Chapter 11 Practice Questions

1. You own a portfolio that has $4,000 invested in Stock A and $5,500 invested in stock B. Assume the expected returns on these stocks are 15 percent and 20 percent, respectively. What is the expected return on the portfolio?

\[
E(R) = \left( \frac{4,000}{4,000 + 5,500} \right) (.15) + \left( \frac{5,500}{4,000 + 5,500} \right) (.20)
\]

\[
E(R) = .17995 \quad \text{or} \quad 17.995\%
\]

2. Calculate the expected return using the following information.

<table>
<thead>
<tr>
<th>State of Economy</th>
<th>Probability of State of Economy</th>
<th>Rate of Return if State Occurs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recession</td>
<td>.40</td>
<td>-0.20</td>
</tr>
<tr>
<td>Boom</td>
<td>.60</td>
<td>0.30</td>
</tr>
</tbody>
</table>

\[
E(R) = .40(-.30) + .60(.30)
\]

\[
= -.12 + .18
\]

\[
= .06 \quad \text{or} \quad 6\%
\]

3. You own the following portfolio of two stocks, W and X. Use the following table of information to find the expected return of the portfolio.

<table>
<thead>
<tr>
<th>Stock</th>
<th>Number of Shares</th>
<th>Price</th>
<th>Expected Return</th>
</tr>
</thead>
<tbody>
<tr>
<td>W</td>
<td>100</td>
<td>$50</td>
<td>12%</td>
</tr>
<tr>
<td>X</td>
<td>75</td>
<td>$25</td>
<td>15%</td>
</tr>
</tbody>
</table>

value of W = (100)(50) = 5,000
value of X = (75)(25) = \[
\frac{1,875}{6,875}
\]

\[
E(R) = \left( \frac{5,000}{6,875} \right) (-.12) + \left( \frac{1,875}{6,875} \right) (.15)
\]

\[
= -.0872 + .04090
\]

\[
= .0283 \quad \text{or} \quad 2.83%
\]
4. Consider the following information:

<table>
<thead>
<tr>
<th>State of Economy</th>
<th>Probability of State of Economy</th>
<th>Rate of Return if State Occurs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Stock A</td>
</tr>
<tr>
<td>Boom</td>
<td>.60</td>
<td>.15</td>
</tr>
<tr>
<td>Bust</td>
<td>.40</td>
<td>.08</td>
</tr>
</tbody>
</table>

What is the expected return of an equally weighted portfolio of these three stocks?

\[
E(R)_{\text{of } A} = (.60)(.15) + (.40)(.06) = 0.12 \text{ or } 12.0\% \\
E(R)_{\text{of } B} = (.60)(.10) + (.40)(.11) = .104 \text{ or } 10.4\% \\
E(R)_{\text{of } C} = (.60)(.35) + (.40)(-.15) = .15 \text{ or } 15.0\% \\
\]

\[
E(R)_{\text{of portfolio}} = \frac{1}{3} (.12) + \frac{1}{3} (.104) + \frac{1}{3} (.15) \\
E(R)_{\text{of portfolio}} = .1253333 \text{ or } 12.53\%
\]

5. What is your portfolio beta if you own a stock portfolio invested 26 percent in stock R; 34 percent in stock S; and 50 percent in stock Q? The betas for these three stocks are 1.0, 1.5, and 1.3 for stocks Q, R, and S respectively.

\[
\beta_{\text{portfolio}} = (.26)(1.0) + (.34)(1.5) + (.50)(1.3) \\
\beta_{\text{portfolio}} = 0.26 + 0.51 + 0.65 \\
\beta_{\text{portfolio}} = 1.42
\]

6. You own a portfolio equally invested in a risk-free asset (which has a beta of zero) and two stocks: J Corp. and G Corp. J Corp. has a beta of 1.24. The total portfolio is equally as risky as the market, so your portfolio beta is 1.0. What must be the beta of G Corp?

\[
1.0 = \frac{1}{3} (0) + \frac{1}{3} (1.24) + \frac{1}{3} (x) \\
1.0 = 0 + .4133333 + \frac{1}{3} (x) \\
x = 1.76
\]
7. Using the CAPM model, ABC corp. has an expected return of 11.5 percent, the risk-free rate is 2.0 percent, and the market risk premium is 6 percent. What must ABC's beta be?

\[
0.115 = 0.02 + \beta (0.06)
\]

\[
\beta = 1.583
\]

8. If the market risk premium is 7%, the risk-free rate is 1.5%, and the beta of a stock is 1.3, what is the expected return of the stock?

\[
E(R) = 0.015 + 1.3(0.07)
\]

\[
= 0.106
\]

\[
= 10.6\%
\]

9. If the return on the market is expected to be 7.5%, the risk-free rate is 2%, and the beta of a stock is 1.5, what is the expected return of the stock?

\[
E(R) = 0.02 + 1.5(0.075 - 0.02)
\]

\[
= 0.1035
\]

\[
= 10.35\%
\]