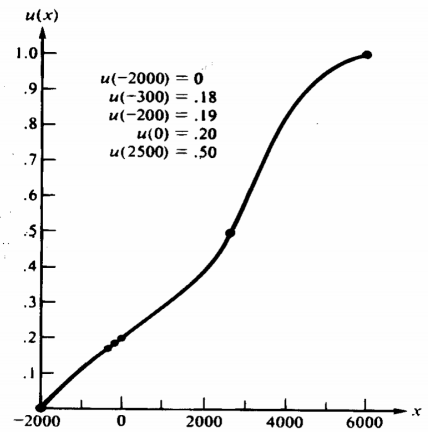
# Example 7

Consider a decision maker whose utility function $u(x)$ for change in current asset position is given as:

考虑一个决策者，其当前资产状况变化的效用函数u(x)为：




$u(0) = 0.2$

$u(-200) = 0.19$

$u(-2000) = 0$

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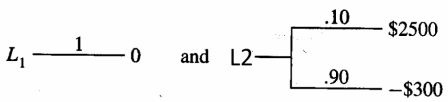
Q

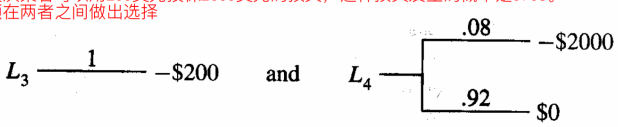
a) If forced to choose between 如果被迫在两者之间做出选择




what would this person do? 这个人会怎么做?

b) Now suppose the decision maker can, for $200, insure against a loss of $2000, which occurs with probability .08. If he must choose between

b)现在假设决策者可以用200美元投保2000美元的损失，这种损失发生的概率是0.08。
如果他必须在两者之间做出选择




what would be his decision?

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Solution $u(0) = 0.2$ $u(2500) = 0.5$ $u(-300) = 0.18$

$E(u \text{ for } L_1) = 1 \times u(0) = 0.2$

$E(u \text{ for } L_2) = 0.1\, u(2500) + 0.9\, u(-300) = 0.212$

$L_2$ is preferred to $L_1$

$CE(L_2) > CE(L_1) = 0$

$L_2$ has a certainty equivalent at least \$0

$EV(L_2) = 0.1 \times 2500 + 0.9 \times (-300) = -20$

$RP(L_2) = EV(L_2) - CE(L_2) = -20 - (\text{at least } 0) < 0$

risk seeking behavior

in this situation

(b) ⊖ buy insurance — $L_3$ — 1 — \$200 — 0.19

$L_4$ — 0.08 — \$20200 — 0

$L_4$ — 0.92 — \$0 — 0.2

$E(u \text{ for } L_3) = 1 \times u(-200) = 0.19$

$E(u \text{ for } L_4) = 0.08 \times u(-20000) + 0.92 \times u(0)$

$= 0.08 \times 0 + 0.92 \times 0.2$

$= 0.184$

$0.19 > 0.184$ prefer no buy insurance

92 / 2 / 0.184

$CE(L_3) > CE(L_4)$

$= -200$

不买保险是选 $L_3$ 和真的 -200

$RP(L_4) = E(L_4) - CE(L_4)$

$= -160 - \pi \in (40, \infty) \quad x < -200$

$> 0$

risk - averse