(6–5) Expected Returns: Discrete Distribution

The market and Stock J have the following probability distributions:

Probability	r_M	r_J
0.3	15%	20%
0.4	9	5
0.3	18	12

a. Calculate the expected rates of return for the market and Stock J.
b. Calculate the standard deviations for the market and Stock J.
c. Calculate the coefficients of variation for the market and Stock J.

(6–6) Required Rate of Return

Suppose $r_{RF} = 5\%$, $r_M = 10\%$, and $r_A = 12\%$.

a. Calculate Stock A's beta.
b. If Stock A's beta were 2.0, then what would be A's new required rate of return?

(6–7) Required Rate of Return

Suppose $r_{RF} = 9\%$, $r_M = 14\%$, and $b_i = 1.3$.

a. What is r_i, the required rate of return on Stock i?
b. Now suppose r_{RF} (1) increases to 10% or (2) decreases to 8%. The slope of the SML remains constant. How would this affect r_M and r_i?
c. Now assume r_{RF} remains at 9% but r_M (1) increases to 16% or (2) falls to 13%. The slope of the SML does not remain constant. How would these changes affect r_i?

(6–8) Portfolio Beta

Suppose you hold a diversified portfolio consisting of a $7,500 investment in each of 20 different common stocks. The portfolio's beta is 1.12. Now, suppose you sell one of the stocks with a beta of 1.0 for $7,500 and use the proceeds to buy another stock whose beta is 1.75. Calculate your portfolio's new beta.

(6–9) Portfolio Required Return

Suppose you manage a $4 million fund that consists of four stocks with the following investments:

Stock	Investment	Beta
A	$ 400,000	1.50
B	600,000	−0.50
C	1,000,000	1.25
D	2,000,000	0.75

If the market's required rate of return is 14% and the risk-free rate is 6%, what is the fund's required rate of return?

CHALLENGING PROBLEMS 10–13

(6–10) Portfolio Beta

You have a $2 million portfolio consisting of a $100,000 investment in each of 20 different stocks. The portfolio has a beta of 1.1. You are considering selling $100,000 worth of one stock with a beta of 0.9 and using the proceeds to purchase another stock with a beta of 1.4. What will the portfolio's new beta be after these transactions?