Decoy Rewards in the Goal-Distance Model

Can an egg today make you desire more the hen tomorrow?

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Bridging Behavioral Economics and Marketing Science

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Evidence from the Existing Literature

- **Goal-gradient hypothesis**: effort to reach a goal increases with proximity to the goal
- Evidence in animal and human behavior: rats run faster as they approach food, members of a cafe' reward program purchase coffee more frequently when they approach the reward

- **Context effect and decoy alternatives**
- Marketing mix implication:
  offer at least two products, a target and a decoy!
- **Contrast effect**: perception of absolute values is affected by relative ones through evaluation of trade-offs

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Research Question

- **Do "decoy rewards" affect the exert of effort?**
- Given an existing target reward, a "decoy reward" has a smaller value and a larger value-to-effort ratio
- *Can an egg today make you desire more the hen tomorrow?*
- **If the effect exists, how should we design a decoy reward?**
- We often observe reward programs with multiple levels
- Classic contract theory: it is the optimal way to offer incentives to an heterogeneous population (self-selection of rewards)
- Behavioral alternative: small rewards just accelerate effort
- Probably a mix of both: experiment to isolate the latter

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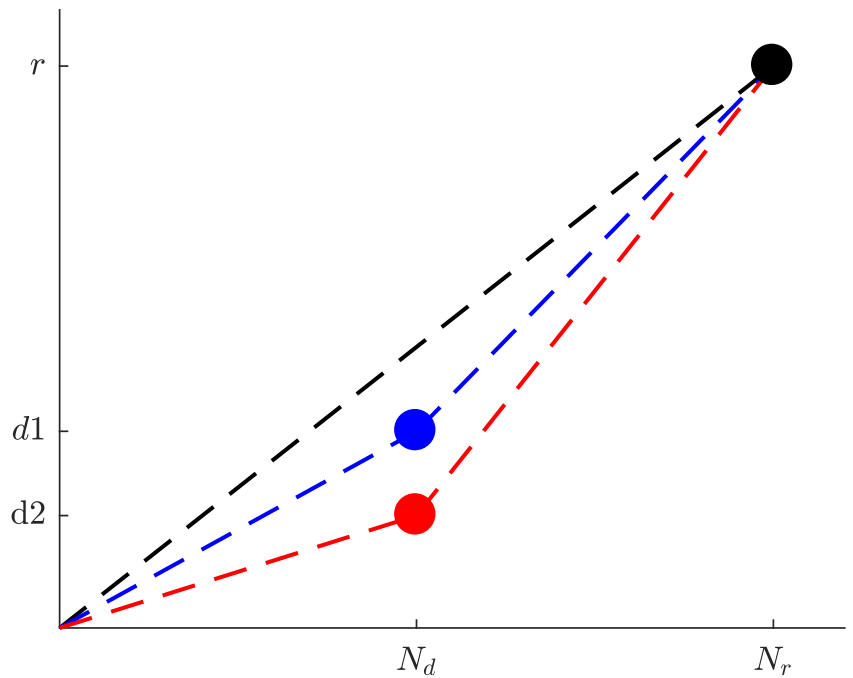
Setup and Model

- An agent can use N_r units of effort in order to receive a reward r
- We are interested in the comparative statics when an additional decoy reward d is added, with requirement N_d.
- Decoy reward: $r > d$, $N_r > N_d$, and $\frac{N_d}{d} > \frac{N_r}{r}$



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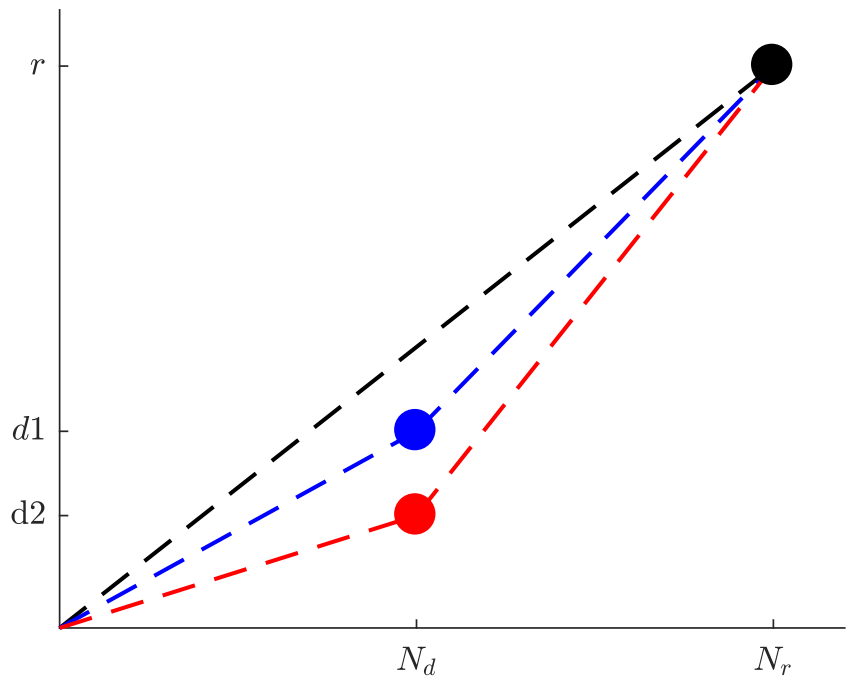

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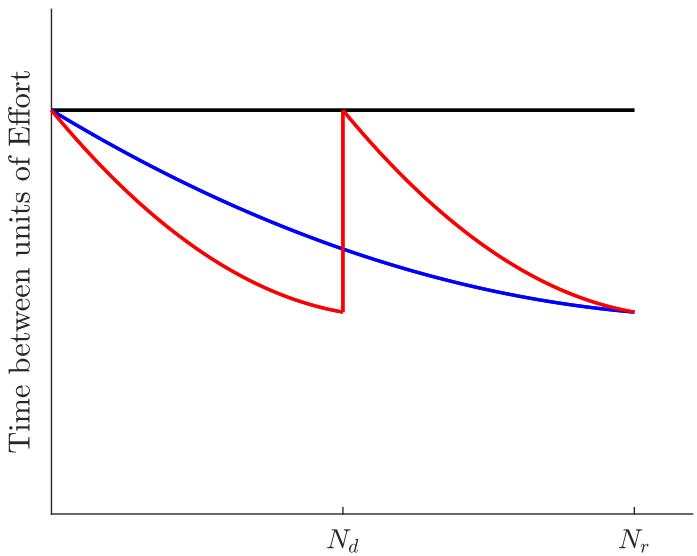
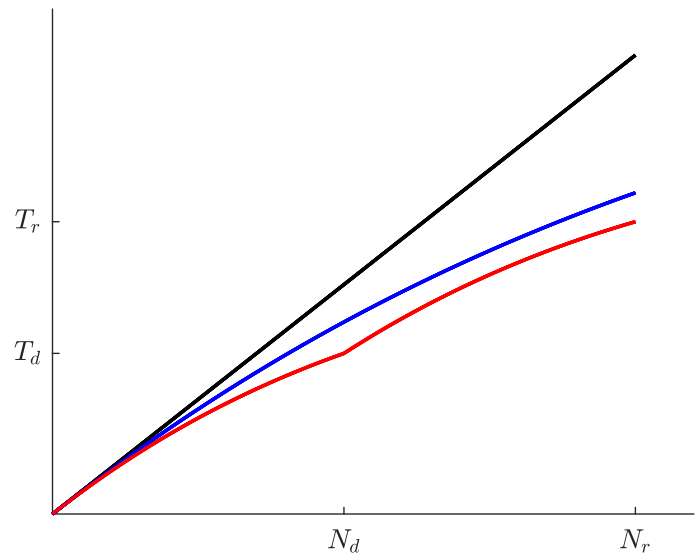
Hypothesis 1

- HP1: The introduction of a decoy reward decreases the total time required to reach the target reward. In particular, efforts accelerates when the consumers approach *d*, slows down again, and then accelerates when they approach *r*.



Left: Speed of effort over time.



Right: Time to exert *N* effort

Hypothesis 2

- HP2: The reduction of the decoy reward (keeping the effort constant) has two opposite effects on effort. It reduces the effort acceleration before d [smaller incentive] and it increases the effort acceleration between d and r [contrast effect].

- After establishing if the decoy reward has an effect, we may want to go deeper in the mechanism and disentangle possible drivers of the effect, in particular the direct incentive to accelerate in the first period and a possible contrast effect that makes the target decoy more desirable

Implementation

- We want to introduce an exogenous between-subjects variation in the incentive structure
- In all the treatments we have a default target reward $\frac{N_r}{r} = 1$
- Participants may have three levels of decoy reward: none (benchmark), small ($\frac{N_d}{d} = 1.5$), and very small ($\frac{N_d}{d} = 3$)

- Surveys: Expected likelihood to join, time to complete RP
- Field experiment: Reward program
- Online experiment: Effort task

Summary

- **We are interested in the effect "decoy rewards"**
- The goal-gradient hypothesis suggests that the introduction of a decoy reward may accelerate effort in a reward program
- Context effects, and contrast effect in particular, suggest that the characteristics of the decoy reward would also play a role in the overall efficacy

- Model: extension of Goal-Distance Model that includes Contrast Effect
- Field/online experiments: manipulation of the intermediate reward (absent, small, very small)

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