

For the parametric analysis of our data we assume that an individual subject in our experiment chooses a consumption profile over two periods, (c_t, c_{t+k}) , to maximize intertemporal utility subject to a budget constraint:

$$u(c_t|\omega) + D_{t,k}u(c_{t+k}|\omega) \quad \text{s.t. } c_t + \frac{1}{1+r_{t,k}}c_{t+k} = m,$$

where $u(\cdot|\omega)$ is the per-period utility function based on the baseline consumption level, ω . The time index t is either 0 (early time frame) or 1 (late time frame). The discount factor $D_{t,k}$ is specified as follows:

$$D_{t,s} = \begin{cases} \beta\delta^k & \text{if } t = 0 \\ \delta^k & \text{if } t = 1. \end{cases}$$

The parameter $r_{t,k}$ represents the experimental interest rate of payments between two periods. We assume a power utility function

$$u(c|\omega) = \frac{(c+\omega)^{1-\rho}}{1-\rho}, \quad (1)$$

where ρ represents a relative risk aversion coefficient.¹ Note that the optimal demand depends on the baseline consumption level. Furthermore, for $\omega \leq 0$, the optimality of demands can not generate corner solutions, widely observed in the experimental data. Thus, we assume that $\omega > 0$. Solving the constrained maximization problem, we derive the following optimal demands:

Case 1: $\omega^\rho / (D_{t,s}(m+\omega)^\rho) \leq (1+r_{t,k}) \leq ((m(1+r_{t,k})+\omega)^\rho) / D_{t,s}\omega^\rho$

$$\begin{aligned} c_t^* &= \frac{m(1+r_{t,k})}{(1+r_{t,k})+K} + \omega \frac{1-K}{(1+r_{t,k})+K}, \\ c_{t+k}^* &= \frac{K(1+r_{t,k})}{(1+r_{t,k})+K} \times (m + (1 - 1/K)\omega), \end{aligned}$$

where

$$K = [D_{t,k}(1+r_{t,k})]^{1/\rho}.$$

Cases 2 & 3:

$$c_t^* = m \quad \text{and} \quad c_{t+k}^* = 0,$$

or

$$c_t^* = 0 \quad \text{and} \quad c_{t+k}^* = (1+r_{t,k})m.$$

¹In Web Appendix ??, we repeat this estimation exercise with a CARA utility function and show that the results presented here also hold for this specification.

We estimate the individual specific vector $\theta = (\beta, \delta, \rho)$ using the individual-level experimental data. Each time frame consists of 50 decision problems for each individual, denoted by $\{(c_t^p, c_{t+k}^p, m^p, r_{t,k}^p)\}_{p=1}^{50}$. We define the demand share for the sooner payment, $rc_t \equiv c_t / (c_t + c_{t+k})$, and use it in our estimation exercise. That is, our econometric method is to minimize the distance between the observed demand share and the optimal demand share for the sooner payment:

$$D(\theta) = \sum_{p=1}^{50} (rc_t^p - rc_t^{p*}(\theta))^2$$