Introduction to Risk Management

What is Risk?

Definition

Risk is the uncertainty about future outcomes, particularly the possibility of loss or adverse deviation from expected results.

Key Characteristics of Risk:

- **Uncertainty**: Future outcomes are not known with certainty
- **Variability**: Actual results may differ from expected results
- **Loss Potential**: Possibility of negative outcomes
- **Measurable**: Risk can often be quantified using statistical methods

Risk vs. Uncertainty (Knight, 1921):

- **Risk**: Uncertainty that can be measured probabilistically
- **Uncertainty**: Situations where probabilities cannot be assigned

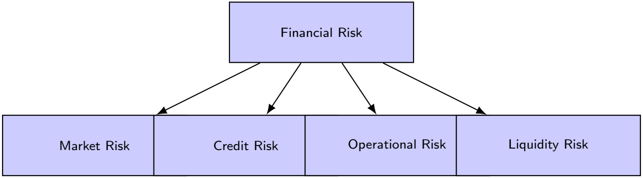
Examples

- Weather uncertainty affecting travel plans
- Health risks from lifestyle choices
- Career risks from changing industries
- Increasing tax treaty changes from Trump administration

Examples from Financial Context

- Market volatility impacting investment portfolios
- Credit risk from borrower defaults
- Liquidity risk in times of financial stress
- Operational risk from system failures

Classification of Financial Risks



Additional Risk Categories:

- **Strategic Risk**: Long-term business strategy risks
- **Reputation Risk**: Damage to company reputation
- **Legal Risk**: Legal and regulatory compliance risks
- **Model Risk**: Risk from using incorrect or inappropriate models

Q. Classify tax treaty changes in terms of risk types?

Market Risk: Definition

Definition

Risk of losses due to changes in market prices and rates.

Components of Market Risk:

- **Equity Risk**: Stock price movements
- **Interest Rate Risk**: Changes in interest rates
- **Currency Risk**: Foreign exchange rate fluctuations
- **Commodity Risk**: Commodity price movements
- **Volatility Risk**: Changes in market volatility levels

Market Risk: Examples

- A portfolio loses value when stock markets decline
- Bond prices fall when interest rates rise
- A multinational company faces losses when foreign currencies weaken
- An airline faces higher costs when oil prices increase

Market Risk: Key Characteristics

- Often affects entire markets or asset classes
- Can be systematic (non-diversifiable) or idiosyncratic
- Typically measured using statistical tools (VaR, volatility)

Credit Risk: Definition

Definition

Risk of loss due to a borrower's failure to repay a loan or meet contractual obligations.

Key Components (Basel Framework):

- **PD**: Probability of Default (likelihood of default)
- **LGD**: Loss Given Default (severity of loss)
- **EAD**: Exposure at Default (amount exposed)
- **Expected Loss**: $EL = PD \times LGD \times EAD$

Example: Expected Loss Calculation

- Assume a loan with:
  - PD = 2%
  - LGD = 40%
  - EAD = \$100,000
- Calculate Expected Loss (EL):

$$\begin{aligned} EL &= PD \times LGD \times EAD \\ &= 0.02 \times 0.4 \times 100,000 \\ &= \$800 \end{aligned}$$

Types of Credit Risk

- **Default Risk**: Complete failure to repay
- **Migration Risk**: Deterioration in credit quality
- **Recovery Risk**: Uncertainty about recovery amounts
- **Concentration Risk**: Over-exposure to specific borrowers/sectors
- **Counterparty Risk**: Risk in derivative/trading transactions

Operational Risk: Definition

Definition (Basel II)

Risk of loss resulting from inadequate or failed internal processes, people, and systems or from external events.

Categories of Operational Risk:

- **Internal Fraud**: Employee theft, unauthorized trading
- **External Fraud**: Cyber attacks, identity theft
- **Employment Practices**: Discrimination, workplace safety
- **Client/Product Issues**: Product defects, fiduciary breaches
- **Physical Assets**: Natural disasters, terrorism
- **Technology Failures**: System outages, data corruption
- **Process Failures**: Transaction errors, settlement failures

Example: The Nick Leeson Case (1995)

- Nick Leeson was a trader at Barings Bank.
- He engaged in unauthorized trading and speculative positions.
- Losses mounted to £827 million, leading to the bank's collapse.
- Key lessons:
  - Importance of risk controls and oversight
  - Need for a strong risk culture
  - Consequences of inadequate internal processes

Liquidity Risk: Definition

Definition

Risk that an entity cannot meet its short-term financial obligations or cannot convert assets to cash quickly without significant loss.

Two Main Types:

- **Funding Liquidity Risk**: Inability to obtain funding when needed
- **Market Liquidity Risk**: Inability to trade assets without significant price impact

Liquidity Risk: Examples

- Banks facing deposit withdrawals during financial crises
- Hedge funds unable to liquidate positions quickly
- Corporations unable to roll over short-term debt
- Real estate assets becoming difficult to sell

Black Monday (1987)

- Stock market crash on October 19, 1987
- Dow Jones Industrial Average fell 22.6% in a single day
- Causes:
  - Program trading and portfolio insurance
  - Overvaluation and market sentiment
- Consequences:
  - Increased volatility and market reforms
  - Increased attention to risk management

LTCM Collapse (1998)

- Long-Term Capital Management (LTCM) was a hedge fund founded in 1994.
- Used high leverage and complex derivatives strategies.
- In 1998, faced massive losses due to Russian debt default and market turmoil.
- Consequences:
    - Required a $3.6 billion bailout led by major banks.
    - Highlighted risks of leverage and interconnectedness in financial markets.
    - Led to increased regulatory scrutiny of hedge funds.

2008 Financial Crisis

- Global financial crisis triggered by the collapse of Lehman Brothers in September 2008.
- Causes:
  - Subprime mortgage crisis and housing bubble
  - Excessive risk-taking by financial institutions
  - Lack of transparency in complex financial products
- Consequences:
  - Severe recession and unemployment spikes
  - Massive government bailouts of banks and financial institutions
  - Increased regulation and oversight of financial markets

Why regulate banks?

- Protect depositors and maintain public confidence
- Ensure stability of the financial system
- Prevent systemic risk and "too big to fail" institutions
- Promote fair and transparent practices in financial markets

Basel Committee on Banking Supervision

- Established in 1974 by central bank governors
- Aims to enhance financial stability and reduce systemic risk
- Key initiatives:
  - Basel I (1988): Capital Adequacy Framework
  - Basel II (2004): Improved risk sensitivity and supervisory review
  - Basel III (2010): Strengthened capital requirements and introduced liquidity standards