2

Managing Risks

Learning Objectives

An understanding of the material in this chapter should enable the student to

2-1. Describe risk management and the role of the risk manager.

2-2. Describe the basic methods of treating risks.

2-3. Explain how insurance works.

2-4. List and describe each of the four steps in the risk management process.

risk management

Chapter 1 discussed the costs of pure risk. Those costs include (1) the actual losses that occur from various perils, (2) fear and worry because of possible losses from those perils, and (3) the less-than-optimal use of resources because of the difficulty of estimating the probability of loss. Because these costs are not accompanied by corresponding benefits, most people want to do something about the pure risks they confront. *Risk management* is the term commonly used to describe a systematic process for dealing with these risks. The need for risk management, in turn, gives rise to a fourth cost of pure risks—the expenses that must be incurred to treat them.

enterprise risk management

Traditionally, risk management has focused on personal risks, property risks, and liability risks, collectively referred to as hazard risks. These are pure risks that present the possibility of loss or no loss, but no possibility of gain. Through the use of insurance, the financial consequences of these pure risks are commonly transferred to an insurer. However, it is becoming increasingly popular for businesses to take a broader view of risk management that encompasses both pure hazard risks and speculative business risks. This broader view, commonly referred to as *enterprise risk management*, is an approach to managing all an organization's risks and opportunities in order to maximize the organization's value. Risk management then takes place at the enterprise level.

Traditionally, risk management is departmentalized with hazard risks managed in a risk management department, financial risks managed in a finance department, and so forth. Organizations that follow this traditional approach rarely make relative comparisons among the various types of risks to

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determine the aggregate effect of any interaction among the risks. The broader view of enterprise risk management is designed to address these issues.

Because it deals with insurance, this text focuses on traditional risk management. However, the broad enterprise risk management philosophy of managing and coordinating various types of risks and opportunities is inherent in a comprehensive personal financial plan. We must leave it to other textbooks to focus on the other topics a comprehensive personal financial planner must master.

Financial planners must help their clients identify risks and alternatives for managing those risks. This chapter begins by looking at the nature, scope, and objectives of risk management as well as the role of the risk manager. Next, it describes the basic methods of treating risks, because the major goal of risk management is the coordination of these various alternatives. Then it discusses the individual steps in the process of risk management in more detail. Finally, the entire risk management process is reviewed in a few brief case studies that illustrate risk management decision making.

NATURE AND SCOPE OF RISK MANAGEMENT

The key steps in the risk management process are[9]

- identification. The process begins with the recognition and classification of various risks.
- measurement. The next step is the analysis and evaluation of risks in terms of frequency, severity, and variability.
- choice and use of methods to treat each identified risk. Some risks can be avoided, some controlled, some retained under planned programs, and some transferred by a method such as insurance.
- administration. Once the methods of treatment are chosen, plans for administration of the program must be instituted. This last step includes both implementing the methods selected and monitoring the choices to see that they are effective.

The details involved in these steps are described later in this chapter.

Insurance is the principal method of treating the pure risks of many businesses and households. But without careful study of all the risk management alternatives in a coordinated decision-making process, insurance may be used inappropriately, or not used where it is appropriate.

9. Some textbooks break the risk management process into six steps: identifying loss exposures, analyzing loss exposures, examining the feasibility of risk management alternatives, selecting the best risk management techniques, implementing risk management techniques, and monitoring results. See, for example, Wiening, Eric A., *Foundations of Risk Management and Insurance,* 1st ed., chapter 1, Malvern, PA: The American Institute for Chartered Property Casualty Underwriters, 2002, p. 3.7. Others combine identification and analysis for a total of five steps.

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OBJECTIVES OF RISK MANAGEMENT

The objective of risk management is to preserve the assets and income of the organization or household against the possibility of accidental loss. Implicit is the idea that preservation concerns all assets—those of property and of people. Also, the idea of protection encompasses many different methods of treating pure risks.

More specific risk management goals might include the following:

- survival
- peace of mind
- lower costs or higher net income
- stable earnings
- minimal interruption of business operations or personal life
- continued growth
- satisfaction of social responsibility with a good public image

Some of these are pre-loss objectives, meaningful before a loss has occurred. Some are post-loss objectives, and several are significant both before and after a loss.

Example: Karen and Joel Wolf are empty nesters in their late 50s who are considering an early retirement. They are not yet eligible to receive Social Security benefits, and retirement will eliminate the flow of earned income. However, Karen and Joel believe they can support themselves on income from their investments and their employers' retirement benefits. Karen and Joel's risk management goals are likely to focus on survival, peace of mind, reduced costs, stable cash flows from their retirement plans and investments, minimal interruption of their personal life, and maintaining their public image. Meeting these goals requires attention to preserving their assets and their retirement income, using insurance and other risk management techniques.

ROLE OF THE RISK MANAGER

Many business firms and other organizations employ a full-time risk manager. The risk manager of a larger firm has, in a majority of cases, full responsibility in the property and liability area for (1) identifying and evaluating risks, (2) selecting insurers, (3) approving insurance renewals and

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amounts, (4) negotiating insurance rates, (5) seeking competitive insurance bids, (6) keeping insurance records, (7) choosing deductibles, and (8) handling insurance claims. The risk manager usually shares authority for (1) deciding whether to insure or retain (including self-insuring) financial risks, (2) selecting insurance agents and brokers, (3) instituting safety programs, and (4) reviewing contracts other than insurance. In some organizations, the risk manager also has some responsibility for life and health insurance programs, while in others these programs fall within the scope of the human resources or personnel department.

Sometimes, particularly in small- and medium-sized firms, an insurance agent, broker, or consultant serves as the risk manager, because the organization has no one person assigned to these responsibilities. Larger agencies and brokerages, especially, offer to serve in this capacity. Care must be taken to see (1) that the services are much broader than mere insurance coverages and include loss prevention and other risk treatment alternatives, and (2) that the insurance agency or brokerage representative or consultant knows the firm's special individual needs.

Risk management is not only a business concept. Individuals and families can apply the same risk management principles a business uses, usually on a smaller scale. Like a business, almost every individual or household uses various techniques, including insurance, for treating pure risks. Few, if any, families employ a full-time risk manager. Like small- or medium-sized businesses, individuals and families often draw on the advice and services of an insurance agent or broker in addressing some of their risk management needs. Many also benefit from the services of a financial planner.

BASIC METHODS OF TREATING RISKS

risk control

risk financing

It is said that, if the only tool in your toolbox is a hammer, then every problem will look like a nail. The point, of course, is that no single tool adequately addresses all needs. By the same token, any single risk management tool does not provide an adequate solution to deal with all pure risks. In practice, usually all, or at least several, techniques are used together to provide the best answers for meeting the financial problems of risk. Two basic methods of treating risks are risk control and risk financing. *Risk control* refers to risk management techniques used to minimize the frequency and severity of losses; *risk financing* refers to techniques used to pay for any losses that do occur.

Risk Control Methods

The major methods of risk control that a client might use can be classified in various ways. Each of the following risk control methods aims to minimize losses to assets and income:

- risk avoidance
- loss prevention

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- loss reduction
- noninsurance transfers

Risk Avoidance

risk avoidance

Risk avoidance, the most extreme form of risk control, is used when a party decides not to incur a loss exposure or to eliminate one that already exists. For example, a family might avoid some specific liability loss exposures by deciding not to place a trampoline in its back yard or removing a trampoline that is already there. A family can decide to rent rather than buy a home, avoiding the possibility of losing the home's value through the peril of fire. A manufacturer may decide not to produce a chemical that could generate products liability claims. People who worry about poisonous snakebites or heat exhaustion can live in the Arctic or at least locate in an area with a minimum exposure to these perils. People who want to avoid the risks of airplane accidents, drownings, and sports injuries can do so largely by keeping away from airplanes, water, and sports activities, respectively.

Example: Jack and Jean Hill have recently relocated to Naples, Florida, with their three young children. They have instructed their realtor that they do not wish to consider any home that has a swimming pool. Thus, they wish to use avoidance to treat the risk of a child's drowning in their pool.

Avoidance is not a practical solution to many risks inherent in normal activities. Some unusual risks with a high chance of loss can be avoided, but risk avoidance is a realistic alternative only for a limited number of risks. Some risks may be impossible to avoid; others may not be economically desirable to avoid because of the high costs of doing so or because avoiding one risk would create another. For example, driving rather than flying avoids the possibility that family members will be injured in a plane crash on the way to Grandma's house for the holidays, but it creates the statistically greater risk of being injured in an auto accident while making the holiday trip. For unavoidable risks, other solutions must be considered.

Loss Prevention and Reduction

loss prevention

loss reduction

Two methods of risk control, loss prevention and loss reduction, are closely related:

- *Loss prevention* refers to risk control measures intended to lower the probability of loss or the frequency with which a given type of loss occurs.

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- *Loss reduction* refers to risk control measures that aim to reduce the severity of loss.

Example: Marie's doctor has urged her to obtain a flu shot in November. He points out that the shot will lower the likelihood that she will contract the flu in the ensuing months (loss prevention) and may speed up her recovery time if she does contract the flu (loss reduction).

Some loss prevention and loss reduction measures available to families and organizations are as follows:

- building fire-resistant structures
- installing security devices in homes
- scheduling annual physical examinations and mammograms
- using auto seatbelts
- introducing wellness programs into workplaces
- using safety devices to guard against injuries from lawn mowers and other machinery

Loss prevention measures, which attempt to keep losses from occurring, are obviously used before any loss occurs. Loss reduction measures apply when a loss occurs and attempt to limit its severity. For example, immediate medical treatment can reduce the damaging effect of a heart attack or a stroke that has already occurred. However, many loss reduction measures must be put into place before losses occur. A fire extinguisher, for example, can limit the damage done by a wastebasket fire. But the fire extinguisher—a loss reduction measure—must be purchased before the fire occurs.

Noninsurance Transfers

noninsurance transfers

Some *noninsurance transfers* qualify as risk control measures. These transfers use a contract, other than an insurance contract, in which one party transfers legal responsibility for a specific activity and any resulting losses to another party.

Subcontracting is one example of a noninsurance transfer for risk control. A contractor may use a contract to transfer the possibility of injury to employees in a particularly dangerous part of a construction project to someone else. Subcontracting thus eliminates the original contractor's exposure to these losses.

Likewise, a homeowner might hire a pest control company rather than using a do-it-yourself approach that might subject the homeowner, family members, or neighbors to the improper application or use of poisonous chemicals.

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Risk Financing Methods

risk financing

In most cases, the methods of risk control previously discussed lower the impact of losses. The one exception is risk avoidance, which eliminates the possibility of loss. With other risk control techniques, losses can still occur, and some additional choices are necessary when deciding how to pay for those losses. The alternative methods of *risk financing* may be divided into two major types:

- risk retention
- risk transfer

Risk Retention

risk retention

Risk retention is the risk financing method that is used when a person or organization keeps, or retains, the financial burden of any losses that occur rather than transferring them to an insurer or some other party. Risk retention may be either planned or unplanned.

Planned risk retention is the result of purposeful, conscious, intentional, and active behavior. For example, a household or firm may evaluate some of its risks as having high frequency but low severity and deliberately decide to retain them. However, many pure risks are retained due to lack of planning or failure to recognize the risk rather than from a rational planning process.

Unplanned risk retention is also common. Some risks are retained because the existence or significance of the risks is not known. Lack of knowledge or inability to reach the right decision, even with adequate knowledge, may result in unplanned risk retention. Information may be available and not used, or perhaps the necessary information is unavailable. Consider the long-term care loss exposure. Retention here is often the result of (1) failing to evaluate the need for and costs of long-term care, or (2) not knowing that insurance can be obtained for such a loss exposure. Unplanned risk retention can also result from unintentional or irrational action or from passive behavior due to laziness or lack of interest in discovering possibilities of loss. Many young married people, for example, carry little or no life insurance because they view death as a problem for much later or a subject they don't want to discuss.

Some risks are intentionally retained because the risks are relatively unimportant or other alternatives are not possible. For example, retention may be the only available option for a self-employed person with a long history of heart disease who is uninsurable for life and disability insurance. Even when insurance is available, some risks are often retained because retention is more convenient, because retention provides greater control, or because the cost of insurance appears to be too high relative to the risk.

Organizations often practice risk retention because they wish to have the control or convenience of paying for their own losses. An employer may pay employees' hospital expenses directly, for example, to improve cash flow by handling expenses when they occur rather than paying a premium in advance. A manufacturer in a competitive technical field might decide to

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retain both property and products liability loss exposures in connection with a research laboratory's highly secret inventions. Individuals or families who have accumulated an adequate emergency fund might also choose to retain certain exposures or to self-fund smaller losses, often by purchasing insurance with a substantial deductible.

deductible

A *deductible* is the initial portion of covered losses that is borne by the insured rather than by the insurance company. Deductibles are a form of partial risk retention. Having the insured receive payment only for losses over a stated amount, or only after a stated period of time has elapsed, has been accepted for many years in most types of medical expense, disability income, and property insurance. A deductible is also common in some types of liability insurance policies. Deductibles lower insurance premiums by eliminating the relatively high costs associated with processing small claims. From the insurer's perspective, deductibles also minimize attitudinal hazards by leaving an insured responsible for a portion of any loss. The policyowner who "has some skin in the game" is presumably more likely to exert an effort to minimize losses.

Some insurance policies require deductibles. Often, deductibles involve a relatively modest amount. Higher deductibles may be available at significant premium savings.

Example: Tom Burton has a homeowners deductible of $1,000 rather than his insurer's standard amount of $250. The annual premium saving is $200. In other words, by decreasing his loss recovery by $750, he saves $200 per year. Inasmuch as the average policyowner has a homeowners loss only once every 15 to 20 years, the long-run savings could be substantial.

The appropriate deductible for a given situation varies, based on several factors. Among these factors are the nature of the perils, including the frequency and severity of loss patterns; the client's financial ability to withstand losses; the existence of reserves or funds to help finance the deductible portion of losses; the policyowner's or the insurer's desire for claims handling services; the need for loss prevention services; and the client's degree of risk tolerance. Another important consideration is the premium reduction associated with any deductible. One fundamental risk management principle is, "Don't risk a lot to save a little." Suppose $500 deductible collision coverage on an auto costs only $10 more than $1,000 deductible coverage. Even if a client is able to retain a $1,000 loss, the added retained risk of the higher deductible might not be worth the savings.

The relative costs of alternative risk treatment methods are a major consideration in most decisions to retain a risk. A comparison of the cost involved in each alternative method of financing losses is necessary. If

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insurance against earthquake damage is available, how much will it cost? If earthquake damage could be prevented by extra-strong building construction, how much would this cost? Would a self-insurance program with a reserve fund be feasible for a business, and what would its cost be? In each of these comparisons, the need for complete evaluation is obvious. Not only must loss frequency and severity be considered, but also all costs of the various alternatives, including indirect as well as direct costs, must be evaluated for fair comparisons. Another significant cost factor that must be evaluated is the cost of funds, which can make risk retention plans more desirable because assets are held until losses actually occur. Tax-related issues must also be considered.

Risks that a business client or a family retains must be financed in some way. The more common methods are described below.

Absorption in Current Operating Expenses. The most common method of risk financing for retained risk is to absorb losses out of regular operating expenses or family budgets. Large organizations often generate sufficient cash inflow to absorb costs, but smaller firms are less likely to be equipped to withstand ongoing losses. Businesses might consider treating glass breakage, transportation shipment damage, and auto physical damage as current operating expenses. For individuals and families, the budget usually provides even less room for absorbing unexpected losses. However, dental bills, eyeglasses, and auto towing expenses can be among the possible candidates for this type of treatment.

Funding and Reserves. For an organization, a fund of actual segregated assets or a reserve may be used to offset losses that are too large to absorb in current operating expenses but small enough that the entity can reasonably retain the risk. For a family, an emergency fund might serve the same role.

The major disadvantage of many reserve accounts is that they do not guarantee that cash will be available to meet losses. Problems with segregated funds include (1) how large the fund should be, (2) how it can be accumulated in spite of possibly disastrous losses during the accumulation period, and (3) how the fund can be maintained without raiding it for other emergencies or using it in the organization's or household's regular operations.

Many individuals and families have savings and liquid investments that provide a safety cushion, whether or not they are set aside as a segregated emergency fund. Within limits, these resources can enable a family to retain the financial consequences of a loss that is too large to handle within the monthly budget. A good example of this type of loss is short-term disability or limited periods of unemployment.

Although money is usually borrowed for other purposes, credit arrangements can also be used to finance retained losses. For example, a client who has owned a home for 10 or 20 years may have accumulated substantial equity in the house. In the event of an emergency that does not involve damage

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to or destruction of the house itself, this equity might be tapped by taking out a home equity loan.

self-insurance

Self-Insurance. Although the term *self-insurance* is often applied to any retention of financial risks, the proper use of the term applies to formal programs of risk retention. Self-insurance is generally appropriate only for a large business in which the business acts like an insurance company for its own risks. This involves having a large number of similar loss exposures, the ability to predict overall losses with some degree of accuracy, and the establishment of a formal fund for future losses and their possible fluctuations.

captive insurer

Captive Insurers. Another risk financing method—the use of a *captive insurer*—is closely related to self-insurance. In this risk financing method, a large organization establishes a separate subsidiary insurance company to write its own insurance. Today, many captive insurers also write insurance for unrelated outside firms as well as for their own parent companies or groups.

Risk Transfer

risk transfer

Risk transfer is the loss financing method that shifts as much as possible of the financial consequences of a risk to some other party. Individuals and organizations use risk transfer because they cannot reasonably retain the financial consequences of some risks. Often, these are risks with low loss frequency but high loss severity. The risk itself still exists, but another party will largely bear the financial consequences. Two methods of risk transfers are possible: (1) noninsurance transfers, and (2) insurance.

Noninsurance Transfers. We previously discussed noninsurance transfers for risk control. As noted, these transfers involve a contract through which one party transfers the legal responsibility for a specific activity and any resulting losses to another party.

When noninsurance transfer is used as a risk financing method, the financial burden of losses, rather than the ultimate legal responsibility, is transferred. For example, purchasing an extended warranty on an auto or an air conditioning system is a noninsurance transfer method that individuals and households commonly use to handle the financial consequences of pure risks. Likewise, businesses and organizations often use hold-harmless agreements to transfer the financial consequences of some of their pure risks.

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Figure 2–1 Hold-Harmless Agreement—Sample Document

HOLD-HARMLESS AGREEMENT

This Hold-Harmless and Indemnification Agreement (“Agreement”) is entered into by and between First Class Catering, a Partnership, hereinafter “Promisor,” and Tuscon Activities Center, Inc., a Corporation, hereinafter “Promisee,” on this ____ day of _______, 20__, in Tuscon, Arizona.

Recitals

Promisor desires to rent Promisee’s premises and building, located at 300 Party Lane, Tuscon, Arizona, for an event to be held on <date>, and at other times as mutually agreed upon between the parties. The intent of this Agreement is to indemnify Promisee from any claims arising from and related to Promisor’s use and rental of these premises.

Agreement

FOR VALUABLE CONSIDERATION, the receipt of which is hereby acknowledged, Promisor and Promisee agree as follows:

Promisor will indemnify and hold harmless Promisee from any and all claims, actions, and judgments, including all costs of defense and attorney’s fees incurred in defending against same, arising from and related to Promisor’s use and rental of the premises located at 300 Party Lane, Tuscon, Arizona. Promisor’s actions include the acts of Promisor’s agents and employees.

Promisee shall be entitled, in its reasonable discretion, to settle claims prior to suit or judgment, and in such event Promisor shall indemnify and hold harmless Promisee for any such claims paid, including Promisee’s reasonable attorney’s fees incurred resulting from such claim.

In the event any claim or suit is brought against Promisee within the scope of this Agreement, Promisor shall pay for legal counsel chosen by Promisee to defend against same.

This Agreement shall encompass claims resulting from (i) the furnishing of alcoholic beverages, and
(ii) valet parking services hired by Promisor as independent contractors.

In the event either party files suit in a court of law to interpret or to enforce the terms of this Agreement, the party prevailing in such action shall be entitled, in addition to any legal fees incurred in defending against any thirty party claim, to its reasonable legal fees and costs incurred in such action to interpret or to enforce the terms of this Agreement.

This Agreement shall be interpreted under the laws of the state of Arizona.

Tuscon Activities Center, Inc.

____
By: Louise K. Russel, President

First Class Catering

____
by: Manfred O. Gerzabek, General Partner

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hold-harmless agreement

Most noninsurance transfers to finance risk deal with liability risks. A *hold-harmless agreement* is a common type of noninsurance transfer in which the transferee agrees to hold the transferor harmless in case of legal liability to others. The transferee agrees to pay claimants or the defense costs of claims or lawsuits, or to repay these losses if they fall on the transferor. If the transferee is unable to pay the losses, the ultimate responsibility remains with the transferor.

Several types of legal contracts commonly include hold-harmless agreements. In lease contracts, a variety of legal responsibilities are transferred from one party to another. A sample hold-harmless agreement appears in Figure 2–1. This particular agreement is between a catering company and a property owner, Tucson Activities Center, Inc. The catering company wants to hold functions on this property, and the property owner wants to protect itself in the event the catering company does anything, such as injuring a guest or serving liquor to a minor, for which the property owner could be sued. A similar agreement might be signed by a couple or a family renting the facility for a wedding reception or a graduation party. For example, a lease often states that property maintenance is the responsibility of the transferee (lessee) who rents the property from the owner. Homes, apartments, autos, and many other types of property are often leased or rented subject to hold-harmless agreements.

Insurance. Insurance is by far the most common risk financing method. Chapter 1 described the nature of insurance. The next section of this chapter describes briefly how insurance works.

HOW INSURANCE WORKS

How can an insurance company assume a large risk for a comparatively small premium and soon thereafter make a large loss payment? For example, life insurance pays some death claims on policies issued and in force for less than a year. Fire insurance on a building may require an insurer to pay thousands of dollars in return for the payment of a few dollars in premiums. The following four concepts help explain how insurance works:

- the insurance equation
- probability and uncertainty
- the law of large numbers
- adequate statistical data

The Insurance Equation

insurance equation

The equality between the sources of income and the uses of income constitutes the *insurance equation*. An insurer receives income from three sources: (1) premiums payments from policyowners, (2) investment earnings, and (3) other income. The other side of the insurance equation includes the

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uses of this income: (1) covered losses, (2) the cost of doing business, or expenses, and (3) covered profits (retained earnings and dividends). Figures 2-2 and 2-3 explain each of these cost factors.

Figure 2–2 The Insurance Equation

Sources of Income	Equal	Uses of Income
Premiums from policyowners		Covered losses
+		+
Investment earnings	=	Cost of doing business
+		+
Other income		Profits

Figure 2–3 Insurance Equation Illustrated

Life Insurance Company Annual Statement of Operations

Premiums	$267,775,200		Covered losses	$269,314,100
Investment earnings	$303,452,600		Cost of doing business	$268,276,800
Other income	$ 10,659,000		Profits	$ 44,295,900
Totals	$581,886,800	=		$581,886,800

Losses

Insurers deal with groups. A life insurance company is not concerned with when one person will die but with how many will die each year out of a large group. Knowing this within reasonable limits, the life insurer sets its rates so that it will take in enough money to be able to pay all expected losses. With other forms of insurance, the procedure is the same, although the result might be less predictable. The fire insurer is interested not in whether specific buildings will burn but in what the ratio of losses to premiums is likely to be when a large group of buildings is insured.

The percentage of the premium used to pay losses varies with the line of insurance written. The losses per premium dollar may be 80 percent or more for group health insurance or less than 50 percent for such lines as surety bonds and equipment breakdown insurance.

Margins are included in the rates that insurers charge. These margins are required by state law to cover specific loss reserves for some lines of insurance. Insurance rates also sometimes include margins to cover possible future catastrophic losses. For example, fires have destroyed large sections in major cities; windstorms, floods, and tsunamis have damaged wide areas; and accidents and terrorist attacks have caused many people to die at one time. Insurers must take catastrophes into consideration when computing premiums.

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Expenses

In addition to securing sufficient funds to meet all covered losses, insurers must collect enough money to pay business expenses, such as salaries, rents, supplies, taxes, and agents' commissions. Some insurers also provide special engineering and loss prevention services that are designed to save property or to promote healthy lifestyles. An insurer's cost of doing business is affected by the marketing system it uses and the services its agents render to policyowners.

Profits

Premiums must also be sufficient to generate profits. Profits are the amounts left after all losses and expenses have been paid out. In a stock company, insurers usually retain some profits to increase surplus, and the remainder is distributed to shareowners. Mutual insurance companies may return some of their profit to policyowners as policy dividends, with the remainder added to surplus for purposes of growth and financial stability. Insurers sometimes operate at a loss for a period of 1 or more years. But this condition obviously cannot continue indefinitely. Profits are essential if an insurance company is to survive in the long run.

Probability

Insurers try to avoid operating at a loss by applying probability concepts. Within calculable limits, the insurer can foresee the normal losses and can also estimate losses from catastrophes in order to compute the premium necessary to pay all losses, as well as to cover expenses and profits.

The ability to use probabilities gives the insurer a different perspective from the policyowner's. Without this ability, insurance would be nothing more than the accumulation of many small risks and accompanying uncertainties into one enormous risk. By using probabilities, even though the element of uncertainty is extreme for each individual insured, the insurer can estimate a somewhat predictable loss for its entire group of insured persons. Variability is not entirely eliminated, and some insurers are more successful than others in their predictions. Every insurance company endeavors to achieve reasonable predictability, but insurance companies often suffer losses and expenses beyond what they take in during any given year.

Law of Large Numbers

The law of large numbers, a principle referred to in chapter 1, is especially important to insurance. Also known as the law of averages, this principle states

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that as the number of independent events increases, the likelihood increases that the actual results will be close to the expected results.

credibility

Insurance is concerned with the number of times an event, or loss, can be expected to occur over a series of occasions. Certain events occur with surprising regularity when a large number of instances are observed. The regularity of the events increases as the observed instances become more numerous. *Credibility* is the degree of reliability placed on past experience to predict what will happen in the future.

Applying concepts such as probability and credibility to insurance in a hypothetical case, assume that we are considering the predictability of auto accidents in a given city. We have gathered data on two different classes of drivers, under age 25 and age 25 or older, in the city over the past several years. The data are shown in Table 2-1.

Table 2-1

Data on Two Different Classes of Drivers

	Under Age 25	Age 25 or Over
Average annual number of drivers	2,000	25,000
Average annual percentage involved in an auto accident	20%	12%
Range of annual percentages involved in an auto accident during the period	9%–31%	8%–16%

It is perhaps not surprising that, on average, a higher percentage of young drivers were involved in auto accidents during a year than older drivers. In addition, however, note that as a smaller group, the younger drivers showed a wider relative variation around their average from year to year than did the older, considerably larger group. If we were to use these data to predict future accident rates, we could predict only within a wide range of percentages for the younger drivers compared with the older group. As a result, there would be a rather low probability of actual experience equaling expected experience for the under-age-25 group. The relative variation in results for the 25-and-over group is smaller, so we could make predictions for the future more accurately. This is the "magic" of insurance—increasing predictability by applying the law of large numbers.

Adequate Statistical Data

mortality

morbidity

Sound application of the mathematical laws of probability and large numbers requires adequate statistical data. Predictions in the form of probabilities must be based on adequate and accurate statistical information. For each line of insurance, insurers carefully compile statistics to accumulate

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experience as a basis for rate making. Important life insurance statistical data deal with *mortality,* defined as the relative incidence of death. The statistical data used in estimating the number of deaths for life insurance purposes are arranged in a mortality table that shows how many persons alive at different ages are expected to die during the coming year. Likewise, health insurers are concerned about statistics regarding *morbidity,* the relative incidence of disease. The number of individuals exposed to the risk of illness and disease at each age is shown in a morbidity table. In commercial property insurance, statistics are developed for such factors as construction, occupancy, fire protection, and location pertaining to different types of buildings. For auto insurance, data for many classifications of type and use of car, territory, age of driver, and other factors are collected. These classifications help to achieve equity in the rates charged to many policyowners with different loss probabilities.

STEPS IN RISK MANAGEMENT

The first part of this chapter presented the background of the basic methods of treating pure risks. The following pages explain the steps in risk management:

- risk identification
- risk measurement
- choice and use of alternative methods of treatment
- risk administration

Risk Identification

risk identification

The process of risk management begins with *risk identification,* the careful and systematic discovery of all risks that confront a household or an organization. Often, a risk and insurance survey form, sometimes called a loss exposure audit or fact finder, is used to organize this information. Several other effective methods of risk identification for households or small businesses are financial statement analysis, personal inspections, and contract analysis.

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Table 2-2

Identification of Household/Family Loss Exposures

Types of Loss Exposure	**Consequences**
Property • Real property – Unimproved land – Residence premises – Other structures – Fixtures • Personal property – Tangible ► At residence premises ► Elsewhere – Intangible – Property held as bailee	Property • Reduction in value • Loss of use
Liability • Premises liability • Libel, slander, and other intentional torts • Employment of domestics • Autos • Recreational vehicles • Watercraft • Business-related liability • Personal activities (for example, hobbies, baby-sitting, serving alcohol, keeping pets)	Liability • Damages awards • Specific performance • Injunction • Fines • Costs of defense • Court costs
Illness and Injury • Related to employment • Not related to employment	Illness and Injury • Medical care expenses • Lost income • Extra expenses and loss of services • Long-term care
Death	Death • Costs associated with death (for example, funeral, taxes, estate administration fees) • Lost income for dependents • Lost employee benefits for dependents
Retirement	Retirement • Lost income
Unemployment	Unemployment • Lost income • Extra expenses (for example, relocation, job hunting)

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Survey Forms

Survey forms, questionnaires, and checklists are often used to identify the loss exposures of a business or nonprofit organization. Similar forms are also available for use with individuals and families. Survey forms, questionnaires, and checklists have been prepared by insurers, financial planners, and insurance agencies. A brief exposure checklist that might be used with a family appears in Table 2–2.[10]

Risk and insurance survey forms involve risk detection, identification, and classification. Sometimes they also include estimates of property values, which are part of risk measurement. Survey forms may be brief or lengthy, depending on whether they are for a household or a business and on the complexity of the case under consideration.

Financial Statement Analysis

Businesses routinely prepare a balance sheet, an income statement, and other financial statements. Although most families' accounting practices are much more informal, individuals and families who are serious about their financial planning and have not already done so are often advised to prepare a balance sheet (also known as a financial position statement), an income statement, and a budget. These documents can be useful in risk identification and risk measurement.

In financial statement analysis, each account on the balance sheet, the income statement, and other financial statements is listed and analyzed to determine the potential perils that might result in losses. For example, the tangible assets listed (house, autos, jewelry, and other items) raise questions regarding the perils that could cause loss or damage to those assets, as well as liability that might result from their ownership or use. The items on the income statement and budget pinpoint the sources of income and profits subject to indirect loss when perils occur. A comprehensive analysis of financial statements thus becomes a very useful method for identifying both direct and indirect losses.

Personal Inspections

Although many methods of risk identification are valuable as checks against possible sources of loss, none of them can replace the technical knowledge that consultants or agents provide. Personal inspections of a business operation or a household remain a significant source of information about possible losses.

10. Table 2-2 was created from materials in Hamilton, Karen L., and Malecki, Donald S., *Personal Insurance: Property and Liability,* 2d ed., chapter 1. Malvern, PA: American Institute for Chartered Property Casualty Underwriters, 1999.

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Contract Analysis

Almost every person or organization enters into contractual agreements. Hold-harmless agreements, mentioned earlier in this chapter, can mean liability exposures are transferred to the client—or from the client to others. Other relevant contracts with both financial planning and insurance implications involve short-term auto rental agreements, auto lease agreements, apartment rental agreements, agreements for the purchase or sale of a house, and the master deed or declarations of a condominium complex. Legal expertise is often necessary to interpret contractual agreements.

Techniques for Risk Identification

- Survey forms
- Financial statement analysis
- Personal inspections?
- Contract analysis

Risk Measurement

The second step in risk management is risk measurement. Each risk can be measured in three basic ways: (1) loss frequency, (2) loss severity, and (3) variability. Business risk managers often estimate expected losses on the basis of past loss experience or judgment. Risk managers also try to predict variations in future losses, in both frequency and severity.

Because the law of large numbers cannot apply, past loss experience is of limited value in evaluating many of the risks facing individuals and families. Many families go 20 years or more without a homeowners insurance claim, but the risk of a serious house fire still exists. Past loss experience can be useful in predicting some expenses, such as the cost of prescription drugs for blood pressure or for a chronic illness.

Some potential losses can be so infrequent that it would be impractical to try to deal with them. Flood damage to property high on a mountain is an example of this type of loss probability. At the other extreme, some losses may be so frequent as to be regularly anticipated. If the losses are small relative to a family's or business firm's assets or income, retaining these risks by absorbing the losses in normal expenses or by reserving for the losses as they occur would be effective. For this sort of retention to work, however, not only must the frequency of loss be high and the severity low, but the variation of losses must also be regular and predictable within ranges that the household or firm can

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handle. We will discuss this approach further in connection with the next step in the risk management process, choice and use of methods of risk treatment.

maximum possible loss

maximum probable loss

If complete data are lacking, or if the cost of making more precise estimates is too high, other methods of measuring risks may be advisable. For example, a client might divide potential losses into various categories, such as losses that are of high, moderate, or slight importance. Estimates of *maximum possible loss* and *maximum probable loss* can also be valuable. Maximum possible loss would be the worst that could happen. Maximum probable loss would be the worst that is likely to happen.

Several dimensions of maximum probable loss are pertinent. To determine the effect of losses on a household or organization, it is worthwhile to estimate the maximum probable loss not only for a single item or life exposed to loss (such as one building or one person), but also for multiple losses that could occur together (such as a windstorm over a large area or the death or disability of both parents in an accident). In addition, the risk manager should evaluate the maximum probable loss per year in terms of its financial effect on the household's or organization's resources, budget planning, and taxes.

Choice and Use of Methods of Risk Treatment

The third step in risk management is to evaluate both the suitability and the cost of various methods of treating pure risks. Sound risk management considers all methods of dealing with risks. Even considering one peril, such as fire, usually requires a risk manager to integrate the two basic methods of risk control and risk financing.

To choose among alternatives, the risk manager must understand each alternative, the conditions under which it should be considered, its advantages, and its limitations. Can the risk be avoided, or can it be controlled by loss prevention or reduction? Can some or all of the risk be financed by risk retention or risk transfer? More important, if several methods are feasible, which one method or combination of methods will provide the most desirable result?

Factors to Consider

Elaborate mathematical models have been designed to compare the benefits and costs of the various methods, and combinations of methods, to treat various pure risks. However, these models are probably not very helpful when risk management is practiced at the level of the household or small business organization. At that level, the choice of the best technique or combination of techniques is likely to be determined by such factors as:

- the maximum probable loss associated with a particular risk in comparison to the household's or firm's financial and other capacities to bear risk
- the legal restrictions that may impose or preclude the use of one or more techniques

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- the extent to which the household or firm is able to control the loss frequency or severity associated with the risk
- the loading fees (expense charges) associated with the available risk management techniques
- the value of ancillary services that may be provided as part of the risk treatment technique, especially the insurance technique
- the time value of investable funds that may be gained or lost by using certain of the available techniques
- the federal income tax treatment of losses under the various techniques
- the possible unavailability of certain techniques for dealing with some pure risks

Last, but certainly not least, the ethical implications of any risk management decision must be considered. For example, suppose the wife's employer provides a broad medical expense insurance plan for employees, with coverage available for family members at an extra cost. Meanwhile, the husband's employer provides no insurance benefits. The wife's paycheck is larger if she does not elect coverage for her husband. However, any decision to leave her husband with no medical expense coverage not only exposes the couple to financial risk but also raises ethical questions, which develop because the existence of insurance can affect one's access to health care; for instance, without insurance, the husband might need to forgo some desirable but costly treatment that would have to be paid out of pocket.

Reviewing Insurance Priorities

Reviewing insurance priorities is one of the simplest approaches to choosing a technique or combination of techniques for a household or small business. Assume that insurance will be used, if available, for each of the pure risks that has been identified and measured in the risk management process. The most suitable policy and its cost are listed for each risk as a benchmark against which to evaluate other possible techniques. Listing insurance coverages also clarifies which risks must be treated by means other than insurance—that is, the risks for which no insurance is available.

Next, insurance coverages are grouped into priority categories, such as

- essential (for example, insurance required by law or losses of possibly disastrous results for the household or business)
- desirable (for example, losses that would seriously impair but not totally wipe out the financial position of the household or business)
- available (all other types of insurance coverage)

Finally, each insurance coverage is compared with the other available techniques for treating the particular risk. For example, can some of the risks in the "essential" category be avoided? Reduced? Transferred? Can some of the risks in the "desirable" category be less expensively addressed through loss

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prevention and reduction? Can some of the risks in the "available" category be retained, at least partially?

Grouping by Frequency and Severity

A different approach to selecting the most appropriate technique, although it might lead to the same conclusion as the review of insurance priorities, is grouping the most logical techniques based on the probable frequency and severity of the losses associated with each pure risk.

- For risks that involve both high loss frequency and high loss severity, the most suitable technique is avoidance. Retention is not realistic, and insurance is too costly if it is even available. If avoidance is not possible, loss prevention or loss reduction measures might reduce frequency and/or severity to a more manageable level.
- For risks that involve high loss frequency and low loss severity, the most suitable technique is usually retention. Where possible, loss prevention measures might be employed to reduce loss frequency.
- For risks that involve low loss frequency and high loss severity, insurance is often the most suitable technique. Retention is not appropriate for one individual's or business's high-severity losses, but the cost of insurance should be manageable because the insurer covers the risks of many insurance buyers and utilizes the law of large numbers.
- For risks that involve both low loss frequency and low loss severity, the most suitable technique is usually retention. Losses don't happen very often, and when they do, the consequences are not major.

The simplicity of this approach is somewhat misleading, because it implies that risks can easily be placed into one of the four categories shown in the matrix below. In reality, risks are just not that simple. The approach is especially instructive for this book on insurance planning, however, because it calls attention to the types of risks for which insurance is suited. Clearly, insurance is best suited for low-frequency, high-severity risks. Insurance is not likely to be available for high-frequency, high-severity risks, and it probably is not economically feasible for low-severity risks.

Appropriate Risk Management Techniques

Expected Frequency	Expected Loss Severity	
	High	Low
High	Avoidance	Retention
Low	Insurance	Retention

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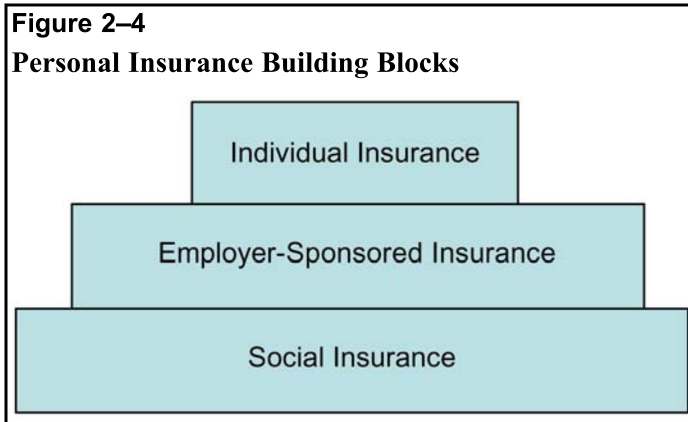
Insurance "Building Blocks" for Individuals and Families

It can be helpful to view insurance for individuals and families as a set of three building blocks (see Figure 2-4):

- social insurance
- employer-sponsored insurance
- individual insurance

Figure 2–4
Personal Insurance Building Blocks



Social Insurance. Because most people are automatically covered by social insurance of some type, it provides a foundation for insurance planning upon which other forms of insurance can build. As mentioned in chapter 1, social insurance consists of various government programs designed to help solve major social problems. Social insurance programs provide basic protection against certain types of losses. Examples include Social Security, Medicare, unemployment insurance, temporary disability insurance, and workers' compensation insurance, all of which are described in chapter 7. Social insurance programs provide compulsory employment-related coverage, partial or total employer financing, benefits prescribed by law, and benefits as a right. Emphasis is placed on social adequacy rather than individual equity.

third-party administrator (TPA)

Employer-Sponsored Insurance. Many individuals and families have access to a second layer of protection through an employer. Many employers provide group life, medical expense, and disability income insurance benefits to employees and their families. Many employers purchase group insurance from a commercial insurer. Other employers self-fund similar benefit programs, often with the aid of a *third-party administrator (TPA)*. A TPA is a firm that administers self-insurance programs for a fee.

Some employers automatically provide coverage for all employees and their dependents at the employer's expense. In other cases, an employee must choose to be covered and must also pay a portion of the cost; however, the employer typically pays the larger portion of the cost. Group insurance almost always costs the employee less than comparable individual coverage.

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As explained in more detail in later chapters, many forms of group insurance receive favorable federal income tax treatment for the employer and/or the employee.

voluntary benefits

Employers are increasingly making *voluntary benefits* available to employees. An employer makes a voluntary benefit plan available to employees, but the employer does not share in the premium cost. Voluntary benefits are referred to by various names, including *worksite products* and *mass-marketed insurance plans*. The most common products offered as voluntary benefits are various forms of life insurance, short-term and long-term disability income insurance, dental insurance, long-term care insurance, and supplemental medical policies such as cancer insurance and critical illness insurance. A few employers also offer auto and homeowners insurance as voluntary benefits.

Voluntary benefits plans have some characteristics of group insurance and some of individual insurance. As with group insurance, premiums may be payable by payroll deduction. Underwriting standards may be less stringent with insurance purchased in a voluntary benefits plan as compared with individual insurance underwriting standards, but underwriting is still done on an individual basis. As with individual insurance, each employee decides whether to purchase the optional coverage(s) his or her employer makes available. Employees should carefully examine the cost of insurance provided as a voluntary benefit. In many cases, individual coverage is available at a comparable or lower price.

cafeteria plan

A *cafeteria plan* allows employees to choose among several different types of benefits options, much as a person eating in a cafeteria decides among various available food items. In its purest form, a cafeteria plan gives employees a certain specified amount of employer-provided dollars, and the employee may select which combination of available benefits will be purchased with these funds. An employee may also be permitted to take cash in lieu of benefits. The cash option is often a sound choice for an employee whose medical expense insurance is provided through his or her spouse's employer. When an employee selects a benefit that is normally nontaxable, such as medical-expense insurance, the benefit is treated as nontaxable income to the employee. Benefits that are normally taxable—or taking cash rather than benefits—results in taxable income.

premium-conversion plan

Some cafeteria plans also permit the employee to obtain additional benefits and pay for them with salary deductions. Various cafeteria plan options enable employees to select a before-tax salary reduction to pay for their contributions to an employer-sponsored health plan or to obtain certain other types of employee benefits. This option, called a *premium-conversion plan*, may be part of a broader cafeteria plan, orthe premium-conversion plan may stand alone.

flexible spending accounts (FSAs) (Section 125 plans)

A cafeteria plan may allow *flexible spending accounts (FSAs),* also known as *Section 125 plans,* under which employees can fund certain types of expenses other than insurance premiums on a before-tax basis. Health FSAs are commonly used for medical and dental expenses not covered by

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an employer's plan—such as copayments and deductibles. Separate FSAs can also be established for dependent care expenses. Health FSAs and premium-conversion plans are examined in more detail in chapter 12.

Forms of Employer-Sponsored Insurance

- Group insurance plans
- Voluntary benefit plans
- Cafeteria plans

Cafeteria plans are subject to complex government rules, and an in-depth discussion is beyond the scope of this book. However, they often provide a cost-effective way for individuals and families to meet some of their personal insurance needs.

Individual Insurance. Individual insurance provides the third layer of insurance protection for individuals and families, and it builds on the other two layers. Individuals and families purchase individual insurance to obtain coverage that cannot be obtained on a cost-effective basis through social insurance and employer-sponsored plans and to increase the total amount of coverage available.

Auto insurance, homeowners insurance, and umbrella liability insurance are usually purchased on an individual basis because they are not available on a group basis or because group coverage, if it is available, is not cost-effective. Individual life insurance is commonly purchased to supplement the total amount of life insurance available through an employer and to obtain permanent protection that supplements the term life insurance usually provided in employer-sponsored plans. Long-term care insurance is also commonly purchased on an individual basis.

Individual insurance generally allows the most flexibility in choosing the type and amount of insurance and selecting the insurance provider. Individual insurance can remain effective despite changes in employment or an employer's cutback or termination of group insurance plans. However, individual insurance typically has stricter underwriting requirements than group insurance plans, and individual insurance is often more expensive than comparable group insurance.

Risk Administration

The fourth step in the risk management process is risk administration. Actually, risk administration must be carried out in conjunction with each of the first three steps of risk management. New risks must be continually identified, and all risks must be frequently remeasured. Treatment alternatives, too, must be reconsidered and reviewed for their effectiveness and their actual and potential costs.

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Often the process of initiating and reviewing insurance coverages for a household or small business involves shopping around for the best coverage. Agents, brokers, or financial planners are helpful in identifying and searching the available markets. Lowest costs are not the only factor to consider; the insurer's quality of service, financial strength, reputation, claims services, and loss prevention are also important, as is other business with that insurer. Shopping around may be a useful way to compare markets periodically, but it is not practical to do so every year because there is value in continued services, and there are costs involved in shopping around.

The administration of existing insurance coverages is another part of risk management. Renewal and expiration records are essential to prevent any unplanned lapse in coverage. Amounts of coverage must be kept up-to-date through frequent reevaluation of the exposures. Rate classifications and costs must be checked.

If methods of risk treatment other than insurance have been chosen, risk administration includes additional procedures and review. For example, if the client is relying on an emergency fund or on other liquid assets to cover deductibles and other retained losses, it is important to review periodically whether these assets remain both adequate and available.

EXAMPLES OF RISK MANAGEMENT DECISION MAKING

Two short case studies serve to review the steps in risk management and risk treatment techniques. The first case involves a small business firm, with emphasis on its property and liability loss exposures. The second case involves a family, with emphasis on its life and health loss exposures.

Small Business Case

This case concerns a small manufacturer of specialty plastic goods. The risk manager or consultant for the firm might apply the risk management process as described below.

Step 1—Risk Identification

Fire and products liability are relatively obvious as two major possible sources of potential loss. The risk manager or consultant also identifies and classifies other sources of loss by using a survey form covering perils or loss exposures and analyzing financial statements and contracts.

Step 2—Risk Measurement

Using past company records, the risk manager or consultant finds out that there has been extreme variation in both the frequency and severity of losses during the past 20 years. The degree of unpredictability and maximum probable

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loss are therefore high. Values of buildings, machinery, inventory, and other property are appraised.

Step 3—Choice and Use of Methods of Treatment

Risk control methods for this small manufacturer include

- avoiding some risks. To conserve working capital and avoid risks, the firm leases three trucks, with the rental company taking care of the fire, theft, and collision coverage. The manufacturer chooses the same risk management technique by leasing its computer.
- adopting an intensive loss prevention and loss reduction program against the perils of fire and explosion. The firm installs an automatic sprinkler system, hires night security guards, trains employees in fire prevention practices and the use of extinguishers, and conducts regular inspections.
- using noninsurance transfer of risk. The manufacturer subcontracts with another firm to produce one of the more toxic plastics necessary for the company's research department.

Risk financing methods include

- retaining some risks by
    - setting up a reserve in the corporate accounts to cover small losses up to $5,000. Alternatively, the operating expense accounts might simply absorb these losses.
    - selecting a deductible of $5,000 in connection with the fire insurance contract. Making the supervisors aware of the deductible may encourage loss prevention.
- transferring some risks by
    - insuring the building and its contents for $1 million with a $5,000 deductible. Consultation with several insurers and agents will help determine the proper perils and the amount of coverage.
    - making a noninsurance transfer of risk through a hold-harmless agreement with the firm's major sales distributor. In the agreement, the distributor agrees to pay for any products liability losses caused by negligence in the distribution process.

Step 4—Risk Administration

The manufacturer implements the risk treatment alternatives in step 3 through the following procedures: communication and discussion with other departments of the firm, rental of the trucks through the purchasing department, establishment of reserve accounts with the accounting department and the treasurer's office, explanation of deductibles to the supervisors of

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various departments, and coordination of the loss prevention program with the safety and security department. The manufacturer also purchases property and liability insurance through a carefully selected agent or broker who will provide appraisal services for property values at stated time intervals.

Finally, the manufacturer schedules annual reviews of all risk management methods and property values, with the option to conduct more frequent reviews if necessary. The firm also hires a consultant to evaluate the risk management decisions and arrange for reevaluation of prices for the insurance at 5-year intervals.

Family Case

Now consider how the risk management process might be applied in a family situation—in this case, to the applicable life and health pure risks. Travis and Ruth Jordan, a husband and wife, have two children: Edward and Penny. Edward is 17 and will begin college as a full-time student in a few months. Penny is 13 and in the eighth grade. Travis is 42, and he is an executive for a chain of grocery stores. He earns about $120,000 per year. Ruth, aged 39, works part-time for an orthodontist and earns about $15,000 per year. Risk management as it relates to the family's life and health pure risks might be applied in this situation as shown below.

Step 1—Risk Identification

The Jordan family faces the following risks:

- The death or disability of Travis might cause a major loss of earnings for the support of Ruth, Edward, and Penny.
- Travis's death would result in some costs, perhaps significant, to clear his estate (funeral, probate, taxes, last illness, and so on).
- Travis's disability could cause extremely high medical bills and other costs (rehabilitation therapy, long-term care, and so on).
- Travis's unemployment could result in lost income for the support of Ruth and the children, as well as some direct costs to obtain another job.
- Several years from now, Travis's retirement from his job will cause a significant loss of income for his and Ruth's support.
- Ruth's death, disability, unemployment, or retirement would cause the same types of losses as described for Travis. The size of the income losses (and some of the estate clearance costs) would be less than for Travis, but the out-of-pocket expenses if Ruth becomes disabled could be fully as large as if Travis were disabled.
- The death of Edward or Penny would cause a loss of their future earning power, some of which might be needed eventually for the support of their parent(s). There would also be some out-of-pocket costs immediately if Edward or Penny were to die.

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- The disability of Edward or Penny could lead to very high costs for medical and other types of care.

Step 2—Risk Measurement

Loss frequency rates are essentially meaningless for many of the risks facing individuals and families. Mortality and morbidity tables can be used to estimate the probability that a 42-year-old male will die or incur a disease during the next 12 months. This information is useful to insurers, who cover many 42-year-old males, but it is of limited value to Travis, who is only one 42-year-old male. Travis is concerned more with the possibility of loss than with the probability of loss. During the coming year, the possibility exists that he could die, develop a disease, become disabled, or lose his job. Sound risk management addresses all these possibilities. For example, Travis has life insurance to protect his survivors, because it is possible he could die at any time, even though the probability of death at age 42 is relatively low.

Measuring the loss severity of most risks to a family is more meaningful than measuring loss frequency. The family's loss exposures can be subjectively grouped into three broad categories based on maximum possible or maximum probable loss, as follows:

- Calamitous losses include income loss due to Travis's death, medical bills and other expenses due to his or any other family member's serious disability, income loss due to his long-term disability or unemployment, and Travis's income loss due to his retirement.
- Serious losses include income loss due to Ruth's death or long-term disability, income loss due to Travis's short-term unemployment, income loss due to Ruth's retirement, estate clearance costs due to Travis's death, and medical bills due to routine accidents or illnesses of Travis, Ruth, Edward, or Penny.
- Bearable losses include estate clearance costs due to the death of Ruth, Edward, or Penny and lost income for possible support of Travis or Ruth due to the death of Edward or Penny.

At this point, dollar values are not assigned to each of the potential losses in each category. Several later chapters, which deal with life insurance, annuities, medical expense insurance, disability income insurance, and long-term care insurance, offer guidance in assigning dollar values to various loss exposures.

Step 3—Choice and Use of Methods of Treatment

The Jordan family can undertake some risk control techniques, particularly in the areas of loss prevention and loss reduction. For example, family members can schedule periodic medical checkups and take preventive measures to lower the likelihood of disability or premature death and so reduce the lost income and out-of-pocket costs associated with those two perils.

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The family can also undertake some risk financing. For example, they can retain the losses listed in the "bearable" category, perhaps through the accumulation of an emergency fund and through absorption as part of normal operating expenses. The Jordans can partially retain some of the losses in the "serious" and "calamitous" categories through the use of deductibles and waiting periods in insurance policies. The household can also transfer some of these losses, perhaps through prearranged, guaranteed sources of credit in times of emergency (for example, a home equity line of credit from a bank). Of course, the best way for the Jordans to transfer the losses they cannot control or fully retain is through insurance. The family should give the highest priority to coverage of potentially calamitous losses through life insurance on Travis, major medical expense insurance on all four family members, long-term disability income coverage on Travis, and some type of retirement plan for Travis. The Jordans should also consider long-term care insurance, especially for Travis and Ruth. Life insurance and, if available, disability income coverage for Ruth are a somewhat lower priority, as is some type of retirement plan for her. The Jordans might also consider dental expense coverage for all family members.

Step 4—Risk Administration

Most of the Jordans' risk administration activities, of course, involve arranging and coordinating various forms of insurance coverage in proper amounts and with appropriate deductibles or waiting periods. They should consider three broad categories of insurance in this process: social insurance, employer-sponsored insurance, and individual insurance.

Social Insurance. The first building block for the Jordans involves social insurance programs. One of these programs is Social Security, which will provide a basic level of retirement income for Travis and Ruth. Social Security will also replace a portion of the income lost following the death of Travis or Ruth and, in certain cases, will replace some of the income lost if either of them becomes disabled. We discuss the benefits under these programs in detail in chapter 7.

Employer-Sponsored Insurance. The second building block for the Jordans is various insurance programs made available where Travis and Ruth work—both group insurance plans and voluntary benefit plans. Because Ruth works part-time, she may not be eligible for employee benefits. Group insurance programs—which may either be insured or self-funded by an employer—can provide specified types of coverage, such as group life insurance, group medical expense insurance, and a pension plan. In some cases, coverage is automatically given to all employees at no cost; in other cases, an employee must elect coverage and pay a portion of the cost. However, the employer often pays a significant amount of the cost, and only

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in rare circumstances is the cost more than that of comparable coverage in the individual marketplace.

The most common products offered as voluntary benefits are various forms of life insurance, short-term and long-term disability income insurance, dental insurance, vision insurance, and more recently, long-term care insurance. Some insurers also offer auto and homeowners insurance as voluntary benefits, although these are not a concern of the Jordan family in this case study. The Jordans should pay attention to the cost of voluntary products. In some cases, the cost of coverage may exceed the cost of comparable coverage in the individual marketplace, particularly if an employee is in good health or has a good driving record.

Individual Insurance. After the Jordans have met their economic security needs to the greatest extent possible through the first two building blocks—social insurance and employer-sponsored benefit plans—they should turn to the third building block, individual insurance. Here, the Jordans should make purchases to fill in coverage gaps left by social insurance and employer-sponsored insurance and to increase total coverage amounts to the necessary levels.

Auto insurance, homeowners insurance, umbrella liability insurance, and other forms of property-liability insurance not typically available through an employer fall in this area, together with individually purchased life insurance that provides higher limits and more permanent protection than that offered by an employer-sponsored plan. Long-term care insurance is also commonly purchased on an individual basis.

Monitoring the Risk Program. Once the Jordans have implemented each of the risk treatment methods, including the insurance method, administration of the risk management process requires ongoing monitoring of the choices and coverages by the Jordans and their financial consultant. New risks must be identified as they arise. The Jordans' insurance coverages and other risk treatment methods must also be reviewed periodically in light of their costs and their effectiveness in meeting the Jordans' needs.

MINI-CASE: AMY AND JOHN SCHULTZ

Case Facts

Amy and John Schultz, introduced in chapter 1, form the basis for a series of mini-cases throughout this text. Basic information regarding Amy and John is introduced in chapter 1. More information is provided in later chapters, as additional topics are discussed.

Recall that Amy Schultz, aged 28, and her husband John, aged 33, are engineers at SKH, Inc., which provides group benefits that include life

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insurance of two times their salary, medical expense insurance, short-term disability insurance, and long-term disability insurance. They just purchased their first house, which is across the street from an elementary school, and they are planning to have children soon.

Amy and John both own and drive late-model compact cars, for which they carry separate auto insurance policies, partly because of John's bad driving record, with the minimum coverages required by law.

Case Analysis

1. Describe three systems Amy and John can use to identify the risks they face.
2. Explain one specific way in which Amy and John can use each of the following risk management techniques to address the risks they face:
    - risk avoidance
    - loss prevention
    - loss reduction
    - noninsurance transfer
    - risk retention
3. Categorize each of the following risks Amy and John face in terms of its expected loss frequency and expected loss severity, and suggest an appropriate way of addressing the risk:
    - damage to John's car, which has a current market value of $12,000
    - liability claim against Amy and John because a guest is injured on their property
    - the necessity of surgery for Amy
    - a cavity in one of John's teeth that needs to be filled

Case Solution

1. Amy and John could identify their risks by using a survey form or questionnaire, reviewing their balance sheet, and conducting a personal inspection of their house and cars.
2. Amy and John could use risk management techniques in the following ways:
    - risk avoidance—Amy and John briefly consider taking a trip to a third-world country but, worried about their safety, instead take a trip to Disney's Epcot Center.
    - loss prevention—Keeping their sidewalk clear of snow helps prevent the possibility that John, Amy, or a guest or member of the public will slip and fall on their property.

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- loss reduction—Using seat belts whenever they drive will not prevent John and Amy from having auto accidents, but it can make the resulting injuries less severe.
- noninsurance transfer—A contract with any contractor working on their house might shift responsibility for injury or damage resulting from his or her work to the contractor.
- risk retention—With no collision insurance on either car, they are currently practicing risk retention.

3. Amy and John's risks can be categorized as follows:

   - Because John has a bad driving record, it would appear that accident damage to his car is a high-frequency, high-severity exposure. Loss prevention—improving his driving habits—is advisable.
   - Liability claims from an injured guest would probably be rare (low frequency), but a serious injury could result in a large claim (high severity). The liability coverage of their homeowners policy is important.
   - Surgery is usually a low-frequency, high-severity exposure, but it is one of many good reasons to have medical expense insurance.
   - Dental cavities occur with some frequency, but dental fillings are usually relatively inexpensive. The Schultzes could retain this high-frequency, low-severity exposure.

SOURCES FOR FURTHER IN-DEPTH STUDY

- Relating to property and liability exposures, a detailed personal exposure survey (including recommendations) and coverage checklists for personal auto, homeowners, personal umbrella, and personal inland marine may be found in *Personal Risk Management and Insurance,* International Risk Management Institute, Dallas, TX. Phone 800-827-4242. Web site address irmi.com.
- For a detailed discussion of business risk management, see the textbooks for the three-course Associate in Risk Management Program of the Insurance Institute of America. Phone 610-644-2100. Web site address aicpcu.org.
- For a detailed discussion of cafeteria plans:

  – Beam, Burton T., Jr., Group Benefits: Basic Concepts and Alternatives, 12th ed., chapter 19, Bryn Mawr, PA: The American College Press, 2009. Phone 888-263-7265. Web site address theamericancollege.edu.
  – Johnson, Richard E., *Flexible Benefits—A How-To-Guide*, 6th ed., Brookfield, WI: International Foundation of

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Employee Benefit Plans, 2002. Phone 888-334-3327 option 4. Web site address ifebp.org.

CHAPTER REVIEW

Key Terms and Concepts

risk management
enterprise risk management
risk control
risk financing
risk avoidance
loss prevention
loss reduction
noninsurance transfers
risk financing
risk retention
deductible
self-insurance
captive insurer
risk transfer
hold-harmless agreement
insurance equation
credibility
mortality
morbidity
risk identification
maximum possible loss
maximum probable loss
third-party administrator (TPA)
voluntary benefits
cafeteria plan
premium-conversion plan
flexible spending accounts (FSAs) (Section 125 plans)

Review Questions

Review questions are based on the learning objectives in this chapter. Thus, a [2-3] at the end of a question means that the question is based on learning objective 2-3. If there are multiple objectives, they are all listed.

2-1. What four steps might a client use in applying the risk management process? [2-4]

2-2. What are the objectives of risk management? [2-1]

2-3. How is the risk manager's role carried out differently in large organizations as opposed to small- and medium-sized firms? [2-1]

2-4. How do the two basic methods of treating risk—risk control and risk financing—differ from one another? [2-2]

2-5. Why is risk avoidance not a practical solution to many risks? [2-2]

2-6. Why might inadequate planning cause a client to retain pure risks? [2-2]

2-7. Why do planners often suggest that clients use higher insurance deductibles? [2-2]

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2-8. Your client Sam Jones feels that if he is going to buy insurance, it should pay whenever he has a loss. As a result, his insurance program includes coverage for high-frequency, low-severity losses. For example, his health insurance program includes basic medical expense coverage that pays from the first dollar of expense when he or his family goes to the doctor or the hospital. What could you recommend to Sam that would treat his risks involving high-frequency, low-severity losses more efficiently than using first-dollar insurance? [2-2]

2-9. How do families and businesses commonly finance the risks they retain? [2-2]

2-10. Four key concepts help explain how insurance works—(a) the insurance equation, (b) probability and uncertainty, (c) the law of large numbers, and (d) adequate statistical data. Why is each concept important to the operation of the insurance mechanism? [2-3]

2-11. What are four methods of risk identification that a planner can use with households or businesses? [2-4]

2-12. What factors should a client consider in choosing the best technique(s) for dealing with a risk situation, especially for a household or a small business? [2-4]

2-13. What are two approaches a client can use in deciding which technique or combination of techniques would best handle the risks households and small businesses face? [2-4]

2-14. What are the three "building blocks" that can be used to form a client's personal insurance program? [2-3]

2-15. Norma and Sidney took an early retirement from their jobs in a northern state and purchased a condominium in the sunbelt. Norma expects to remain involved in cultural and social activities while Sidney pursues his dream of writing the great American novel. They leased a convertible to enjoy the year-round sunny climate in their new area, and they also plan to travel abroad and to travel north frequently to visit their children and grandchildren.
Briefly summarize the risk management process Norma, Sidney, and their financial planner might use to identify and address the risks associated with this major change in Norma's and Sidney's lives. [2-4]

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