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Time Perception and Retirement Saving: Lessons from Behavioral Decision Research

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Intertemporal preferences: Examples

- Many problem in day to day life shares a common structure: we care more about short term benefits than their long term implications.
 - eating chocolate cake (rather than fruit) now and not thinking than about our long term health.
 - having a new flat screen TV now rather than having money for retirement.
- The problem that we are all interested in is:
 - How to get individuals to save more
 - People delay in initiating savings programs that they believe are beneficial

Future Weighed Less than Present

- There is great deal of research in psychology and economics that is relevant to this question.
- Economic framework: discounted utility model:
$$U_t(c_t, \dots, c_T) = \sum D(k) u(c_{t+k}), \text{ where } D(k) = (1/(1+\rho))^k$$
- However, a very large literature shows that discounted utility model descriptively inadequate
 - I will not review this lit in any detail
- Our main idea: if I understand what drives your preferences, I can construct tools and policies to “nudge” people towards a desired behavior.

A few key lessons

- People often display extremely high discounting of future outcomes.
- Intertemporal Preferences are highly context dependent.
- And importantly, interest rates are highly dependent on the time interval in question, often refer to as 'hyperbolic discounting'.

Present Biased Preferences

- Two types of evidence for hyperbolic discounting:
- **Preference reversals over time**
 - Discounted utility model implies that
 - if one prefers \$100 today over \$110 tomorrow,
 - one should also prefer \$100 in a month over \$110 in a month + a day.
 - However, many studies show that people may prefer \$100 today over \$110 tomorrow but have the opposite preferences in the more distant future
- **Interval effect:** preferences elicited over multiple periods showed implied discount rates that decline over time
 - Thaler (1981): \$ they would require in [1 month / 1 year / 10 years] to make them indifferent to receiving \$15 now.
 - Median responses [\$20/\$50/\$100] imply (annual) discount rate of 345% for 1m / 120% for 1-y, and 19% for 10 years.

What Drives Time Preference?

- Why do we care about why this happens? If we know why, we could find whys to correct it.
- Affective Drivers
 - Impulsivity (Ainslie 1975; Rachlin and Raineri 1992)
 - Visceral factors (Loewenstein 1996)
- **Cognitive Drivers**
 - Mental Representation of outcomes (Malkoc & Zauberman 2006)
 - Resource Slack (Zauberman & Lynch 2005)
 - Time Perception (Kim & Zauberman 2009; Zauberman et al. 2009)

No Time Like the Future to Start Saving

- One of these mechanism – **slack** – can provide insight into the problem of initiating savings
 - How to get people to save more and initiate savings programs that they believe are beneficial
- Our proposed explanation: Procrastination comes from false perceptions
 - I'll have more spare money in a year than now
 - I'll have more spare time to study and file paperwork to save in a few months than now

Yes....

- Damn!
- If the same offer were made for tomorrow, I'd say no...I'm too busy.
- Why don't I learn to stop saying yes?
- Do people make the same mistake for investments of resources other than their own time – e.g., investments of money?

Resource Slack & Discounting

- People discount delayed outcomes when:
 - Immediate investment of X would block attaining other proximate active goals requiring same resource, and
 - In future, more “slack” and thus less sacrifice of highly valued goals – i.e., there is “slack gain” in future
- Slack is perceived surplus of resource X available for some focal task (Zauberman & Lynch 2005)
- Systematic biases in perceptions of slack in short and long run that explain resource differences in discounting

Discounting Time vs. Money

- **Time:** most people expect to have more time slack in 2 weeks than today, so discount future time steeply
- **Money:** most (but not all) people expect more similar money slack in 2 weeks & today, so do not discount future money steeply.
 - Some do expect more \$ slack and the future and they so delay investment.
 - This could be especially powerful in today's economic climate.
- The key is that their slack growth predict the extent of their discounting, or propensity to delay.

Application to Financial Decisions

- Refinancing: People fail to refinance because, in the short run, it requires a big time investment.
- Sub-prime lending: the attractiveness of loans with low immediate cost.

Our Focus:

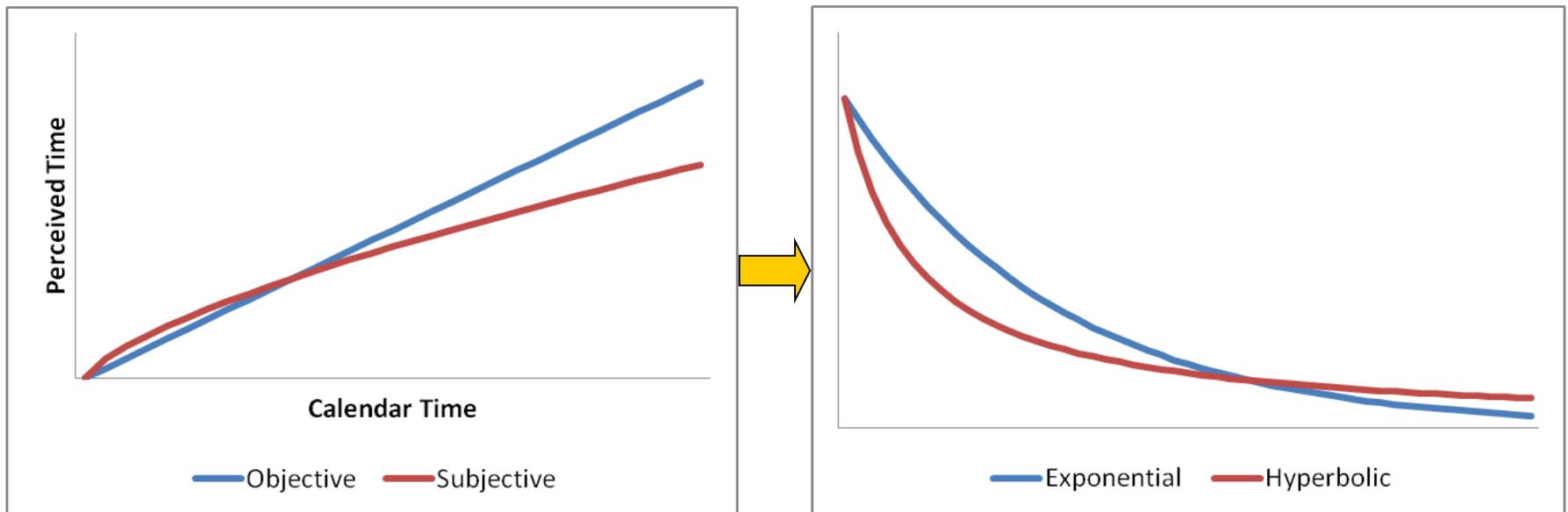
- Saving for retirement.

Focusing on Application to Saving for Retirement

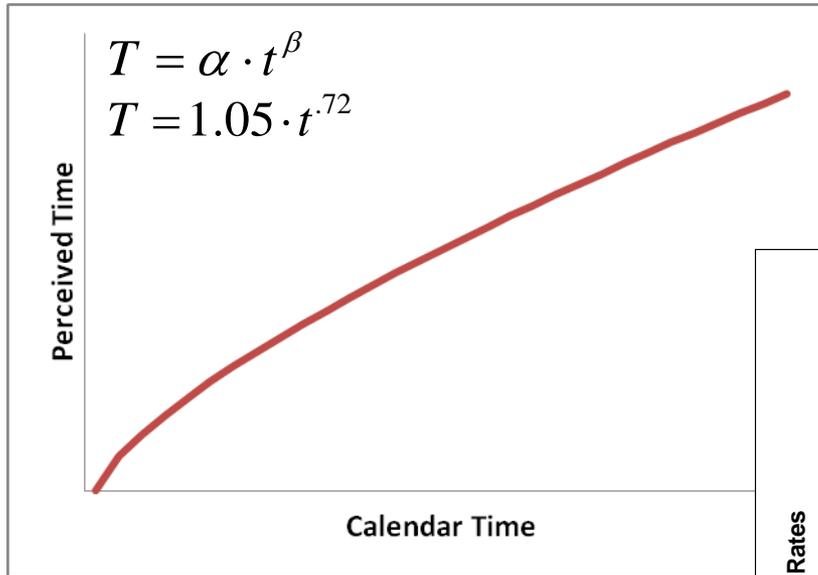
- People fail to save because, in short run, savings exact a cost (that is perceived to be higher than in the future).
- Slack Theory account:
 - Time Slack More in Future (for most people)
 - People think that they don't have time today to initiate a savings program or meet with a financial advisor, but will later
 - Money Slack More in Future (for some people)
 - People feel cash constrained in present, but imagine that they will not in future with raise (or asset appreciation).
 - Thaler & Benartzi 2004, asking people to precommit to save future raise money for retirement led to increase annual savings rate

Time Perception and Discounting

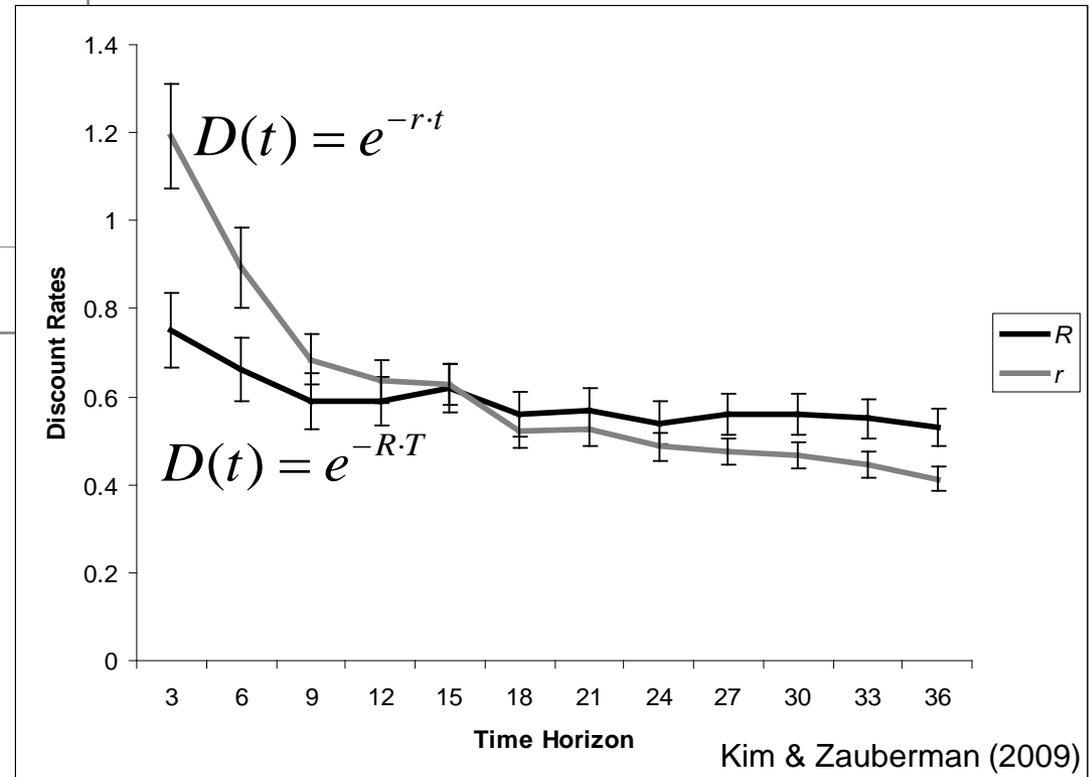
- Non-linear time perception may lead to hyperbolic discounting (Kim & Zauberman 2009; Zauberman et al. 2009)



Empirical Evidence



Time Perception Task



Delay-Discounting Task

Time Perception and Discounting

- Future discounting can be explained (in part) by subjective time perception. Thus, changes in the way people perceive time can change their pattern of discounting.
- Hyperbolic discounting: Non-linear time perception
- Individual/situational difference in discounting: Variables that change time perception, also change discounting.
 - Sexually-arousing images and steep discounting of future
 - Spatial distance and discounting

Implication To Retirement Savings

- **Failing to initiate saving**

- This phenomenon is commonly explained by hyperbolic discounting (as a self-control problem).
- According to our theory, this tendency can be reduced by leading people to perceive more linearly.

- **Low saving rates**

- Various factors in the environment influence how long or short people subjectively perceive time to be (e.g., duration to retirement)
- Reducing perceived duration to retirement may increase saving rates.

Conclusions

- Better understanding the psychological drivers of choice over time can allow us to provide better instruments to increase savings.
- **Slack theory**
 - (Mis)perceptions of changes in perceived opportunity costs make people procrastinate in savings
 - Biased time Slack perception...No time to start saving now.
 - Biased money Slack perception...I'll make too much more in the future to start saving now.
- **Time perception**
 - Non-linear time perception may contribute to self-control problems.
 - Factors influencing time perception may contribute low saving rates.