Debt Aversion: Theory and Experiment

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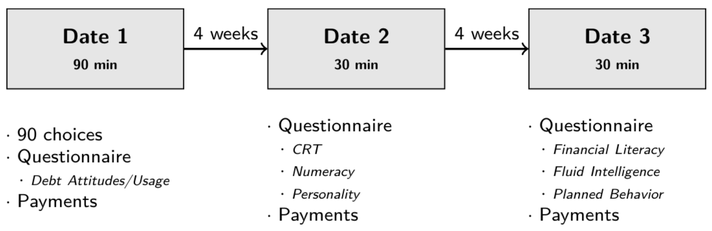
Debt Aversion

- Puzzle: people seem to shy away from debt, even if it comes with economic benefits (Field, 2009; Meissner, 2016; Duffy and Orland, 2020)
- This project:
  1. Model of debt aversion
  2. Experiment to elicit and structurally estimate debt aversion
- Debt aversion will be accounted for jointly with:
  - Risk aversion, Loss Aversion, Time Discounting, (Present Bias)
- All these preferences may affect how people save and borrow and therefore need to be controlled for
- This Project: identify debt aversion by comparing willingness to accept different saving and borrowing contracts
  - Saving and borrowing contracts are structurally similar: Gain and loss of money, temporally separated
- If (after controlling for other preferences) people are willing to pay a premium to avoid being in debt → debt aversion

Experiment

- Participants complete a total of 90 binary choices over lotteries and intertemporal prospects
  - Three rather standard multiple price lists (MPLs) to elicit risk and time preferences
  - Four new MPLs that consist of *saving* and *debt* contracts
- One of the 90 choices is randomly chosen for implementation in real-time
- Subjects had to come to the lab on three dates:



- Example saving contract

Experiment

- Example debt contract

Model

- Two period model ($\tau \in \{t, T\}$, $0 \leq t < T$):

$$U(X) = \mathbb{E}\left[\phi(t)v(x_t) + \phi\left(T\right)v(x_T) - c\left(x_t, x_T\right)\right]$$

$$c(x_t, x_T) = \begin{cases} \tilde{c}(x_t, x_T) & \text{if } x_t > 0 \text{ and } x_T < 0 \\ 0 & \text{otherwise.} \end{cases}$$

- Value function:

$$v(x) = \begin{cases} u(x) & \text{if } x \geq 0 \\ -\lambda u(-x) & \text{if } x < 0 \end{cases}$$

- Cost of being in debt:

$$\tilde{c}(x_t, x_T) = (\gamma - 1)\phi(T)v(x_T)$$

- Atemporal utility function (CRRA):

$$u(x) = \frac{(x)^{1-\alpha}}{1-\alpha}$$

- Discounting:

$$\phi(\tau) = \frac{1}{(1+\delta)^{\tau}}$$

- Intertemporal utility for saving contracts ($x_t < 0, x_T > 0$):

$$U(X) = -\lambda\phi(t)u(x_t) + \phi\left(T\right)u(x_T)$$

- Intertemporal utility for debt contracts ($x_t > 0, x_T < 0$):

$$U(X) = \phi(t)u(x_t) - \gamma\lambda\phi\left(T\right)u(x_T)$$

Results

- We estimate all preference parameters jointly using maximum likelihood

	Point estimate	Standard Error	95% Conf. Interval
Risk aversion: α	0.6430	0.0344	0.57 , 0.71
Discounting: δ	0.0359	0.006	0.02 , 0.05
Debt Aversion: γ	**1.0535**	**0.0112**	**1.03 , 1.08**
Loss Aversion: λ	1.1074	0.0118	1.08 , 1.13
Fechner error: μ	0.4483	0.0402	0.37 , 0.52
n: 12,240, cluster: 127, log-likelihood: -2854.2			

- Average participant would be indifferent between accepting or rejecting:
  - €20.63 today €-15 in 4 weeks
- Counterfactual *debt-neutral* person with the same parameters (except $\gamma = 1$):
  - €17.81 today €-15 in 4 weeks
- "Debt premium" of €2.82

Conclusion

- We formalize a model of debt aversion
- Participants are on average debt averse
- We ran a battery of robustness checks: different forms of $\tilde{c}(x_t, x_T)$, $u(x)$, $\phi(\tau)$ (e.g. quasi hyperbolic discounting), error structure (logit, probit, multiple)
  - Debt aversion remains robust
  - No evidence for present bias in our sample
- Methodological contribution: To our knowledge we are first to implement actual indebtedness in an experiment

References

References

Duffy, J. and A. Orland (2020): "Liquidity Constraints and Buffer Stock Savings: Theory and Experimental Evidence," *SSRN Electronic Journal*.

Field, E. (2009): "Educational Debt Burden and Career Choice: Evidence from a Financial Aid Experiment at NYU Law School," *American Economic Journal: Applied Economics*, 1, 1–21.

Meissner, T. (2016): "Intertemporal consumption and debt aversion: an experimental study," *Experimental Economics*, 19, 281–298.