In-Class Practice

1 Sep 2022

An angel investor

Assume that an angel investor has the following value function under Prospect theory:

$$v(x) = \begin{cases} x^{0.5} & ,x \geq 0 \\ -\lambda(-x)^{0.5} & ,x < 0 \end{cases}$$

Also assume that the probability weighting function is $\pi(p) = p$, that is the investor has the weighting of probability equal to the objective probability.

Consider three startups: SamSan Tech (SST), Syng, and Cazoo. Suppose that the profit levels and their related probabilities for each startup are as follow:

$$SST = (2089, 0.80; 1625{,}0.20),$$

$$Syng = (2225{,}0.70; 1625{,}0.30),$$

$$Cazoo = (3116{,}0.70; 996{,}0.30)$$

[1.] Suppose that you are a consultant to this angel investor and you are trying to understand his risk preferences. A series of questions was earlier answered by this angel investor with his responses shown below. If the angel investor says he has the targeted profit of US$1,000 as his reference point, rank the startups from the most to the least preferred from this angel's perspective based on Prospect theory. Explain and show your calculation in detail.

Would you accept the following bet? A coin toss where:	The recorded answers:
If tails, lose $100, heads win $150?	No
If tails, lose $100, heads win $160?	No
If tails, lose $100, heads win $170?	No
If tails, lose $100, heads win $180?	No
If tails, lose $100, heads win $190?	No
If tails, lose $100, heads win $200?	Yes
If tails, lose $100, heads win $210?	Yes
If tails, lose $100, heads win $220?	Yes
If tails, lose $100, heads win $230?	Yes
If tails, lose $100, heads win $240?	Yes
If tails, lose $100, heads win $250?	Yes
If tails, lose $100, heads win $260?	Yes

[2.] If the angel investor follows your advice **not to** be loss-averse, will the ordering change? If so, how ? and why ? If not, why not?