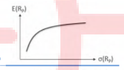
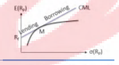
Foundations of Risk Management

- **Enterprise Risk Management**
  - Key Classes of risk
    - Market Risk
    - Credit Risk
    - Liquidity Risk
    - Operational Risk
    - Legal Risk
    - Business Risk
    - Strategic Risk
    - Reputation Risk
  - Risk Management Process
    - Step 1: Identify the risks.
    - Step 2: Quantify and estimate the risk exposures
    - Step 3: perform a cost-benefit analysis on risk transfer methods.
    - Step 4: Develop a risk mitigation strategy
    - Step 5: Assess performance and amend risk mitigation strategy as needed.
  - Key Measures
    - Scenario Analysis
    - Stress Testing
    - Expected Loss
    - Unexpected Loss
    - VaR
    - Economic Capital
  - Enterprise Risk Management
  - Risk Appetite
  - Corporate Governance
    - the role of the Board of Directers
    - the role of CRO
    - the role of Audit Committee
  - Risk Management Failures
  - Data Quality
    - Accuracy
    - Completeness
    - Consistency
    - Reasonableness
    - Currency
    - Uniqueness
  - Basel Principles for Effective Risk Data Aggregaion
- **Financial Disasters**
  - Kidder Peabody
  - Allied Irish Bank
  - Barings
  - Union Bank of Switzerland (UBS)
  - Long Term Capital Management (LTCM)
  - Société Generate
  - Metallgesellschaft
  - Sumitomo Corporation
  - JPMorgan, Citigroup, and Enron
  - Bankers Trust
  - The Credit Crisis of 2007
- **Portfolio Management Theory**
  - Portfolio Management Theory
    - Assumption
      - Regard E(R) as return and σ as risk
      - Utility maximization
      - Risk aversion
    - Derivation
      - Minimum variance frontier
      - Global minimum-variance portfolio
      - Efficient frontier
    - Graphics

    - Basic Formulas
      - $E(R_p) = \omega_1 E(R_1) + \omega_2 E(R_2)$
      - $\sigma_p^2 = \omega_1^2\sigma_1^2 + \omega_2^2\sigma_2^2 + 2\omega_1\omega_2 Cov_{1,2}$
      - $\sigma_p^2 = \omega_1^2\sigma_1^2 + \omega_2^2\sigma_2^2 + 2\omega_1\omega_2\rho_{1,2}\sigma_1\sigma_2$
  - Capital Market Theory
    - Assumption
    - Derivation
    - Graphics

    - Basic Formulas
      - $E(R_i) = R_f + \sigma_i \left[\frac{E(R_M) - R_f}{\sigma_M}\right]$
    - Key Conclusion
      - Systematic risk: cannot be diversified away
      - Unsystematic risk: diversifiable, firm-specific risk
  - Basic Formulas
    - Beta
      - A standardized measure of systematic risk
      - $\beta_i = \frac{Cov_{i,mkt}}{\sigma^2_{mkt}} = \left(\frac{\sigma_i}{\sigma_{mkt}}\right) \times \rho_{i,mkt}$
    - CAPM -(SML)
      - $E(R_i) = R_f + \beta_i\left[E(R_M) - R_f\right]$, $(\beta_i = \frac{Cov_{i,M}}{\sigma^2_M})$
  - Graphics

  - CAPM
    - Difference between SML and CML
      - Measure of Risk
        - Uses systematic risk(SML)
        - Uses standard deviation(CML)
      - Application
        - Tool used to determine the appropriate expected returns for securities(SML)
        - Tool used to determine the appropriate asset allocation(CML)
      - Definition
        - Graph of the CAPM(SML)
        - Graph of the efficient frontier(CML)
      - Slope
        - Market risk premium(SML)
        - Market portfolio Sharpe Ratio(CML)
    - Performance Measurement
      - Sharpe Ratio
        - Formula
          - $S_p = \frac{E(R_p) - R_f}{\sigma_p}$
        - Application
          - Applied to all portfolios and is a better method for measuring historical performance
      - Treynor Ratio
        - Formula
          - $TR = \frac{E(R_p) - R_f}{\beta_p}$
        - Application
          - For well-diversified portfolios
      - Sortino Ratio
        - Formula
          - $SOR = \frac{E(R_p) - R_{MAR}}{\sqrt{MSD_p}}$
        - Application
          - Return distribution is skewed to the left
      - Information Ratio
        - Formula
          - $IR_p = \frac{E(R_p) - E(R_b)}{\sigma_p}$
        - Application
          - A measure of how well the manager has acquired and used information compared to the average manager
      - Jensen Alpha
        - Formula
          - αP = E(RP) – (RF + βP[E(RM) - RF])
        - Application
          - The Jensen measure is the asset' s excess return over the return predicted by the CAPM
  - Multifactor Models
    - Inputs
      - Expected return for the stock.
      - Factor betas, also known as factor sensitivities
      - Deviation of macroeconomic factors from their expected values
      - Firm-specific return
    - Equation
      - $R_i = E(R_i) + \beta_{i1}F_1 + \beta_{i2}F_2 + ... + \beta_{ik}F_k + e_i$
  - Arbitrage Pricing Theory
    - Equation
      - $E(R_i) = R_f + \beta_{i1}RP_1 + \beta_{i2}RP_2 + ... + \beta_{ik}RP_k$
      - $R_f + \beta_{i1}[E(R_1) - R_f] + \beta_{i2}[E(R_2) - R_f] + ... + \beta_{ik}[E(R_k) - R_f]$
      - The Fama-French Three-Factor Model
- **GARP Code of Conduct**
  - Code of Conduct
    - Professional Integrity and Ethical Conduct
    - Conflict of Interest
    - Confidentiality
    - Fundamental Responsibilities
    - Best Practices

融悦财经 RONGYUE FINANCE