**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 \( \beta \) of 1.2? With a \( \beta \) of .6?
   
   (c) What is the \( \beta \) 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 \( \sigma_M \)? What is the expected return on this portfolio? What is the \( \beta \) 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 \( \beta \) 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?