Temptation and Self Control Evidence

Mark Dean
Behavioral Economics ECON 1820

Evidence on Temptation and Self Control

- Discuss some empirical evidence on
  - Demand for Commitment
  - Present Bias
  - Sophistication
  - Willpower Depletion

Demand for Commitment

- Supreet Kaur, Michael Kremer and Sendhil Mullainathan "Self Control at Work" Mimeo 2013

Hauser et al. [2010]

- One of the few papers to see if people will pay to avoid future temptations in lab setting
- Basic Setup: Counting task

Temptation and commitment in the laboratory

- Counting task appeared every 1, 2 or 3 minutes
- Experiment lasts 2 hrs
- Subjects earn $15 if they get at least 70% of all counting tasks correct
- (This is a really unpleasant task)
Temptation and commitment in the laboratory

- Every so often, (and to their surprise) subjects would face a temptation screen:

<table>
<thead>
<tr>
<th>Place</th>
<th>Duration</th>
<th>Number of counting tasks</th>
<th>Number of temptation screens</th>
<th>Commitment cost [in $]</th>
<th>Final payoff if staying [in $]</th>
<th>Additional payoff for counting to end of experiment [in $]</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>35 min</td>
<td>ET</td>
<td>0</td>
<td>e</td>
<td>( R = e - p_1 )</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>45 min</td>
<td>T8</td>
<td>1</td>
<td>e</td>
<td>( R = e - p_1 )</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>65 min</td>
<td>T2</td>
<td>0</td>
<td>e</td>
<td>( R = e - p_1 )</td>
<td></td>
</tr>
</tbody>
</table>

Temptation and commitment in the laboratory

Conclusions

- Some design features of the experiment make it a little difficult to interpret
  - Dynamic problem
  - Subjects surprised by surfing screen
  - Temptation and commitment offered at the same time
- Subjects will make use of commitment (40%)
- Fewer will pay for it (20%)
- Evidence of ‘strict set betweenness’
  - Subjects will ignore temptation and choose commitment

Tying Odysseus to the Mast: Evidence from a Commitment Savings Product in the Philippines

- Looking at the effect of commitment devices in the field
- Partnered with Green Bank of Caraga
- 1777 current or previous clients
  - Asked hypothetical time discounting questions
  - Half then offered commitment savings product
  - Remainder either in a control group or given a marketing visit to encourage savings
Tying Odysseus to the Mast: Evidence from a Commitment Savings Product in the Philippines

• Questions:
  – Do people take up commitment device?
  – Is take up related to hyperbolic discounting?

SEED accounts

• Client either sets a date or an amount that they want to save (202 of 842 took it up)
• Cannot withdraw until that goal is met
• Two types of goal
  – Amount (142)
  – Date (60)
• Two types of additional commitment
  – Locked box (costs a small fee) which is then taken to the bank (167)
  – Automatic transfers (2)

Measuring Time Preferences

• Asked hypothetical questions of the type
  – Would you prefer P200 today or P300 in 1 month?
  – Would you prefer P200 in 6 months or P300 in 7 months
• Identify x that makes individuals indifferent between 200 earlier and x later

Measuring Time Preferences

• Do Time Preferences Predict Take Up?

Predictors of Take Up

• Time inconsistency (just about)
• Education
• Income
• Female
Self Control At Work

- Consider a job in which you get paid piece rate
- Paid only at the end of the week
- What is the effect of temptation (e.g. hyperbolic discounting)?
  - Pay day effects: work harder when reward is immediate
  - May work less hard in period t+1 than would like in period t. Creates a demand for commitment
- Test this using an experiment with a data entry firm in Mysore, India

Pay Day Effects

- Figure 2: Production over the Pay Cycle
  - 102 workers over 8 months
  - Number of additional fields (over a base of about 5000)
  - Size of effect inconsistent with discounting
  - Gradual slope: incommensurate with quasi-hyperbolic discounting?

Commitment and Dominated Contracts

- Dominated Contracts: Reduce Pay if target is not met
- A form of commitment, as it removes the possibility of producing less than the target at the same pay

Demand for Dominated Contracts

- In some weeks, workers offered the chance to choose a target b
  - Receive half pay if fail to hit target
  - b=0 the same as the standard contract

Effect of Dominated Contracts

- Targets increased output
  - If they were self imposed (columns 1 and 2)
  - Exogenously imposed (3)

Interaction between Payday Effects and Demand for Dominated Contracts

- Those with high payday impacts more likely to take up dominated contract
- Output also more affected
Summary

- There is evidence that people will take up commitment devices
- There is some evidence that offering people commitment devices can alter their behavior
  - Similar results found in other settings (e.g. smoking)
- But it is hard to make them pay for it
  - No large ‘commitment industry’
- Why?
  - Naïveté?
  - Commitment vs Flexibility
  - Hard to make commitment stick?
  - Self control problems not as ubiquitous as we might think?

Present Bias

- Mark Dean and Anja Sautmann “Credit Constraints and the Measurement of Time Preferences” Mimeo 2014.

Present Bias

- Until recently, present bias has been an experimental ‘fact’
- Typical Experimental Result [Dean and Ortoleva 2012]
  - $8.94 today equivalent to $10 in 2 week’s time
  - $9.30 in 5 week’s time equivalent to $10 in 7 week’s time
- But, potential problems with these experiments
  - Transaction costs
  - Trust

Dean And Sautmann [2014]

- Experiment in urban Mali
- Surveyors came to the house every week
- No problem with transaction costs or trust

Augenblick et al. 2013

- But monetary payments may not be the best way to measure time preferences
- Money does not equal consumption
- Can move money intertemporally – i.e. borrowing and savings
- May just be measuring the market interest rate
- Also affected by income shocks
- Alternative: real effort experiment
Real Effort Tasks

• Week 1: allocate tasks between week 2 and 3
• Week 2: reallocate tasks between week 2 and 3
• With probability 0.1 week 1 allocation used, with prob 0.9 week 2 allocation used
• $100 at the end of the experiment if all tasks completed successfully

Parameter Estimates

• Present bias for effort tasks
• Not for monetary rewards

Demand for Commitment

• Subjects offered a commitment device (higher probability of initial choice counting)
• Those who took up commitment device had higher present bias
• Still not prepared to pay for it

Sophistication


Paying Not to Go to the Gym

• Test whether people have sophisticated beliefs about their future behavior
• Examine the contract choices of 7978 healthcare members
• Also examine their behavior (i.e. how often they go to the gym)
• Do people overestimate how much they will go the gym, and so choose the wrong contract?
Paying Not to Go to the Gym

- Three contracts
  - Monthly Contract – automatically renews from month to month
  - Annual Contract – does not automatically renew
  - Pay per usage

Overconfidence

- Consumers appear to be overconfident
  - Overestimate future self control in doing costly tasks
    - Going to the gym
    - Cancelling contract
  - 80% of customers who buy monthly contracts would be better off had they paid per visit (assuming same number of visits)
    - Average cost of $17 vs $10
  - Customers predict 9.5 visits per month relative to 4.5 actual visits
  - Customers who choose monthly contracts are 18% more likely to stay beyond a year than those who choose annual contract, and wait 2.29 months after last visit before cancelling

Willpower Depletion

- Gailliot MT, Baumeister RF, DeWall CN, Maner JK, Plant EA, Tice DM, Brewer LE, Schmeichel BJ. "Self-control relies on glucose as a limited energy source: willpower is more than a metaphor." J Pers Soc Psychol. 2007 Feb;92(2):325-36.

Shiv and Fedorikhin [1999]

- Subject enters room 1
- Asked to remember a number to be repeated in room 2
- Walks to room 2 via a tray of snacks
- Containing 2 types of snack
  - Chocolate Cake
  - Fruit

Willpower Depletion

- Interesting and relatively new area of research on temptation and self control
- Willpower is a resource that can be used up
- Intriguing experiments in Psychology

Shiv and Fedorikhin [1999]

- Four treatments:
  - Available processing capacity
    - High (2 digit number)
    - Low (7 digit number)
  - Presentation mode
    - Real
    - Symbolic
Shiv and Fedorikhin [1999]

- Procedure
  - Measure glucose level
  - Watch video of woman talking (no sound)
  - One syllable words appear in bottom left corner of screen
  - Two treatments
    - Watch normally
    - Ignore words
  - Glucose measured again
- Result: ‘Self Control’ reduced glucose
- Glucose levels dropped significantly for ‘Watch normally’
- Not for ‘watch normally’ group

Galliot et. al. [2007]

- Fall in glucose level associated with worse performance in Stroop task

DeWall et. al. [2012]

- Procedure
  - Subjects either consume a glucose drink or placebo
  - Watch video of woman talking (as before)
  - Four treatments
    - Glucose vs placebo
    - Watch normally vs ignore words

DeWall et. al. [2012]

- Subjects listened to an interview:
  - Young woman described how her parents were recently killed
  - Only one to care for her younger siblings.
  - Would have to drop out of college without help
  - Participants were then told that the study had ended
  - Before they left, asked if they would help young woman
    - Participants the opportunity to help woman by volunteering time to complete various tasks (e.g., stuffing envelopes)
    - Asked to indicate the number of hours they were willing to help, ranging from 0 to 9

DeWall et. al. [2012]

- Results:
  - Placebo condition
    - Those in depletion condition significantly less likely to help
  - Glucose condition
    - No effect
  - Looking within depletion condition, those who took glucose significantly more likely to help
  - Warning: Further results find similar effects even if drink is not drunk, just washed around the mouth
Conclusions

- There is evidence of demand for commitment
  - Although getting people to pay for it is hard
- Also evidence that people are overoptimistic about their ability to overcome temptation
- Evidence that people do suffer from present bias, and that this is linked to demand for commitment
- Recent evidence from psychology suggests that willpower may be a resource that can be depleted
- Suggests a possible link between willpower and poverty
  - Poverty as a drain on cognitive resources [Mani et al. 2013]
  - Poverty and behavioral control [Spears 2010]
  - Theoretical links between poverty and self control [Ozdenoren et al. 2012, Bernheim et al. 2013]