

Problem Set 8

Corporate Finance, Sections 001 and 002

Due Thursday, April 8th

Suggested problems:

RWJ Problems 10.23, 10.26, 10.33, 10.35

(Use revised problems on <http://finance.wharton.upenn.edu/~jwachter/fnce100>.)

Required problems:

1. Given the following information, $R_f = .06$, $\bar{R}_M = .12$, $\sigma_M = .15$, answer the following questions.
 - (a) What is the numerical value of the risk premium?
 - (b) What is the equilibrium expected return on a risky asset with a β of 1.2? With a β of .6?
 - (c) What is the β of a security with an equilibrium expected return of .03?
 - (d) Is it possible in equilibrium for the expected return on a risky security to be less than the risk-free rate?
2. You are given the following two equations:

$$\bar{R}_i = R_f + (\bar{R}_M - R_f)\beta_i \quad (1)$$

$$\bar{R} = R_f + \left(\frac{\bar{R}_M - R_f}{\sigma_M} \right) \sigma \quad (2)$$

You also have the following information: the expected return on the market $\bar{R}_M = .15$, the riskfree rate $R_f = .06$, and the standard deviation of the market $\sigma_M = .15$. Answer the following questions, assuming that the capital asset pricing model is correct:

- (a) Which equation would you use to determine the expected return on an individual security with a standard deviation of returns $\sigma = .5$ and a $\beta = 2$? Given the parameters above, what is the expected return for that security?
- (b) Which equation would you use to determine the expected return on an *efficient* portfolio with a standard deviation equal to σ_M ? What is the expected return on this portfolio? What is the β of this portfolio?
- (c) What is the expected return on an efficient portfolio with a standard deviation equal to twice the standard deviation of the market? What is the β of this portfolio?
- (d) Given your answers above, describe what type of risky assets equation (1) can be used for. What about the risky assets equation (2) can be used for?