

In class chapter 5: Uncertainty and Consumer Behavior

1) Cell phone problem with risk-loving utility:

$$I = 400$$

$$U = I^2$$

Prob 0.10 that lose \$300

Prob 0.90 that lose \$0

$$EU_{\text{Gamble}} = 0.10 \cdot (400 - 300)^2 + 0.90 \cdot (400 - 0)^2 = 145,000$$

$$EU_{\text{withinsurance}} = (400 - x)^2$$

Set $EU_{\text{Gamble}} = EU_{\text{withinsurance}}$

$$145,000 = (400 - x)^2 \text{ solve for } x:$$

$$380.79 = 400 - x \text{ (so } 380.79 \text{ is certainty equivalent)}$$

And $x = 19.21$ is reservation price for insurance

2) House example

$$I = 400,000$$

$$U = \text{sqrt}(I) = I^{1/2}$$

Prob 0.00001 that lose 400,000

Prob 0.99999 that lose 0

$$EU_{\text{Gamble}} = 0.00001 \cdot (400,000 - 400,000)^{1/2} + 0.99999 \cdot (400,000 - 0)^{1/2} = 632.449$$

$$EU_{\text{withinsurance}} = (400,000 - x)^{1/2}$$

Set $EU_{\text{Gamble}} = EU_{\text{withinsurance}}$

$$632.449 = (400,000 - x)^{1/2} \text{ solve for } x:$$

$$399,991.74 = 400,000 - x \text{ (so } 399,991.74 \text{ is certainty equivalent)}$$

And $x = 8.26$ is the reservation price for insurance