Principles of

Risk Management and Insurance

Twelfth Edition

Rejda • McNamara

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Risk Management and Insurance

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Principles of Risk Management and Insurance

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Preface

This text deals with risk and its treatment. Since the last edition of *Principles of Risk Management and Insurance* appeared, several unprecedented events have occurred that clearly demonstrate the destructive presence of risk in our society. In 2010, one of the most devastating earthquakes in recent history struck poverty-stricken Haiti, causing enormous human suffering, an estimated 316,000 deaths, one million homeless people, and widespread property destruction. In 2011, a deadly earthquake hit Japan that caused a devastating tsunami and a nuclear accident crisis. More than 18,000 people died, thousands more are missing, and estimated property damage may exceed $300 billion. During the same period, the Obama Administration introduced legislation to reform a broken health-care delivery system. Despite formidable opposition by the Republicans, and heated and bitter debate, Congress enacted the Affordable Care Act in March 2010. The new law extends health insurance coverage to millions of uninsured people, provides subsidies to purchase insurance, and prohibits certain abusive practices by insurers.

Finally, in 2012, a deranged gunman randomly killed 12 people and wounded at least 58 others in a theater in Aurora, Colorado. This tragic act again highlights the fact that spree killings are not isolated events, and that the risk of death or injury is markedly present.

Flash forward to the present. The economy and housing markets are slowly recovering from the second most severe economic downswing in the nation's history; although declining, unemployment remains at historically high levels; and a dysfunctional Congress remains hopelessly deadlocked because of deeply held ideological beliefs by its members. The Affordable Care Act remains controversial, and Republicans in Congress are determined to repeal it. The House has already enacted legislation to repeal the Affordable Care Act. To say that we live in a risky and dangerous world is an enormous understatement.

The twelfth edition of *Principles of Risk Management and Insurance* discusses these issues and other insurance issues as well. As in previous editions, the text is designed for a beginning undergraduate course in risk management and insurance with no prerequisites. The twelfth edition provides an in-depth treatment of major risk management and insurance topics. Coverage includes a discussion of basic concepts of risk and insurance, introductory and advanced topics in risk management, functional and financial operations of insurers, legal principles, life and health insurance, property and liability insurance, employee benefits, and social insurance. In addition, the new Affordable Care Act is discussed in depth. Once again, the twelfth edition places primary emphasis on insurance consumers and blends basic risk management and insurance principles with consumer considerations. With this user-friendly text, students can apply basic concepts immediately to their own personal risk management and insurance programs.

KEY CONTENT CHANGES IN THE TWELFTH EDITION

Thoroughly revised and updated, the twelfth edition provides an in-depth analysis of current insurance industry issues and practices, which readers have come to expect from *Principles of Risk Management and Insurance*. Key content changes in the twelfth edition include the following:

- *Health-care reform*. Chapter 15 has an in-depth discussion of the broken health-care delivery system in the United States, which led to enactment of the Affordable Care Act.
- *Enactment of the Affordable Care Act*. Chapters 15 and 16 discuss the major provisions of the new Affordable Care Act and its impact on individual and group health insurance coverages. Primary attention is devoted to provisions that have a major financial impact on individuals, families, and employers.

- *New homeowners insurance policies.* The Insurance Services Office (ISO) has introduced a new 2011 edition of the homeowners insurance policies that are widely used throughout the United States. Chapters 20 and 21 discuss important changes in homeowners insurance, especially the Homeowners 3 policy.
- *Updated discussion of life insurance marketing.* The section on life insurance marketing and distribution systems has been completely updated and substantially rewritten. Chapter 5 discusses the current distribution systems and marketing practices of life insurers.
- *New developments in employer-sponsored health insurance plans.* Employers continue to grapple with the rapid increase in group health insurance premiums and continually seek new solutions for holding down costs. Chapter 16 discusses new developments in group health insurance to contain higher health-care costs and premiums.
- *Impact of the Affordable Care Act on Medicare.* Chapter 18 discusses important provisions of the Affordable Care Act that have a direct impact on the Medicare program. These provisions are designed to control cost and make Medicare a more efficient program in protecting seniors against the risk of poor health.
- *New Insight boxes.* The twelfth edition contains a number of new and timely Insight boxes. Insights are valuable learning tools that provide real-world applications of a concept or principle discussed in the text.
- *Technical accuracy.* As in previous editions, numerous experts have reviewed the text for technical accuracy, especially in areas where changes occur rapidly. The twelfth edition presents technically accurate and up-to-date material.

SUPPLEMENTS

The twelfth edition provides a number of supplements to help busy instructors save time and teach more effectively. The following supplements are available to qualified adopters through the Instructor's Resource Center at pearsonhighered.com/irc.

Companion Web Site. The twelfth edition has an Internet site at pearsonhighered.com/rejda that allows students to work through a variety of exercises and to take a self-assessment quiz after studying the chapter material. Students can use the Internet to view real world examples of risk and insurance concepts discussed in the text.

Printed Instructor's Manual and Test Item File. Designed to reduce start-up costs and class preparation time, a comprehensive instructor's manual contains teaching notes; outlines; and answers to all end-of-chapter review, application, and case questions. The test bank, prepared by Professor Michael J. McNamara of Washington State University, enables instructors to construct objective exams quickly and easily.

Computerized Test Bank. In addition to the printed test bank, these same questions are also available in Word, PDF, and TestGen formats. The easy-to-use TestGen software is a valuable test preparation tool that allows busy professors to view, edit, and add questions.

PowerPoint Presentation. Prepared by Professor Patricia Born of Florida State University, this tool contains lecture notes that reflect the new edition. It also includes the complete set of figures from the textbook. Depending on interest, instructors can choose among hundreds of slides to assist in class preparation.

Study Guide. Also prepared by Michael J. McNamara, this study tool helps students analyze and internalize the topics learned in class. Every chapter includes an overview, learning objectives, outline, and extensive self-test with answers. The self-test section contains short answer, multiple choice, true/false, and case application questions that challenge students to apply the principles and concepts covered in the twelfth edition.

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A market-leading textbook is never written alone. I owe an enormous intellectual debt to many professionals for their kind and gracious assistance. In particular, Professor Michael McNamara, Washington State University, is a new coauthor of the text. Professor McNamara is an outstanding scholar and researcher who has made significant contributions to the twelfth edition. As a result, the new edition is a substantially improved educational product.

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The views expressed in the text are those solely of the authors and do not necessarily reflect the viewpoints or positions of the reviewers whose assistance I am gratefully acknowledging.

Finally, the fundamental objective underlying the twelfth edition remains the same as in the first edition—I have attempted to write an intellectually stimulating and visually attractive textbook from which students can learn and professors can teach.

George E. Rejda, Ph.D., CLU
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CHAPTER 1

Risk and Its Treatment

"When we take a risk, we are betting on an outcome that will result from a decision we have made, though we do not know for certain what the outcome will be."

Peter L. Bernstein
Against the Gods: The Remarkable Story of Risk

Learning Objectives

After studying this chapter, you should be able to

- Explain the historical definition of risk.
- Explain the meaning of loss exposure.
- Understand the following types of risk:

  Pure risk
  Speculative risk
  Diversifiable risk
  Enterprise risk

- Identify the major pure risks that are associated with financial insecurity.
- Show how risk is a burden to society.
- Explain the major techniques for managing risk.

Shannon, age 28, is employed as a bank teller for a commercial bank in Omaha, Nebraska. She is a single parent with two preschool children. Shortly after the bank opened on a Saturday morning, two men armed with handguns entered the bank and went to Shannon's window and demanded money. When a bank guard entered the premises, one gunman became startled and shot Shannon in the chest. She died while being transported to a local hospital.

Shannon's tragic and untimely death shows that we live in a risky and dangerous world. The news media report daily on similar tragic events that clearly illustrate the widespread presence of risk in our society. Examples abound—a tornado destroys a small town; a gunman enters a classroom at a local college and kills seven students; a drunk driver kills four people in a van on a crowded expressway; a river overflows, and thousands of acres of farm crops are lost. In addition, people experience personal tragedies and financial setbacks that cause great economic insecurity—the unexpected death of a family head; catastrophic medical bills that bankrupt the family; or the loss of a good paying job during a business recession.

In this chapter, we discuss the nature and treatment of risk in our society. Topics discussed include the meaning of risk, the major types of risk that threaten our financial security, the burden of risk on the economy, and the basic methods for managing risk.

DEFINITIONS OF RISK

There is no single definition of risk. Economists, behavioral scientists, risk theorists, statisticians, and actuaries each have their own concept of risk. However, risk historically has been defined in terms of uncertainty. Based on this concept, **risk** *is defined as uncertainty concerning the occurrence of a loss*. For example, the risk of being killed in an auto accident is present because uncertainty is present. The risk of lung cancer for smokers is present because uncertainty is present. The risk of flunking a college course is present because uncertainty is present.

Employees in the insurance industry often use the term *risk* in a different manner to identify the property or life that is being considered for insurance. For example, in the insurance industry, it is common to hear statements such as "that driver is a poor risk," or "that building is an unacceptable risk."

Finally, in the economics and finance literature, authors often make a distinction between risk and uncertainty. The term "risk" is often used in situations where the probability of possible outcomes can be estimated with some accuracy, while "uncertainty" is used in situations where such probabilities cannot be estimated.[1] As such, many authors have developed their own concept of risk, and numerous definitions of risk exist in the professional literature.[2]

Because the term *risk* is ambiguous and has different meanings, many authors and corporate risk managers use the term "loss exposure" to identify potential losses. *A* **loss exposure** *is any situation or circumstance in which a loss is possible, regardless of whether a loss occurs*. Examples of loss exposures include manufacturing plants that may be damaged by an earthquake or flood, defective products that may result in lawsuits against the manufacturer,

possible theft of company property because of inadequate security, and potential injury to employees because of unsafe working conditions.

Finally, when the definition of risk includes the concept of uncertainty, some authors make a careful distinction between objective risk and subjective risk.

Objective Risk

Objective risk (also called degree of risk) *is defined as the relative variation of actual loss from expected loss*. For example, assume that a property insurer has 10,000 houses insured over a long period and, on average, 1 percent, or 100 houses, burn each year. However, it would be rare for exactly 100 houses to burn each year. In some years, as few as 90 houses may burn; in other years, as many as 110 houses may burn. Thus, there is a variation of 10 houses from the expected number of 100, or a variation of 10 percent. This relative variation of actual loss from expected loss is known as objective risk.

Objective risk declines as the number of exposures increases. More specifically, *objective risk varies inversely with the square root of the number of cases under observation*. In our previous example, 10,000 houses were insured, and objective risk was 10/100, or 10 percent. Now assume that 1 million houses are insured. The expected number of houses that will burn is now 10,000, but the variation of actual loss from expected loss is only 100. Objective risk is now 100/10,000, or 1 percent. Thus, as the square root of the number of houses increased from 100 in the first example to 1000 in the second example (10 times), objective risk declined to one-tenth of its former level.

Objective risk can be statistically calculated by some measure of dispersion, such as the standard deviation or the coefficient of variation. Because objective risk can be measured, it is an extremely useful concept for an insurer or a corporate risk manager. As the number of exposures increases, an insurer can predict its future loss experience more accurately because it can rely on the law of large numbers. *The* **law of large numbers** *states that as the number of exposure units increases, the more closely the actual loss experience will approach the expected loss experience*. For example, as the number of homes under observation increases, the greater is the degree of accuracy in predicting the proportion of homes that will burn. The law of large numbers is discussed in greater detail in Chapter 2.

Subjective Risk

Subjective risk *is defined as uncertainty based on a person's mental condition or state of mind*. For example, assume that a driver with several convictions for drunk driving is drinking heavily in a neighborhood bar and foolishly attempts to drive home. The driver may be uncertain whether he will arrive home safely without being arrested by the police for drunk driving. This mental uncertainty is called subjective risk.

The impact of subjective risk varies depending on the individual. Two persons in the same situation can have a different perception of risk, and their behavior may be altered accordingly. If an individual experiences great mental uncertainty concerning the occurrence of a loss, that person's behavior may be affected. High subjective risk often results in conservative and prudent behavior, while low subjective risk may result in less conservative behavior. For example, assume that a motorist previously arrested for drunk driving is aware that he has consumed too much alcohol. The driver may then compensate for the mental uncertainty by getting someone else to drive the car home or by taking a cab. Another driver in the same situation may perceive the risk of being arrested as slight. This second driver may drive in a more careless and reckless manner; a low subjective risk results in less conservative driving behavior.

CHANCE OF LOSS

Chance of loss is closely related to the concept of risk. **Chance of loss** *is defined as the probability that an event will occur*. Like risk, "probability" has both objective and subjective aspects.

Objective Probability

Objective probability *refers to the long-run relative frequency of an event based on the assumptions of an infinite number of observations and of no change in the underlying conditions*. Objective probabilities can be determined in two ways. First, they can be determined by deductive reasoning. These probabilities

are called *a priori probabilities*. For example, the probability of getting a head from the toss of a perfectly balanced coin is 1/2 because there are two sides, and only one is a head. Likewise, the probability of rolling a 6 with a single die is 1/6, since there are six sides and only one side has six dots.

Second, objective probabilities can be determined by inductive reasoning rather than by deduction. For example, the probability that a person age 21 will die before age 26 cannot be logically deduced. However, by a careful analysis of past mortality experience, life insurers can estimate the probability of death and sell a five-year term life insurance policy issued at age 21.

Subjective Probability

Subjective probability *is the individual's personal estimate of the chance of loss*. Subjective probability need not coincide with objective probability. For example, people who buy a lottery ticket on their birthday may believe it is their lucky day and overestimate the small chance of winning. A wide variety of factors can influence subjective probability, including a person's age, gender, intelligence, education, and the use of alcohol or drugs.

In addition, a person's estimate of a loss may differ from objective probability because there may be ambiguity in the way in which the probability is perceived. For example, assume that a slot machine in a casino requires a display of three lemons to win. The person playing the machine may perceive the probability of winning to be quite high. But if there are 10 symbols on each reel and only one is a lemon, the objective probability of hitting the jackpot with three lemons is quite small. Assuming that each reel spins independently of the others, the probability that all three will simultaneously show a lemon is the product of their individual probabilities ($1/10 \times 1/10 \times 1/10 = 1/1000$). This knowledge is advantageous to casino owners, who know that most gamblers are not trained statisticians and are therefore likely to overestimate the objective probabilities of winning.

Chance of Loss Versus Objective Risk

Chance of loss can be distinguished from objective risk. Chance of loss is the probability that an event that causes a loss will occur. Objective risk is the relative variation of actual loss from expected loss. *The chance of loss may be identical for two different groups, but objective risk may be quite different.* For example, assume that a property insurer has 10,000 homes insured in Los Angeles and 10,000 homes insured in Philadelphia and that the chance of a fire in each city is 1 percent. Thus, on average, 100 homes should burn annually in each city. However, if the annual variation in losses ranges from 75 to 125 in Philadelphia, but only from 90 to 110 in Los Angeles, objective risk is greater in Philadelphia even though the chance of loss in both cities is the same.

PERIL AND HAZARD

The terms *peril* and *hazard* should not be confused with the concept of risk discussed earlier.

Peril

Peril *is defined as the cause of loss*. If your house burns because of a fire, the peril, or cause of loss, is the fire. If your car is damaged in a collision with another car, collision is the peril, or cause of loss. Common perils that cause loss to property include fire, lightning, windstorm, hail, tornado, earthquake, flood, burglary, and theft.

Hazard

A **hazard** *is a condition that creates or increases the frequency or severity of loss*. There are four major types of hazards:

- Physical hazard
- Moral hazard
- Attitudinal hazard (morale hazard)
- Legal hazard

Physical Hazard A **physical hazard** *is a physical condition that increases the frequency or severity of loss*. Examples of physical hazards include icy roads that increase the chance of an auto accident, defective wiring in a building that increases the chance of fire, and a defective lock on a door that increases the chance of theft.

Moral Hazard **Moral hazard** *is dishonesty or character defects in an individual that increase the frequency or severity of loss*. Examples of moral

hazard in insurance include faking an accident to collect from an insurer, submitting a fraudulent claim, inflating the amount of a claim, and intentionally burning unsold merchandise that is insured. Murdering the insured to collect the life insurance proceeds is another important example of moral hazard.

Moral hazard is present in all forms of insurance, and it is difficult to control. Dishonest individuals often rationalize their actions on the grounds that "the insurer has plenty of money." This view is incorrect because the insurer can pay claims only by collecting premiums from other insureds. Because of moral hazard, insurance premiums are higher for everyone.

Insurers attempt to control moral hazard by the careful underwriting of applicants for insurance and by various policy provisions, such as deductibles, waiting periods, exclusions, and riders. These provisions are examined in Chapter 10.

Attitudinal Hazard (Morale Hazard) **Attitudinal hazard** *is carelessness or indifference to a loss, which increases the frequency or severity of a loss*. Examples of attitudinal hazard include leaving car keys in an unlocked car, which increases the chance of theft; leaving a door unlocked, which allows a burglar to enter; and changing lanes suddenly on a congested expressway without signaling, which increases the chance of an accident. Careless acts like these increase the frequency and severity of loss.

The term *morale hazard* has the same meaning as attitudinal hazard. *Morale hazard* is a term that appeared in earlier editions of this text to describe someone who is careless or indifferent to a loss. However, the term *attitudinal hazard* is more widely used today and is less confusing to students and more descriptive of the concept being discussed.

Legal hazard **Legal hazard** *refers to characteristics of the legal system or regulatory environment that increase the frequency or severity of losses*. Examples include adverse jury verdicts or large damage awards in liability lawsuits; statutes that require insurers to include coverage for certain benefits in health insurance plans, such as coverage for alcoholism; and regulatory action by state insurance departments that prevents insurers from withdrawing from a state because of poor underwriting results.

CLASSIFICATION OF RISK

Risk can be classified into several distinct classes. They include the following:

- Pure and speculative risk
- Diversifiable risk and nondiversifiable risk
- Enterprise risk

Pure Risk and Speculative Risk

Pure risk *is defined as a situation in which there are only the possibilities of loss or no loss*. The only possible outcomes are adverse (loss) and neutral (no loss). Examples of pure risks include premature death, job-related accidents, catastrophic medical expenses, and damage to property from fire, lightning, flood, or earthquake.

Speculative risk *is defined as a situation in which either profit or loss is possible*. For example, if you purchase 100 shares of common stock, you would profit if the price of the stock increases but would lose if the price declines. Other examples of speculative risks include betting on a horse race, investing in real estate, and going into business for yourself. In these situations, both profit and loss are possible.

It is important to distinguish between pure and speculative risks for three reasons. First, private insurers generally concentrate on insuring certain pure risks. With certain exceptions, private insurers generally do not insure speculative risks. However, there are exceptions. Some insurers will insure institutional portfolio investments and municipal bonds against loss. Also, enterprise risk management (discussed later) is another exception where certain speculative risks can be insured.

Second, the law of large numbers can be applied more easily to pure risks than to speculative risks. The law of large numbers is important because it enables insurers to predict future loss experience. In contrast, it is generally more difficult to apply the law of large numbers to speculative risks to predict future loss experience. An exception is the speculative risk of gambling, where casino operators can apply the law of large numbers in a most efficient manner.

Finally, society may benefit from a speculative risk even though a loss occurs, but it is harmed if a pure risk is present and a loss occurs. For example, a firm may develop new technology for producing inexpensive computers. As a result, some competitors

may be forced into bankruptcy. Despite the bankruptcy, society benefits because the computers are produced at a lower cost. However, society normally does not benefit when a loss from a pure risk occurs, such as a flood or earthquake that devastates an area.

Diversifiable Risk and Nondiversifiable Risk

Diversifiable risk *is a risk that affects only individuals or small groups and not the entire economy*. It is a risk that can be reduced or eliminated by diversification. For example, a diversified portfolio of stocks, bonds, and certificates of deposit (CDs) is less risky than a portfolio that is 100 percent invested in stocks. Losses on one type of investment, say stocks, may be offset by gains from bonds and CDs. Likewise, there is less risk to a property and liability insurer if different lines of insurance are underwritten rather than only one line. Losses on one line can be offset by profits on other lines. Because diversifiable risk affects only specific individuals or small groups, it is also called *nonsystematic risk* or *particular risk*. Examples include car thefts, robberies, and dwelling fires. Only individuals and business firms that experience such losses are affected, not the entire economy.

In contrast, **nondiversifiable risk** *is a risk that affects the entire economy or large numbers of persons or groups within the economy*. It is a risk that cannot be eliminated or reduced by diversification. Examples include rapid inflation, cyclical unemployment, war, hurricanes, floods, and earthquakes because large numbers of individuals or groups are affected. Because nondiversifiable risk affects the entire economy or large numbers of persons in the economy, it is also called *systematic risk* or *fundamental risk*.

The distinction between a diversifiable and nondiversifiable (fundamental) risk is important because government assistance may be necessary to insure nondiversifiable risks. Social insurance and government insurance programs, as well as government guarantees or subsidies, may be necessary to insure certain nondiversifiable risks in the United States. For example, the risks of widespread unemployment and flood are difficult to insure privately because the characteristics of an ideal insurable risk (discussed in Chapter 2) are not easily met. As a result, state unemployment compensation programs are necessary to provide weekly income to workers who become involuntarily unemployed. Likewise, the federal flood insurance program makes property insurance available to individuals and business firms in flood zones.

Enterprise Risk

Enterprise risk *is a term that encompasses all major risks faced by a business firm. Such risks include pure risk, speculative risk, strategic risk, operational risk, and financial risk*. We have already explained the meaning of pure and speculative risk. *Strategic risk* refers to uncertainty regarding the firm's financial goals and objectives; for example, if a firm enters a new line of business, the line may be unprofitable. *Operational risk* results from the firm's business operations. For example, a bank that offers online banking services may incur losses if "hackers" break into the bank's computer.

Enterprise risk also includes financial risk, which is becoming more important in a commercial risk management program. **Financial risk** *refers to the uncertainty of loss because of adverse changes in commodity prices, interest rates, foreign exchange rates, and the value of money*. For example, a food company that agrees to deliver cereal at a fixed price to a supermarket chain in six months may lose money if grain prices rise. A bank with a large portfolio of Treasury bonds may incur losses if interest rates rise. Likewise, an American corporation doing business in Japan may lose money when Japanese yen are exchanged for American dollars.

Enterprise risk is becoming more important in commercial risk management, which is a process that organizations use to identify and treat major and minor risks. In the evolution of commercial risk management, some risk managers are now considering all types of risk in one program. **Enterprise risk management** *combines into a single unified treatment program all major risks faced by the firm*. As explained earlier, these risks include pure risk, speculative risk, strategic risk, operational risk, and financial risk. By packaging major risks into a single program, the firm can offset one risk against another. As a result, overall risk can be reduced. As long as all risks are not perfectly correlated, the combination of risks can reduce the firm's overall risk. In particular, if some risks are negatively correlated, overall risk can be significantly reduced. Chapter 4 discusses enterprise risk management in greater detail.

Treatment of financial risks typically requires the use of complex hedging techniques, financial derivatives, futures contracts, options, and other financial instruments. Some firms appoint a chief risk officer (CRO), such as the treasurer, to manage the firm's financial risks. Chapter 4 discusses financial risk management in greater detail.

MAJOR PERSONAL RISKS AND COMMERCIAL RISKS

The preceding discussion shows several ways of classifying risk. However, in this text, we emphasize primarily the identification and treatment of pure risk. Certain pure risks are associated with great economic insecurity for both individuals and families, as well as for commercial business firms. This section discusses (1) important personal risks that affect individuals and families and (2) major commercial risks that affect business firms.

Personal Risks

Personal risks *are risks that directly affect an individual or family*. They involve the possibility of the loss or reduction of earned income, extra expenses, and the depletion of financial assets. Major personal risks that can cause great economic insecurity include the following:[3]

- Premature death
- Insufficient income during retirement
- Poor health
- Unemployment

Premature Death **Premature death** *is defined as the death of a family head with unfulfilled financial obligations*. These obligations include dependents to support, a mortgage to be paid off, children to educate, and credit cards or installment loans to be repaid. If the surviving family members have insufficient replacement income or past savings to replace the lost income, they will be exposed to considerable economic insecurity.

Premature death can cause economic insecurity only if the deceased has dependents to support or dies with unsatisfied financial obligations. Thus, the death of a child age seven is not "premature" in the economic sense since small children generally are not working and contributing to the financial support of the family.

There are at least four costs that result from the premature death of a family head. First, the human life value of the family head is lost forever. *The* **human life value** *is defined as the present value of the family's share of the deceased breadwinner's future earnings*. This loss can be substantial; the actual or potential human life value of most college graduates can easily exceed $500,000. Second, additional expenses may be incurred because of funeral expenses, uninsured medical bills, probate and estate settlement costs, and estate and inheritance taxes for larger estates. Third, because of insufficient income, some families may have trouble making ends meet or covering expenses. Finally, certain noneconomic costs are also incurred, including emotional grief, loss of a role model, and counseling and guidance for the children.

Insufficient Income During Retirement The major risk associated with retirement is insufficient income. The majority of workers in the United States retire before age 65. When they retire, they lose their earned income. Unless they have sufficient financial assets on which to draw, or have access to other sources of retirement income, such as Social Security or a private pension, a 401(k) plan, or an individual retirement account (IRA), they will be exposed to considerable economic insecurity.

The majority of workers experience a substantial reduction in their money incomes when they retire, which can result in a reduced standard of living. *For example, according to the 2012 Current Population Survey, estimated median money income for all households in the United States was $50,054 in 2011. In contrast, the estimated median income for households with a householder aged 65 and older was only $33,118 in 2010, or 34 percent less.*[4] This amount generally is insufficient for retired workers who have substantial additional expenses, such as high uninsured medical bills, catastrophic long-term costs in a skilled nursing facility, or high property taxes.

In addition, most retired workers have not saved enough for a comfortable retirement. During the next l5 years, millions of American workers will retire. However, an alarming number of them will be financially unprepared for a comfortable retirement. According to a 2012 survey by the Employee Benefit Research Institute, the amounts saved for retirement are relatively small. *The survey found that 55 percent of the retirees who responded to the survey reported total savings and investment of less than $25,000,*

which did not include their primary residence or any defined benefit plan. Only 15 percent reported saving $250,000 or more for retirement (see Exhibit 1.1). In general, these amounts are relatively small and will not provide a comfortable retirement.

Finally, many retired people are living in poverty and are economically insecure. New poverty data show that poverty among the aged is more severe than the official rate indicates. For 2011, the official poverty rate by the Census Bureau showed that only 8.7 percent of those aged 65 and over were counted poor. However, the official figure does not include the value of food stamps, payroll taxes, the earned income tax credit, work-related expenses, medical costs, child care expenses, and geographical differences. The Census Bureau has developed a supplemental poverty measure that includes these factors and shows that the poverty rate for the aged is significantly higher than is commonly believed. *The new measure showed that the poverty rate for the aged 65 and older was 15.1 percent or about 74 percent higher than the official rate.*[5]

Poor Health Poor health is another major personal risk that can cause great economic insecurity. The risk of poor health includes both the payment of catastrophic medical bills and the loss of earned income. The costs of major surgery have increased substantially in recent years. An open heart operation can cost more than $300,000, a kidney or heart transplant can cost more than $500,000, and the costs of a crippling accident requiring several major operations, plastic surgery, and rehabilitation can exceed $600,000. In addition, long-term care in a nursing home can cost $100,000 or more each year. Unless you have adequate health insurance, private savings and financial assets, or other sources of income to meet these expenditures, you will be exposed to great economic insecurity. At the present time, millions of Americans are uninsured and cannot afford to pay for medical care, or delay seeking needed medical care, or are ruined financially because of catastrophic medical bills and declare bankruptcy. Economic insecurity from poor health and the problems of the uninsured are discussed in greater detail in Chapter 15.

The loss of earned income is another major cause of financial insecurity if the disability is severe. In cases of long-term disability, there is substantial loss of earned income; medical bills are incurred; employee benefits may be lost or reduced; and savings are often depleted. There is also the additional cost of providing care to a disabled person who is confined to the home.

Most workers seldom think about the financial consequences of long-term disability. The probability of becoming disabled before age 65 is much higher than is commonly believed, especially by the young. According to the Social Security Administration, studies show that a 20-year-old worker has a 3 in 10 chance of becoming disabled before reaching the full retirement age.[6] Although disability for a specific individual cannot be predicted, the financial impact of total disability on savings, assets, and the ability to earn an income can be severe. In particular, the loss of earned income during a lengthy disability can be financially devastating (see Insight 1.1).

Exhibit 1.1

Total Savings and Investment Reported by Retirees, Among Those Providing a Response (not including value of primary residence or defined benefit plans)

<table>
<tr><th></th><th>2002</th><th>2007</th><th>2008</th><th>2009</th><th>2010</th><th>2011</th><th>2012</th></tr>
<tr><td>Less than $1,000</td><td rowspan="3">45%</td><td rowspan="2">32%</td><td rowspan="2">51%</td><td>23%</td><td>27%</td><td>28%</td><td>28%</td></tr>
<tr><td>$1,000–$9,999</td><td>17</td><td>15</td><td>14</td><td>19</td></tr>
<tr><td>$10,000–$24,999</td><td>13</td><td>9</td><td>16</td><td>14</td><td>12</td><td>8</td></tr>
<tr><td>$25,000–$49,999</td><td>7</td><td>10</td><td>9</td><td>13</td><td>11</td><td>6</td><td>9</td></tr>
<tr><td>$50,000–$99,999</td><td>14</td><td>11</td><td>6</td><td>9</td><td>6</td><td>11</td><td>8</td></tr>
<tr><td>$100,000–$249,999</td><td>19</td><td>20</td><td>13</td><td>10</td><td>15</td><td>12</td><td>12</td></tr>
<tr><td>$250,000 or more</td><td>15</td><td>14</td><td>12</td><td>12</td><td>12</td><td>17</td><td>15</td></tr>
</table>

SOURCE: Employee Benefit Research Institute and Mathew Greenwald & Associates, Inc. 2002–2012. Retirement Confidence Surveys.

INSIGHT 1.1

Financial Impact on Disabled Individuals Can Be Staggering, Says New Study

The financial impact on individuals who become disabled can be staggering if they lack disability insurance—as high as 20 times a person's annual salary, finds a new study released today by the nonprofit LIFE Foundation and America's Health Insurance Plans (AHIP). Conducted by the global consulting firm Milliman, Inc., the study, titled "The Impact of Disability", is a rare look at the consequences facing individuals who become disabled and can't work, and the level to which various types of disability income protection can help to reduce the financial impact. The findings reveal that in the absence of insurance, a majority of Americans would likely have to make difficult financial decisions, or even drastic lifestyle changes, in order to cover the costs associated with disability, regardless of whether the disability is short- or long-term.

The Cost of Disability Hits Single, Low Income, and Long-Term Disabled the Hardest

Examining four representative scenarios of newly disabled individuals, *the study found, for example, that the financial impact of a disability—equal to lost income plus expenses—to be as high as nearly $1 million for a 40-year-old, single male earning $50,000 per year who suffers a long-term disability lasting untill age 65—nearly 20 times his pre-disability earnings.* The study also shows that the costs associated with short-term disabilities can be quite significant—equaling one to nearly two times income in some cases for a disability lasting just two years.

The study by Milliman found that those hit hardest by the costs resulting from a disability are single individuals, who do not have a second income to rely on; lower-income individuals, because added expenses are greater relative to the lost income; and those who suffer longer-term disabilities, since both income and expenses tend to increase with inflation, raising the cost of disability over time.

Further illustrating the stark financial reality outlined by these findings is the fact that as a result of the recession, many Americans have less savings and investments to fall back on should they become disabled and can't work. According to a recent national survey conducted by LIFE, more than a quarter (27%) of Americans admit they would begin having difficulty supporting themselves financially "immediately" following a disability, while nearly half (49%) would reach that point within a month.

"Our experience tells us that if you become disabled and don't have disability insurance, you're going to have a very rough go of it. This study quantifies the impact of a disability so working Americans can get a better understanding of financial difficulties they'll likely face without proper insurance coverage," said Marvin H. Feldman, CLU, ChFC, RFC, president and CEO of the LIFE Foundation. "Disability Insurance provides a financial safety net that can be counted on to replace lost income if you were suddenly out of work due to illness or injury."

The Value and Availability of Sources of Disability Income Protection

The study also shows that various sources of disability insurance provide valuable income replacement to help cover the high costs of disability and keep life on track for people who can't work due to a disabling illness or injury.

In fact, private disability insurance plans, such as employer-sponsored (primarily group) or individual coverage, can reduce the cost of a disability by 70–80%. Individual disability coverage, in combination with employer- or government-sponsored insurance programs, can reduce the financial cost of disability by 80–95%.

The study also makes clear that while government-sponsored disability insurance—either through Workers' compensation or Social Security—is available to many working Americans, it can be difficult to qualify for. Workers' Compensation insurance is limited to disabilities that occur on the job, but a vast majority (90%) occur outside the workplace and are therefore not covered by Workers' Compensation programs. In recent years, only about 45% of initial applications for Social Security benefits have been approved, and the average monthly benefit, $1,062, is barely above the poverty level.

"The Social Security Disability Insurance (SSDI) program can be one source of disability income for many Americans, but this is no guarantee that disabled individuals will be eligible for SSDI," said Karen Ignagni, President and CEO of HIP. "Working Americans and their families can benefit from the value that private disability income insurance provides."

The Non-Financial Impact of Disability

The study also examines the non-financial impacts associated with disability. While difficult to articulate and quantify, they are often tied to an individual's overall happiness and sense of self-worth, and can be exacerbated by the financial strain that occurs when a disabled person is overwhelmed with expenses in the absence of sufficient income. The availability of benefits from government programs and private insurance during a period of disability can also mitigate the severity of the non-financial costs.

"Not only does a disability take a financial toll, but it also has an impact emotionally and psychologically on the individual and affects the family as well," said Ignagni. "Private disability coverage helps not only to address the financial toll, but it also allows a person to focus on recovery and rehabilitation."

SOURCE: Life and Health Foundation for Education (LIFE), Press Release, "Financial Impact on Disabled Individuals Can Be Staggering, Says New Study," May 15, 2009.