Pricing of Financial Securities and Derivatives **Final Exam 4.9.2004**
Time: 4 hours
Calculator may be used
Note: The exam is first graded on a 40 p scale, and then scaled to 60 p.

1. Briefly explain the following words and expressions (8 p):

   a) Merton's (1974) model
   b) rating transition matrix
   c) recovery rate
   d) domestic commercial paper market

2. Answer the following questions:

   a) Explain how the rate for a Forward Rate Agreement-contract (FRA) is determined, and why the rate must be determined in such a way. (5 p)
   b) An FRA contract is said to be "cash settled up front". What does this mean, and explain why this is an appropriate way of settling the contract. (5 p)

3. You decide to take a short position in 100 European stock call options (assume 1 option contract is for 1 share). You decide to delta-hedge your position. The share price is S = EUR 100, the strike is X = EUR 100, the call price is C = 2.00, and the delta for the call is d = 0.55. Answer the following questions: (10 p)

   a) How would you construct your delta-hedge? Explain why you set up your hedge the way you did. (4 p)
   b) What are the advantages and disadvantages of your hedge? (3 p)
   c) Suppose now that you hedged options with a strike of X = 110 (the stock price is still S = 100). Would this position be easier or more difficult to delta hedge than in question a)? (3 p)

4. Discuss modified duration and key rate durations as measures of interest rate risk in the following order: a) how are they calculated, what factors affect them and how?, b) what do they measure, how should they be interpreted?, c) what are their weaknesses and limitations? (12 p)