

COMPUTER ASSIGNEMENT 3

Consider the following 3 independent risky investments, equally priced in the market at 10 euros.

Investment A		Investment B		Investment C	
Prob	Wealth	Prob.	Wealth	Prob.	Wealth
3/15	20	0.3	19	0.25	18
4/15	16	0.3	10	0.25	16
4/15	14	0.4	5	0.4	12
2/15	10			0.1	8
2/15	6				

1. Consider the three investments as alternative.
 - (a) For an investor with utility function $U(W) = 4W - \frac{1}{10}W^2$, determine:
 - (i) Determine the expected utility associated with each investment.
 - (ii) For a simple game with outcome 0 or 20, determine the subjective probability associated with the outcome 20, so that the simple game is equivalent to each of the investments. Explain how to rank investments according to these subjective probabilities.
 - (b) Determine the possible returns for each investment.
 - (c) Rank the three investments according to:
 - (i) A Roy investor, with $R_L = 10\%$. Interpret.
 - (ii) A Kataoka investor, with $\alpha = 30\%$. Explain.
 - (iii) A Telser investor, with $R_L = 10\%$ and $\alpha = 30\%$.
 - (d) Rank the three investments for a risk neutral investor.
 - (e) What can you conclude from first, second and third order stochastic dominance analysis? Interpret.
2. Consider combinations of the three assets, assuming however shortselling is forbidden. Determine the optimal combination of A, B and C , for:
 - (a) An investor with utility function $U(W) = 4W - \frac{1}{10}W^2$ and $W_0 = 10$.
 - (b) A Roy investor, with $R_L = 10\%$. Interpret.
 - (c) A Kataoka investor, with $\alpha = 0.3$. Explain.
 - (d) A Telser investor, with $R_L = 10\%, \alpha = 0.3$.
 - (e) A risk neutral investor.
 - (f) A risk seeking investor.
3. Show that in this setting considering a 2nd-order Taylor approximation of risk tolerance functions and various levels of RRA, may help “design” the efficient frontier. Take, for instance, $RRA = \{-1, 0, 1, 2, 3, 4, 5, 6\}$. Explain.
4. Redo Question 2 – finding optimal portfolios for all investors (a)-(e) in the case when, besides the risky assets A, B and C , there is also a riskless asset F with $R_f = 5\%$.