Chapter 2
The Insurance Mechanism

■ Overview

Insurance is an important method of transferring pure loss exposures to an entity better positioned to handle these risks. But what is insurance and how does insurance work? This chapter analyzes the insurance mechanism. You will learn the important characteristics of insurance and what conditions must be present for a risk to be privately insurable. This chapter also provides an overview of private and government insurance. Private insurance can be divided into two divisions: property and liability insurance and life and health insurance. Government insurance programs are designed to insure risks that may not be insurable by a private insurance company. Although insurance provides many benefits to society, there are some costs associated with the use of insurance. These costs and benefits are discussed at the conclusion of this chapter.

■ Learning Objectives

After studying this chapter, you should be able to:
• Explain the basic characteristics of insurance.
• Explain the law of large numbers.
• Describe the characteristics of an ideally insurable risk from the viewpoint of a private insurer.
• Identify the major insurable and uninsurable risks in our society.
• Describe the major types of insurance.
• Explain the social benefits and social costs of insurance.
• Define the following:
  Adverse selection      Ocean marine insurance
  Casualty insurance     Personal lines
  Commercial lines       Pooling
  Expense loading        Property insurance
  Fidelity bonds         Reinsurance
  Fortuitous loss        Requirements of an insurable risk
  Indemnification        Risk transfer
  Inland marine insurance Social insurance
  Insurance              Surety bond
  Law of large numbers   Underwriting
  Liability insurance
  Life insurance
Outline

I. Definition of Insurance

II. Basic Characteristics of Insurance
   A. Pooling of Losses
   B. Payment of Fortuitous Losses
   C. Risk Transfer
   D. Indemnification

III. Characteristics of an Ideally Insurable Risk
   A. Large Number of Exposure Units
   B. Accidental and Unintentional Loss
   C. Determinable and Measurable Loss
   D. No Catastrophic Loss
   E. Calculable Chance of Loss
   F. Economically Feasible Premium

IV. Adverse Selection and Insurance

V. Insurance and Gambling Compared

VI. Insurance and Hedging Compared

VII. Types of Insurance
   A. Private Insurance
      1. Life and Health Insurance
      2. Property and Liability Insurance
   B. Government Insurance
      1. Social Insurance
      2. Other Government Insurance

VIII. Benefits of Insurance to Society

IX. Costs of Insurance to Society
Short Answer Questions

1. What are the basic characteristics of insurance?

2. What is adverse selection? How do insurance companies attempt to avoid the problem of adverse selection?

3. Can individuals who have a higher-than-average probability of loss be insured without adverse selection occurring?
4. From the viewpoint of a private insurer, what are the ideal characteristics for a risk to be privately insurable?

5. Last night Ken and Ann Johnson’s home burned to the ground. They were not insured. Clearly this was a catastrophic loss for the Johnsons; yet one of the characteristics of a privately insurable risk is that losses must not be catastrophic. Explain this apparent contradiction.

6. What is the law of large numbers? Why is the law of large numbers important to private insurers?
7. If a risk cannot be insured by a private company, does that mean that the risk cannot be insured?

8. Complete this outline:

   I. Private Insurance
      A.
      B.

   II. Government Insurance
      A.
      B.

9. In what ways does insurance benefit society?
10. What are the costs of insurance to society?

11. How do insurance and gambling differ?

**Multiple Choice Questions**

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

1. All of the following are characteristics of ideally insurable risks EXCEPT:
   (a) losses must not be catastrophic
   (b) losses must not be accidental
   (c) there must be a large number of exposure units
   (d) losses must be determinable and measurable
2. Rhonda is concerned that her employees might steal money from the cash register. To provide protection against such losses, Rhonda should purchase:
   (a) workers’ compensation insurance
   (b) fidelity bonds
   (c) social insurance
   (d) marine insurance

3. Which statement(s) is (are) true with regard to insurance?
   I. It involves the pooling of fortuitous losses.
   II. It involves transfer of risk and indemnification of loss.
   (a) I only
   (b) II only
   (c) both I and II
   (d) neither I nor II

4. Spreading of losses incurred by a few persons over the entire group so that in the process the average loss is substituted for the actual loss is called:
   (a) indemnification
   (b) adverse selection
   (c) underwriting
   (d) pooling

5. Insurance benefits society in all of the following ways EXCEPT:
   (a) it reduces fear and worry
   (b) it provides indemnification when losses occur
   (c) it leads to inflated claims
   (d) it provides a source of investment funds

6. All of the following risks are privately insurable EXCEPT:
   (a) the risk of premature death
   (b) the risk of physical damage to your car
   (c) the risk of unemployment
   (d) the risk of poor health

7. Ron was concerned that customers at his store might be injured while on the premises and file a lawsuit against him. To provide protection against such claims, Ron should purchase:
   (a) liability insurance
   (b) social insurance
   (c) surety bonds
   (d) inland marine insurance
8. Which statement(s) is (are) true with regard to the law of large numbers?
   I. By applying the law of large numbers, insurers prevent losses from occurring.
   II. According to the law of large numbers, as the sample size increases, objective risk declines.
   (a) I only
   (b) II only
   (c) both I and II
   (d) neither I nor II

9. A small property and liability insurance company concentrated its underwriting efforts in one city in Oklahoma. When tornadoes damaged a large number of structures in the city, the insurer did not have adequate financial resources to pay the losses and it became insolvent. Which characteristic of an ideally insurable risk was violated in this scenario?
   (a) there must be a large number of exposure units
   (b) the loss should not be catastrophic
   (c) the loss must be accidental and unintentional
   (d) the loss must be determinable and measurable

10. Although insurance benefits society in many ways, there are some social costs associated with insurance. These social costs include all of the following EXCEPT:
    (a) insurers’ cost of doing business
    (b) inflated claims
    (c) indemnification of losses
    (d) fraudulent claims

   □ 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. Marine insurance is used to insure goods in transit.

   T F   2. Multiple-line insurance provides several types of coverage in one contract.

   T F   3. There is no reason for the government to be involved in insurance.

   T F   4. Insurers play no role in capital formation in the U.S. economy.

   T F   5. Insurance benefits society by enhancing credit.

   T F   6. According to the law of large numbers, as the number of exposure units increases, the average size of loss declines.

   T F   7. Insurance and hedging are the same thing.

   T F   8. Market risks, financial risks, production risks, and political risks are generally uninsurable.
T  F  9. Pooling means that losses of a few are spread over the group and the average loss is substituted for the actual loss.

T  F  10. Social insurance programs are voluntary private insurance programs.

T  F  11. Purchasing insurance is simply a gamble that you will experience a loss.

T  F  12. A fortuitous loss is a loss that is expected to occur.

■ Case Applications

Case 1

An automobile club charges more for first-year memberships than for renewal memberships. When asked about this pricing policy, a club official said, “It costs something to put the new members’ names on the books, and, more importantly, utilization of club services tends to be much higher for first-year club members, so we must adjust our rates accordingly.” Is a similar phenomenon observed in private insurance markets? Explain.

Case 2

The Feelings Mutual Insurance Company is considering insuring two risks the company has not previously insured: windstorm and war. Considering the requirements of privately insurable risks, will The Feeling Mutual Insurance Company be able to write insurance for windstorm and war? Explain your answer.
Solutions to Chapter 2

Short Answer Questions

1. Insurance has a number of distinct characteristics. These characteristics include: pooling of losses, payment of fortuitous losses, risk transfer, and indemnification of losses.

2. Adverse selection is the tendency for persons who have a higher-than-average chance of loss to seek insurance at average rates, which if not controlled by underwriting, results in higher-than-expected losses. Insurance companies attempt to deal with the problem of adverse selection through careful underwriting and contractual provisions. Underwriting refers to the selection and classification of insureds. Underwriters determine if the policy should be written by the insurer, and if so, what premium should be charged and what restrictions should apply.

3. Yes. If these individuals are recognized as higher-than-average risks and charged a premium commensurate with the level of risk, adverse selection does not occur. There are auto insurers, for example, that specialize in insuring high-risk drivers.

4. From the viewpoint of a private insurer, there are six ideal characteristics of an insurable risk:
   - There must be a large number of exposure units.
   - The loss must be accidental and unintentional.
   - The loss must be determinable and measurable.
   - The loss should not be catastrophic.
   - The chance of loss must be calculable.
   - The premium must be economically feasible.

5. There is no contradiction. Recall that we are considering whether the loss exposure can be insured from the viewpoint of a private insurer. The loss of the family home is a catastrophic loss from the homeowner’s perspective; but from the insurer’s perspective, the loss of one home is not a catastrophic loss. Insurers are in the business of losses—they expect some losses to occur. It’s only when losses are substantially higher than expected that insurers consider losses catastrophic.

6. The law of large numbers is a mathematical principle which states that as the sample size increases, the deviation between actual results and expected results declines. This principle is important to private insurers because through the application of the law of large numbers, insurers can reduce objective risk by increasing the number of loss exposures insured.

7. Just because the risk cannot be insured privately does not mean that the risk is uninsurable. Some risks that cannot be insured privately are covered by government insurers. For example, it is difficult for private insurers to write flood insurance and unemployment insurance. These coverages can be made available, however, through government involvement.

8. The two sub-categories under Private Insurance are:
   A. Life and Health Insurance
   B. Property and Liability Insurance

   The two sub-categories under Government Insurance are:
   A. Social Insurance
   B. Other Government Insurance
9. Insurance benefits society in a number of ways, including: indemnification of losses, less worry and fear, source of investment funds, loss prevention incentives, and enhancement of credit.

10. Although insurance provides a number of benefits to society, there are a number of social costs attributable to the presence of insurance. First, there is the cost of insurance company operations. Second, there is a cost associated with fraudulent claims. Finally, claims may be inflated because of the presence of insurance.

11. Although insurance is often confused with gambling, there are two major differences between insurance and gambling. First, gambling creates a new speculative risk that was not present before, while insurance is a method of dealing with a pure risk that is already present. Second, gambling is socially unproductive, since the winner’s gain comes at the expense of the loser. Insurance is socially productive, since both the insurer and the insured have a common interest in loss prevention and both parties benefit if a loss does not occur.

**Multiple Choice Questions**

1. (b) To be insurable, losses must be accidental and unintentional. If a loss is not accidental, it means that it is intentional.

2. (b) Fidelity bonds provide protection against the dishonest acts of employees, such as theft of cash.

3. (c) The four key characteristics stressed in the definition of insurance are covered in both statements. These characteristics include: pooling, fortuitous losses, transfer of risk, and indemnification of losses.

4. (d) Through pooling, the average loss of the group is substituted for the actual loss that individual members of the group may experience.

5. (c) The inflated claims that arise because of insurance are a cost of insurance to society, not a benefit.

6. (c) The risk of unemployment, as demonstrated in your text, generally is not privately insurable.

7. (a) Liability insurance provides protection against such lawsuits.

8. (b) The first statement is incorrect. The law of large numbers does not prevent losses from occurring. The law of large numbers addresses the predictability of losses. The second statement is correct. As the sample size increases, the variation between actual and expected losses (objective risk) declines.

9. (b) This insurer experienced catastrophic losses because it concentrated too much of the coverage it wrote in one area. Many of its exposure units were damaged at the same time, producing catastrophic losses for the insurer.

10. (c) Indemnification of losses is a benefit of insurance to society, not a cost.
True/False
1. T
2. T
3. F Some coverages that are deemed necessary by society are difficult, if not impossible, for private insurers to write. In such situations, the government is in a better position to provide the coverage than are private insurers.
4. F Insurers play an important role in capital formation in the U.S. economy. The premiums paid by policyowners are available for insurers to invest in the capital markets. Insurers are important investors in mortgages, corporate securities (stocks and bonds), and government securities. Investment income is an important source of revenue for insurers.
5. T
6. F The law of large numbers does not address the average size of individual losses. As the sample size increases, the frequency of loss becomes more predictable.
7. F Insurance differs from hedging. Insurance transfers risks that are insurable. Hedging is used to transfer risks that are typically uninsurable, such as adverse price movements of a commodity. Secondly, insurance can reduce objective risk through the application of the law of large numbers. Hedging typically transfers risk only—it does not reduce risk.
8. T
9. T
10. F Social insurance programs are compulsory government insurance programs.
11. F There are two major differences between insurance and gambling. Insurance addresses a pure risk that already exists, while gambling creates a new speculative risk. Also, gambling is socially unproductive as a winner’s gain comes at the expense of someone else. Insurance benefits both the insurer and the insured.
12. F A fortuitous loss is a loss that is unforeseen and unexpected.

Case Applications
Case 1
Auto clubs, like private insurers, are susceptible to adverse selection problems. Uninsured individuals are more likely to seek health insurance when they begin to have health problems. Drivers not enrolled in auto clubs are more likely to seek to join an auto club in anticipation of the need for club services (e.g., just before going on a long trip). Through underwriting, private insurers attempt to prevent higher-than-average risks from passing as average risks, leading to higher than anticipated losses. The auto club, aware that the utilization rate of club services will be higher than average for new club members, loads (charges extra) for a similar phenomenon.
Case 2

Is windstorm privately insurable?

- There would be a large number of exposure units.
- Losses would be accidental and unintentional.
- Losses would be determinable and measurable.
- Losses would not be catastrophic if the company diversified geographically or used reinsurance.
- The chance of loss is calculable based on historical data.
- The premium would be economically feasible.

Windstorm meets the requisites of insurable risks. It should be noted, however, that it is difficult for insurers to cover damage caused by hurricanes in certain areas (e.g., the Gulf Coast and property close to the ocean on the East Coast of the U.S.). In some states, “wind plans” help to make coverage for this type of damage available to property owners.

Is war privately insurable?

- There would be a large number of exposure units.
- Losses would not be accidental and unintentional—in war the intent is to destroy property.
- Losses may be difficult to determine and measure if widespread destruction occurred.
- Losses could very well be catastrophic; entire neighborhoods in London and Dresden were destroyed in World War II; if atomic weapons were used, such as the one used on Hiroshima, losses would indeed be catastrophic.
- The chance of loss would not be calculable because the peril insured against is not a random event.
- Finally, because intentional catastrophic loss is possible and data are not available upon which premiums can be based, it is unlikely an affordable premium could be determined.

War is not privately insurable.