Portfolio Management 2011 Final Exam 1
Saturday, June 14th, 2011 Extras: Calculator
Exam time: 5 hours
Maximum score is 50 points. Minimum required to pass exam is 25p. Avoid essay question answers>one page.

1. List three possible arguments against international equity investment and briefly discuss the significance of each. (**8p**).

2. Explain briefly the four main implementation steps behind the Black-Litterman model of active asset allocation. (**8p**)

3. You have classified the market in four portfolios as follows: Small Value, Large Value, Small Growth, Large Growth. The weight of the each portfolio in the index is also given. Suppose the risk free rate is 2% and accordingly you have designed the following model:

Portfolios	Weight	Sensitivity to Factor I (Market beta)	Sensitivity to Factor II (Price/Book)	Sensitivity to Factor III (Average capitalisation)
Small Value	5%	0.85	0.8	1
Small Growth	5%	0.95	1.3	1
Large Value	40%	0.90	2.0	8
Large Growth	50%	1.10	3.0	10
Risk premium		8%	-2%	0.1%

a) When using the APT, which portfolio has the highest expected return? Show your calculations. (**2p**)
b) Still using the APT, what is the expected return of the market and how does it compare with the returns of the other 4 portfolios? (**2p**)
c) One of your competitors uses the CAPM. Based on the betas above, which portfolio would he choose when he wants to maximise his expected return? (**3p**)
d) In order to diversify his anticipated risk, another competitor wants to combine the Small Value and the Large Growth Portfolios. The new portfolio should have an overall sensitivity to factor I of one. Show how much the competitor must invest in Small Value and how much in Large Growth. The portfolio must be fully invested. Short sales are not allowed. (**3p**)

(End of question 3.)

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4. Expected returns, volatilities and correlations for four assets are given in the table below. X and Y are individual risky assets whereas M represents the market value weighted index and RF the risk free rate.

a) Compute the expected return, volatility and expected Sharpe ratio of a currently held portfolio with a weight of 10% in X, 10% in Y, 50% in M and 30% in RF. **(4p)**

b) Construct an *optimal* allocation for an investor with constant relative risk aversion coefficient A=4. **(10p)**

Asset (i)	Expected return	Volatility
X	5.60%	20.00%
Y	4.80%	8.00%
M	6.00%	15.00%
RF	4.00%	0.00%

Correlation

	X	Y	M
X	1		
Y	0.4	1	
M	0.6	0.2	1

(End of question 4.)

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