

### Example 5

Q : rank

$L_1 = \frac{1}{10,000}$

$L_2 \rightarrow \begin{matrix} 0.5 \\ \hline 0.5 \end{matrix} \quad \begin{matrix} 30,000 \\ 0 \end{matrix}$

$$L_3 \quad \text{---} \quad 0$$

$L_4$  —  $\left[ \begin{array}{c} 0.02 \\ 0.98 \end{array} \right] \begin{array}{l} -10,000 \\ 500 \end{array}$

Solution

-10,000	0	500	10,000	30,000
least favorable				most favorable

$$u(\$30000) = 1$$

$$u(\$-10000) = 0$$

reward	utility
10000	0.9
0	0.6
30000 (most fav)	1
-10000 (least fav)	0
500	0.62

$$\begin{aligned}
 E(u \text{ of } L_4) &= 0.02 \times u(-10000) + 0.98 \times u(500) \\
 &= 0.02 \times 0 + 0.98 \times 0.62 \\
 &= 0.6076
 \end{aligned}$$

$$E(u \text{ of } L_1) = 1 \times u(10000) = 1 \times 0.9 = 0.9$$

$$E(u \text{ of } L_2) = 0.5 \times u(30000) + 0.5 \times u(0) = 0.5 \times 1 + 0.5 \times 0.6 = 0.8$$

$$E(u \text{ for } L_3) = 1 \times u(0) = 1 \times 0.6 = 0.6$$

$L_1$  is chose

② Rank the lotteries according expected payoff

$$L_1 \xrightarrow{1} 10,000$$

$$EU_{10,000}$$

$$L_2 \begin{cases} \xrightarrow{0.5} 30,000 \\ \xrightarrow{0.5} 0 \end{cases}$$

$$15,000 \quad \checkmark \text{ choice } L_2$$

$$L_3 \xrightarrow{1} 0$$

$$0$$

$$L_4 \begin{cases} \xrightarrow{0.02} -10,000 \\ \xrightarrow{0.98} 500 \end{cases}$$

$$\begin{aligned}
 &500 \times 0.98 - 10000 \times 0.02 \\
 &= 5 \times 98 - 200 \\
 &= 290
 \end{aligned}$$