# Managerial exploration exploitation tradeoffs - Time horizons (#46341)

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**1) Have any data been collected for this study already?**
No, no data have been collected for this study yet.

**2) What's the main question being asked or hypothesis being tested in this study?**
Subjects play three-armed bandit experiments with different number of rounds, therefore different time horizons. We expect that the sampling strategy of subjects differs across experiments. We hypothesize that the higher the number of rounds, the longer subjects will stay in exploration. The shorter the time horizon, the earlier participants move to exploitation and inertia.

**3) Describe the key dependent variable(s) specifying how they will be measured.**
We test several sets of dependent variables. First, we test descriptive measures of sampling strategy, such as the percentage of participants switching between the arms of the bandit in each round, and the percentage of suboptimal arms sampled by subjects in each round (or alternatively, the proportion of participants choosing the arm with the highest average reward in each round). Second, we test model-based measures of sampling strategies: we expect differences in the distributions of the baseline probability of switching between exploration, exploitation, and inertia.

**4) How many and which conditions will participants be assigned to?**
Four conditions, in a between-subjects design. Each subject plays one of the three-armed bandit experiments with 20, 50, 100 or 200 rounds. The reward distributions are similar across the four conditions.

**5) Specify exactly which analyses you will conduct to examine the main question/hypothesis.**
To test differences in the descriptive measures, we will use ANOVAs with the four conditions as explanatory variable. We will use logistic regression to predict the probability of switching between arms as a function of lagged rewards and the experimental conditions.
We assess sampling strategies by running a three-state non-homogeneous hidden Markov model per condition. The model predicts subjects' probability to switch between an exploration, an exploitation and an inertia strategy. We will use the parameters governing these probabilities to test our hypotheses.

**6) Describe exactly how outliers will be defined and handled, and your precise rule(s) for excluding observations.**
We do not plan to exclude any observations.

**7) How many observations will be collected or what will determine sample size? No need to justify decision, but be precise about exactly how the number will be determined.**
We will collect observations from approximately 400 subjects in total, meaning approximately 100 subjects per condition. We randomly assign a subject to a condition, therefore the actual number of subjects per condition might differ slightly.

**8) Anything else you would like to pre-register? (e.g., secondary analyses, variables collected for exploratory purposes, unusual analyses planned?)**
We will also test whether there are differences between the four conditions in the percentage of forgone payoffs. We compute forgone payoffs as the difference between the actual total rewards and the rewards subjects could have obtained if they followed an optimal sampling path. We use the Gittins Index to compute the optimal path in the three-armed bandit experiments used for the four conditions.