Chapter 1
Risk and Its Treatment

■ Overview

With this chapter you begin your study of risk management and insurance. This chapter provides a working definition of risk and a discussion of the various types of risk. Some risks that we face are uncertain losses caused by perils. Hazards are conditions that increase the chance that a loss will occur. Our concern in this course primarily will be pure risks—risks in which the possible outcomes are loss and no loss. As an individual, you face personal risks, property risks, and liability risks. There are a number of methods for handling risk: avoidance, retention, loss control, noninsurance transfers, and insurance.

■ Learning Objectives

After studying this chapter, you should be able to:

• Define risk.
• Explain the meaning of a loss exposure.
• Understand the following types of risk: pure risk, speculative risk, diversifiable risk, and enterprise risk.
• Identify the major pure risks that are associated with financial insecurity.
• Show how risk is a burden to society.
• Explain the major techniques for managing risk.
• Define the following:
  
  | Attitudinal hazard | Loss control |
  | Avoidance          | Loss exposure |
  | Chance of loss     | Moral hazard  |
  | Commercial risks   | Nondiversifiable risk |
  | Direct loss        | Noninsurance transfers |
  | Diversifiable risk | Objective probability |
  | Enterprise risk    | Objective risk |
  | Enterprise risk management | Peril |
  | Financial risk     | Personal risks |
  | Hazard             | Physical hazard |
  | Hedging            | Premature death |
  | Hold-harmless clause | Property risks |
  | Human life value   | Pure risk |
  | Incorporation      | Retention |
  | Indirect (or consequential) loss | Risk |
  | Law of large numbers | Self-insurance |
  | Legal hazard       | Speculative risk |
  | Liability risks    | Subjective probability |
  |                     | Subjective risk |

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Outline

I. Definitions of Risk
   A. Objective Risk
   B. Subjective Risk

II. Chance of Loss
   A. Objective Probability
   B. Subjective Probability
   C. Chance of Loss Distinguished from Objective Risk

III. Peril and Hazard
   A. Peril
   B. Hazard
      1. Physical Hazard
      2. Moral Hazard
      3. Attitudinal (Morale) Hazard
      4. Legal Hazard

IV. Classifications of Risk
   A. Pure Risk and Speculative Risk
   B. Diversifiable Risk and Nondiversifiable Risk
   C. Enterprise Risk

V. Major Personal Risks and Commercial Risks
   A. Personal Risks
   B. Property Risks
   C. Liability Risks
   D. Commercial Risks

VI. Burden of Risk on Society

VII. Techniques for Managing Risk
   A. Avoidance
   B. Loss Control
   C. Retention
   D. Noninsurance Transfer
   E. Insurance
Short Answer Questions

1. How does objective probability differ from subjective probability?

2. What is the difference between risk and chance of loss?

3. How do moral hazard and attitudinal (morale) hazard increase the chance of loss?
4. Differentiate between the types of risk in the following pairs.

   (a) pure and speculative risks

   (b) diversifiable and nondiversifiable risks

5. What are “enterprise risk” and “enterprise risk management”? 
6. Explain why, from an economic standpoint, the impact of long-term disability can be more severe than the impact of premature death.

7. What are the major costs of risk to society?

8. What is the difference between active and passive retention? Provide an example of each.
9. What are the potential advantages and disadvantages of using (a) retention and (b) avoidance to handle risk exposures?

10. What are the major characteristics of the risk handling technique called insurance?

**Multiple Choice Questions**

*Circle the letter that corresponds to the BEST answer.*

1. Ben purchased fire insurance on his antique desk. While the desk was being moved, it was damaged. As “damage in transit” was not an insured peril, Ben set fire to the damaged desk. The desk was completely destroyed and Ben collected the insured value of the desk from his fire insurer. This scenario illustrates:
   (a) moral hazard
   (b) subjective probability
   (c) speculative risk
   (d) attitudinal hazard
2. Which statement is true with regard to risk and insurance?
   I. Most speculative risks can be insured.
   II. Insurance is a form of risk transfer.
   (a) I only
   (b) II only
   (c) both I and II
   (d) neither I nor II

3. The probability of drawing an “ace” from a thoroughly shuffled deck of playing cards is one-thirteenth (there are 4 aces out of 52 cards). This type of probability is known as:
   (a) subjective probability
   (b) objective risk
   (c) chance of loss
   (d) objective probability

4. When an earthquake occurred in California, a studio was filming a number of movies. In addition to the physical damage the studio sustained, the studio was forced to delay or cancel release of some films. The profits lost because of delay or cancellation illustrate:
   (a) consequential loss
   (b) direct loss
   (c) subjective probability
   (d) objective probability

5. Beth was late for work. As she drove around a curve, she hit a patch of oil that had been spilled on the road. She slid across the road and hit a guard rail. Beth was not hurt; however, her car was severely damaged. The presence of oil on the road is best described as a(n):
   (a) attitudinal hazard
   (b) objective risk
   (c) moral hazard
   (d) physical hazard

6. In the preceding question, the collision between Beth’s car and the guard rail is an example of a:
   (a) peril
   (b) physical hazard
   (c) legal hazard
   (d) speculative risk

7. All of the following are diversifiable risks EXCEPT:
   (a) damage from hurricanes
   (b) theft of your car
   (c) a fire at your home
   (d) investment risk
8. Collins Van Lines requires each of their moving van drivers to complete a driver safety course each year. Requiring drivers to complete a driver safety course is an example of:
   (a) retention
   (b) noninsurance transfer
   (c) avoidance
   (d) loss control

9. Jack started a construction company. To protect his personal assets from the claims of creditors and claimants, he decided to incorporate the business. Incorporating the business illustrates which method of risk treatment?
   (a) retention
   (b) noninsurance transfer
   (c) avoidance
   (d) loss control

10. The variation between actual and expected results is known as:
    (a) objective risk
    (b) objective probability
    (c) subjective probability
    (d) subjective risk

11. Which statement is true about hazard?
    I. Attitudinal hazard is a more severe problem than moral hazard.
    II. Peril and hazard are the same thing.
    (a) I only
    (b) II only
    (c) both I and II
    (d) neither I nor II

■ True/False

Circle the T if the statement is true, the F if the statement is false. Explain to yourself why a statement is false.

T F 1. The risk associated with the purchase of common stock is a pure risk.

T F 2. Indifference to loss because of the presence of insurance is called moral hazard.

T F 3. Liability risks can be more severe than property risks.

T F 4. As the sample size increases, the deviation between actual losses and expected losses also increases.

T F 5. The presence of risk leads to a less than perfect allocation of productive resources.

T F 6. Direct losses are the only type of losses associated with property risks.
T  F  7. Hedging price risks is an example of risk retention.

T  F  8. The subjective probability associated with an event is the same for all individuals.

T  F  9. There are both property risks and liability risks associated with operating an automobile.

T  F  10. Risk is the probability that a loss will occur.

T  F  11. Financial risk refers to the uncertainty of loss because of adverse price movements, changing interest rates, and similar exposures.

■ Case Applications

Case 1
Casinos and lotteries have increased in popularity in recent years. What type of risk (pure or speculative) is created when someone gambles at a casino or plays the lottery? The method of wagering at casinos is interesting. Most games of chance are designed to have repeated small bets rather than a single large bet. Why are the games designed in this way?

Case 2
Individuals who are in charge of handling loss exposures for corporations, municipalities, universities, etc., are called “risk managers.” Why are the identification of hazards and the preparation for perils important in risk management? What types of physical hazards confront the risk manager of your college or university?
Solutions to Chapter 1

Short Answer Questions

1. Objective probability is a mathematical probability that can be determined by deduction or through statistical analysis. For example, based on pooled mortality data, we can estimate the probability that an individual will die before he or she reaches age 50. Subjective probability is an individual’s personal estimate of the chance of loss. As subjective probabilities are personal estimates, they are not identical across individuals and can be influenced by a number of factors.

2. Chance of loss is a probability concept. Risk is uncertainty concerning the occurrence of loss. The chance of loss (probability) may be the same for two events, but the risk could be very different. For example, two stocks may have the same expected return, 10 percent, and the distribution of their expected returns may be symmetric (50 percent probability of gain, 50 percent probability of loss). However, the standard deviation of the returns of the first stock may be 25 percent, while the standard deviation of the returns of the second stock may be only 10 percent. Thus, the chance of loss for both stocks is 50 percent, but the first stock is of greater risk.

3. Attitudinal hazard increases the chance of loss because the individual is indifferent to loss because of insurance. Thus proper loss control activities may not be undertaken. Moral hazard is more severe. Here an individual commits dishonest acts in an effort to collect from the insurer. Attitudinal hazard does not involve an action; moral hazard involves committing dishonest acts.

4. (a) Pure risks have two possible outcomes: a loss or no loss. Speculative risks have three possible outcomes: loss, no loss, and gain. Pure risks are readily insurable, while most speculative risks are not privately insurable.
   (b) Diversifiable risk is risk that affects individuals or small groups, and not the entire economy. It is risk that can be reduced or eliminated through diversification. Nondiversifiable risk is risk that affects the entire economy or large numbers of persons or groups within the economy. It is risk that can’t be eliminated or reduced through diversification.

5. Enterprise risk encompasses all major risks faced by a business firm, including pure risks, speculative risks, strategic risks, and operational risks. Enterprise risk management combines treatment of this broad range of risks into a single, unified, risk treatment program.

6. From an economic standpoint, the consequences of long-term disability can be more severe than premature death. In either case, the income stream provided to the family by the family breadwinner is interrupted. In the case of long-term disability, however, there are additional expenses that must be incurred by the disabled individual and his/her family.

7. There are three major costs of risk to society. First, emergency funds must be set aside to pay for losses when they occur. Second, because of risk, society may be deprived of needed goods and services. Finally, because of risk, society must bear the burden of fear and worry.

8. Active retention involves a conscious decision to use retention to handle a risk after analysis of the risk. An example would be a business deciding to retain the risk of physical damage to vehicles in its delivery fleet rather than purchasing insurance. Passive retention occurs when risks are unknowingly retained. For example, a business may start to offer off-site day care as an employee benefit. The company may assume that its liability insurance will cover liability claims associated with the day care center. However, the coverage may include a “premises only” definition of insured locations. Thus, the risk is passively retained because the company thought it was covered.
9. (a) The potential advantage of retention is that if the loss level is low, the expenditure to transfer the risk would not have been incurred. The potential disadvantage is that if the loss level is high, you will be responsible for all of the loss.

(b) With avoidance, the probability of loss is reduced to zero. However, there may be some benefit that is foregone if avoidance is used. For example, the fear of liability may force discontinuation of operations and avoiding an exposure may mean the loss of profits that could have been earned if operations had continued.

10. Insurance has a number of important characteristics. First, insurance involves the transfer of risk. Second, insurance uses pooling to spread the cost of losses over the entire group that is insured. Third, insurance applies the law of large numbers to reduce objective risk.

**Multiple Choice Questions**

1. (a) As the original damage was not insured, Ben caused a greater loss in order to collect under his fire insurance policy. This fraudulent claim illustrates moral hazard.

2. (b) Speculative risks are not readily insurable. Insurance is a mechanism used to transfer risk to an insurer.

3. (d) Objective probability refers to the long-run relative frequency of an event based on an assumption of infinite observations with no changes in the underlying conditions. Given that the deck of cards is “fair,” the objective probability of drawing an ace is one-thirteenth.

4. (a) A loss that occurs as a result of a direct loss is called an indirect, or consequential, loss.

5. (d) The oil on the road is a physical condition that increases the chance of loss. It is a physical hazard.

6. (a) Peril is the cause or source of loss. The collision between Beth’s car and the guard rail is a peril.

7. (a) Diversifiable risk is risk that affects individuals or small groups of people. A hurricane can impact many people on a multiple-state basis. The other risks listed are diversifiable risks.

8. (d) Loss control activities are undertaken to reduce the frequency and severity of losses. By requiring driver safety courses, Collins Van Lines is attempting to reduce the number of losses and limit the severity of those losses that do occur.

9. (b) Jack incorporated the business in order to transfer risk from himself to a legally-created entity, the corporation. Business-related claims will be brought against the corporation, rather than against Jack and his personal assets. Jack is using incorporation as a noninsurance transfer of risk.

10. (a) The variation between actual losses and expected losses is called objective risk. Minimizing objective risk through the application of the law of large numbers is crucial for private insurers.

11. (d) Neither statement is true. Moral hazard is more severe than attitudinal hazard. Attitudinal hazard is a feeling or disposition towards risk, while moral hazard involves committing dishonest acts. Peril and hazard are not the same thing. Hazard is a condition that increases the chance of loss. Peril is the cause or source of loss.
True/False

1. F This risk is a speculative risk because there are three possible outcomes: loss, breaking even, and gain. Loss and no loss are the possible outcomes with pure risks.

2. F Indifference to loss because of the presence of insurance is called attitudinal (morale) hazard.

3. T

4. F When the sample size increases, the deviation between actual losses and expected losses declines. Private insurers rely on this principle, known as the law of large numbers.

5. T

6. F Indirect losses, such as continuing expenses and the loss of profits, also are associated with property risks.

7. F Hedging price risks illustrates the transfer of risk, not risk retention.

8. F Subjective probability is an individual’s personal assessment of the chance of loss. Individuals may perceive the same situation differently, depending on their risk aversion, prior experience, age, education, and other factors.

9. T

10. F Chance of loss is the probability that a loss will occur. Risk is uncertainty concerning the occurrence of loss.

11. T

Case Applications

Case 1
The risk that is created when someone gambles is a speculative risk. In addition to the possibility of loss or no loss, there is also the potential for gain when one gambles. The reason that casino games are designed to include many repetitions is to reduce the level of objective risk for the casino. If a casino game is played four times for high stakes, the casino could lose four times in a row. However, if the casino game is played four hundred times at smaller stakes, the actual result will be far closer to the expected outcome. Although insurance is very different from gambling, both insurers and casinos apply the same mathematical principle (the law of large numbers) to reduce objective risk.

Case 2
By identifying hazards before losses occur, the risk manager may be able to reduce the likelihood that the hazard will lead to a loss. By preparing for losses caused by perils before they occur, risk managers are in a better position to respond when losses occur. Some physical hazards that may be important to the risk manager at your college or university include: hazardous substances in chemistry labs, crowded classrooms with limited building exits, ice on campus roads and sidewalks, unattended dormitory rooms, unattended vehicles in the parking lot, and unruly crowds at athletic events and concerts held on campus.