Chapter one

Risk in our society

Different Definitions of Risk

- **Risk: Uncertainty concerning the occurrence of a loss**
- **Loss Exposure: Any situation or circumstance in which a loss is possible, regardless of whether a loss occurs.**

- **Objective Risk vs. Subjective Risk**
  - Objective risk is defined as the relative variation of actual loss from expected loss
    - It can be statistically calculated using a measure of dispersion, such as the standard deviation
    - ***The law of large numbers*** states that as the number of exposure units increases, the more closely the actual loss experience will approach the expected loss experience.

Different Definitions of Risk

- **Subjective risk** is defined as uncertainty based on a person's mental condition or state of mind
  - Two persons in the same situation may have different perceptions of risk
  - High subjective risk often results in conservative behavior

Chance of Loss

- **Chance of loss**: The probability that an event will occur

- Objective Probability vs. Subjective Probability
  - **Objective probability** refers to the long-run relative frequency of an event assuming an infinite number of observations and no change in the underlying conditions
    - It can be determined by deductive or inductive reasoning
  - **Subjective probability** is the individual's personal estimate of the chance of loss
    - A person's perception of the chance of loss may differ from the objective probability
    - Many factors affect subjective probability [age, gender, education…etc]

Peril and Hazard

- A **peril** is defined as the cause of the loss
  - In an auto accident, the collision is the peril

- A **hazard** is a condition that increases the chance of loss
  - Physical hazards are physical conditions that increase the chance of loss (icy roads, defective wiring)
  - Moral hazard is dishonesty or character defects in an individual, that increase the chance of loss (faking accidents, inflating claim amounts)
  - Attitudinal Hazard (Morale Hazard) is carelessness or indifference to a loss, which increases the frequency or severity of a loss (leaving keys in an unlocked car)
  - Legal Hazard refers to characteristics of the legal system or regulatory environment that increase the chance of loss (large damage awards in liability lawsuits)

Classification of Risk

- Pure and Speculative Risk
  - A **pure risk** is one in which there are only the possibilities of loss or no loss (earthquake, car accident)
  - A **speculative risk** is one in which both profit or loss are possible (gambling, purchasing shares)

➢ Why distinguishing between pure and speculative:

1- Private insurers insure only pure risks.

2- The law of large numbers apply easily to pure risks than speculative risk.

3- Society may benefit from speculative risk but harmed from pure risk.

Classification of Risk

- Diversifiable Risk and Nondiversifiable Risk
  - A **diversifiable risk** affects only individuals or small groups (car theft). It is also called nonsystematic or *particular risk*.
  - A **nondiversifiable risk** affects the entire economy or large numbers of persons or groups within the economy (hurricane). It is also called systematic risk or *fundamental risk.*
  - Government assistance may be necessary to insure nondiversifiable risks.

Classification of Risk

- **Enterprise risk** encompasses all major risks faced by a business firm, which include:
    1. ***Pure risk***
    2. ***Speculative risk***
    3. ***Strategic risk*** [refers to uncertainty regarding the firm's financial goals and objectives] ex: if a firm enters a new business line which may be un profitable
    4. ***Operational risk*** [results from the firms business operations] ex: a bank that offers online banking services may incur losses if "hackers" break into the bank's computer]
    5. ***Financial risk*** [refers to the uncertainty of loss because of adverse changes in commodity prices, interest rates, foreign exchange rates and the value of money] ex: a food company that agrees to deliver cereal at fixed price to a supermarket in 6 months may lose money if the grain prices rise.

Classification of Risk

- *Enterprise Risk Management* combines into a single unified treatment program all major risks faced by the firm. The firm can offset one risk against another. As a result, the overall risk can be reduced. As long as all risks are not perfectly correlated, the combination of risks can reduce the firms overall risk. In particular if one risk is negatively correlated, overall risk can be significantly reduced.

Major Personal Risks and Commercial Risks

- **Personal risks** involve the possibility of a loss or reduction in income, extra expenses or depletion of financial assets:
  - Premature death of family head [the death of a household head with unfulfilled financial obligations, ex: dependents to support, children to educate]
  - Insufficient income during retirement
    - Most workers are not saving enough for a comfortable retirement
  - Poor health (catastrophic medical bills and loss of earned income)
  - Involuntary unemployment [losing salary and employee benefits, long period of unemployment means savings (if available) may be exhausted.]

Major Personal Risks and Commercial Risks

- **Property risks** involve the possibility of losses associated with the destruction or theft of property:
  - Physical damage to home and personal property from fire, tornado, vandalism, or other causes
- Direct loss vs. indirect loss
  - A **direct loss** is a financial loss that results from the physical damage, destruction, or theft of the property, such as fire damage to a home.

Ex: if a restaurant is damaged by a fire, the physical damage (cost of replacement or repair) is a direct loss.

Major Personal Risks and Commercial Risks

- An **indirect loss** results indirectly from the occurrence of a direct physical damage or theft loss, such as the additional living expenses after a fire to a home. These additional expenses would be a consequential loss.

  Ex: loss of profits, loss of the use of the building, loss of market and extra expenses while the restaurant is being repaired.

Major Personal Risks and Commercial Risks

- **Liability risks** involve the possibility of being held liable for bodily injury or property damage to someone else
  - There is no maximum upper limit with respect to the amount of the loss
  - A lien can be placed on your income and financial assets to satisfy a legal judgment.
  - Defense costs can be enormous

Major Personal Risks and Commercial Risks

- **Commercial Risks**
  - Firms face a variety of pure risks that can have serious financial consequences if a loss occurs
    - **Property risks**, such as damage to buildings, furniture and office equipment
    - **Liability risks**, such as suits for defective products, pollution of the environment
    - **Loss of business income**, when the firm must shut down for some time after a physical damage loss
    - **Other risks** to firms include crime exposures, human resource exposures, foreign loss exposures, intangible property exposures, and government exposures

Burden of Risk on Society

- The presence of risk results in ***three major burdens*** on society:
  1. In the absence of insurance, individuals would have to maintain large emergency funds
  2. The risk of a liability lawsuit may discourage innovation, depriving society of certain goods and services
  3. Risk causes worry and fear

Techniques for Managing Risk

- There are *five major methods* for managing risk, that can be divided into 2 categories:

A. ***Risk Control***: refers to techniques that reduce the frequency and severity of losses, and includes:

1. **Avoidance:** you can avoid the risk of losing your car in an accident by not having one or death in a plane crash by not flying.
2. **Loss control**

   - **Loss prevention** refers to activities to reduce the frequency of losses, ex: using traffic lights and increasing the fines for high speed.
   - **Loss reduction** refers to activities to reduce the severity of losses, installing sprinklers, fire walls and seat belts.

Techniques for Managing Risk

B. Risk financing

1. Retention

- An individual or firm retains all or part of a given risk
- **Active retention** means that an individual is consciously aware of the risk and deliberately plans to retain all or part of it. Ex: motorists can retain small collision losses. It is used when insurance is not available or unaffordable.
- **Passive retention** means risks may be unknowingly retained because of ignorance, indifference, or laziness. It is very dangerous if the risk retained has huge potential loss.

Techniques for Managing Risk

- **Self Insurance** is a special form of planned retention by which part or all of a given loss exposure is retained by the firm.

- Retention is appropriate for *high frequency and low severity* risk where potential loss is small.
- It shouldn't be used for low frequency and high severity risk such as major surgery expense , long term disability or a lawsuit.

Techniques for Managing Risk

2. Noninsurance transfers

- A risk may be transferred to another party by several methods:

1. A transfer of risk by contract, such as through a service contract or a hold-harmless clause in a contract. Ex: if a manufacturer inserts this clause in a contract with the retailer , the retailer agrees to hold the manufacturer harmless in case a scaffold collapses and someone is injured.
2. Hedging is a technique for transferring the risk of unfavorable price fluctuations to a speculator by purchasing and selling futures contracts on an organized exchange

Techniques for Managing Risk

3. Incorporation of a business firm transfers to the creditors the risk of having insufficient assets to pay business debts

3. Insurance

- For most people, insurance is the most practical method for handling a major risk