What is Risk and Return?

Worksheet

The risk-return trade-off says that higher potential returns come with higher risk (uncertainty of outcome); the Capital Asset Pricing Model (CAPM) quantifies this as E(R) = Rf + (Rm Rf).

$$E[R_i] = R_f + @beta(E[R_m] - R_f)$$

Questions

1. Using CAPM with Rf = 2%, = 1, Rm = 8%, what is the expected return?

A) 8%
B) 6%
C) 10%
D) 2%

2. What does beta primarily measure?

A) Systematic risk relative to the market
B) Total company risk
C) Inflation risk only
D) Currency exchange risk

3. If beta = 0, CAPM says the expected return equals

A) The risk-free rate
B) The market return
C) Zero
D) An undefined value

4. Why do investors generally demand a higher expected return for higher risk?

A) To be compensated for bearing greater uncertainty
B) Because risk guarantees higher profit
C) Because regulators require it
D) Because risk always lowers volatility

5. A stock has a beta of 1.2. The risk-free rate is 3% and the expected market return is 9%. Find its expected return using CAPM.

6. A defensive stock has beta = 0.8, Rf = 2%, Rm = 7%. Find its expected return.

7. A high-growth stock has beta = 1.5, Rf = 4%, Rm = 10%. Find its expected return.

8. Define: What is the risk-return trade-off?

9. Define: What does the CAPM formula calculate?

10. Define: What is Beta ()?

Answer Key

1. A) 8% - E(R) = 2 + 1(82) = 2 + 6 = 8%.

2. A) Systematic risk relative to the market - Beta captures an asset's sensitivity to market-wide (systematic) movements.

3. A) The risk-free rate - When = 0, (Rm Rf) = 0, so E(R) = Rf.

4. A) To be compensated for bearing greater uncertainty - Higher risk means more uncertain outcomes, so investors require extra expected return as compensation.

5. E(R) = Rf + (Rm Rf) E(R) = 3 + 1.2 (9 3) E(R) = 3 + 1.2 6 = 3 + 7.2 = 10.2%

6. E(R) = 2 + 0.8 (7 2) E(R) = 2 + 0.8 5 = 2 + 4 = 6%

7. E(R) = 4 + 1.5 (10 4) E(R) = 4 + 1.5 6 = 4 + 9 = 13%

8. Investors demand higher expected returns to accept higher risk - return is compensation for bearing uncertainty.

9. The expected return of an asset given its systematic risk (beta), the risk-free rate, and the market return.

10. A measure of an asset's volatility relative to the overall market; = 1 moves with the market, > 1 is more volatile.