DEPARTMENT OF FINANCE AND STATISTICS

Portfolio Management Time: 4 h

Exam on May 15, 2009. Calculator allowed

The exam gives a maximum of 50 points (10 points for each question).

1. Show how the following equation describing security risk

$$\sigma_{i_i}^2 = \beta_i^2 \sigma_{m_i}^2 + \sigma_{e_{i_i}}^2$$

can be derived from the Sharpe single index model

$$R_i = \alpha_i + \beta_i R_m + e_i$$

where R_i and R_m are excess returns over the riskfree rate for security i and the market portfolio. e_i is the firm specific random return component.

2. Give an overview of the mutual fund market, i.e. which types of funds are available and in which different ways can the funds be classified.

3. Describe graphically (using the opportunity set, the Capital Allocation Line and indifference curves) and with words the investment decision for a risk avert investor with two risky (not perfectly correlated) and one riskfree asset open for investments.

4. Assume that you live in a CAPM world. Fill in the missing items in the table below

Security	Exp. Ret.	Beta	Std.Dev.	Resid. Variance
Stock A	-	-	0.4123	0.16
Stock B	5%	0	-	0.04
Stock C	20%	-	0.4243	0.09
Stock D	20%	1.5	0.5831	-
Market portf.	-	1	-	0

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5. You have the following data on Computer Associates Intl (CA) and Biogen Inc (BGEN):

	Exp.Return.	Variance
CA	20%	0.09
BGEN	25%	0.16

The correlation between CA and BGEN is 0.2.

a) What is the expected return and standard deviation of a portfolio that consists to 60% of Computer Associates Intl and to 40% of Biogen Inc?
b) How would you combine the two stock in order to get the lowest possible portfolio risk?

GOOD LUCK !!!