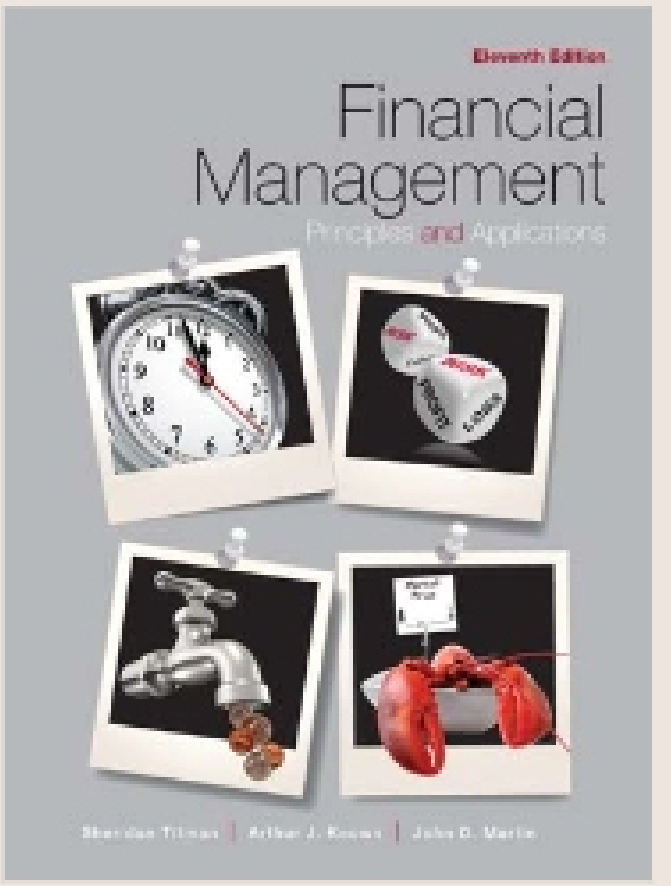
Chapter 8

Risk and Return: Capital Market Theory



Chapter 8 Contents

Learning Objectives

1. Portfolio Returns and Portfolio Risk
   1. Calculate the expected rate of return and volatility for a portfolio of investments and describe how diversification affects the returns to a portfolio of investments.
2. Systematic Risk and the Market Portfolio
   1. Understand the concept of systematic risk for an individual investment and calculate portfolio systematic risk (beta).
3. The Security Market Line and the CAPM
   1. Estimate an investor's required rate of return using capital asset pricing model.

Portfolio Returns and Portfolio Risk

- With appropriate diversification, can lower risk of the portfolio without lowering the portfolio's expected rate of return.
- Some risk can be eliminated by diversification, and those risks that can be eliminated are not necessarily rewarded in the financial marketplace.

Calculating Expected Return of a Portfolio

- To calculate a portfolio's expected rate of return, *weight* each individual investment's expected rate of return using the fraction of the portfolio that is invested in each investment.
- Example 8.1 : Invest 25% of your money in Citi bank stock (C) with expected return = -32% and 75% in Apple (AAPL) with expected return=120%. Compute the expected rate of return on portfolio.
- Expected rate of return

  = .25(-32%) + .75 (120%) = **82%**

Calculating Expected Return of Portfolio

Portfolio Expected Rate of Return

$$E(r_{portfolio}) = [W_1 \times E(r_1)] + [W_2 \times E(r_2)] + [W_3 \times E(r_3)] + \cdots + [W_n \times E(r_n)]$$

- $E(r_{portfolio})$ = the expected rate of return on a portfolio of n assets.
- W_i = the portfolio weight for asset i.
- Sum of $W_i = 1$
- $E(r_i)$ = the expected rate of return earned by asset i.
- $W_1 \times E(r_1)$ = the contribution of asset 1 to the portfolio expected return. Weight times the rate!

Checkpoint 8.1

Calculating a Portfolio's Expected Rate of Return

Penny Simpson has her first full-time job and is considering how to invest her savings. Her dad suggested she invest no more than 25% of her savings in the stock of her employer, Emerson Electric (EMR), so she is considering investing the remaining 75% in a combination of a risk-free investment in U.S. Treasury bills, currently paying 4%, and Starbucks (SBUX) common stock. Penny's father has invested in the stock market for many years and suggested that Penny might expect to earn 9% on the Emerson shares and 12% from the Starbucks shares. Penny decides to put 25% in Emerson, 25% in Starbucks, and the remaining 50% in Treasury bills. Given Penny's portfolio allocation, what rate of return should she expect to receive on her investment?