

The Building Blocks of Risk Management

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What is Risk?

- Risk
 - Uncertainty regarding future
 - Not necessarily related to size of results
 - More related to variability of results

What is Risk?

- Risk management
 - Process of activities to mitigate potential losses
 - Expected
 - Unexpected
- Risk taking
 - Activities that:
 - increase opportunities for gains;
 - introduce opportunities for losses.

Risk Management is a Process

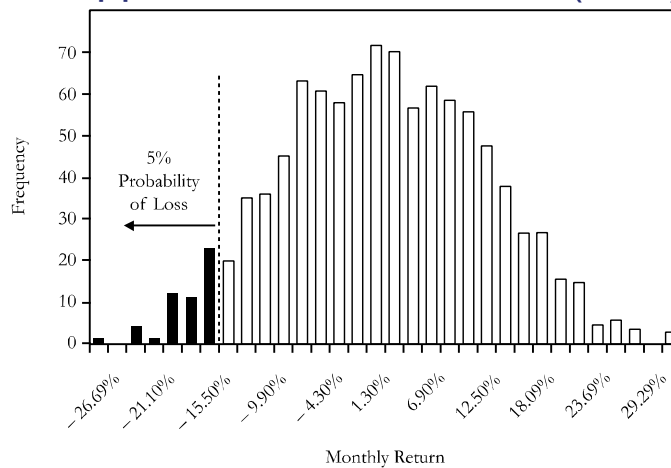
1. Identify risks.
2. Measure and manage risks.
3. Distinguish between expected and unexpected risks.
4. Address the relationship between risks.
5. Develop a risk mitigation strategy.
6. Monitor the risk mitigation strategy and adjust as needed.

Risk Management Challenges

- Insufficiently dispersed risk across market participants
- Occurrence of fraud due to corporate governance failures
- Complex derivatives with unclear exposures
- “Zero-sum game” where risk is only transferred, not eliminated

Measuring and Managing Risk

- Quantitative approaches: value at risk (VaR)



Value at Risk (VaR)

Definition: An estimate of the maximum (or minimum) expected loss at a specified level of probability over a specified time period

Example: The 1-day, 1% VaR of a portfolio is \$2.6m. This means that we feel there is a 1% chance the portfolio will lose at least \$2.6m in one day. *Alternatively*, we are 99% confident that the portfolio will lose no more than \$2.6m in one day.

Measuring and Managing Risk

- Qualitative approaches
 - Scenario analyses
 - Stress testing
- Enterprise risk management
 - Integrative approach
 - Entity-wide assessment

Expected vs. Unexpected Losses

- Expected loss
 - Normal course of business
 - Generally stable and predictable using past history
 - Bad debt expense, loan loss reserves, etc.
- Unexpected loss
 - Beyond normal course of business
 - Difficult to predict and be prepared for
 - Correlation risk, negative macro-economic impacts

Risk vs. Reward

- Tradeoff is the greater the risk, the greater the potential return.
- This relation may break down when times are too good or bad.
- Issues: failing to adjust return for risk taken, ignoring correlations

Risk Classes

- Market risk
- Credit risk
- Liquidity risk
- Operational risk
- Legal/Regulatory risk
- Business risk
- Strategic risk
- Reputation risk

Risk Classes

- **Market risk:** The risk that declining prices or volatility of prices in the financial market will result in a loss
 - Interest rate risk
 - Equity price risk
 - Foreign exchange risk
 - Commodity price risk

Risk Classes

- **Credit risk:** The possibility of default by the counterparty to a financial transaction
 - Default risk
 - Bankruptcy risk
 - Downgrade risk
 - Settlement risk

Risk Classes

- **Liquidity risk:** The possibility of sustaining significant losses due to the inability to take or liquidate a position at a fair price
 - Funding and market liquidity risk
- **Operational risk:** The risk of loss due to inadequate monitoring systems, management failure, defective controls, fraud, or human errors
 - Technology failures
 - Fraud
 - Natural disasters
 - Human error

Risk Classes

- **Legal and regulatory risk**
 - One party not legally able to enter transaction
 - Lawsuits
 - Change in a general law or specific regulation
- **Business risk**
 - Uncertainty associated with the business
 - Could be economic or implementation difficulties
 - Measured by variability in revenues or operating income

Risk Classes

- **Strategic risks**
 - Usually associated with new market or business opportunity
 - Change in focus or activity
- **Reputation risk**
 - Perceived trustworthiness
 - Deals unfairly in transactions
 - Questionable business deals
 - Rumors

Risk Factor Interactions

- Some risks are correlated, which can lead to a domino effect where one risk leads directly to another risk. This can amplify risk exposures.
- **Risk aggregation** is the process of considering risk at the enterprise level.
- Higher complexity of the underlying risks will lead to less reliability of risk assumptions.

Example: Credit Risk

Which of the following is not usually associated with credit risk?

- A. Downgrade risk
- B. Interest rate risk
- C. Default risk
- D. Settlement risk

Answer

- Answer: **B**
- Interest rate risk measures systematic exposure of an instrument and is usually associated with market risk, not credit risk.