

14.11: Self Control, Commitment and Savings

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We have already seen time-inconsistent preferences when we discussed them in the lecture on public health.

Time-inconsistent preferences arise when your preferences change over time. In particular, from a prior perspective, they want to behave patiently in the future, while in the instant, they want to behave impatiently.

e.g. Early in the dinner, a dieter does not want to order the creme brulee, but at the time of the dessert, she might, only to regret it later.

e.g. Do you prefer 100 today or 110 in one month? Do you prefer 100 in 6 months or 110 in 7 months?

One way to describe this is “time-inconsistent” preferences:

$$u_t = v_t + \beta \sum_{\tau=1}^T \delta^\tau v_{t+\tau}$$

If people have such preferences, constraints can help them make choices that are more efficient from the point of view of their long-run selves.

Note: What preferences should one use for welfare analysis? Why prefer the long-run preferences?

Whether they will want to make such choices depends on how aware they are of their self-control problems:

- Perfectly aware: will want to impose constraints on future selves.
- Perfectly naive: will always believe that they will eventually make the right choice in the future.
- Partially naive (Rabin and O’Donohue): know they have problems, but underestimate them: they think that in the future they will behave as sophisticated hyperbolic discounters with

discount rate $\hat{\beta}$, larger than the true β .

-Boundedly rational: they may be aware of the problem, but knowing what to do about it may require complicated reasoning that they may not be able to do; they may take a shortcut to address the problem.

Applications of the self-control problem:

- Procrastination (delaying undertaking a costly activity that has benefits in the future)
- Savings behavior
- Addiction (consuming now makes you more likely to consume in the future)

1 Self-imposed deadlines and commitments

“Procrastination, Deadlines, and Performance”

The study is about the use of self-imposed deadlines to deal with procrastination.

Questions:

1. Do people self-impose deadlines to increase performance if they have the possibility to?
2. Do the deadlines increase performance?
3. Are they set optimally for maximum performance?

Two studies.

First study: Deadlines for assignments for the MIT server Exec. Ed. students

Students have 3 assignments (essays). Recitations are assigned to one of two conditions:

- Students choose the deadlines. Once a deadline is chosen it cannot be changed, and it is binding. The assignments will be given back only at the end of the semester.
- Evenly spaced deadlines are imposed.

Note about standard errors: What should he do with the standard errors in the analysis?

What problem will he run into?

What is the optimal choice of deadline in the absence of self-control problems?

Actual choice of deadline: see graph. Students did not choose to hand in all assignments the last day of class.

Performance: The grades in the no-choice section were higher than the grades in the choice section (difference: a little over 1/100, on a mean of 85.67 in the choice section, with a t of 3 [but this was the wrong t...]): the deadlines were not imposed in the optimal way for performance.

Note: They then ask themselves whether students take the external deadlines more seriously. To answer this, they go on to compare the performance of students who did choose evenly spaced deadlines to the performance of students in the forced-deadlines section and find no significant difference. They conclude that the self-imposed deadlines are just as good if they are spaced evenly. What is the problem with this interpretation?

What question remains unanswered?

Second study: Proofreading task

For this study they select 60 students through poster advertising for a proofreading task. Students need to proofread 3 essays in 3 weeks. They are paid by the task, i.e. penalized if they miss mistakes. They are also penalized for delays. The essays are generated by a computer and make no sense, though all sentences are grammatically correct (to start with: the experimenter then adds the mistakes).

Three conditions:

1. No deadline conditions: All essays are due in 3 weeks
2. Self-imposed deadline conditions: Student self-impose the deadlines
3. Evenly spaced deadline conditions: Evenly spaced deadlines are imposed by the experimenter

Results:

-Participants chose spaced deadlines (the statistic was not very clear to me).

-They do best under imposed deadlines, better under self-imposed deadlines, and worst under no deadlines.

This last result shows that people are partially naive, partially sophisticated: they underestimate the degree to which they are hyperbolic discounters.

People make other mistakes when setting self-imposed restraints: in particular, they sometimes set constraints that are not *really* constraining. Some industries are quite good at exploiting those mistakes. “Paying not to go to the gym” investigates this issue.

Three options for the gym:

- Annual membership
- Monthly membership
- Pay per visit (about 10 dollars a visit, with 10-visits pass)

Main finding in table 3 and 4. People pay more per visit with monthly membership (they do not come often enough).

Explanation: people may be overconfident about their probability of undergoing a costly activity with delayed reward (going to the gym). Moreover (though not pursued in the paper), they may be mistaken and think that paying for the gym somehow has “committed” them to going (sunk cost fallacy).

2 “Soft paternalism”: default and manipulation in savings behavior in the U.S.

A naive hyperbolic agent will have a tendency to “procrastinate,” i.e. always plan to undertake the unpleasant task tomorrow rather than today. The agent wrongly believes that whatever he/she will want to do tomorrow (instead of starting to save) is less important than what he/she is doing today. This will be more so if the task requires a choice and some figuring out.

You saw it in the choice experiments: when a naive agent is confronted with more choice (and a problem that requires more thinking), he/she may be even more likely to procrastinate.

Retirement savings accumulates several difficulties for a (partially) naive hyperbolic agent.

-It is renouncing consumption now for the sake of consumption tomorrow.

-It is a little bit complicated to figure out: need to understand what to do, where to invest, which person to call, etc....

This suggests that an agent who has to decide whether to enroll in a 401(k) may never do it. Historically, people did not need to decide. Social security, complemented by defined benefits retirement plans in firms, used to do the job. But increasingly, this is not the case any more, and agents are left to decide.

Procrastination suggests that there will be a strong “status quo bias,” i.e. the agent will tend to stick to whatever “default option” he/she was presented with.

For example, Samuelson and Zeckhauser show that the median change in asset allocation in

TIAA-CREF is *zero*.

Madrian and Shea (2004) present a nice (non-experimental) illustration of this. A firm introduces “default” enrollment in its 401k plan (retirement saving plan) for a particular cohort.

Results:

- This cohort is much more likely to be enrolled than the previous cohorts (which had access to the plan but no automatic enrollment).
- They stick with the basic contribution rate.
- They stick with the basic asset allocation.

Over time, people enroll, so that the long-term effects on enrollment are less clear, but still probably quite positive. The downside is that they stick to a low contribution rate (3%) and rather silly asset allocation.

Benartzi and Thaler try something more tricky than just a default: they ask the employees themselves to make a choice *for the future*.

Features to take into account when they design their plan:

- Hyperbolic
- Some amount of naivete
- Inertia
- Loss aversion: people may find a reduction of disposable income today unbearable.

Smart Plan:

Employee decides *now* to save a fraction of his/her future pay raise. The contribution level increases with each pay raise, until it reaches a pre-set maximum. He/she stays in the plan until he/she opts out.

There was no experiment, unfortunately, just implementation in the field.

First implementation: 315 employees were offered a talk with a financial consultant. The consultant runs financial software which spits out a recommendation for the contribution in the 401k (which the consultant caps at 5% if the employee is not willing to do that).

If the employee refuses to do that, the consultant runs the Smart program. Smart proposes a 3% increase in the savings rate each year, starting with the next pay raise.

Results: See table.

The idea of soft paternalism stems from these findings. Since people will be facing defaults all the time anyway, why not place them in the defaults that are “good for them” from a long-run

perspective? They still would have the option to shift out of the default if they wanted to, so that “libertarian paternalism is not an oxymoron.”...

3 Demand for commitment in the Philippines

If people have such preferences and are at least in part aware of this, they should demand commitment devices to tie their own hands. Moreover, those who get the option to tie their own hands should be able to save more.

These conjectures were tested in a randomized experiment in the Philippines.

Work with 1,700 clients of a microfinance institution in the Philippines, which offers savings accounts. Introduce a new savings product with a commitment feature.

Questions:

- Will anybody take it up?
- Will individuals identified as hyperbolic be more likely to take it up? Will it result in increased savings (for those offered/for those who take up)?
- Can we make sure it is the effect of the commitment and not something else?

Experimental design:

1,700 existing clients are randomly assigned to one of three groups:

- Treatment group (offer of commitment savings product is made during home visits).
- Marketing group (value of commitment is extolled during home visits, but no product is offered).
- Control group: nothing is offered.

Before anything is offered, individuals are surveyed, which includes questions asked to evaluate whether individuals are likely to be hyperbolic. Savings in this bank and other banks are measured after 6 and 12 months.

Commitment treatment:

Individuals can choose to set either a time goal (I will leave the money in the account until X date) or an amount goal (I will not take the money out until I have reached a particular sum). The decision is theirs, but once they have decided, they cannot withdraw the money until the target is achieved. They are given a certificate which says what they are saving for. They are also offered a lockbox to put accumulated savings before they go deposit them into the bank (low barrier commitment).

Marketing treatment:

Individuals receive a home visit, and they are encouraged to set a goal for themselves (either time or an objective). They are given a similar certificate. However, they are not offered an account with commitment features. (They are not allowed to open one even if they have heard about it).

Results: Did anybody take this up?

202 accounts were opened.

-50% of the accounts stayed at the minimum deposit after 12 months.

-Half of the clients made more than one contribution.

-Fewer people (62) chose the amount goal than the time goal (147).

-Those who chose the amount goal saved much more.

-Nobody tried to withdraw before maturity.

-Accounts that reached time or amount maturity all rolled over.

Did the people who are hyperbolic take it up?

Survey questions try to elicit “preference reversal” that could indicate hyperbolic behavior.

-Would you prefer P200 today or P300 guaranteed in a month?

-Would you prefer P200 in 6 months or P300 guaranteed in 7 months?

In the table, the light grey indicates preference reversal in the “expected” order.

Note that people also reverse their preferences in the opposite order....

Could be time-inconsistencies, or mistakes, or worry that the future is uncertain.

Does reversal predict take up of the product? Yes, for females, no for males.

Results: Savings: balances after 6 months are significantly higher in commitment savings group. Large effect in proportion (savings in control groups are rather small). Effect is due to commitment: there is no significant increase in balance for the marketing group (though the estimate is large too...).

4 Puzzles: fertilizer in Kenya

Another example of the role of commitment is given by a study on fertilizer in Kenya.

Only about 20% of farmers use fertilizer in any given season in an area of Western Kenya (Busia district).

Duflo, Kremer and Robinson (2006) investigate various reasons for this slow use. They do demonstration plots on the plots of randomly selected farmers, and show that fertilizer is a very profitable investment, when used in the right way. They also show that the farmers who have had a demonstration plot on their farm do use fertilizer more the next season (16% more) than others, but the effect fades over time: two seasons after, it is only 10% more. So lack of knowledge is probably not the only reason why farmers do not use fertilizer.

They decided to investigate the role played by the difficulty to save, since most farmers say they do not use fertilizer for “lack of money.” Farming is seasonal, so farmers typically have money right after the harvest. Fertilizer needs to be put on the plants several weeks later. Often people have plans to use fertilizer right after the harvest, but they end up not using it in the end “for lack of money.”

The field officer of a local NGO visited farmers (randomly selected from students’ parents in a school) right after harvest and offered to sell them fertilizer right then (they could use cash or sell some maize to the field officer, whichever was more convenient). They actually sold the farmer a voucher, and the farmer could get delivery when convenient.

Results:

- Many farmers took advantage of the opportunity.
- Farmers offered the option were more likely to use fertilizer in the current season.
- Take up was as large as 50% subsidy right at the time of using fertilizer.
- And the effect on take up was actually even larger.

So it appears that the opportunity to commit at the time a farmer has money is valued, and does lead to an increase in fertilizer use.

Moreover, for a given sub-group, they visited the farmers in advance (before harvest) and asked them *if* and *when* they wanted to be visited to buy fertilizer. Those who were given the choice of the date were as likely to buy fertilizer as those for whom the date was imposed: a fair amount of sophistication!

Remaining puzzle:

- Most farmers required delivery *right away*. So they did not value the commitment option very much.
- So why don’t they go out themselves and buy the fertilizer early in the season?

What experiments could be run to shed light on this phenomenon?