For this quiz, assume the following: The risk-free rate is 2% and the market risk premium is 7%. Boeing’s stock has a beta of 1.1 and a standard deviation of 30%. Safeco Insurance’s stock has an average return of 6.9%, a beta of 0.7 and a standard deviation of 20%. Boeing and Safeco have a correlation coefficient of 0.22. The tax rate is 40%.

1. What is the expected return and standard deviation of a portfolio that is 45% Boeing and 55% Safeco? [1.5]

\[
E[R_{Port}] = w_B E[R_B] + w_S E[R_S] = .45(.097) + .55(.069) = .0816
\]

\[
\sigma^2_{Port} = w_B^2 \sigma_B^2 + w_S^2 \sigma_S^2 + 2w_Bw_S \sigma_B \sigma_S \rho_{BS} = .45^2(.3^2) + .55^2(.2^2) + 2(.45)(.55)(.3)(.2)(.22) = .036859
\]

\[
\sigma_{Port} = \sqrt{.036859} = .192
\]

2. If Boeing’s capital structure is 30% debt with an interest rate of 6%, what is its after-tax WACC? [1]

\[
WACC = r_{equity} \frac{E}{E+D} + r_{debt} (1\text{-TaxRate}) \frac{D}{E+D} = .097(.7) + (1-.4)(.06)(.3) = .0787
\]

3. The last 3 months of returns for stock C are the following:

a. What is the standard deviation of the stock’s returns? [1.5]

\[
\bar{R} = \frac{.12 - .03 + .15}{3} = .08, \quad \sigma^2 = \frac{(R_1 - \bar{R})^2 + (R_2 - \bar{R})^2 + \ldots + (R_T - \bar{R})^2}{T-1}
\]

\[
\sigma^2 = \frac{(.12 - .08)^2 + (-.03-.08)^2 + (.15-.08)^2}{3-1} = .0093, \quad \text{so} \quad \sigma = .0964
\]

b. What is a 95% confidence interval for the stock’s return? [1]

\[
\bar{R} \pm 2\sigma, \quad \text{so} \quad .08 \pm 2(.0964) = -.1128 \text{ to } .2728
\]

4. You are thinking about buying a stock with earnings of $3 per share and a P/E ratio of 15. If you buy the stock now, it pays a $1 dividend in one year, and then you sell it for $48, what return will you have earned? [1]

With earnings of $3 and a P/E of 15, the price now must be $3 \times 15 = $45, so your return would be:

\[
R = \frac{Div + (P_1 - P_0)}{P_0} = \frac{1 + (48 - 45)}{45} = .089
\]