UNIVERSITÉ TOULOUSE 1 CAPITOLE

TSE
Toulouse School of Economics
École d'économie de Toulouse

Année Universitaire 2012-2013
SESSION 1

MASTER 1

MARKET FINANCE
(durée 1h30)

Lundi 14 janvier 2013 ~ 10h00 –11h30

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Exercise 1

A person has an expected utility function of the form $U(W) = \ln[W]$. He initially has wealth of 4. He also has a lottery ticket that will be worth 12 with probability 0.5 and will be worth 0 (nothing) with probability 0.5.

a) Compute the Arrow-Pratt absolute and relative risk aversion.
b) Compute the expected utility.
c) What is the lowest price, p, at which he would sell the ticket?
d) Without going through the calculations how question b) would change if the person had a wealth of 10. Explain you answer.

Exercise 2

On the capital market two securities with the following risk-return characteristics exist:

Stock A: $E[r_A] = 10\%$ $\sigma_A = 20\%$

Stock B: $E[r_B] = 15\%$ $\sigma_B = 25\%$

a) Assume that you own a portfolio which consists of 35% stock A and 65% stock B.
   i. Compute the expected return and the variance of the portfolio.
   ii. For which correlation between the stocks $\rho_{A,B}$ is the standard deviation of the portfolio return maximal and minimal respectively.
b) Compute the maximal and minimal standard deviation of the portfolio return.
c) Assume that $\rho_{A,B} = 0$. Is it possible to realize a portfolio with $E[r_p] = 14\%$ if the risk should maximally be $\sigma_p = 20\%$. For this, determine the risk for an efficient portfolio with $E[r_p] = 14\%$.

Exercise 3

Explain the main contribution of the APT, how it relates to the CAPM and the reason of its name.

Exercise 4

Indicate if the following statements are true or false and explain your answer.

a) In an efficient market the expected returns of the financial assets are equal to 0.
b) The value of a portfolio constituted by a call option and future written on the same asset and same expiry date can be negative.
c) The future price is the price you pay to enter into a future contract.
d) The risk free rate puzzle states that the risk free rate is too low.
e) The prices of a strong form efficient market do not reflect private information.