Sample Problem 1. Solution

Show your work to receive full credit.

Assume the following:

<table>
<thead>
<tr>
<th>Asset/portfolio</th>
<th>Expected return</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Riskless rate</td>
<td>5 %</td>
<td>0</td>
</tr>
<tr>
<td>Risky portfolio A</td>
<td>10 %</td>
<td>20 %</td>
</tr>
<tr>
<td>Risky portfolio B</td>
<td>20 %</td>
<td>40 %</td>
</tr>
</tbody>
</table>

1. Your client currently holds 100% of her wealth in portfolio A. Could you suggest a better allocation of her wealth? Be specific and support your answer.

Solution: Your client would be better off allocating her wealth between the riskless asset and portfolio B.

She can achieve the same expected return with less risk, or a higher expected return for taking the same risk.

E.g., let y represent her allocation to portfolio B.

If she chooses y=50%, then her expected return = .05 + (1/2) (.20 - .05) = 12.5%
and her expected standard deviation = (1/2) 40% = 20%

Alternatively, set her expected return from investing y% in B to 10% and solve for y to find the percentage she should allocate to B in order to maintain her expected return while reducing risk:

10% = .05 + y (.20 - .05)
.05 = y (.15)
1/3 = y

so expected return would be = (2/3)(.05) + (1/3)(.20) = 10%
and standard deviation = (1/3)(40%) = 13.3%