and individuals in a group seem to be more risk averse than the group itself. Further research has also demonstrated that important social, political, and cultural factors play an important role.

This book is a collection of 26 articles on the perception of risk published in several journals from 1974 to 2000. The articles are unfortunately in chronological order (except for Chapter 16) and encompass early work in the psychometric paradigm that is distin-

guished by comparisons of large sets of hazards containing items as diverse as bicycles and nuclear power plants (Chapters 5–10), as well as subsequent studies that have been dedicated to hazards within the same domain (Chapters 12 and 15–23). The last two chapters (25 and 26) present risk assessment issues in modern industrialized societies, and as such they highlight the importance of considering judgment processes.

The reviewer will not compete with the excellent introduction and overview presented by the editor and co-author of all the articles collected. The introduction explains the history and developments in research on risk perception. The psychometric paradigm as defined by the author assumes that risk is subjectively defined by individuals who may be influenced by a wide range of psychological, social, institutional, and cultural factors. Psychometric techniques using questionnaires or interviews seem well suited for identifying similarities and differences among groups with regard to risk perception and attitude. One of the strengths of this approach is its broad descriptive capability. This is illustrated in several articles in plots of hazards in a two-dimensional space (Figure 5 in Chapter 5, Figure 1 in Chapter 8, and Figure 1 in Chapter 13).

Chapters 1, 2, 8, and 9 present the theoretical framework in judgmental biases. People's perception of risk is clearly associated with their representation of hazards and distorted judgments of risks, and the degree of biases is fundamental in the understanding of perceived risk (Chapters 5 and 8).

No reader will read all the articles but will "pick and choose" those studies on risk perception that appeal to personal interests. However, some chapters are a must in the understanding of this field of research:

Chapter 5: "How Safe is Safe Enough? A Psychometric Study of Attitudes Toward Technological Risks and Benefits"

Chapter 6: "Rating the Risks"

Chapter 7: "Weighing the Risks: Which Risks Are Acceptable?"

Chapter 5 is certainly the masterpiece of this work in the psychometric paradigm. Readers interested in the question of bias in judgment should also read an article not included in this book and published in 1978 by the same author in the *Journal of Experimental Psychology*: "Judged Frequency of Lethal Events."

Chapter 3 is an article published in this journal entitled "Preference for Insuring Against Probable Small Losses." It singles itself out as being the only article that uses a different methodology, but it also has direct implications for the theory and practice of insurance. This article has been frequently quoted in the insurance literature and frequently replicated in the classroom.

The important findings from the earliest psychometric studies were not adequately appreciated until recent research from several authors at the end of the 1990s recognized key links in a theory about the role of affective processes in judgment, decision making, and risk perception. The last Nobel Prize in economics recognized this area of research.

The book will certainly not appeal to a wide audience, contrary to what the title may suggest. This collection of articles may prove useful to insurance academics, as it contains all the basic references to supplement readings in a risk/insurance seminar.

The disadvantage of the collection is that not many academics or students may have strong interests in these specific research areas.

*The Government of Risk – Understanding Risk Regulation Regimes*, by Christopher Hood, Henry Rothstein, and Robert Baldwin, 2001, New York: Oxford University Press

Reviewer: Patricia Born, California State University, Northridge

*The Government of Risk* is an interesting guide to the evaluation of risk regulation. It offers a very detailed system for classifying risk regulation regimes, which is motivated by a need to understand why society addresses different risks in so many different ways. Risks that get a lot of media attention do not always get heightened regulatory attention. Despite pressures of interest groups, the regulatory responses to some risks may be better explained by historical inertia in the regulating organization. This book examines these types of inconsistencies by disaggregating components of regulatory content and testing competing theories of how various factors influence these components.

The first section of the book sets up a system by which risk regulation regimes may be classified. The system is designed to describe regimes—to provide meaningful ways of classifying regimes for a variety of purposes—but not to explain their existence. Since empirical insurance research often involves classification of both legal and regulatory regimes (e.g., rate filing regulation type), the discussion here is quite useful for insurance researchers. Most important, the discussion suggests how a simple categorization (e.g., “prior approval” rate regulation) may obscure many other dimensions of the regulation activity.

In the first two chapters, the authors set up two basic dimensions on which risk regimes could vary: (1) the context and content of regimes, and (2) the information-gathering, standard-setting, and behavior modification components of control. The section is long and hard to follow, but this is largely due to the complexity of the authors’ task. Classification systems themselves are classified; regimes are disaggregated into simple dimensions, which are then divided into components. The reader may be encouraged by the authors’ use of tables, without which the first few chapters would be extremely confusing.

Having provided a framework for comparison, the authors then describe nine specific risk regulation “regimes,” including attacks by dangerous dogs outside the home, cancer from emissions of benzene, and adverse health effects from exposure to pesticide residues in food and in drinking water. In each of the nine examples, the authors address basic points of comparison. For example, is the risk a product of technological developments? How is the risk measured? Is there a common view, or is there controversy over the estimated risk? Is it a risk that has been given close attention by society and/or the media? Who or what creates or contributes to the risk? Which parties take an interest in the methods used for controlling the risk? The authors use the nine examples to illustrate the relationship between varying levels of regulatory control (high to low) and the regime context, defined as the “setting in which regulation takes place, such as the different types and levels of risk being tackled, the nature of public preferences and attitudes over risk, and the way the various actors who produce or are affected by the hazard are organized.” Then the authors use the same nine examples to show the relationships between the varying degrees of

