Portfolio Management 2016 Final Exam 2
Saturday, June 11th, 2016 Extras: Calculator
Exam time: 4 hours
Maximum score is 50 points. Minimum required to pass exam is 25p. Avoid essay question answers > one page. For speeding up exam correction: Please structure your answers - do not ramble. Underlining the key terms in your answers is a good idea.

1. Define briefly following terms:
a) An index model
b) A hedge fund
c) A cumulative abnormal return (CAR)
d) The security market line (SML)
e) Tracking error volatility
(2p/sub-question; 10p in total for question 1)

2. a) You are assisting Sherlock Holmes and hired to fill in the gaps in a missing table important for the case in question. Assume that the market is efficient and that assets are priced according to the CAPM. Please derive the missing figures.

(Hint: The two formulas needed are the SML equation, and the formula for decomposing an asset's variance into systematic and unique (firm specific) risk. Solving item by item the ones you have enough information on, i.e. the ones for which you know all the values but one in the relevant formula, will help to derive all the gaps. Some rows will be helpful in giving the missing items needed to solve for the gaps in other rows.)

	Beta	Expected return	Volatility (st.deviation): σ_i	Unique risk: σ_e^2
Stock A		4.8%	0.16	0
Stock B	2	9%		0.09
Stock C	1.0			0
Stock D	0	2%		0.36

(2 p per gap, that is **5*3 p =15 p**)

b). Assume that when you get older, you become **more** risk averse. What implications would this have for your optimal total portfolio in a CAPM-world (a one factor asset pricing model operates)? Would different individual risky assets be selected at later age than now? Explain. **(5p)**

(20p total for question 2)

Please turn page!

3. a) Would you expect a well-diversified stock portfolio of relatively illiquid stocks have a return better or worse than a well-diversified portfolio of highly liquid stocks? Why? (**4p**)

b.) Market efficiency in the weak, semi-strong and strong form. Explain the concepts and give for each of them, example of a return pattern, price reaction, or a market anomaly, which would represent a deviation from that form. (**6p**)

(Total 10p for question 3)

4.) You are the advisor for a client who compares two alternative portfolios. You have the following statistics for the two portfolios **P** and **Q** and the market **M**:

	Sharpe ratio	Treynor measure	Alpha	Beta	Information ratio
Portfolio P	0.159	4.375	0.3%	0.8	0.0199
Portfolio Q	0.161	4.357	0.5%	1.4	0.0195
Market M	0.20	4.0	0%	1.0	0

Explain what the statistics in the table measure (and how they are defined), and what you on the basis of them can infer concerning the two portfolios' relative **performance, risk,** and **degree of diversification.** Which of the two portfolios P and Q would you recommend if it was the investors total wealth portfolio? Would your answer be different if she were only to invest part of her wealth in that one, i.e. use it as an active portfolio mixed with the market index portfolio?
(**10p**)