Risk & Insurance

Greene · Trieschmann

Sixth Edition

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SIXTH EDITION

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Published by
SOUTH-WESTERN PUBLISHING CO.

CINCINNATI WEST CHICAGO, IL DALLAS PELHAM MANOR, NY PALO ALTO, CA

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ISBN: 0-538-06540-0

Library of Congress Catalog Card Number: 83-50780

1 2 3 4 5 6 7 8 9 K 3 2 1 0 9 8 7 6 5 4
Printed in the United States of America

Preface

Since the first edition of this text appeared in 1962, many important changes have occurred in the field of risk and insurance which were reflected in subsequent editions of 1968, 1973, 1977 and 1981. This sixth edition continues the task of presenting as modern and complete a picture of risk and insurance as possible.

New Features

There are several major changes in this edition. Discussions of risk management have been added to several chapters, most notably Chapters 4 and 10. To help you locate the sections on risk management, they have been highlighted in color in the table of contents.

Part 5, Life and Health Insurance, has been extensively revised to reflect the changes brought about by the Economic Recovery Tax Act. New sections on universal life policies, retirement plans, tax sheltered annuities, and the impact of the ERTA on estate planning have been added.

Tables and charts throughout the text have been updated. Several chapters have been rewritten and reorganized for greater clarity and improved coverage of the material.

We have retained the glossary of terms and sample insurance contracts in the appendixes. A sample HO-82 contract has been added. The glossary should be especially helpful to the beginning student in learning concepts presented in the text. The sample insurance policies provide a convenient reference for systematic teaching and easy review of basic plans that govern insurance agreements.

A fundamental concept has been retained in this text: to recognize that one book in risk and insurance is the maximum that most college students will ever study. Hence, nearly all fields of insurance have been covered, and problems caused by risk in our world have been emphasized before posing solutions. In this way it is hoped that analysis of insurance will be more meaningful to the student than would be possible by factual discussion of insurance contracts without any analysis of the problems that established the need for such contracts. Emphasis has also been placed on teaching how contracts may be analyzed so that students may apply this knowledge to new policies as they are developed.

The original goals in writing the book have been preserved: (1) to cover basic ideas, problems, and principles found in all types of modern insurance and other methods of handling risk; (2) to *emphasize the fundamental unifying elements of* risk and insurance; and (3) to stimulate thought about the problems of risk and insurance through questions at the end of the text that often cannot be answered by short, factual statements taken directly from text material.

Supplements

Two supplementary publications accompany the text to enhance its usefulness as a learning device: (1) A separate study guide for use by the student has been revised by Dr. Trieschmann. (2) The instructor's manual has also been revised and expanded. For each chapter of the text, the manual now contains:

1. a complete chapter outline
2. a listing of new terms and concepts
3. answers to the end-of-chapter questions
4. several supplementary questions not found in the text
5. true-false and multiple-choice questions

Several short cases with suggested solutions have also been added to the manual.

Acknowledgements

There are many who should be thanked for their kind assistance and inspiration to the authors in preparing the sixth edition. We are grateful to

those teachers who gave generously of their time in writing letters with helpful suggestions for changes and corrections in the book. We would like to especially thank Sandra G. Gustavson and Thomas A. Aiuppa. We think incorporation of these suggestions into the manuscript has improved the book in many ways. The result should make the material more meaningful to students in the quest for a scientific study of risk and insurance.

Finally, we would like to extend special thanks to Carol Corina, who contributed generously of her time and effort with proofreading and other assistance.

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Athens, Georgia

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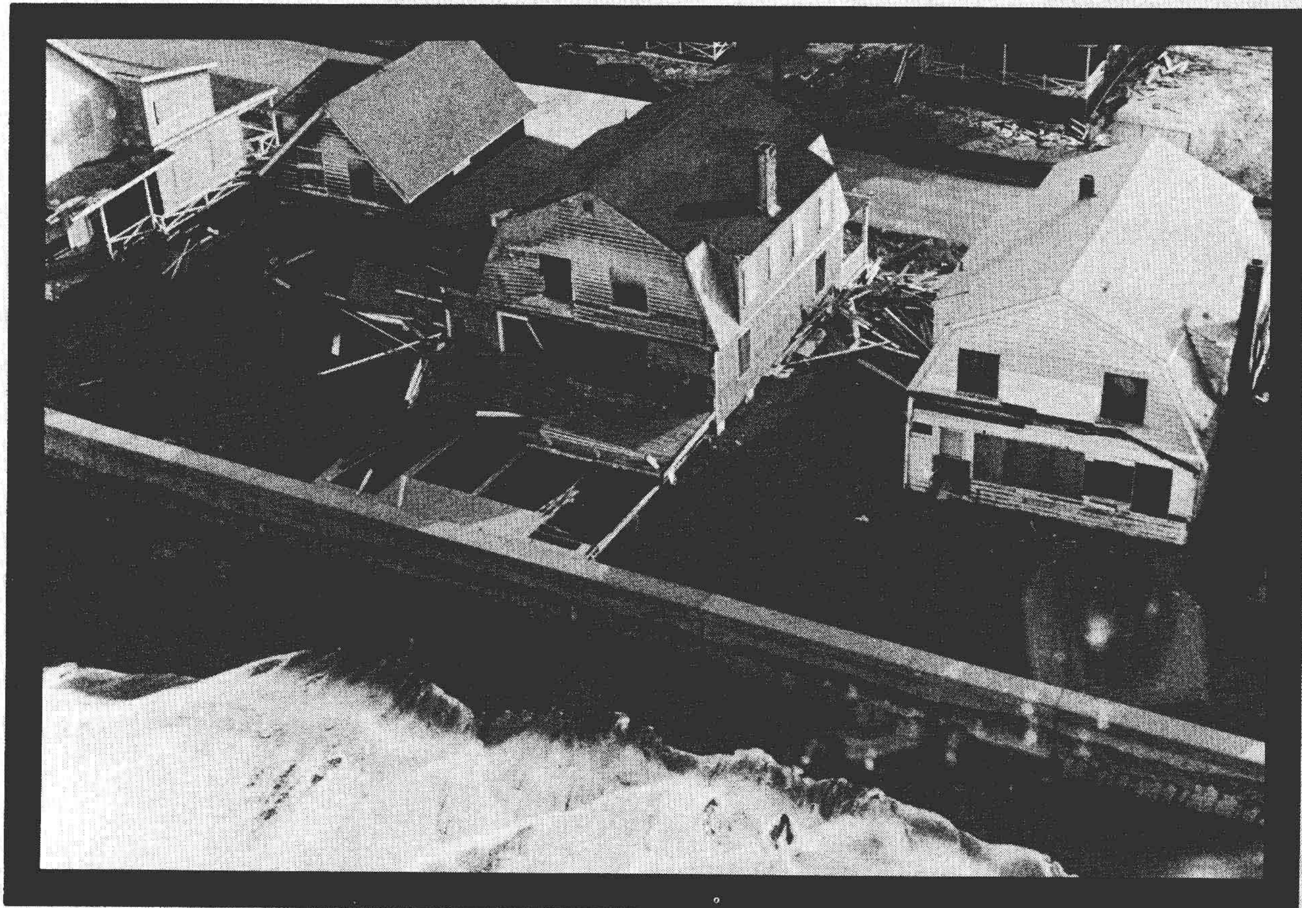
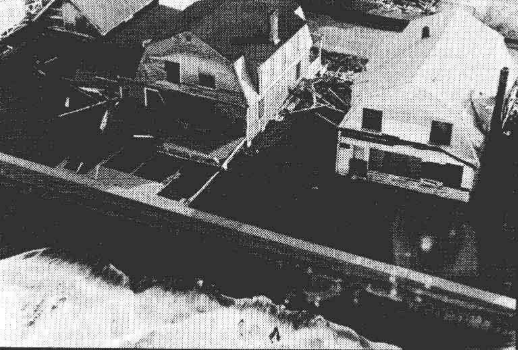


THE NATURE OF RISK AND RISK MANAGEMENT



CHAPTER 1

CONCEPTS IN RISK AND INSURANCE

Risk, defined as uncertainty as to loss, poses a problem to individuals in nearly every walk of life. Students, householders, business people, employees, travelers, investors, and farmers all must face risk and develop ways to handle it. If a cost or a loss is certain to occur, it may be planned for in advance and treated as a definite, known expense. It is when there is uncertainty about the occurrence of a cost or loss that risk becomes an important problem. For example, if a merchant *knows* for sure that a certain amount of shoplifting will occur, this loss may be recovered by marking up all goods by some percentage. There is little or no *risk* involved unless actual shoplifting is greater than normal. The merchant is usually more concerned about the risk of abnormal losses than about normal or expected losses.

THE BURDEN OF RISK

To some people the idea of risk bearing and risk assumption is tantalizing, an element that makes life more interesting. They probably have in mind the uncertainty of making a profit or a gain, and not the uncertainty of incurring disasterous losses. In this book we will be dealing with the latter type of uncertainty. Recognizing that risk assumption carries with it the possibility of losses as well as gains, most individuals constantly seek ways to avoid the losses in as efficient a manner as possible without destroying the possibility of gain.

How does risk create an economic burden? It does so in several ways. First, risk may necessitate the setting aside of a reserve fund to meet losses if and when they do occur. Such a reserve fund, if it were not used for this purpose, could be employed in other ways, presumably at greater advantage than is offered by demand deposit or an investment at the low interest rates that apply to investments readily convertible into cash.

Second, the existence of risk not only raises the cost to society of certain services, but may also deprive society altogether of services "too risky" to warrant the investment of savings. There is a shortage of "risk capital" in all nations because most investors prefer a significant degree of safety. Mark Twain epitomized this attitude when he commented that he was more interested in the return *of* his money than he was in the return *on* his money. In other words, the riskier the venture, the greater the return that must be promised to investors; hence the more costly that particular service is to society. And if risk is too great, the service may be withdrawn altogether.

An illustration of how risk discourages risk capital formation is seen in a simple experiment. Ask a person if he or she would prefer (1) to accept a gift of $1,000 in cash or (2) to flip a coin for $2,000 if heads come up, but nothing if tails comes up. Even though the mathematical value of the coin-flipping game is $1,000, most people would hesitate to pass up a certain $1,000 for an all-or-nothing chance at $2,000. In the real world, risk capital usually must offer much higher odds than 50-50 to attract investors.

An example will illustrate the burden of risk in society. A member of the American Medical Society once commented that without malpractice insurance many physicians would refuse to practice medicine. The comment arose from publicity given to reports that many insurers planned to withdraw malpractice coverage from the market because of heavy losses and inadequate rates.

Thus, the inability to transfer risk to others threatened the reduction of vital medical services because physicians perceived risk of loss by legal suits from patients on the medical treatment they had received.

Most people try to avoid risk as much as possible or to reduce its negative consequences. Unfortunately not all risk can be minimized or avoided. To maximize our insulation from the adverse effects of risk, we must study the subject scientifically, learn more about the specific nature of the different types of risk, and find ways to deal with risk more effectively.

RISK DEFINED

The word *risk* is used in many different ways. It can refer to general uncertainty, doubt, an insured object, or chance of loss. In this book risk is defined in two ways: objectively and subjectively. **Objective risk,** or **statistical risk,** applicable mainly to groups of objects exposed to loss, refers to the variation that occurs when actual losses differ from expected losses. It may be measured statistically by some concept in variation, such as the standard deviation. **Subjective risk,** on the other hand, refers to the mental state of an individual who experiences doubt or worry as to the outcome of a given event. Both definitions of risk are concerned with events that may or may not produce economic loss or an involuntary parting of value.

The economic loss can take the form of loss of property by physical perils such as fire, tornado, or explosion. It can take the form of premature death of a key person in a business enterprise or of a family breadwinner. It can result from a lawsuit to recover damages for some negligent act. Whatever its form, the risk of economic loss is something most people wish to avoid. As a result, it becomes especially important to have a clear understanding of its nature.

Objective Risk

Objective risk, then, may be defined as the relative variation of actual from probable or expected loss. In dealing with objective risk we are concerned mainly with the range of variability of economic losses about some long-run average (most probable) loss in a group large enough to analyze significantly in a statistical sense. For example, an insurer observes that in a group of 100,000 houses there are on the average 100 losses from fire each year. The insurer is naturally concerned with the problem of whether the actual number of losses experienced will be exactly 100, or some other number, such as 95 or 105. If the insurer can be 95 percent sure that the range will not exceed the bounds of 95-105, one rate may be quoted. If, instead, the range is likely to be 80-120 losses, a higher rate may be quoted because the objective risk is higher. The probable variation of actual losses from the average or probable loss or range is one measure of objective risk of the insurer. It may be expressed as follows:

$$\text{Objective Risk} = \frac{\text{Probable Variation of Actual from Probable Losses}}{\text{Probable Losses}}$$

Subjective Risk

A subjective risk is defined as a psychological uncertainty that stems from the individual's mental attitude or state of mind.[1] Subjective risk has been measured by means of different psychological tests, but no widely accepted or uniform tests of proven reliability have been developed.[2] Thus, although we recognize different degrees of risk-taking willingness in persons, it is difficult to measure these attitudes scientifically and to predict risk-taking behavior, such as insurance-buying behavior, from tests of risk-taking attitudes. In Chapter 4 the concept of economic utility is discussed as one means of quantifying subjective risk and rationalizing insurance-buying behavior.

Subjective risk may affect a decision when the decision maker is interpreting objective risk.

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[1]Some writers have used the word "uncertainty" to be synonomous with subjective risk as defined here.

[2]Paul Slovic, "Convergent Validation of Risk-Taking Measures," *Journal of Abnormal and Social Psychology*, Vol. 65 (1962), pp. 68-71.

One risk manager may determine that some given level of risk is "high" while another may interpret this same level as "low." These different interpretations depend on the subjective attitudes of the decision makers toward risk. Thus, it is not enough to know only the degree of objective risk; the risk attitude of the decision maker who will act on the basis of this knowledge must also be known. A person who knows that there is only one chance in a million that a loss will occur may still experience worry and doubt, and thus would buy insurance, while another would not. One can appreciate the importance of studying subjective risk, however, by studying several examples illustrating different mental attitudes toward risk in different situations.

Banker *A* refuses a loan proposition that Banker *B* accepts easily and under equivalent conditions. Student *B* graduates and accepts a position paying a low initial salary but offering an opportunity for a large income for a few who succeed in the company; Student *A* graduates and accepts a position paying a higher and more secure salary than *B*'s position pays, but under conditions limiting the opportunities for advancement. Consumer *A* is offered certain types of goods over the telephone but refuses to buy; Consumer *B*, offered the same goods, buys even without full information. Business *A* insures the plant against fire even though the premium may be very high, while Business *B*, a neighbor operating under similar conditions, refuses the insurance.

In all of the above examples, *A* can be described as apparently perceiving a higher degree of risk in the given situation and behaving more conservatively than *B*.[3] *A* tends to be a risk averter and *B*, a risk taker.

Various studies have been made to learn more about the factors that influence subjective risk. The change in individual decisions regarding risk as a result of exposure to group discussion is the subject of a large body of psychological literature.[4] In general, psychologists have demonstrated that the decision maker tends to assume more risk after group discussion than before. It has been shown that age and sex influence risk attitudes, with women being more conservative than men and older people being more conservative than young people.[5] It has also been shown that there is a tendency for people to overestimate low likelihoods and underestimate high likelihoods.[6] Thus, due to mental attitude toward risk, a poker player might disregard extremely low probabilities of success and take gambles unwarranted by the size of the pot. Similarly, a person facing a substantial probability of loss of an automobile through collision might refuse insurance. Try the simple test in Figure 1-1 to learn more about your own attitudes toward risk.

DEGREE OF RISK

What is meant by a high degree of risk or a low degree of risk? The answer depends on whether we are speaking of subjective risk or objective risk. A high degree of subjective risk exists when a person experiences great mental uncertainty as to the frequency of occurrence of some event that may cause a loss, and as to the amount or severity of this possible loss. Generally, high subjective risk produces very conservative conduct and low subjective risk tends to produce less conservative conduct.

Objective risk, on the other hand, varies according to the ratio of probable variation of actual from probable loss. If a loss has already occurred, the probable variation is zero and thus

[3] It is possible, of course, for individuals to perceive high risk and still not behave in a conservative manner.

[4] Russell P. Clark, III, "Risk Taking in Groups: A Social Psychological Analysis," *Journal of Risk and Insurance*, Vol. 41, No. 1 (March, 1974), pp. 75-92.

[5] N. Kass, "Risk in Decision Making as a Function of Age, Sex, and Probability Preference," *Child Development*, Vol. 35 (1964), pp. 577-582.

[6] M. D. Preston and P. C. Baratta, "An Experimental Study of the Auction Value of an Uncertain Income," *Americal Journal of Psychology*, Vol. 161 (1948), pp. 183-193.

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