Assignment 10

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment. Due on 2018-10-10, 23:59 IST.

1) If you follow safety first principle while making investment decisions, that means: 1 point

- You don't know the utility theorem and make your decisions placing more importance to bad outcomes
- You don't know the utility theorem and make your decisions giving more weight to the positive outcomes
- You know the utility theorem and to be on a safe side adopt a function that gives more importance to bad outcomes
- You know the utility theorem and adopt a function that leads to optimistic outcomes

No, the answer is incorrect.
Score: 0
Accepted Answers:
You don't know the utility theorem and make your decisions placing more importance to bad outcomes

2) Based on your understanding of the lectures select which one is the optimal portfolio considering the need to Min P[R_i - R_L] from the following information. Suppose that returns are normally distributed. i denotes the investment option among X, Y and Z. R_L (the fixed level of return) is set as 6.

<table>
<thead>
<tr>
<th>R_i</th>
<th>σ_i</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>4</td>
</tr>
<tr>
<td>12</td>
<td>7</td>
</tr>
<tr>
<td>19</td>
<td>8</td>
</tr>
</tbody>
</table>

- X
- Y
- Z
- Either X and Y

No, the answer is incorrect.
Score: 0
Accepted Answers:
You don't know the utility theorem and make your decisions placing more importance to bad outcomes

- Either X and Y
Quiz: Assignment 10

WEEK 10 - FEEDBACK - Data Analysis and Decision Making - I

Assignment 10 Solution

1. Scenario X Y Z
   1 0.20 0.30 0.50
   2 1/3 1/3 1/3
   3 .25 .50 .25

   1
   2
   3
   Both 2 and 3

   No, the answer is incorrect.
   Score: 0
   Accepted Answers: 1

4) For an exponential utility function exp(-bW) where, b>0 what can you say about the nature of the graphs:
   - It is increasing and concave
   - It is decreasing and concave
   - It is increasing and convex
   - None of the above

   No, the answer is incorrect.
   Score: 0
   Accepted Answers: It is increasing and concave

5) For an exponential utility function exp(-bW) where, b>0 what is its absolute risk aversion coefficient r_A
   - b
   - b^2
   - 1/b
   - -b

   No, the answer is incorrect.
   Score: 0
   Accepted Answers: b

6) For a power utility function (W^{1-b})/(1-b), for b≠1 what can you say about the nature of the graphs for W > 0?
   - It is increasing and concave
   - It is decreasing and concave
   - It is increasing and convex
   - None of the above

   No, the answer is incorrect.
   Score: 0
   Accepted Answers: It is increasing and concave

7) For a power utility function (W^{1-b})/(1-b), for b≠1 what is its relative risk aversion coefficient r_R

   1 point
8) Consider a random variable A with probability function:
p(a) = 0.8 for a=1 and p(a) = 0.2 for a=100.
Consider another random variable B with probability function:
p(b) = 0.99 for b=10 and p(b) = 0.01 for a=1000.
Let \( U(W) = \log(W) \).
Then:
- \( E[U(A)] > E[U(B)] \)
- \( E[U(A)] = E[U(B)] \)
- \( E[U(A)] < E[U(B)] \)
- None of the above

No, the answer is incorrect.
Score: 0
Accepted Answers:
- \( E[U(A)] > E[U(B)] \)

9) Assume that an agent’s expected utility function is given by a quadratic utility function 1 point
\( U(W) = W - (b/2)W^2 \), \( b > 0 \). The mean–variance portfolio theory (\( \mu - \sigma \) analysis) assumes that an agent’s preferences can be described by a preference function, \( V(\mu, \sigma) \), over the mean (\( \mu \)) and the standard deviation (\( \sigma \)) of the portfolio return. What is the expected utility for this agent?

- \( E[U(W)] = \mu - (b / 2) (\sigma^2 + \mu^2) \)
- \( E[U(W)] = \mu + (b / 2) (\sigma^2 + \mu^2) \)
- \( E[U(W)] = \mu + (b / 2) (\sigma^2 - \mu^2) \)
- None of the above

No, the answer is incorrect.
Score: 0
Accepted Answers:
- \( E[U(W)] = \mu - (b / 2) (\sigma^2 + \mu^2) \)

10) Based on the formulations in question 9 what can you say about the standard assumptions of mean–variance portfolio theory as applicable to that \( U(W) \)? \( \max\{W\} < 1/b \).

- \( V_\mu > 0, V_\sigma < 0 \)
- \( V_\mu = 0, V_\sigma < 0 \)
- \( V_\mu < 0, V_\sigma > 0 \)
- \( V_\mu > 0, V_\sigma = 0 \)

No, the answer is incorrect.
Score: 0
Accepted Answers:
- \( V_\mu > 0, V_\sigma < 0 \)

11) You have an opportunity to place a bet on the outcome of an upcoming tennis tournament involving a certain Indian player. If you bet \( x \) dollars and she wins, you will have \( w_0 \)
12. Consider an agent with utility function $u(x) = -e^{-x}$. Does his investment in the risky asset change with wealth?

- Yes
- No
- Can't say
- Insufficient data

No, the answer is incorrect.
Score: 0
Accepted Answers:
Yes

13. Considering the safety-first principle, we can state which of the following where $x$ is the subsistence or disaster level of returns and $p$ is the probability of disaster? $z$ is the total one-period return on the portfolio.

- $\min \text{ Probability}(z \leq x)$
- $\max x \text{ subject to } \text{Probability}(z \leq x) \leq p$
- $\max \mu \text{ subject to } \text{Probability}(z \leq x) \leq p$ where $\mu$ is the expected value of $z$ and $\sigma$ is the standard deviation of $z$
- All of the above

No, the answer is incorrect.
Score: 0
Accepted Answers:
$\min \text{ Probability}(z \leq x)$
15) Which of the following is not a feature/assumption of utility theory?

- Ordering of alternatives
- Synchronicity
- Monotonicity
- Transitivity

**No, the answer is incorrect.**

*Score: 0*

*Accepted Answers:*

*Ordering of alternatives*