Unit 8 - Week 5: Non-Mean-Variance Portfolio Theory

Assignment 5

Due on 2023-10-21, 23:59:59 IST.

1. Consider two investment opportunities A and B, for an investor with utility function \( U(W) = W^{0.5} \).
   Opportunity A: An investment of $500 has 100% chance of either gaining $50 with probability \( \frac{1}{2} \) or losing $50 with probability \( \frac{1}{2} \).
   Opportunity B: An investment of $100 has 10% chance of gaining $100 and 90% chance of losing $100.
   Then the difference \( E(U(W)) - E(U(W)) \) equals:
   - [ ]
   - [ ]

2. Consider the following Table:

<table>
<thead>
<tr>
<th>Returns</th>
<th>Probability</th>
<th>( q_2 )</th>
<th>Probability</th>
<th>( q_3 )</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>-5%</td>
<td>0.8</td>
<td>0.3</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0%</td>
<td>0</td>
<td>0.2</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5%</td>
<td>0.2</td>
<td>0.5</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

   If the utility function is \( U(r) = r^2 \), and if the expected utility of returns of assets \( q_1, q_2 \) and \( q_3 \), are \( E(U(q_1)), E(U(q_2)) \) and \( E(U(q_3)) \), respectively, then \( \frac{E(U(q_1)) + E(U(q_2))}{E(U(q_3))} \) equals:
   - [ ]
   - [ ]

3. Consider an investment opportunity, where an investment of $600, either results in the gain being $300 with probability \( \frac{1}{2} \),
   or results in the loss being $200 with probability \( \frac{1}{2} \).
   If the utility function is \( U(W) = \ln(W) \), then the Certainty Equivalent (CE) equals:
   - [ ]
   - [ ]

4. An investor has the utility function \( U(W) = W^{0.5} \) and is indifferent between receiving $100 and $80,
   with equal probabilities or $150 with certainty, then the value of \( \gamma \) equals:
   - [ ]
   - [ ]

5. Which of the following utility function represents a risk-averse investor?
   - [ ]
   - [ ]

6. Which of the following holds in case of an investor with the quadratic utility
   \( U(W) = 2W - 0.9W^2 \) ?
   - [ ]
   - [ ]
   - [ ]
   - Decreasing AEA and Decreasing RRA
   - Increasing AEA and Decreasing RRA
   - Decreasing AEA and Increasing RRA
   - Increasing AEA and Increasing RRA

7. If \( A(W) \) is the AEA of utility function \( U(W) \), then the AEA for \( U(W) = a + bU(W) \) is given by:
   - [ ]
   - [ ]
   - [ ]
   - [ ]
   - [ ]

8. Which of the following holds in case of a risk-loving investor?
   - [ ]
   - [ ]

9. Which of the following holds in case of a risk-averse investor?
   - [ ]
   - [ ]
   - [ ]
   - [ ]
   - [ ]

10. Which of the following holds in case of a risk-neutral investor?
    - [ ]
    - [ ]
    - [ ]
    - [ ]
    - [ ]