

PRINCIPLES OF RISK MANAGEMENT AND INSURANCE

CLASS NOTES

Chapter 2

The Insurance Mechanism

Review questions

1.

Which of the following risks are considered insurable risks?

- I. Static Risks
- II. Dynamic Risks
- III. Speculative Risks
- IV. Pure Risks
- V. Inflation Risk
- A. I and IV only
- B. II and IV only
- C. I, IV, and V
- D. I, II, III, IV, and V

Answer: A

Only pure risks are insurable. Static risks are a type of pure risk that tends to occur with regularity- they can be insured against. Dynamic, Inflation, and Speculative risks are all uninsurable.

Question 2:

Which of the following is an element of insurable risk?

- A. The loss must be unexpected or accidental
- B. The loss must be catastrophic
- C. The loss produced by the risk cannot be measurable
- D. The loss must be damage related

Answer: A

The loss must be unexpected or accidental to be an insurable risk. It cannot be catastrophic and it must be measurable and definitive.

Chapter 2 Topics

- Definition and Basic Characteristics of Insurance
- Characteristics of An Ideally Insurable Risk
- Adverse Selection and Insurance
- Insurance and Gambling Compared
- Insurance and Hedging Compared
- Benefits and Costs of Insurance to Society

Definition of Insurance

- Commission on Insurance Terminology of the American Risk and Insurance Association :

“Insurance is the pooling of fortuitous losses by transfer of such risks to insurers, who agree to indemnify insureds for such losses, to provide other pecuniary benefits on their occurrence , or to render services connected with the risk.”

Basic Characteristics of Insurance

Based on the insurance definition, an insurance plan typically includes the following characteristics:

- 1-Pooling of losses
- 2-Payment of fortuitous losses
- 3-Risk transfer
- 4-Indemnification

1-Pooling of losses(sharing of losses)

Pooling involves spreading losses incurred by the few over the entire group.

- Risk reduction is based on the Law of Large Numbers.
- According to the Law of Large Numbers, the greater the number of exposures, the more closely will the actual results approach the probable results that are expected from an infinite number of exposures.
- Example of Pooling:
 - Two business owners own identical buildings valued at \$50,000
 - There is a 10 percent chance each building will be destroyed by a peril in any year
 - Loss to either building is an independent event
 - Expected value and standard deviation of the loss for each owner is:

$$\text{Expected loss} = 0.90 * \$0 + 0.10 * \$50,000 = \$5,000$$

$$\begin{aligned}\text{Standard deviation} &= \sqrt{0.90(0 - \$5,000)^2 + 0.10(\$50,000 - \$5,000)^2} \\ &= \$15,000\end{aligned}$$

- Example, continued:
 - If the owners instead pool (combine) their loss exposures, and each agrees to pay an equal share of any loss that might occur:

$$\begin{aligned}\text{Expected loss} &= 0.81 * \$0 + 0.09 * \$25,000 + 0.09 * \$25,000 + 0.01 * \$50,000 \\ &= \$5,000\end{aligned}$$

$$\begin{aligned}\text{Standard deviation} &= \sqrt{0.81(0 - \$5,000)^2 + (2)(0.09)(\$25,000 - \$5,000)^2 + 0.01(\$50,000 - \$5,000)^2} \\ &= \$10,607\end{aligned}$$

- As additional individuals are added to the pool, the standard deviation continues to decline while the expected value of the loss remains unchanged

2-Payment of Fortuitous Losses

Fortuitous Losses or accidental losses

Insurance company pays for an “accidental” losses and they must be “unforeseen” and “unexpected”. This kind of loss is called fortuitous loss.

Example: a person may slip on an icy sidewalk and break a leg. The loss would be fortuitous.

Law of large number is based on the assumption that losses are accidental and occur randomly. Therefore, Insurance policies don't pay for intentional losses.

3-Risk Transfer

Risk transfer means that a pure risk is transferred from insured to the insurer, who is in a stronger financial position than the insured.

Pure risks such as the risk of premature death, poor health, disability, destruction and theft of property, and personal liability lawsuit.

4-Indemnification

The insurer puts the insured back to the same financial position prior to the occurrence of loss.

Example: If your home burns in a fire, a homeowner policy will indemnify you or restore you to your previous position.

- If you hit somebody with your car and you are liable for his bodily injury, insurer indemnifies the person by using the auto liability insurance.

Characteristics of an Ideally Insurable Risk

Private insurers only insure pure risks but not all pure risks are insurable. A pure risk ideally should have certain characteristics to be insurable.

- Large number of exposure units.
- Loss must be accidental and unintentional.
- Loss must be determinable and measurable.
- Loss should not be catastrophic.
- Chance of loss must be calculable.
- Premium must be economically feasible.

Large Number of Exposure Units

- The should be large number of similar but not necessarily identical exposure units that are subjected to the same peril or group of perils.

Example: Large number of houses in a city can be insured through property insurance on houses.

Accurate prediction of losses based on the law of large number is the purpose of first requirement.

Accidental and Unintentional Loss

The loss should be unintentional and unexpected by the insured and outside the insured 's control.

If the cause of loss is intentionally, the insurer does not pay for the loss.

- Two reasons why the second requirement is necessary:

1-If the intentional loss paid by insurer, moral hazard would be increased substantially and the premiums would rise consequently (fake accident, fraudulent claim, inflating the amount of a claim, Intentionally burning the unsold merchandise).

2-The loss should be accidental because the law of large number is based on the random occurrence of events whereby the intentional loss is not a random event. Therefore, the aim of law of large number is violated due to the prediction of future experience may be highly inaccurate.

Determinable and Measurable Loss

- The loss should be both determinable and measurable meaning that time , place and amount of loss should be distinguishable.

Example: In life insurance policies usually the time and the cause of death can be determinable and the death benefit is usually the face amount of life insurance policy.

The basic purpose of third requirements is to enable an insurer to determine if the loss is covered under the policy, and if it is covered, how much should be paid.

Example:

Shanon had an expensive fur coat that is insured under homeowners policy. It makes a great deal of difference to insurer if a thief breaks into her home and steals the coat, or the coat is missing because her husband gave it for dry-cleaning and forgot to tell her.

The loss is covered in the first example but not in the second.

No Catastrophic Loss

- Catastrophic losses periodically result from floods, hurricanes, tornadoes, earthquakes, forest fires, and other natural disasters or acts of terrorism.
- The loss should not be catastrophic meaning that a *large number of exposure units should not incur losses at the same time.*
- Pooling techniques does not work if most or all of the exposure units in a certain class **simultaneously** incur a loss(losses of the few are no longer spread over the entire group).

Calculable Chance of Loss

- Chance of loss should be calculable.

The average severity and average frequency of future losses must be calculable by the insurer.

- Why chance of loss should be calculable?

If chance of loss is calculable, the proper premium can be charged to pay all claims and expenses and yield a profit during the policy period.

- The chance of loss for catastrophic event cannot be accurately estimated. Why?

Catastrophic loss such as floods, wars, and cyclical unemployment occur on an irregular basis and prediction of severity and frequency of losses is difficult.

Economically Feasible Premiums

- The premium should be economically feasible meaning that the insured must be able to afford the premium and indeed the premium must be substantially less than the face value.

Based on these requirements:

- Most personal, property and liability risks can be insured.
- Market risks, financial risks, production risks and political risks are difficult to insure.

Exhibit 2.1 Risk of Fire as an Insurable Risk

<i>Requirements</i>	<i>Does the risk of fire satisfy the requirements?</i>
1. Large number of exposure units	Yes. Numerous exposure units are present.
2. Accidental and unintentional loss	Yes. With the exception of arson, most fire losses are accidental and unintentional.
3. Determinable and measurable loss	Yes. If there is disagreement over the amount paid, a property insurance policy has provisions for resolving disputes.
4. No catastrophic loss	Yes. Although catastrophic fires have occurred, all exposure units normally do not burn at the same time.
5. Calculable chance of loss	Yes. Chance of fire can be calculated, and the average severity of a fire loss can be estimated in advance.
6. Economically feasible premium	Yes. Premium rate per \$100 of fire insurance is relatively low.

Exhibit 2.2 Risk of Unemployment as an Insurable Risk

<i>Requirements</i>	<i>Does the risk of unemployment satisfy the requirements?</i>
1. Large number of exposure units	Not completely. Although there are a large number of employees, predicting unemployment is often difficult because of the different types of unemployment and different types of labor.
2. Accidental and unintentional loss	Not always. Some unemployment is due to individuals who voluntarily quit their jobs.
3. Determinable and measurable loss	Not completely. The level of unemployment can be determined, but the measurement of loss may be difficult. Most unemployment is involuntary because of layoffs or because workers have completed temporary jobs. However, some unemployment is voluntary; workers voluntarily change jobs because of higher wages, a change in careers, family obligations, relocation to another state, or other reasons.
4. No catastrophic loss	No. A severe national recession or depressed local business conditions in a town or city could result in a catastrophic loss.
5. Calculable chance of loss	Not completely. The different types of unemployment in specific occupations can make it difficult for actuaries to estimate the chance of loss accurately.
6. Economically feasible premium	Not completely. Adverse selection, moral hazard, policy design, and the potential for a catastrophic loss could make the insurance too expensive to purchase. Some plans, however, will pay unemployment benefits in certain cases where the unemployment is involuntary, and the loss payments are relatively small, such as waiver of life insurance premiums for six months, or payment of credit card minimum payments for a limited period.

Adverse Selection and Insurance

- Adverse selection is the tendency of persons with a higher-than-average chance of loss to seek insurance at standard rates.
- If not controlled by underwriting, adverse selection results in higher-than-expected loss levels.
- Adverse selection can be controlled by:
 - careful underwriting (selection and classification of applicants for insurance)
 - policy provisions (e.g., suicide clause in life insurance)

What does underwriting mean?

- Underwriting is the process of selecting and classifying applicants for insurance.
- Those applicants that met the underwriting standards are insured at standard rates, but those applicants that have higher-than-average chance of loss, the insurer denies to provide insurance for them or they have to pay extra premium.
- The problem of adverse selection arises when applicants with a higher-than-average chance of loss succeed in obtaining the coverage at standard or average rates.

Insurance vs. Gambling

Insurance

- Insurance is a technique for handling an already existing pure risk
- Insurance is always socially productive:
 - both parties have a common interest in the prevention of a loss

Gambling

- Gambling creates a new speculative risk
- Gambling is not socially productive
 - The winner's gain comes at the expense of the loser

Insurance vs. Hedging

Insurance

- Risk is transferred by a contract
- Insurance involves the transfer of pure (insurable) risks
- Insurance can reduce the objective risk of an insurer
 - through the Law of Large Numbers

Hedging

- Risk is transferred by a contract
- Hedging involves risks that are typically uninsurable
- Hedging does not result in reduced risk

Benefits of Insurance to Society

- 1- Indemnification of loss
- 2- Reduction of worry and fear

- 3- Source of investment funds
- 4-Loss prevention
- 5-Enhancement of credit

➤ **1-Indemnification of loss**

Indemnification permits individuals and families to be restored to their former financial position after a loss occurs.

- Indemnification to business firms also permits firms to remain in business and employees to keep their jobs.

➤ **2-Reduction of worry and fear**

If a person has any insurance coverage one of the benefit of insurance is that worry and fear are reduced.

Example:

-If family head has life insurance coverage, those who are financially dependent are less likely to worry about the financial security in the event of premature death.

-Owners of auto insurance policy or any other type of property insurance enjoy greater peace of mind because they know they are covered if a loss occurs.

➤ **3-Source of Investment funds**

The insurance industry is an important source of funds for capital investment and accumulation.

- Premiums are collected in advance of the loss, and funds not needed to pay immediate losses and expenses can be loaded to business firms.
- Funds typically are invested in shopping centers, hospitals, factories, housing developments, and new machinery and equipment.

➤ **4- Loss Prevention**

Insurance companies are actively involved in numerous loss-prevention activities and also employ a wide variety of loss-prevention personnel, including safety engineers and specialists in fire prevention, occupational safety and health, and products liability.

□ Examples of loss-prevention activities that property and casualty insurers strongly support:

- Highway safety and reduction of automobile deaths
- Fire prevention
- Prevention of auto thefts
- Prevention of defective products that could injure the user

Society benefits because both types of direct and indirect losses are reduced by loss-prevention activities.

➤ **5- Enhancement of Credit**

Insurance makes a borrower a better credit risk because it guarantees the value of the borrower's collateral or gives greater assurance that the loan will be paid.

Example:

- When a house is purchased, the lending institution requires property insurance on the house before the mortgage is granted. The property

insurance protects the lender's financial interest if the property is damaged or destroyed.

- If a new car is purchased and financed by a bank or other lending institution, auto insurance policy may be required before the loan is made.

Costs of Insurance to society

- ❑ The major costs of insurance include:

- 1- Cost of doing business
- 2- Fraudulent claims
- 3- Inflated claims

- **1- Cost of doing business**

Insurers consume scarce economic resources land, labor, capital, and business enterprise in providing insurance to society.

- **2- Fraudulent claims**

Submission of fraudulent claims is another cost of insurance. Examples of fraudulent claims :

- 1- Auto accidents are faked or staged to collect benefits.
- 2- Phony burglaries, thefts, or acts of vandalism are reported to insurers.
- 3- False health insurance claims are submitted to collect benefits.

- **3- Inflated claims**

Submission of inflated claims is another cost of insurance.

Although the loss is not intentionally caused by the insured, the dollar amount of the claim may exceed the actual financial loss.

Examples:

- ✓ Insureds exaggerate the amount and value of property stolen from a home or business.
- ✓ Disabled persons often malingering to collect disability-income benefits for a longer duration.

INSIGHT 2-1

Shocking Examples of Insurance Fraudulent Sinister seniors

Two elderly women befriended two homeless men in Los Angeles and took out \$3 million of life insurance on the men, naming themselves as beneficiaries. Helen Golay and Olga Rutterschmidt then had cars run down and kill the two men. Both women received life without parole.

Swallowing glass to shake down insurers

Ron Evano swallowed broken glass to shake down insurers and business firms by lying that he found the glass in food and drinks that he consumed. He received a prison sentence of 63 months and must make restitution of more than \$340,000.

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