

Temptation and Self Control Evidence

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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

- Daniel Houser & Daniel Schunk & Joachim Winter & Erte Xiao, 2010. "Temptation and commitment in the laboratory," IEW - Working Papers iewwp488, Institute for Empirical Research in Economics - University of Zurich.
- Nava Ashraf & Dean Karlan & Wesley Yin, 2006. "Tying Odysseus to the Mast: Evidence from a Commitment Savings Product in the Philippines," The Quarterly Journal of Economics, MIT Press, vol. 121(2), pages 635-672, May.
- 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

The screenshot shows a web-based interface for a counting task. At the top, it says "Count the number of ones:". Below this, the number "101000010" is displayed in red. There is a small square checkbox below the number. A blue "Submit" button is located below the checkbox. On the right side, there is a "Status" section with the text "Total time elapsed: 0:00". At the bottom of the interface, it says "Time left for decision: 10 s".

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:

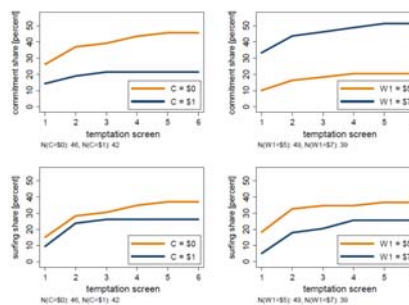
Temptation and commitment in the laboratory



Temptation and commitment in the laboratory

Phase	Duration	Number of counting tasks	Number of temptation screens	Commitment cost [in \$]	Final payoff if surfing [in \$]	Additional payoff for counting to end of experiment [in \$]
0	30 min	15	0			
1	45 min	12	6	C	P_1	$W_1 = 15 - P_1$
2	45 min	12	6	C	P_2	$W_2 = 15 - P_2$

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

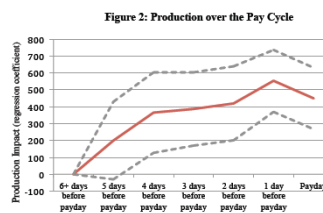
Tying Odysseus to the Mast: Evidence from a Commitment Savings Product in the Philippines

- 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

Self Control At Work

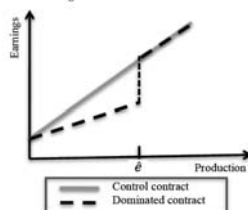
- Consider a job in which you get paid piece rate
- Paid only at the end of the week
- What is the effect of temptation (e.g. hyperbolic discounting)?
 - Pay day effects: work harder when reward is immediate
 - May work less hard in period t+1 than would like in period t: Creates a demand for commitment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

Pay Day Effects



- 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

Table 3
Contract Treatments

Panel A: Take-up of Dominated Contracts (Summary Statistics)	
Dominated contract chosen: conditional on attendance	0.36 (0.31)
Dominated contract chosen: target=0 if absent	0.28 (0.26)

- 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

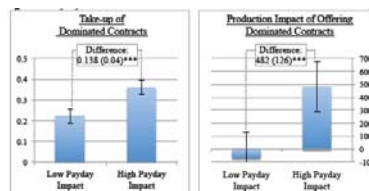
Effect of Dominated Contracts

Panel B: Treatment Effects of Contracts

Sample	Dependent variable: Production		Dependent variable: attendance	
	Control & Open Ots (1)	Control & Open Ots (2)		Full Sample (3)
Options to choose dominated contract	120 (39)**			
Evening options to choose dominated contract	176	130	0.01	
Morning options to choose dominated contract	84	73	-0.08	
Target imposed: Low target	(89)	(89)	(0.03)	
Target imposed: Medium target		213	-0.01	
Target imposed: High target		(91)**	(0.01)	
Observations: worker-days	4310	4310	8423	8423
R2	0.40	0.40	0.39	0.23
Dependent variable means	5311	5311	5337	0.88

- 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?
 - Naiveté?
 - 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.
- Ned Augenblick, Muriel Niederle and Charlie Sprenger "Working Over Time: Dynamic Inconsistency in a Real Effort Task" Mimeo 2013

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]

Set A		Set B	
in 1 week	today	in 2 weeks	in 1 week
a_1	a_0	b_2	b_1
CFA 300	CFA 50	CFA 300	CFA 50
CFA 300	CFA 100	CFA 300	CFA 100
CFA 300	CFA 150	CFA 300	CFA 150
CFA 300	CFA 200	CFA 300	CFA 200
CFA 300	CFA 250	CFA 300	CFA 250
CFA 300	CFA 300	CFA 300	CFA 300
CFA 300	CFA 350	CFA 300	CFA 350
CFA 300	CFA 400	CFA 300	CFA 400

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

Dean And Sautmann [2014]

	week 1		week 2		week 3	
	A	B	A	B	A	B
avg. switch at or below (CFA)	157.0	155.6	153.5	152.4	158.4	154.6
correlation A	weeks 1 and 2: 0.61		weeks 2 and 3: 0.67		weeks 1 and 3: 0.64	
correlation B	weeks 1 and 2: 0.62		weeks 2 and 3: 0.64		weeks 1 and 3: 0.64	
A=B	64.40%		65.39%		69.82%	
more patient in A	18.47%		16.17%		13.32%	
more patient in B	17.13%		18.45%		16.86%	
pay neg. interest	9.66 %	8.15%	7.38%	5.52%	7.37%	6.86%
inconsistent	14.76%	13.93%	10.16%	11.71%	11.13%	10.51%
N	969		965		961	

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

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

Panel A: Job 1: Gink Transcription

Panel B: Job 2: Partial Tetris Game

Real Effort Tasks

Job 1 Transcription

- 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

	Monetary Discounting		Effort Discounting	
	(1) All Days Complete	(2) Some Week Delay Complete	(3) Job 1 Complete	(4) Job 2 Complete
Present Bias Parameter β	0.971 (0.006)	0.969 (0.006)	0.980 (0.007)	0.967 (0.005)
Early Discount Factor λ	0.988 (0.006)	0.997 (0.005)	0.990 (0.004)	0.985 (0.004)
Monetary Curvature Parameter α	-0.075 (0.006)	0.076 (0.005)		
Cost of Effort Parameter γ			1.028 (0.141)	1.027 (0.090)
β Observations	1080	1125	900	900
β Choices	75	75	60	60
Job Effort			Yes	Yes
$H_0: \beta = 1$	$\chi^2(1) = 0.77$ ($p = 0.38$)	$\chi^2(1) = 1.06$ ($p = 0.31$)	$\chi^2(1) = 0.38$ ($p = 0.53$)	$\chi^2(1) = 11.43$ ($p < 0.01$)
$H_0: \beta(1-\lambda) = \beta(1-\lambda)$	$\chi^2(1) = 0.20$ ($p = 0.65$)			
$H_0: \beta(1-\lambda) = \beta(1-\lambda)$		$\chi^2(1) = 0.26$ ($p = 0.61$)		

- Present bias for effort tasks
- Not for monetary rewards

Demand for Commitment

Table 6: Monetary and Effort Discounting by Commitment

	Monetary Discounting		Effort Discounting	
	Choice 1: 0%	Choice 1: 2%	Choice 1: 0%	Choice 1: 2%
Present Bias Parameter β	0.989 (0.005)	0.981 (0.011)	0.985 (0.012)	0.985 (0.012)
Early Discount Factor λ	0.997 (0.005)	0.997 (0.005)	0.988 (0.005)	0.989 (0.005)
Monetary Curvature Parameter α	0.091 (0.009)	0.073 (0.007)		
Cost of Effort Parameter γ			1.023 (0.162)	1.016 (0.116)
β Observations	450	765	450	765
β Choices	28	47	28	47
Job Effort			Yes	Yes
$H_0: \beta = 1$	$\chi^2(1) = 0.01$ ($p = 0.92$)	$\chi^2(1) = 2.11$ ($p = 0.15$)	$\chi^2(1) = 2.64$ ($p = 0.10$)	$\chi^2(1) = 9.08$ ($p < 0.01$)
$H_0: \beta(1-\lambda) = \beta(1-\lambda)$	$\chi^2(1) = 1.29$ ($p = 0.26$)			
$H_0: \beta(1-\lambda) = \beta(1-\lambda)$		$\chi^2(1) = 4.05$ ($p = 0.04$)		

- 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

- Stefano DellaVigna & Ulrike Malmendier, 2006. "Paying Not to Go to the Gym," American Economic Review, American Economic Association, vol. 96(3), pages 694-719, June.

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

- Shiv, Baba & Fedorikhin, Alexander, 1999. "Heart and Mind in Conflict: The Interplay of Affect and Cognition in Consumer Decision Making," Journal of Consumer Research, University of Chicago Press, vol. 26(3), pages 278-92, December.
- 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.

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

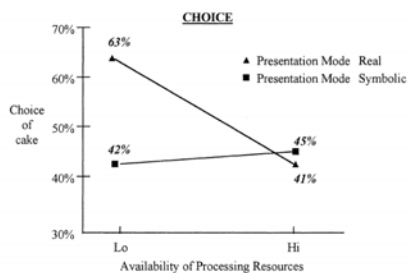
Shiv and Fedorikhin [1999]

- 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

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]



Galliot et. al. [2007]

- 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

Red	Blue
Yellow	Green
Blue	Yellow
Green	Red
Green	Green
Yellow	Blue
Blue	Red

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]

BeeMinder

