Advanced Financial Management

Exercise Set: Portfolio Theory and the CAPM

Portfolio Analysis

	Expected return	Standard deviation	Beta
Risk-free asset	2%	0%	?
Market portfolio	8%	20%	?
Asset A	8%	30%	1.0
Asset B	5%	20%	0.5
Asset C	9%	40%	1.4

1) Imagine that you have 10,000€ to invest. What would be the combination of Asset A and Asset B that would yield you an expected return of 4%?

2) What is the standard deviation of the portfolio described in the previous question, knowing that the correlation coefficient between Asset A and Asset B is 0.2?

3) Given the set of possible portfolios by combining Asset A and Asset B, would the portfolio in the previous questions be mean-variance efficient? Justify.

4) Is asset C in equilibrium? Explain what will happen to the value of the asset, including your detailed rationale, assuming that the market is efficient.

CAPM

5) There is a market portfolio composed by all existing stocks that is expected to generate a return of 8% and has a standard deviation of returns of 14%. The risk-free rate is 3%. An asset management company built a portfolio that is in equilibrium and that has an expected return of 12% and a standard deviation of 30%. Is this portfolio efficient?

6) There is a stock with a Beta of 1.2. What would be its equilibrium return knowing that the CAPM conditions are verified?

7) There is another stock with a Beta of 0.6 and its expected return is 8%. If the CAPM conditions are verified, what is expected to happen its price and its expected return?

8) Which of the following sentences is true in a world where the CAPM conditions are verified?

   a. The stock with most total risk should also have the highest expected return
   b. Two stocks with the same volatility should have the same expected return
   c. Systematic risk is irrelevant for the expected return of a stock
   d. One stock with higher volatility might have lower expected return than another stock with lower volatility
   e. Specific risk is non diversifiable and will not be reduced with the addition of more stocks into the portfolio