



20135 Theory of Finance – Part 1

Mock Question 6 (5 points)

Time Advised: 20-22 minutes (for this questions)

Difficulty Level: MEDIUM-EASY

Question 6.A (3.75 points)

Define what is an indifference curve in a (μ, σ) Cartesian plane. What are the possible foundations/motivations for the typical monotone increasing, convex shape of standard mean-variance indifference curves? Make sure to carefully justify what you may mean by “plausible predictions” of behavior also providing, if useful, some examples.

Question 6.B (0.75 points)

Mary is characterized by a power utility function, such that $U_{Mary}(W) = \frac{W^{1-\gamma}}{1-\gamma}$, with γ . Her initial wealth is $W = \$1000$. Mary has told to her friend John, that she would accept to enter in a bet in which she may gain or lose \$10 she would require a probability of winning the lottery higher or equal than 0.525. Compute Mary’s coefficient of risk aversion, γ , making sure to show your work. John claims that he has the same preferences as Mary, but he would accept a bet in which he may gain or lose \$10 if the probability of winning was higher or equal than 0.51. Are these two claims compatible? Carefully explain your reasoning.

Question 6.C (0.5 points)

Mary is a non-satiated, risk-averse mean-variance optimizer characterized by a MV risk-aversion coefficient $\kappa = 0.5$. You know that Mary’s optimal portfolio is characterized by a standard deviation of 25% and that she is investing 20% of her wealth in the risk-free asset. Her brother, John, is also a non-satiated, risk-averse mean-variance optimizer, but he is characterized by a risk aversion coefficient $\kappa = 1$. What can you say about the composition—in terms of weight assigned to riskless cash investments and the risky tangency portfolio—of John’s optimal portfolio?