

Portfolio Management 2010 Final Exam
Tuesday, June 10th, 2010 **Extras: Calculator**
Exam time: 5 hours

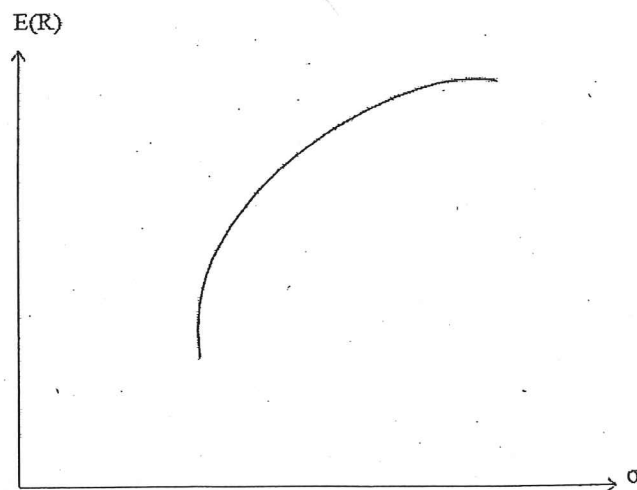
Maximum score is 75 points. Minimum required to pass is 37.5p.

1. Is it possible that a positive alpha for a managed mutual fund will be associated with inferior portfolio performance? Discuss. (10p)
2. Define briefly following investment related terms/concepts (3p/sub-question, 15p max.)

- a) A Single Index Model
- b) Framing (type of investor behaviour)
- c) Home country bias
- d) Dollar-weighted rate of return
- e) Style analysis (of a portfolio)

(total 15p)

3. a) The graph below plots the efficient frontier for N risky assets for one of your clients. Which shape will the efficient frontier have for an investor who is more risk averse, and for an investor who is less risk averse? What role does homogenous vs non-homogenous information play in this context? Justify.



- b) Assume now that information is homogenous and the investor has the opportunity to invest part of his wealth in a risk free asset and the rest in a combination of risky asset. Draw the new efficient frontier and explain why this line defines the dominant set of portfolio possibilities.

(8+7=15p)

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4. Your analysis of a new client profile shows that his risk preference can be modelled using the following utility function: $U = E(R) - 0.5 \sigma^2$ where $E(R)$ =Expected Return, σ^2 = Return variance. Three portfolios, data for which are provided below, are available for investment by your client.

Portfolio I: An investment in an equally weighted portfolio with four securities, all of which are perfectly and positively correlated with each other. The expected returns and standard deviation for the securities are:

Security	Expected return p.a. (%)	Standard deviation (% p.a.)
A	4	5
B	16	30
C	13	25
D	21	35

Portfolio II: The minimum variance portfolio comprising an investment in a security E (which has an expected return of 19% and a return standard deviation of 33%) and an investment in a security F (with an expected return of 14% and standard deviation of 28%). The correlation coefficient between securities E and F is 0.5.

Portfolio III: A portfolio with an expected return of 16%, a beta of 1.2 and an unsystematic risk of 12% in standard deviation terms. The volatility of market return is 21%.

- Compute the return and the volatility for each portfolio I-III. (10p)
- Which investment is your client likely to select? Justify. (4p)
- What can you say about your client's attitude towards risk? (3p)
- Explain why investors' indifference curves are important in portfolio theory. (3p)

(total 20p)

5. The global market portfolio is expected to return 5% p.a. and has volatility of 15% p.a. Finnish equities have a beta of 1.5 against the market portfolio and have a volatility of 30% p.a. The risk free rate is 1% p.a.

- What is the expected return (% p.a.) on Finnish equities justifying an mean-variance optimal weight of 0.2 (= +20% "overweight" given Finland's negligible weight in the global market portfolio)? (8p)
- Advise clients demanding a portfolio with volatility target of 10% p.a.! (5p)
- How much incremental Sharpe ratio can be attained from the active Finland overweighting above, compared to having clients invest only the global market portfolio? (2p)

(total 15p)