

## Quiz For Lecture # 10

Question 1)

Consider the regression equation:

$$r_i - r_f = g_0 + g_1 b_i + g_2 \sigma_{ei}^2 + e_{it}$$

where:

$r_i - r_f$  = the average difference between the monthly return on stock i and the monthly risk-free rate

$b_i$  = the beta of stock i

$\sigma_{ei}^2$  = a measure of the nonsystematic variance of the stock i.

If you estimated this regression equation and the CAPM was valid, you would expect the estimated coefficient,  $g^2$  to be

- A) 0
- B) 1
- C) equal to the risk-free rate of return
- D) equal to the average difference between the monthly return on the market portfolio and the monthly risk-free rate
- E) none of the above

Ans: A

Question 2)

Consider a well-diversified portfolio, A, in a two-factor economy. The risk-free rate is 6%, the risk premium on the first factor portfolio is 4% and the risk premium on the second factor portfolio is 3%. If portfolio A has a beta of 1.2 on the first factor and .8 on the second factor, what is its expected return?

- A) 7.0%
- B) 8.0%
- C) 9.2%
- D) 13.0%
- E) 13.2%

Ans: E

Question 3)

Security A has a beta of 1.0 and an expected return of 12%. Security B has a beta of 0.75 and an expected return of 11%. The risk-free rate is 6%. Explain the arbitrage opportunity that exists; explain how an investor can take advantage of it. Give specific details about how to form the portfolio, what to buy and what to sell.

Ans: An arbitrage opportunity exists because it is possible to form a portfolio of security A and the risk-free asset that has a beta of 0.75 and a different expected return than security B. The investor can accomplish this by choosing .75 as the weight in A and .25 in the risk-free asset. This portfolio would have  $E(r_p) = 0.75(12\%) + 0.25(6\%) = 10.5\%$ , which is less than B's 11% expected return. The investor should buy B and finance the purchase by short selling A and borrowing at the risk-free asset.