Risk and the Required Rate of Return

Basic exercises (1-4):

1. The standard deviation of the market portfolio is 4%. The risky asset S shows a correlation coefficient with the market of 0.75 and a standard deviation of 8%. Compute the beta of asset S.

2. The beta of the market portfolio itself is 1. Why?

3. The stock of an important food retail company has a beta of 1.2. The expected return on the market portfolio is 12% and the risk-free rate 6%. What is the expected or required rate of return on that stock?

4. The standard deviation of the market portfolio described in problem 3 is 4%. That of the stock of the food retailer is 8%. How can you explain this, given the beta of 1.2? Hint: draw a CML (Capital Market Line) and a SML (Security Market Line) on the same scale next to each other and compare the two.

Advanced exercises 5 (a-c):

5. In a certain capital market characterised by CAPM-equilibrium, two risky stocks, P and Q are traded amongst a multitude of other financial assets. In this market the risk-free rate of return is 6% and the market risk premium is 4%. The risk of the market portfolio (as σ) is 8%. The characteristics of P and Q are:

Stock	P	Q
Expected return	8%	12%
σ of return	7%	12%

   a. Compute the non-diversifiable risk (market risk) for P and Q.

   b. Depict in a graph the security market line (SML) and the capital market line (CML) applicable to these data and plot the market portfolio, and stock P and Q (diversified & non-diversified).

   c. Suppose that in the market described above also a stock R is traded with a β of 1.25. This non-growth stock is expected to pay a yearly dividend of €7.70. What is the value of that stock according to the CAPM?

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