Strategic Games, Theory, and Experiment

Butler University

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Dictator Game

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- Experiment: double-blind vs. standard

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- Minimal acceptable offers distribution: now, theory, experiment.

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- Biological interpretation.

War of Attrition

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- One player who values the prize at v thinks about changing his bid from $\beta(v)$ to b. His expected payoff is

$$\pi(b) = \int_{\beta(u)<b} (v - \beta(u)) f(u)\, du - b \int_{\beta(u)\geq b} f(u)\, du$$

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- Assume $\beta(v)$ is the player's payoff maximizing bid, that is,

$$\pi(\beta(v)) \geq \pi(b)$$

for all $b \geq 0$.

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- Verify we have found a maximum by substituting $\beta'(v)$ expression back into formula for $\pi'(b)$.

$$\pi'(b) = (1 - F(\beta^{-1}(b))(v/\beta^{-1}(b) - 1)$$

which is positive if $b < \beta(v)$ and negative if $b > \beta(v)$.

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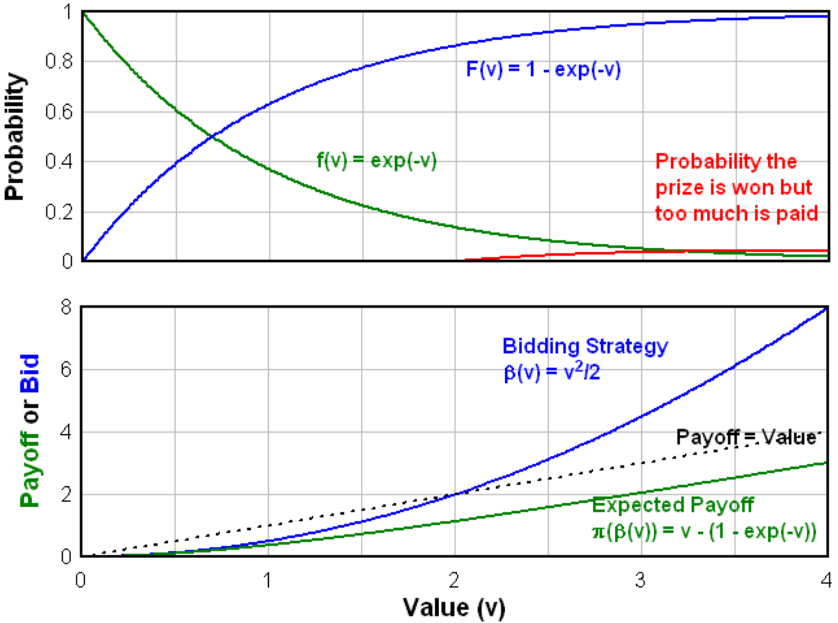
- For some prize values v, the bid $\beta(v)$ is greater than the value!


Probability
0
0.2
0.4
0.6
0.8
1
F(v) = 1 - exp(-v)
f(v) = exp(-v)
Probability the
prize is won but
too much is paid
Payoff or Bid
0
2
4
6
8
Bidding Strategy
β(v) = v²/2
Payoff = Value
Expected Payoff
π(β(v)) = v - (1 - exp(-v))
0
1
2
3
4
Value (v)

Beauty Contest

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- Find the distribution of guesses as well as the winner.

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- If players choose randomly, the median will be 50. So, I should choose 35.
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- But the reality is that not everyone thinks that deeply, and so I must think about how deeply my opponents will think.
- This is why stock market and housing bubbles persist even though everyone knows it will burst at some point.

MARPS

Monetary Asymmetric Rock-Paper-Scissors

- You against everyone else.

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- Each player secretly writes rock, paper, or scissors.

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- You receive the average playing against everyone else.

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Repeated Monetary Asymmetric Rock-Paper-Scissors

- Two players.

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- Two players.
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- Play it ten times with a single opponent now!

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- There is a lot more for us to learn!

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