

Chapter 1

Risk and Its Treatment

■ Teaching Note

Welcome to Principles of Risk Management and Insurance! As you start the course, you may want to emphasize to your students the practical nature of the material that will be covered. Individuals and families face real-world risks—premature death, poor health, property damage, liability claims, and other loss exposures.

In presenting the material in this chapter, keep in mind that students must master a certain amount of new insurance terminology. Studying insurance is similar to becoming fluent in a foreign language. The student starts by building upon a basic vocabulary when learning a new language. The same is true for insurance. Insurance is a technical subject that requires a basic vocabulary.

It is also worthwhile to point out that there is no single definition of risk. However, risk has been traditionally defined as uncertainty concerning the occurrence of a loss. Because the term “risk” is ambiguous, many risk managers use the term “loss exposure.”

Take some time to discuss the major types of pure risks that can result in great financial insecurity. Pure risks can result in loss or no loss. Speculative risks may produce a loss or a gain. This chapter summarizes the important points concerning the different types of risk and methods of handling risk.

In discussing the major methods of handling risk, several points should also be stressed. First, explain that these concepts are discussed in greater detail in Chapter 3. Second, stress the idea that insurance is only one of several methods for handling risk. Finally, explain that in many cases other methods for handling risk may be more effective and that several risk treatment measures may be used together.

■ Outline

I. Definitions of Risk

- A. Different definitions of risk; risk historically has been defined as uncertainty.
- B. Objective Risk
 - 1. Defined as the relative variation of actual loss from expected loss
 - 2. Declines as the number of exposure units increases

3. Can be measured by using the standard deviation or coefficient of variation

C. Subjective (Perceived) Risk

1. Defined as uncertainty based on one's mental condition or state of mind
2. Difficult to measure

II. Chance of Loss

A. Objective Probability

1. A priori—by logical deduction such as in games of chance
2. Empirically—by induction, through analysis of data

B. Subjective Probability—a personal estimate of the chance of loss. It need not coincide with objective probability and is influenced by a variety of factors including age, sex, intelligence, education, and personality.

C. Chance of Loss Versus Objective Risk—although chance of loss may be the same for two groups, the relative variation of actual loss from expected loss may be quite different. The expected prices of two stocks might each be \$60 one year from today, and the distribution of expected prices might symmetric, meaning a fifty percent chance the price will be greater than \$60 and a fifty percent change the price will be less than \$60.

III. Peril and Hazard

A. Peril—defined as the cause of loss

B. Hazard

1. Physical hazard—physical condition that increases the chance of loss. Examples are icy streets, poorly designed intersections, and dimly lit stairways.
2. Moral hazard—dishonesty or characteristics of an individual that increase the chance of loss
3. Attitudinal (Morale) hazard—carelessness or indifference to a loss, which increases the frequency or severity of loss
4. Legal hazard—characteristics of the legal system or regulatory environment that increase the frequency or severity of losses

IV. Classifications of Risk

A. Pure and Speculative Risk

1. Pure risk—a situation where there are only the possibilities of loss or no loss
2. Speculative risk—a situation where either profit or loss is possible

B. Diversifiable Risk and Nondiversifiable Risk. Diversifiable risk affects only individuals or small groups and not the entire economy; it can be reduced or eliminated by diversification. Nondiversifiable risk affects large numbers of persons or groups in the economy and cannot be eliminated or reduced by diversification.

C. Enterprise Risk. This is a term that encompasses all major risks faced by a business firm, including pure risk, speculative risk, strategic risk, operational risk, and financial risk.

- D. Systemic Risk. This is the risk of collapse of an entire system or entire market due to the failure of a single entity or group of entities that can result in the breakdown of the entire financial system.

V. Major Personal Risks and Commercial Risks

- A. Personal Risks
 - 1. Risk of premature death
 - 2. Risk of insufficient income during retirement
 - 3. Risk of poor health
 - 4. Risk of unemployment
 - 5. Alcohol and drug addiction
- B. Property Risks
 - 1. Direct loss
 - 2. Indirect or consequential loss
- C. Liability Risks
- D. Commercial Risks
 - 1. Property risks
 - 2. Liability risks
 - 3. Loss of business income
 - 4. Cybersecurity and identity theft
 - 5. Other risks—crime exposures, human resources exposures, foreign loss exposures, intangible property exposures, government exposures

VI. Burden of Risk on Society

- A. Need for a Larger Emergency Fund
- B. Loss of Needed Goods and Services
- C. Worry and Fear

VII. Techniques for Managing Risk

- A. Risk Control
 - 1. Avoidance
 - 2. Loss prevention
 - 3. Loss reduction
 - 4. Duplication
 - 5. Separation
 - 6. Diversification
- B. Risk Financing
 - 1. Retention
 - 2. Noninsurance transfers

3. Insurance

■ Answers to Case Application

- a. *Retention*. Because the car is old and has a limited market value, collision insurance should not be purchased. Retention can be used to deal with the exposure.
- b. *Liability insurance*. Because the exposure has the potential for causing a catastrophic loss, auto liability insurance should be purchased.
- c. *Insurance*. Property insurance could be purchased to deal with the property exposure of \$10,000. The policy should contain a deductible.
- d. *Retention*. The dollar value of the loss of a disposable contact lens is small.
- e. *Loss control*. The waterbed should be carefully checked for possible leaks to reduce the possibility of damage to the apartment. As an alternative, an endorsement can be added to a homeowners policy to cover the liability exposure.
- f. *Avoidance*. Michael should pick a new running route.
- g. *Life insurance*. Michael's father should have purchased life insurance. The loss of tuition would have been replaced by life insurance.

■ Answers to Review Questions

1. (a) There is no single definition of *risk*. Historically, many insurance authors have defined risk in terms of uncertainty. *Risk* is uncertainty concerning the occurrence of a loss.
(b) A *loss exposure* is any situation or circumstance in which a loss is possible, regardless of whether a loss occurs.
(c) *Objective risk* is the relative variation of actual loss from expected loss. As the number of exposure units under observation increases, objective risk declines. *Subjective risk* is uncertainty based on one's mental condition or state of mind. Accordingly, objective risk is measurable and statistical; subjective risk is personal and not easily measured.
2. (a) *Chance of loss* can be defined as the probability that an event will occur.
(b) *Objective probability* refers to the long-run relative frequency of an event based on the assumption of an infinite number of observations and no change in the underlying conditions. *Subjective probability* is the individual's personal estimate of the chance of loss.
3. (a) *Peril* is the cause of loss. *Hazard* is a condition that creates or increases the chance of loss.
(b) *Physical hazard* is a physical condition that increases the chance of loss. *Moral hazard* is dishonesty or character defects in an individual that increase the chance of loss. *Attitudinal hazard* (*morale hazard*) is carelessness or indifference to a loss. *Legal hazard* refers to

characteristics of the legal system or regulatory environment that increase the frequency or severity of losses.

4. (a) *Pure risk* is defined as a situation in which there are only the possibilities of loss or no loss. *Speculative risk* is defined as a situation where either profit or loss is possible.
 - (b) *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. 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 reduced or eliminated by diversification.
5. (a) *Enterprise risk* is a term that encompasses all major risks faced by a business firm, which include pure risk, speculative risk, strategic risk, operational risk, and financial risk.
 - (b) *Financial risk* is the uncertainty of loss because of adverse changes in commodity prices, interest rates, foreign exchange rates, and the value of money.
 - (c) *Systemic risk* is the risk of collapse of an entire system or entire market due to the failure of a single entity or group of entities that can result in the breakdown of the entire financial system.
6. (a) *Enterprise risk management* combines into a single unified treatment program all major risks faced by the firm. These risks include pure risk, speculative risk, strategic risk, operational risk, and financial risk.
 - (b) *Traditional risk management* considered only major and minor pure risks faced by a corporation. These risks were limited to property, liability, and personnel-related loss exposures. Enterprise risk management considers all risks faced by a corporation as described in (a) above.
7. Personal risks associated with great financial and economic insecurity include the risks of premature death, insufficient income during retirement, old age, poor health, unemployment, and alcohol and drug addiction. In addition, persons owning property are exposed to the risk of having their property damaged or lost from numerous perils. Finally, liability risks are also associated with great financial and economic insecurity.
8. Risk is a burden to society in at least three ways:
 - (a) The size of an emergency fund must be increased.
 - (b) Society may be deprived of needed goods and services.
 - (c) Worry and fear are present.
9. A direct loss is a financial loss that results from the physical damage, destruction, or theft of property. Indirect loss results from or is the consequence of a direct loss. For example, if a student's car is stolen (direct loss), he or she will lose the use of the car until it is replaced or recovered (indirect loss).
10. Major risks faced by business firms include property risks, liability risks, loss of business income, cyber security and identity theft, crime exposures, human resources exposures, foreign loss exposures, intangible property exposures, and government exposures.

11. (a) Risk control techniques refer to techniques that reduce the frequency or severity of losses. They include the following:
- (1) *Avoidance*. This means a certain loss exposure is never acquired, or an existing loss exposure is abandoned. For example, a drug manufacturer can avoid lawsuits associated with a dangerous drug by not producing the drug.
 - (2) *Loss prevention*. Certain activities are undertaken that reduce the frequency of a particular loss. One example of loss prevention is periodic inspection of steam boilers to prevent an explosion.
 - (3) *Loss reduction*. This refers to measures that reduce the severity of a loss after it occurs. One example of loss reduction is an automatic sprinkler system in a department store that can reduce the severity of a fire loss.
 - (4) *Duplication*. This technique refers to have back-up or duplicate copies of important documents or property in the event a loss occurs.
 - (5) *Separation*. The assets exposed to loss are separated or divided to minimize the financial loss from a single event.
 - (6) *Diversification*. This technique reduces the chance of loss by spreading the loss exposure across different parties.
- (b) Risk financing refers to techniques that provide for the payment of losses after they occur. They include the following
- (1) *Retention*. This means that an individual or business firm retains part or all of the losses that can result from a given loss exposure. For example, a motorist may retain the first \$500 of a physical damage loss to his or her automobile by purchasing an auto insurance collision policy with a \$500 deductible.
 - (2) *Noninsurance transfers*. This means that a risk is transferred to another party other than an insurance company. For example, the risk of a defective television set can be shifted or transferred to the retailer by the purchase of a service contract by which the retailer is responsible for all repairs after the warranty expires.
 - (3) *Insurance*. Insurance transfers risk to an insurer that pays if a loss occurs. An auto insurance policy can be purchased covering liability arising from the negligent operation of an automobile.

■ Answers to Application Questions

1. Objective risk is the relative variation of actual loss from expected loss. Although the chance of loss may be identical for two different groups, the relative variation of actual from expected loss may be quite different. For example, if a company has a fleet of 1,000 trucks, the expected number of collision losses each year may be 30. However, actual losses may vary each year from 25 to 35. In contrast, another fleet of 1,000 trucks may have the same number of expected losses (30), but the annual variation may be considerably higher, such as 20 to 40. Thus, objective risk is greater for the second fleet.

2.
 - (a) This is a nondiversifiable risk because the entire nation can be affected by a terrorist attack.
 - (b) This is a pure risk. The insured rarely profits if his or her house is damaged in a fire.
 - (c) This is pure risk because of the loss of earned income. You usually do not profit if you are totally disabled.
 - (d) This is a speculative risk. Profit or loss is possible.
 - (e) This is a nondiversifiable risk because large numbers of people can lose their homes in a major flood.
 - (f) This is a nondiversifiable risk because large numbers of home buyers will be adversely affected by higher interest rates and higher monthly mortgage payments. From the viewpoint of home builders and realtors, a rise in interest rates is also a financial risk that can slow down the sale of new and used homes.
 - (g) This is a speculative risk because both profit and loss are possible.
3.
 - (a) Risk control such as exercise, losing weight, and following a healthy diet can reduce the chance of dying prematurely from a heart attack. Life insurance can also be used, which reduces or eliminates the financial consequences to surviving family members if a family head dies prematurely.
 - (b) Property insurance is an appropriate technique for dealing with the risk of a hurricane. Retention can also be used by purchasing the policy with a deductible.
 - (c) Collision insurance on the new car is an effective way to deal with this exposure. Retention can also be used by purchasing the policy with a deductible for collision losses. The insured can also drive defensively, which is a form of risk control.
 - (d) A catastrophic loss exposure is present. Auto liability insurance should be purchased to deal with the exposure.
 - (e) Professional liability insurance should be purchased to deal with malpractice suits. The surgeon could also use risk control to reduce the possibility of injuring a patient.
4. Andrew has three noninsurance options.
 - (a) *Avoidance.* Andrew can avoid the risk of burglary or robbery by going into a different line of business. However, this is not a practical solution and may not be feasible.
 - (b) *Risk control.* Risk control efforts can be undertaken to reduce both the frequency and severity of losses. A burglar alarm system can be installed. The gun shop can be relocated to another part of the city where crime rates are lower. Losses also can be prevented by hiring a guard or patrol service to protect the property.
 - (c) *Retention.* Andrew may decide to retain all losses, thereby eliminating the need for burglary insurance. However, since a large loss could result in financial ruin, he may decide to retain losses only up to a certain amount, such as \$1,000. Excess insurance can be purchased for losses exceeding the retention limit.
5.
 - (a) *Retention.* The firm is retaining the earthquake exposure.
 - (b) *Risk control.* If a fire occurs, the sprinkler system will operate automatically to extinguish the fire, thereby reducing the severity of the loss.

- (c) *Avoidance*. The firm is avoiding a lawsuit by not manufacturing products that could injure customers who use the product.
- (d) *Noninsurance transfer*. The firm manufacturing the product has transferred the risk of a liability suit to the retailers by such an agreement. This agreement is often called a hold-harmless agreement. For example, a manufacturer may insert a hold-harmless clause in a contract with a retailer by which the retailer agrees to hold the manufacturer harmless if a scaffold collapses and someone is injured.