

1. Capital Asset Pricing Model (25%)

- a. Suppose that risk-free rate is 6 percent and the market risk premium is 6 percent. What is the expected return for the overall stock market? What is the required rate of return on a stock that has a beta of 1.5?
- b. Suppose you have \$100,000 to invest in a portfolio containing Stock X, Stock Y, and a risk-free asset. You must invest all of your money. Your goal is to create portfolio that has an expected return of 12.5 percent and that has only 80 percent of the risk of the overall market. If X has an expected return 28 percent and a beta is 1.6. Y has an expected return 16 percent and a beta is 1.2 and the risk-free rate is 7 percent. How much money will you invest in Stock X? How do you interpret your answer?.

2. Capital budgeting (25%)

- a. Define the following terms: net present value; internal rate of return
- b. Project S costs \$10000 and is expected to produce cash flows of \$4500 per year for 3 years. Calculate the project's net present value (NPV), assuming a cost of capital of 10 percent, 12 percent, and 14 percent.
- c. According to the above NPV, what is the internal rate of return by linear interpolation?

3. Portfolios (25%)

Suppose the expected returns and standard deviations of stock A and B are  $E(R_A)=0.15$ ,  $E(R_B)=0.20$ ,  $\sigma_A=0.10$ , and  $\sigma_B=0.20$ , respectively.

- a. Calculate the expected return and standard deviation of a portfolio that is composed of 40 percent A and 60 percent B when the correlation between the returns on A and B is 0.5.
- b. Calculate the standard deviation of a portfolio that is composed of 40 percent A and 60 percent B when the correlation between the returns on A and B is -0.5.
- c. How does the correlation between the returns on A and B affect the stand deviation of the portfolio?

4. Capital Structure (25%)

- a. In a world with no taxes, no traction costs, and no costs of financial distress, are the following statements true, false, or uncertain? Explain your answers.

Statement 1: If a firm issues equity to repurchase some of its debt, the price per share of the firm's stock will rise because the shares are less risky.

Statement 2: Moderate borrowing will not increase the required return on a firm's equity.

- b. How do the existence of financial distress costs and agency costs affect Modigliani and Miller's theory in a world where corporations pay taxes?