Lesson 2: Risk preference metrics

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Certainty vs risk

Example (Certainty equivalent)

Alice is risk averse; when offered a one-in-two chance of winning $2000, she would only take the risk for $600 or less.

Alice prefers a certain $600 to the lottery

$600 is Alice’s certainty equivalent for the lottery:

$$\left[ \frac{1}{2} : \$2000 \mid \frac{1}{2} : \$0 \right]$$
$600 is $400 less than the \textit{fair value} of the lottery ($1000)

- her \textit{risk premium} is $400
- her risk premium quantifies how risk averse she is

\textbf{Definition (Risk premium)}

A decision-maker’s \textit{risk premium} is the difference between the fair value of an uncertain alternative and the decision-maker’s certainty equivalent for it.

\textbf{Risk attitudes: reformulated}

- Risk averse = positive risk premium
  
  \textit{Alice will accept $400 less than the fair value of the uncertain alternative to avoid the risk}

- Risk seeking = negative risk premium
  
  \textit{A risk seeking Alice would pay more than the fair value of the uncertain alternative for the chance to win}

- Risk neutral = zero risk premium