BEHAVIORAL ECONOMICS · LECTURE 19

Temptation and self-control: evidence

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Master Economics – Winter 2026/27

Before we start: predict yourself

Write down two numbers, privately

1. How many times will you do sport (gym, run, swim...) in the **next four weeks**?
2. How many times did you do sport in the **last four weeks**?

Before we start: predict yourself

Write down two numbers, privately

1. How many times will you do sport (gym, run, swim…) in the **next four weeks**?
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And one choice

Would you pay **€5** for an app that blocks your phone during the exam week?

Learning objectives

By the end of this lecture you should be able to:

- Derive the **testable predictions** of the models of Lectures 17–18.
- Describe how **commitment** has been elicited in the lab and in the field, and what was found.
- Explain why **preference for flexibility** and **naivete** can both dampen the demand for commitment.
- Compute β and δ from **time-preference** choices, and discuss why money is a poor measure.
- Assess the evidence linking **present bias**, **commitment** and **sophistication**.

Roadmap

Commitment in the lab

Commitment in the field

Commitment vs. flexibility

Measuring present bias

Present bias, commitment and sophistication

Where we are in the course

The assumptions of the Robinson model

0. **Consistent preferences:** Robinson's choices can be described by a utility function u
1. **Costless optimization:** he always finds the option that maximizes u
2. **Correct beliefs & expected utility:** he knows p and maximizes expected utility
3. **Absolute, self-regarding consumption:** only his own (b, y) enters u
4. **Stable tastes:** the same u in both periods

Lectures 17–18 gave two models of failures of Assumption 4. Today we confront them with **data**: do people demand commitment, reverse their choices, and anticipate their own temptations?

What the theory predicts

Predictions of the models

If people are...	then we should see...	Lecture
tempted (GP), **sophisticated**, **certain** about the future	demand for commitment	17
uncertain about future tastes	preference for flexibility	17
present-biased ($\beta < 1$)	preference reversals	18
present-biased **and sophisticated**	demand for commitment	18
present-biased **and naive**	over-optimistic plans, no commitment	18

Today's evidence: (1) commitment, (2) flexibility, (3) reversals in discounting experiments, (4) the link between reversals and commitment, (5) sophistication.

1

Commitment in the lab

Few commitment devices arise naturally; in the lab, some subjects choose commitment when it is free, but few pay for it.

Preference for commitment in the field?

Commitment devices in the field

Do we see much demand for commitment in the field? **Arguably not much.**

- Some **informal** commitment devices: New Year's resolutions, joining a gym, ROSCAs (rotating savings and credit associations).
- Most **formal** devices were designed by economists: *stickK*, *Beeminder*, *Save More Tomorrow* (Thaler and Benartzi, 2004).
- And they are small: stickK reported about 480,000 "commitments" (January 2020).

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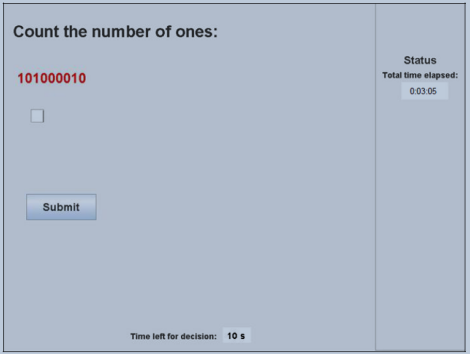
Can we generate a preference for commitment?

Two examples:

- **Lab:** *Temptation and commitment in the laboratory* (Houser et al., 2018); see also Toussaert (2018).
- **Field:** *Self-control at work* (Kaur et al., 2015); see also Ashraf et al. (2006).

Houser et al.: the counting task

The task screen

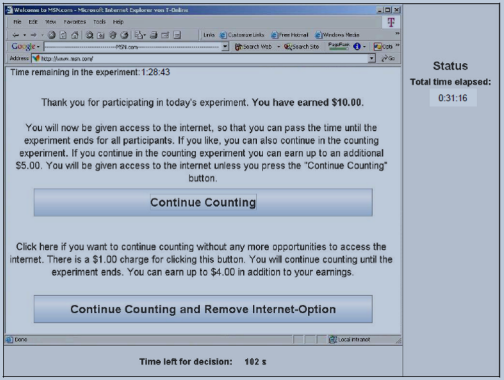


A really unpleasant task

- count the ones in a string of digits;
- a new task every 1, 2 or 3 minutes;
- the experiment lasts 2 hours;
- subjects earn $15 if they solve at least 70% of the tasks correctly.

Houser et al.: temptation and commitment

The temptation screen



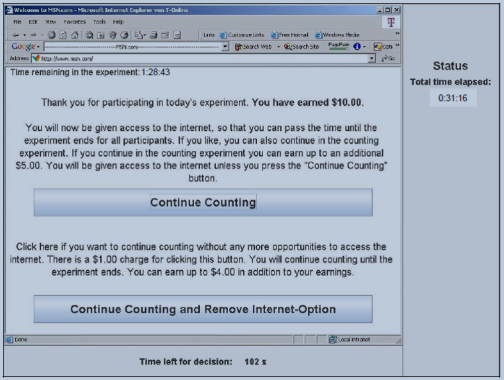
Temptation and commitment

Every so often, a **surprise temptation screen**:

- **quit and surf** the internet, for only a fraction of the $15;

Houser et al.: temptation and commitment

The temptation screen



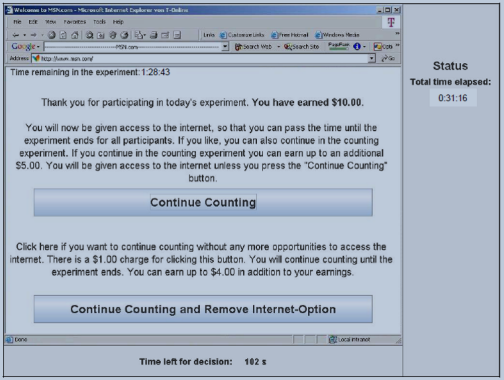
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Temptation and commitment

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- **quit and surf** the internet, for only a fraction of the \$15;
- or **commit**: pay C (possibly \$0) to never see a temptation screen again.

In menu terms: $\{\text{count}\}$ vs. $\{\text{count}, \text{surf}\}$.

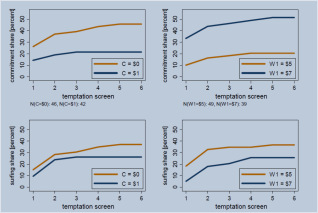
Houser et al.: design and results

Design

Phase	Duration	Tasks	Temptation screens	Commitment cost	Payoff if surfing
0	30 min	15	0	–	–
1	45 min	12	6	C	P_1
2	45 min	12	6	C	P_2

Counting to the end of a phase adds $W_i = 15 - P_i$. Treatments vary $C \in \{\$0, \$1\}$ and $W_1 \in \{\$5, \$7\}$.

Results



Houser et al.: discussion

What we learn

- **Some subjects want commitment** (about 40% when it is free)...

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Problems with the design

An unmodelled dynamic problem; subjects are **surprised** by the surfing screen; temptation and commitment are offered **at the same time**.

2

Commitment in the field

Data-entry workers work harder as payday approaches, and those who do so most choose dominated contracts that commit them to work.

Self-control at work (Kaur et al., 2015)

Setup

Consider a job paid by **piece rate**, but only at the **end of the week**.

Test

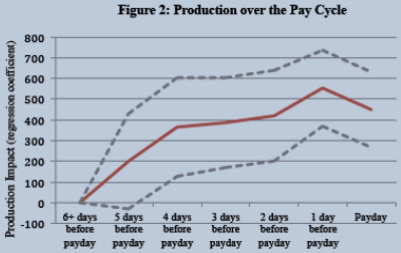
A field experiment with data-entry workers in Mysore, India.

What does present bias predict?

- **Payday effects:** effort rises as payday approaches (the reward becomes "immediate").
- On day t, the worker plans more effort for day $t+1$ than she will actually exert then.
- This creates a **demand for commitment**.

Payday effects

Output and payday



Data

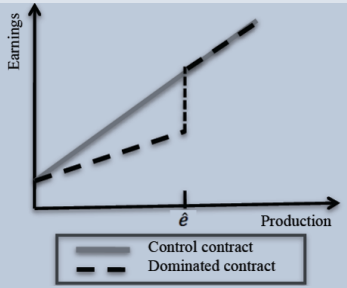
- 102 workers over 8 months.
- Additional fields typed per day, relative to 6+ days before payday (base: about 5,000).

Which model?

- The size of the effect is hard to reconcile with exponential discounting (it would require a discount rate of about 4% per **day**).
- But the slope is **gradual**: hard to reconcile with β–δ either?

Dominated contracts as commitment

The contracts



Two contracts

- **Control contract:** piece rate w per field.
- **Dominated contract:** a target T; piece rate w if output $\geq T$, $w/2$ otherwise.
- Choosing $T = 0$ = the control contract.

The dominated contract **removes** "produce less than T at full pay" from the menu:

$$\{\text{effort, full pay}\} \subset \text{control menu.}$$

A standard worker never strictly prefers it.

Who chooses commitment, and does it work?

Take-up

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)

A dominated contract ($T > 0$) is chosen on **36%** of worker-days with the option (28% counting absences as $T = 0$).

Output

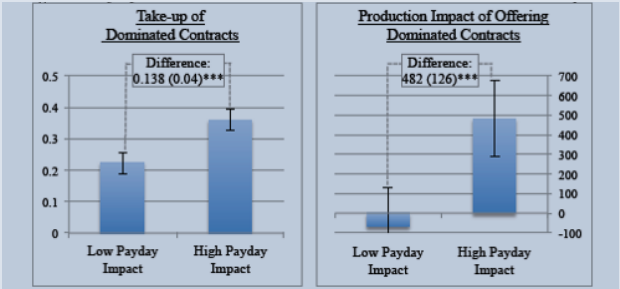
Panel B: Treatment Effects of Contracts

	Dependent variable: Production			*Dependent var: Attendance*
Sample	Control & Option Obs (1)	Control & Option Obs (2)	Full Sample (3)	Full Sample (4)
Option to choose dominated contract	120			
	(59)**			
Evening option to choose dominated contract		156	150	0.01
		(69)**	(69)**	(0.01)
Morning option to choose dominated contract		84	73	-0.00
		(69)	(69)	(0.01)
Target imposed: Low target			3	-0.00
			(90)	(0.01)
Target imposed: Medium target			213	-0.01
			(91)**	(0.01)
Target imposed: High target			334	-0.01
			(150)**	(0.02)
Observations: worker-days	6310	6310	8423	8423
R2	0.60	0.60	0.59	0.15
Dependent variable mean	5311	5311	5337	0.88

Output rises with the option to choose a target (about 120 fields, columns 1–2), and with **imposed** targets (column 3).

Heterogeneity: payday effects predict commitment

Take-up by payday effect



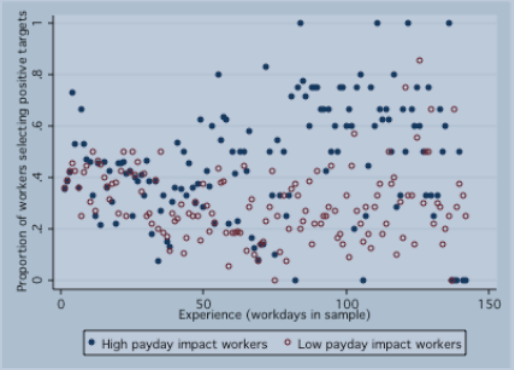
Findings

- Workers with **high payday effects** (more present-biased) are **more likely** to take up the dominated contract.
- Their **output** also responds more to the offer.

Those who **need** commitment most (by their payday effect) **choose** it most: consistent with sophisticated present bias.

Learning to commit

Take-up by experience



Findings

- Share of workers choosing a positive target, by experience (workdays in the sample).
- Workers with high payday impacts choose the dominated contract **more with experience**; others do not.

Suggests people **learn** about their own self-control.

Recap: commitment

What we found

- Few commitment devices arise **naturally**; most were designed by economists.
- In the **lab** (Houser et al.) and the **field** (Kaur et al.), a sizeable minority chooses commitment, even **dominated** contracts.
- Demand for commitment is **correlated** with measured present bias (payday effects) and grows with experience.
- But few people **pay** much for it.

We can generate a preference for commitment, but surprisingly little of it. **Why?**

3

Commitment vs. flexibility

Preference uncertainty is the enemy of commitment: in an experiment, a third of subjects value flexibility and almost none want commitment.

Why so little commitment?

At least two possibilities:

1. Preference for flexibility

Uncertainty about future tastes makes options valuable (Lecture 17).

2. Lack of sophistication

Naive agents do not expect to need commitment (Lecture 18).

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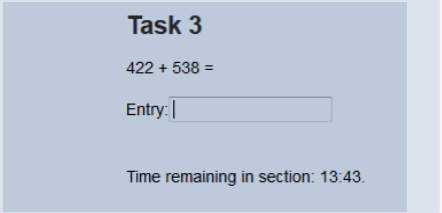
Preference uncertainty is the **enemy** of commitment: both forces act on the same menu choice. **Can we find evidence for preference uncertainty?** Dean and McNeill (2014)

Dean and McNeill: design

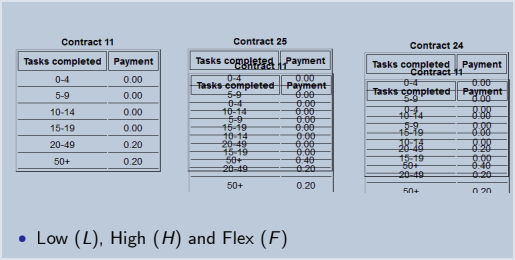
Design

- A simulated **workplace**: subjects perform real-effort tasks (simple additions) for pay.
- **Choice from menus:** at work time, choose how many tasks to do, within the contract.
- **Choice between menus:** beforehand, choose between payment **contracts**.

The task



The contract choice



Contract 11

Tasks completed	Payment
0-4	0.00
5-9	0.00
10-14	0.00
15-19	0.00
20-49	0.20
50+	0.20

Contract 25

Tasks completed	Payment
0-4	0.00
5-9	0.00
10-14	0.00
15-19	0.00
20-49	0.00
50+	0.40

Contract 24

Tasks completed	Payment
0-4	0.00
5-9	0.00
10-14	0.00
15-19	0.00
20-49	0.20
50+	0.20

- Low (L), High (H) and Flex (F)

Dean and McNeill: contracts

Three contracts

Each contract offers two or three undominated options (tasks, payment):

Tasks	0	20	50
Payment	0	20	40
L (low)	✓	✓	–
H (high)	✓	–	✓
F (flexible)	✓	✓	✓

Questions

Three binary questions: H vs. L, H vs. F, L vs. F.

Note that $F = L \cup H$: a test of **set betweenness** vs. **flexibility**.

Dean and McNeill: five types

Classification

From the three binary choices, each subject is classified as:

Type	Pattern
Flexibility	$F \succ L$ and $F \succ H$
Standard	$F \sim L \succ H$ or $F \sim H \succ L$
Indifferent	$F \sim L \sim H$
Commitment	$L \succ F$ or $H \succ F$
Intransitive	the rest

What the models allow

- **Set betweenness** allows “standard”, “indifferent” and “commitment”, **not** “flexibility”.
- **Monotonicity** (flexibility model) allows “flexibility”, “standard”, “indifferent”, **not** “commitment”.

Dean and McNeill: results

Shares of types

Type	N	Share	Benchmark I	Benchmark II
Flexibility	43	35%	17%	6%
Standard	40	32%	17%	6%
Indifferent	23	19%	25%	13%
Commitment	7	6%	42%	16%
Intransitive	11	9%	–	59%

Benchmarks

Benchmark I: uniform random choice over transitive preference profiles. Benchmark II: random choice in each question. All shares except “indifferent” differ significantly from both benchmarks.

A third of subjects **value flexibility**; almost none want commitment. Preference uncertainty is real.

4

Measuring present bias

Choices over money show little present bias and are hard to interpret; choices over effort show clear present bias.

Time-preference experiments with money

A typical design

E.g. Benhabib et al. (2010):

- find \$$x$ today that is indifferent to \$$y$ in 1 month;
- find \$$z$ in 1 month that is indifferent to \$$w$ in 2 months.

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Discount factors

Approximate the **discount factors** (linear utility):

$$D(0,1) = \frac{x}{y}, \qquad D(1,2) = \frac{z}{w}.$$

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Present bias if $\frac{x}{y} < \frac{z}{w}$. In the β–δ model: $\frac{x}{y} = \beta\delta$ and $\frac{z}{w} = \delta$, so $\beta = \frac{x/y}{z/w}$.

Worked example: estimating β and δ

Example

Example from Dean and Ortoleva (2019):

- indifferent between **$9.28 in 5 weeks** and **$10 in 7 weeks** $\Rightarrow$ two-week factor $\delta^2 \approx 0.928$;
- indifferent between **$8.94 today** and **$10 in 2 weeks** $\Rightarrow \beta\delta^2 \approx 0.894$.

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Estimates

Hence

$$\beta \approx \frac{0.894}{0.928} \approx 0.96, \qquad \delta \approx \sqrt{0.928} \approx 0.963 \text{ per week.}$$

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Hence

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Problems with this approach

- trust and transaction costs (future payments are risky or costly to collect);
- money $\neq$ utility (curvature, and money is not consumption);
- arbitrage (outside borrowing and lending).

Transaction costs and trust

Near-term vs. far-term choices

	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	
correlation B	weeks 1 and 2: 0.62				weeks 2 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	

An experiment in Mali

- Experiment in urban **Mali** (Dean and Sautmann).
- Surveyors visit each household **every week**; today's and future payments are delivered the same way.
- No problem with transaction costs or trust.

About the same share is more patient in the near-term (A) as in the far-term (B) choice: **no present bias** on average.

Money is not consumption

We can solve the trust/transaction-cost problem, but money still causes trouble:

Arbitrage

If the local bank pays 5%, why would you accept anything other than 5% in the experiment? Choices reveal the market rate, not your preferences.

Shocks

If your rent is due today, money is worth more today than in a week: you would *look* present-biased.

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Solution?

Use rewards that are consumed when received:

- primary rewards, e.g. juice for thirsty subjects (McClure et al., 2007);
- **effort** (Augenblick et al., 2015).

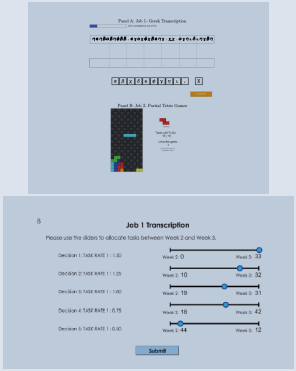
Does this solve the problem? Only if people cannot **smooth** effort and face no shocks to its cost.

Working over time (Augenblick et al., 2015)

Design

- A real-effort experiment: subjects must complete tasks to earn their payment ($100).
  - transcribing blurry **Greek** text;
  - completing **Tetris** lines.
- Subjects allocate tasks across dates, with **"convex time budgets"**:
  - today vs. next week;
  - next week vs. the week after.
- Also standard choices over **money** for comparison.

The tasks



Working over time: estimates

Estimates

	Money		Effort		
	all delays	3-week delay	Greek	Tetris	combined
Present bias $\hat{\beta}$	0.974	0.988	0.900	0.877	0.888
	(0.009)	(0.009)	(0.037)	(0.036)	(0.033)
Daily $\hat{\delta}$	0.998	0.997	0.999	1.001	1.000
$H_0 : \beta = 1$, p-value	< 0.01	0.16	< 0.01	< 0.01	< 0.01

Almost **no present bias over money**, but clear present bias over **effort** ($\hat{\beta} \approx 0.89$): the measurement problem matters.

5

Present bias, commitment and sophistication

Those who commit are more present-biased; but many people are naive about their future self-control, as gym contracts and failed savings commitments show.

Do reversals lead to commitment?

Recall the theory (Lecture 18)

$$\text{non-exponential discounting} \iff \text{preference reversals},$$
$$\text{reversals} + \text{sophistication} \implies \text{demand for commitment}.$$

Do reversals lead to commitment?

Recall the theory (Lecture 18)

$$\text{non-exponential discounting} \iff \text{preference reversals},$$
$$\text{reversals} + \text{sophistication} \implies \text{demand for commitment}.$$

A commitment device

Augenblick et al. (2015) offer a **commitment device**:

- the allocation of effort between dates $t+1$ and $t+2$ is chosen **both** at t and at $t+1$;
- one of the two choices is implemented;
- **commitment** = choosing a higher probability that the **date-t** choice is implemented.

Commitment and present bias

Estimates by commitment choice

	Money		Effort	
	no commitment	commitment	no commitment	commitment
Present bias $\hat{\beta}$	0.999	0.981	0.965	0.835
	(0.010)	(0.013)	(0.022)	(0.055)
$H_0 : \beta = 1$, p-value	0.94	0.14	0.10	< 0.01

Findings

- Subjects who **commit** have much stronger measured present bias over effort.
- Their $\hat{\beta}$ differs significantly from that of non-committers ($p = 0.03$).

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A **link** between preference reversals and commitment, as the sophisticated β–δ model predicts. But, as usual, it is hard to get people to **pay** for commitment.

Is the missing demand for commitment naivete?

Questions

- Present-biased agents who will not **pay** for commitment: a sign of **naivete**?
- Or is present bias not (only) due to non-exponential discounting?
- **Do we have other evidence of a lack of sophistication?**

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A simple model of partial naivete

O'Donoghue and Rabin (1999): the agent has present bias β, but **believes** her future selves have $\hat{\beta} \in [\beta, 1]$.

- $\hat{\beta} = \beta$: sophisticated; $\hat{\beta} = 1$: fully naive.

Worked example: going to the gym

Setup

A gym visit costs effort 6 **today** and gives a health benefit 10 **tomorrow**. $\beta = \frac{1}{2}$, $\delta = 1$.

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- **Yesterday (planning):** $\beta\,(-6+10) = 2 > 0. \Rightarrow$ *"I will go tomorrow."*
- **Today:** $-6 + \beta \cdot 10 = -1 < 0. \Rightarrow$ *She skips.*

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Sophisticated vs. naive

- **Sophisticated** ($\hat{\beta} = \frac{1}{2}$): predicts she will skip; values a commitment (a pre-paid class with a penalty).
- **Naive** ($\hat{\beta} = 1$): predicts $-6 + 10 > 0$, "I will go"; **overestimates** future visits and may choose a flat-rate membership.

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Naivete shows up as **over-optimistic predictions** about one's own future behavior: testable with contract choices.

Paying not to go to the gym (DellaVigna and Malmendier, 2006)

Question and data

- Do people have **sophisticated beliefs** about their future behavior?
- Data: contract choices **and** attendance of 7,978 members of US health clubs.

Three contracts

- **monthly** contract, renewed automatically each month;
- **annual** contract, not renewed automatically;
- **pay per visit** ($10 with a 10-visit pass).

Do people **overestimate** how often they will go, and choose the wrong contract?

Paying not to go to the gym: results

Results

Consumers appear **overconfident** about their future self-control (going to the gym, and cancelling):

- **80%** of monthly members would have been better off paying per visit (for the same number of visits): average cost of about **$17 per visit** instead of $10.

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Paying a flat fee for an option you rarely use is what a **naive** β–δ agent does. Compare with your own two numbers from the start of the lecture.

When commitment fails (John, 2015)

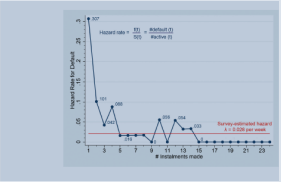
Naivete can also lead people to take up commitment contracts that are **bad** for them.

Achiever's Savings Account

Subjects in the Philippines are offered an **"Achiever's Savings Account"**:

- regular deposits are required;
- failing to make them triggers a **default cost**;
- interest equal to the standard market rate.

Defaults



- **55%** default on the contract.
- Most default **almost immediately** (hazard after 1–3 instalments): unlikely to be due to shocks.

Partial naivete: they buy commitment that is **too weak** for their true β.

Recap

Commitment

- Few **naturally occurring** commitment devices; but people **can** be induced to commit (lab, field), mostly when it is free.
- Two reasons for the weak demand, both supported by evidence:
  - **preference for flexibility** (Dean and McNeill: a third of subjects);
  - **lack of sophistication** (gym contracts, failed savings commitments).

Present bias

- Time-preference experiments with **money** are problematic; with **effort**, clear present bias ($\hat{\beta} \approx 0.89$).
- Present bias and demand for commitment are **linked** (Kaur et al.; Augenblick et al.).

Exercises

Exercise 1 · Easy

A subject is indifferent between €90 today and €100 in 4 weeks, and between €95 in 4 weeks and €100 in 8 weeks. Assuming linear utility and the β–δ model, compute β and the four-week δ^4.

Exercise 2 · Intermediate

A gym offers \$10 per visit or a flat \$70 per month. A naive member expects 9.5 visits per month and actually makes 4.5. Which contract does she choose? What does she pay per visit, and how much does she lose per month?

Exercise 3 · Intermediate

In Houser et al., about 45% commit when it is free, about 20% when it costs \$1. Using the GP model, what do we learn about the self-control costs of those who commit at \$1, and of those who commit only at \$0?

Exercise 4 · Discussion

Why is there so little commitment in the field? Rank flexibility, naivete and the (non-)availability of devices, and design a study that could tell two of them apart.

Final take-aways

1. People **can** be induced to commit, but rarely pay much for it.
2. **Preference for flexibility** and **naivete** both weaken the demand for commitment, and both are in the data.
3. Present bias is hard to measure with **money**; it shows up clearly over **effort**.
4. Those who are more present-biased **demand more commitment**, as the sophisticated β–δ model predicts.
5. Normative question for later: if people are naive, should policy **offer** commitment, or **impose** it?

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