

From Cashews to **NUDGES**

The Evolution of
Behavioral Economics

Richard H. Thaler
NOBEL PRIZE LECTURE
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Stories and thought experiments circa 1970s



The dinner party.

Conundrum: Why were we happy to have a choice removed?

Research topic: Self control (joint research with Hersh Shefrin)



Wine

Meet Professor Rosett. Chair of Economics Dept.

- ❑ Years earlier (1950s) he bought some bottles for **\$4.95**
- ❑ He can sell a bottle for **\$100**
- ❑ He never pays more than **\$30** for a bottle of wine
- ❑ But he sometimes drinks one of his old ones

So he won't buy, won't sell, but will drink. **Huh?**

More research topics!

The “endowment effect”; loss aversion; status quo bias.



Driving in the snow

A friend and I are given tickets to an basketball game in Buffalo, 100 km away. There is a blizzard. We skip the game, but my friend says, *“if we had paid full price for those tickets we would have gone”*.

Question: Why does going to the game help?

Research topic! Mental accounting



A key insight from Kahneman and Tversky



- Because of limited rationality, people use simple rules of thumb (heuristics) to help them make judgments and forecasts.
- The use of these heuristics leads to **systematic errors** (biases).
- Random errors would not matter to economic theory, but systematic error is a big deal.



Supposedly Irrelevant Factors

One lesson from my stories is that some things that economic theory says should not matter actually do matter:

“Supposedly Irrelevant Factors” (SIFs)



☐ Moving the cashews across the table should not matter.



☐ Professor Rosett's willingness to drink a bottle of wine should not depend on whether he owns such a bottle (assuming he can buy and sell at the same price).



☐ Our willingness to go to the game should not depend on how much we paid for the tickets. Sunk costs are SIFs.

Once we realize that SIFs are not irrelevant, the power of economics is increased since more things “matter”.



Going beyond stories and thought experiments

Experiment with Daniel Kahneman and Jack Knetsch





\$20



\$18



\$15



\$15



\$12



\$10





\$20



\$18



\$15



\$15



\$12



\$10

**Random
assignment**



\$9



\$8



\$5



\$3



\$2



\$0





\$20



\$18



\$15



\$15



\$12



\$10



Coase Theorem—Nobel 1991—works for tokens!



\$9



\$8



\$5



\$3



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Random
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If Coase Theorem worked...



\$9



\$8



\$5



\$3



\$2



\$0





\$20



\$18



\$15



\$15



\$12



\$10



Endowment Effect – loss aversion & inertia!



\$9



\$8



\$5



\$3



\$2



\$0



The endowment effect and status quo bias



Token experiments:
Markets worked just as
in text books.



Mugs experiments:
Too little trading...initial
assignments seem “sticky”!

Why?

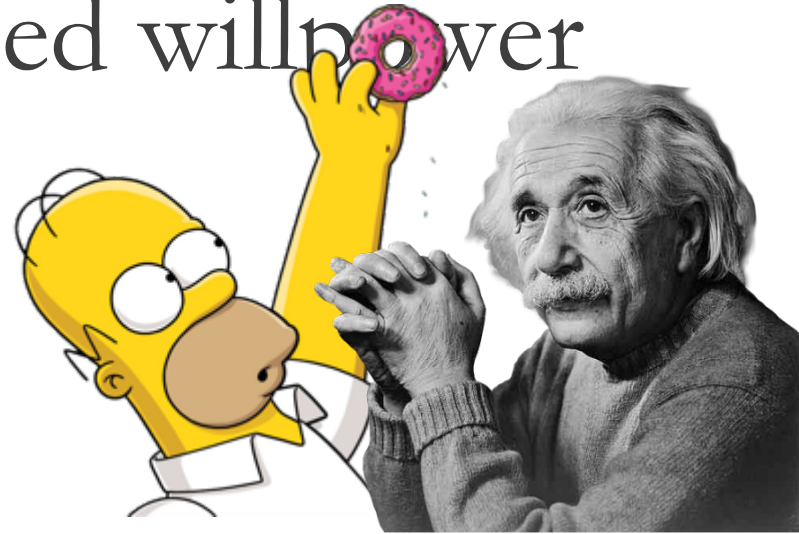
- **Loss aversion:** Mug owners demanded about twice as much to give up their mugs as non-owners were willing to pay to get one.
- **Status quo bias**, the tendency to stick with what you have.
- **Other reinforcing factors:**
 - The comfort of the known vs. the unknown.
 - Inattention, laziness and procrastination. Example: television watching.



Bounded rationality and bounded willpower

What if Humans are not as smart as Einstein?

What if they (occasionally) submit to temptation?

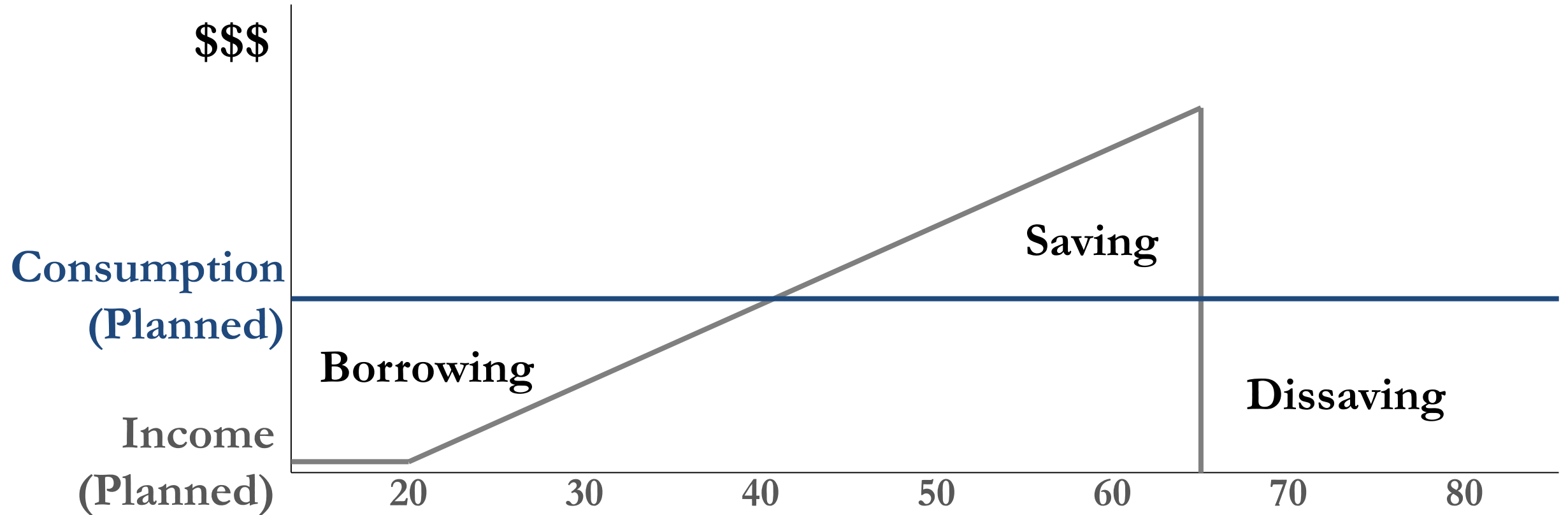


Consider the “**Life-Cycle Hypothesis**” Modigliani Nobel 1985

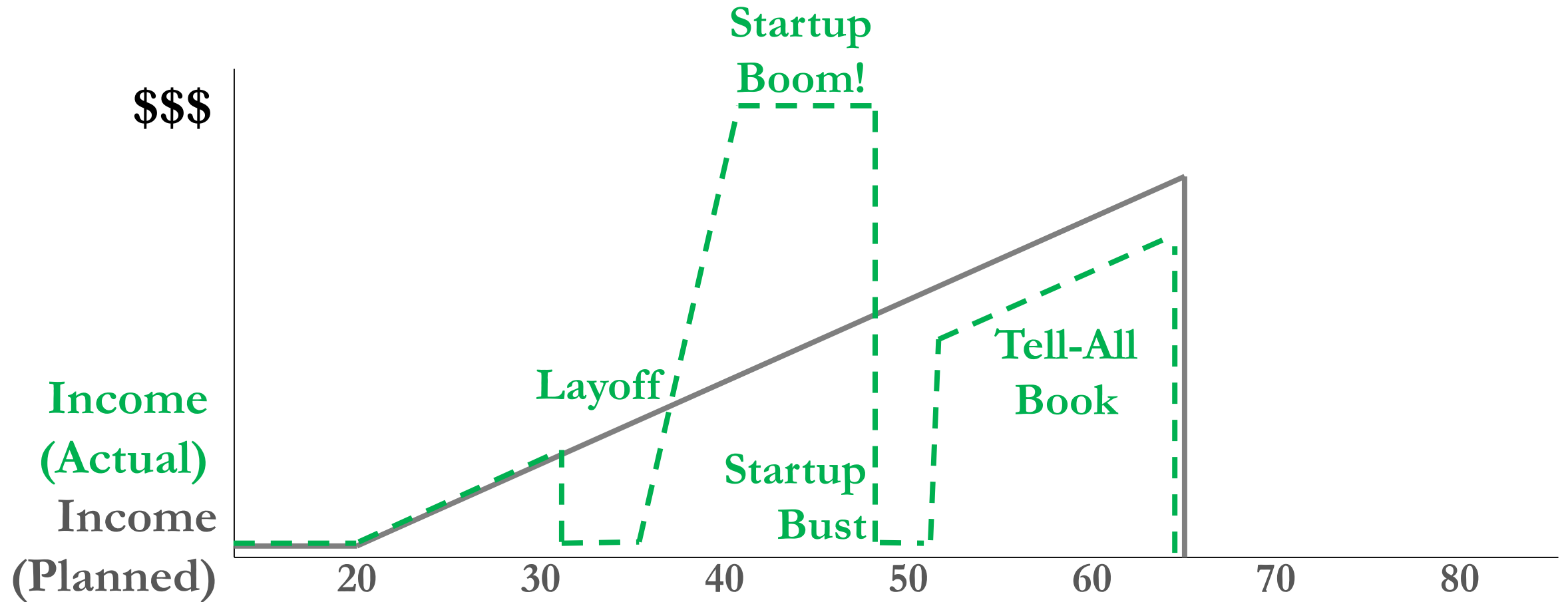
1. Figure out how much you expect to make over your lifetime, and how long you plan to work.
2. Decide how you would like to spread your earnings over your lifetime.
3. Implement this plan!



A simple example

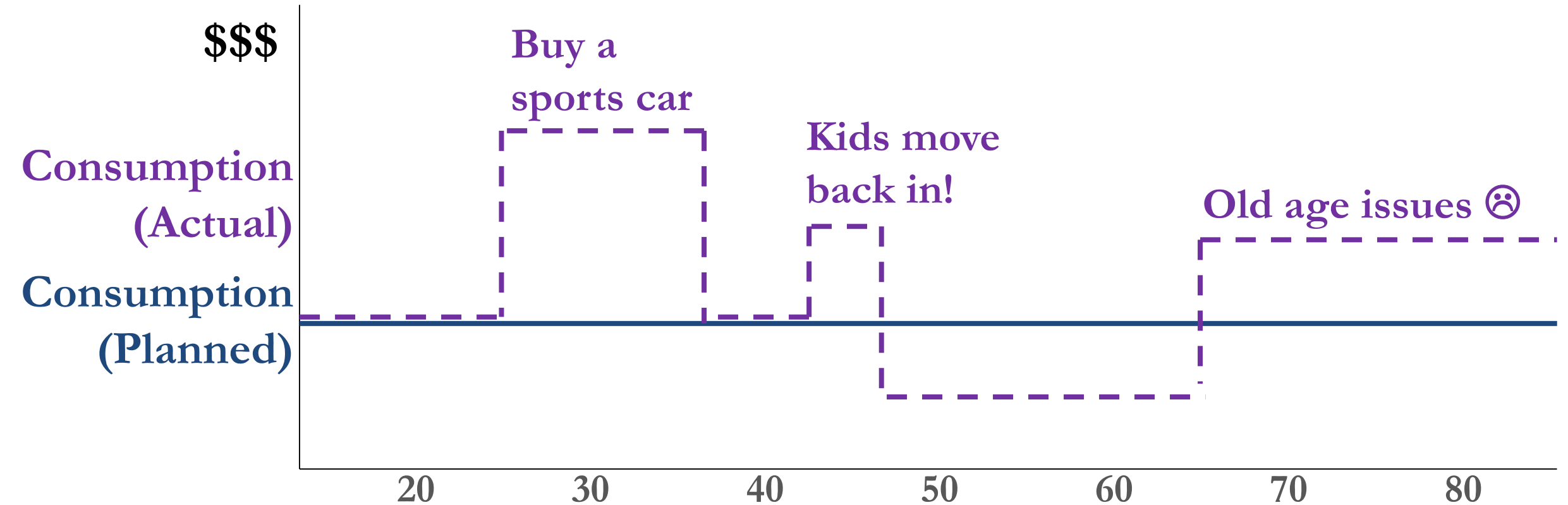


Unexpected income disruptions



Self-control and savings

Must calculate, update, have willpower...



This is **HARD**, how to **HELP**?

- For most of Human history, people did not live long enough to worry about retirement saving.
- Those that did, moved in with their kids, who lived nearby.
- 20th century solutions as parents started living longer and the kids began leaving home:
 - State sponsored social security
 - Defined benefit company pensions
- These solutions required virtually no decisions or self-control by citizens/employees.



The rise of defined contribution systems

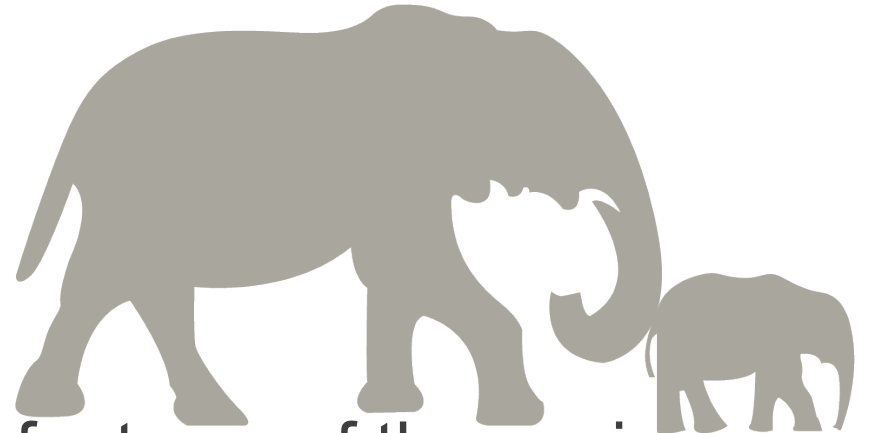
- Employers and governments introduce defined contribution plans in which Humans have to make decisions on whether to join, how much to save, and how to invest. Difficult!
- Problems:
 - Some people fail to join.
 - Even for those who join, they may not save enough to invest wisely.
- Note: the traditional life-cycle model offers no help in solving these problems because it assumes people are already saving just the right amount!
- How can behavioral economics help?



One solution: Choice Architecture

(Thaler & Sunstein, 2008)

- Choice architecture is the environment in which people make decisions.
- Some examples:
 - Menus
 - Store Layouts
 - On line shopping web sites
- Choice architecture can include **nudges**, features of the environment that influence Humans but not Econs (short for *homo economicus*).
- Note that nudging is choice preserving. No one is forced to do anything! Libertarian paternalism is not an oxymoron!



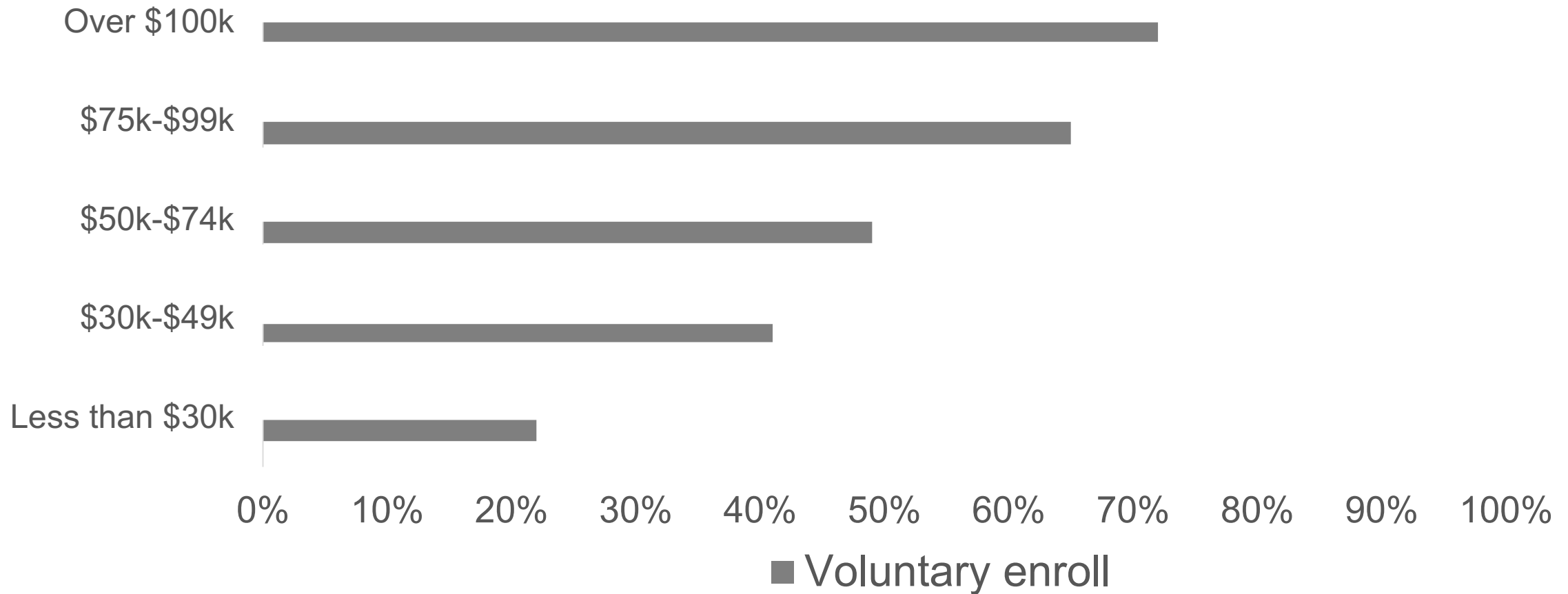
Powerful nudge: Change the default

- The default is what happens if you do nothing. (Humans are good at doing nothing.)
- Old default in retirement savings plans—you have to fill in forms to join. Filling in forms is nasty.
- New default—automatic enrollment. You are enrolled unless you opt out. This is a nudge. Does it work?



Participation rates by employee income

(Vanguard Defined Contribution plans)



*Vanguard



Problem with automatic enrollment

- Most firms enroll people at too low of a savings rate, often 3% in U.S.
- Approach to solving the problem? Use knowledge of human nature.
 - We know people have more self-control for the future—not today!
 - Loss aversion—people hate to see their paycheck fall.
 - Inertia. People get stuck.



Save More Tomorrow

(Thaler and Benartzi, 2004)

Basic Idea: invite people to join a plan in which they will save more in the future whenever they get a raise. Increases continue until cap is reached or person opts out.

1. In first implementation, participants were offered free financial advice.
 - ❑ Most employees were advised to increase their saving by 5 percentage points.
2. Save More Tomorrow was offered only to those who rejected this advice.
 - ❑ Increase saving rate by 3% at each raise.



Effects of Save More Tomorrow program

Savings rates of participants who...	<u>Initially</u>	After <u>1st</u> pay raise	<u>2nd</u> pay raise	<u>3rd</u> pay raise	<u>4th</u> pay raise
Declined offer of financial advice	6.6	6.5	6.8	6.6	6.2
Took the consultant's recommended savings rate					
Joined the "Save More Tomorrow" plan					

*Benartzi and Thaler (2004)



Yes, but...

- Policies such as automatic enrollment and Save More Tomorrow appear to strongly influence behavior, but what if people are just moving money around and saving less elsewhere or borrowing more?
- This question has been impossible to answer until Raj Chetty and colleagues investigated with Danish data.



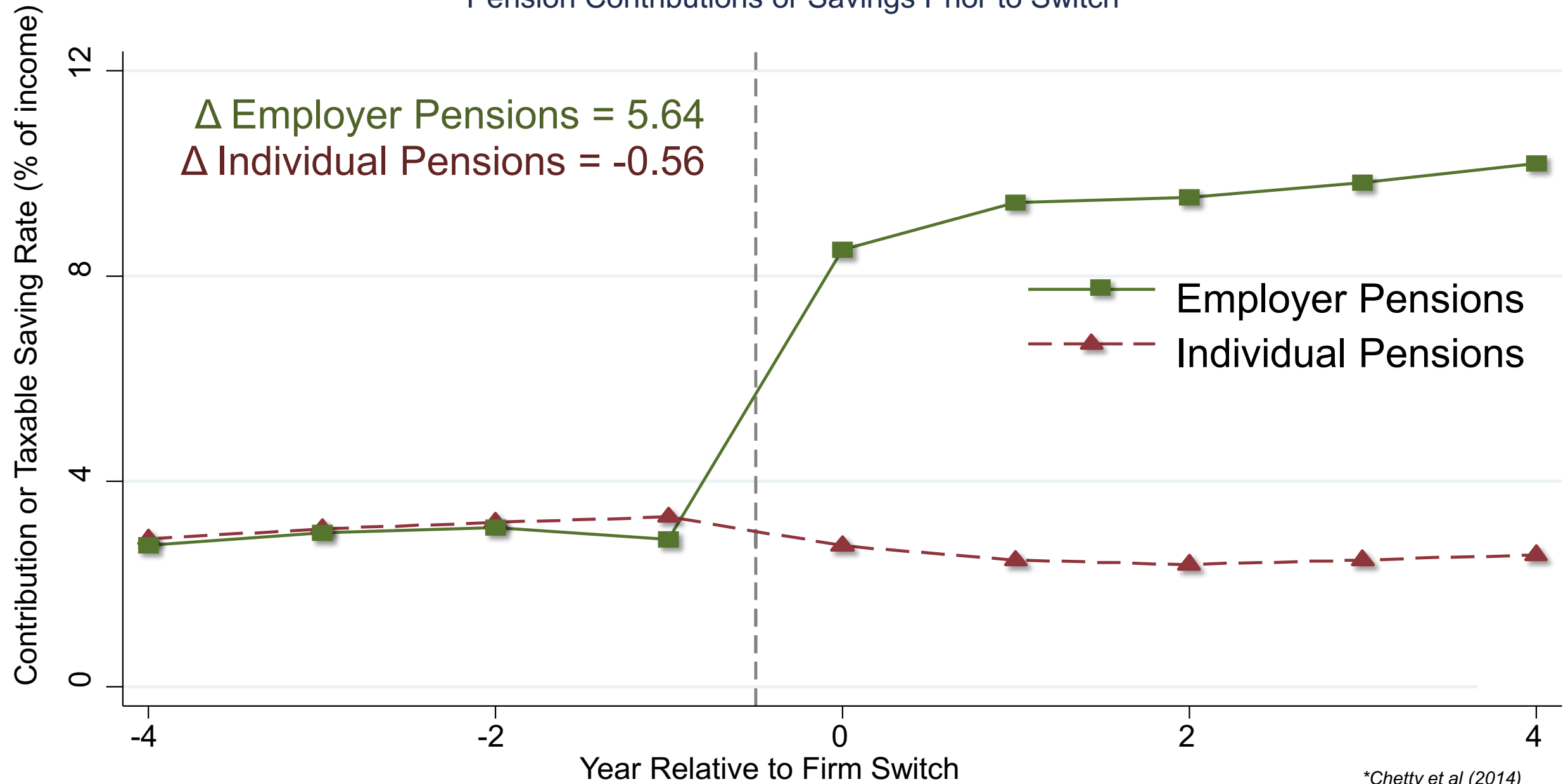
Event Study around Switches to Firm with >3% Increase in Employer Pension Rate Individuals with Positive Pension Contributions or Savings Prior to Switch



*Chetty et al (2014)



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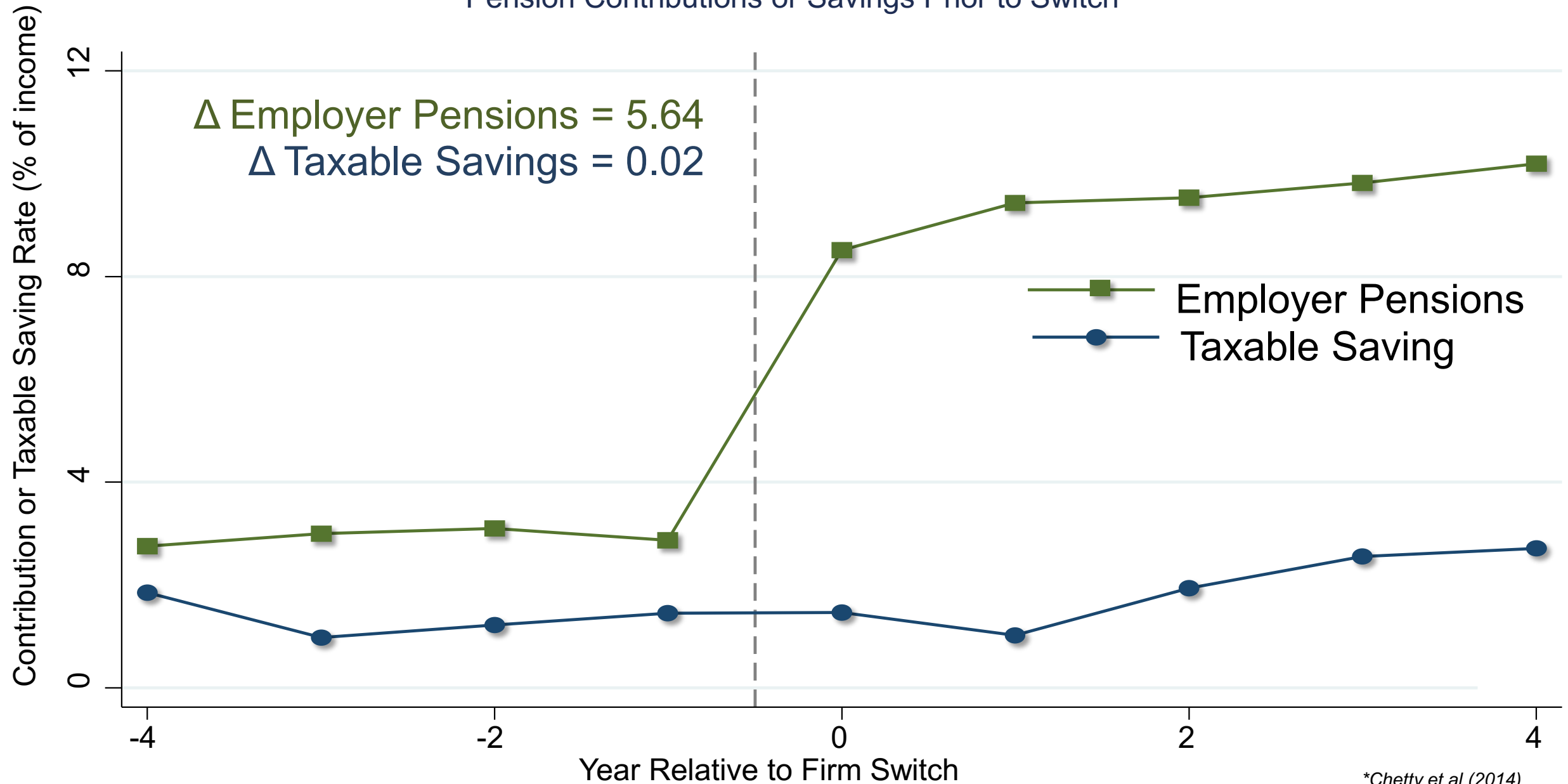


*Chetty et al (2014)



Event Study around Switches to Firm with >3% Increase in Employer Pension Rate Individuals with Positive Pension Contributions or Savings Prior to Switch

Δ Employer Pensions = 5.64
 Δ Taxable Savings = 0.02



*Chetty et al (2014)



How long do nudges last? A test in Sweden

- In 2000 Sweden launched the Premium Pension System
- Key features:
 - 2.5% of pay is directed into a defined contribution retirement savings plan, as a part of the social security system (total payroll tax of 16%).
 - Over 450 funds were offered.



The Battle of the Nudges

- **Nudge #1.** In the 2000 launch, a **default fund** was selected (AP7) for anyone not wishing to make a choice or for those who did not actively choose. We will call those who take the default fund Delegators.
- **Nudge #2.** The government **urged citizens to form a portfolio themselves.** We will call these people Self Directed.
- Both the government and private funds advertised widely. The government urging people to actively choose, the funds to choose their fund.
- The ads from individual funds were primarily uninformative.



Harrison Ford Offers Investment Advice



Harrison Ford kan ge dig en bättre pension.

På söndag 21.00 på TV4 kan du se Air Force One med Harrison Ford som hjälte president. I pausen, 21.55, tar du svar på alla dina pensionsfrågor. Är du fortfarande osäker på hur du ska välja, föreslår vi att du poppar popcorn medan filmen loppar. Du kan du i kuan och se planera ditt pensionsval.

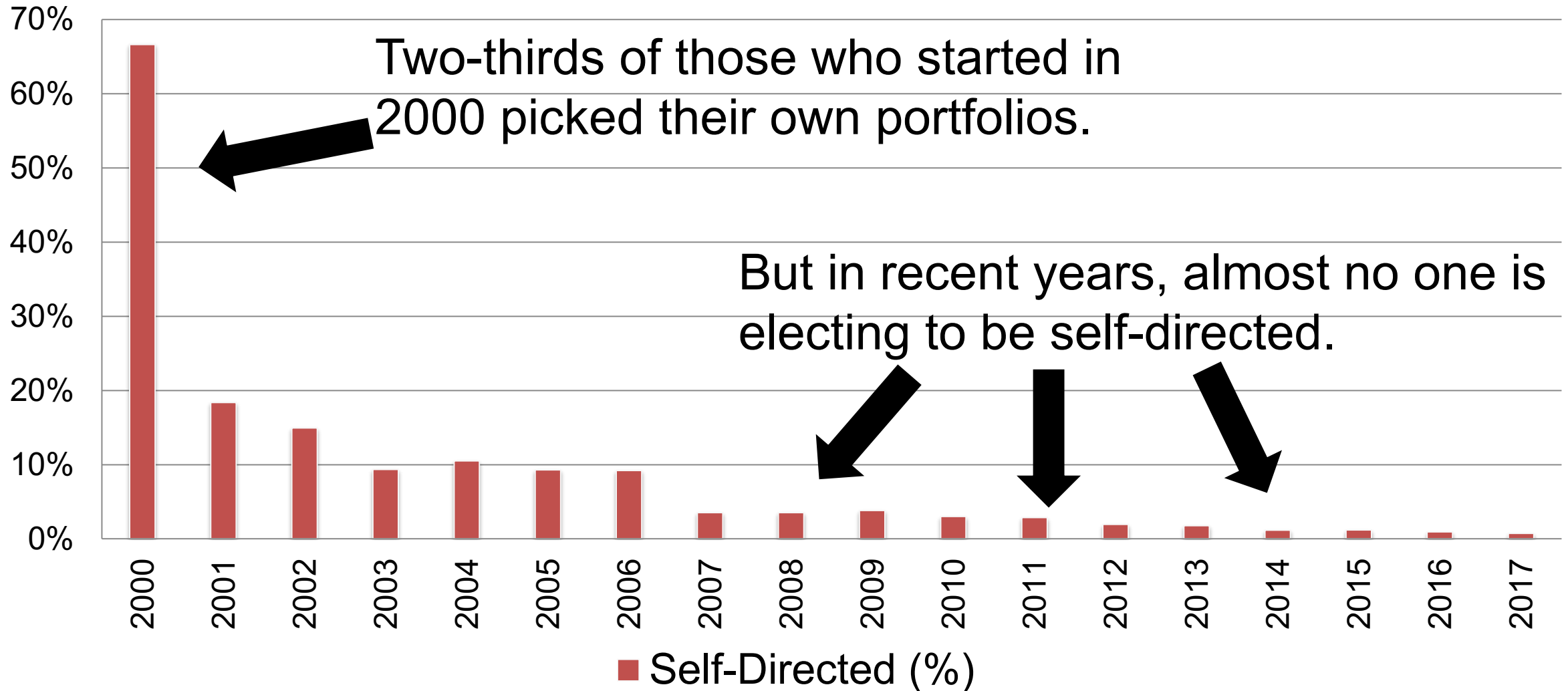


Which nudge won?

- Two-thirds of citizens chose to form their own portfolios.
- In subsequent years, as new people joined the system, an increasing proportion chose the default fund.



Investor behavior: Initial choices



Long-term effects of nudges for initial investors

■ Were the initial choices sticky?

- ❑ **27%** of those in the default fund have left it, to become self-directed.
- ❑ But only **3%** of those making self-directed choices switched to the default.



What happens if you add leverage?

In 2010 the managers of the default fund added 25% leverage, then upped it to 50% in 2011. 50% leverage means:

- ❑ If the market goes up 10%, the fund goes up 15%
- ❑ If the market falls 10%, the fund falls 15%
- ❑ If this were in place in 2006-8 the fund would have lost **82%!**

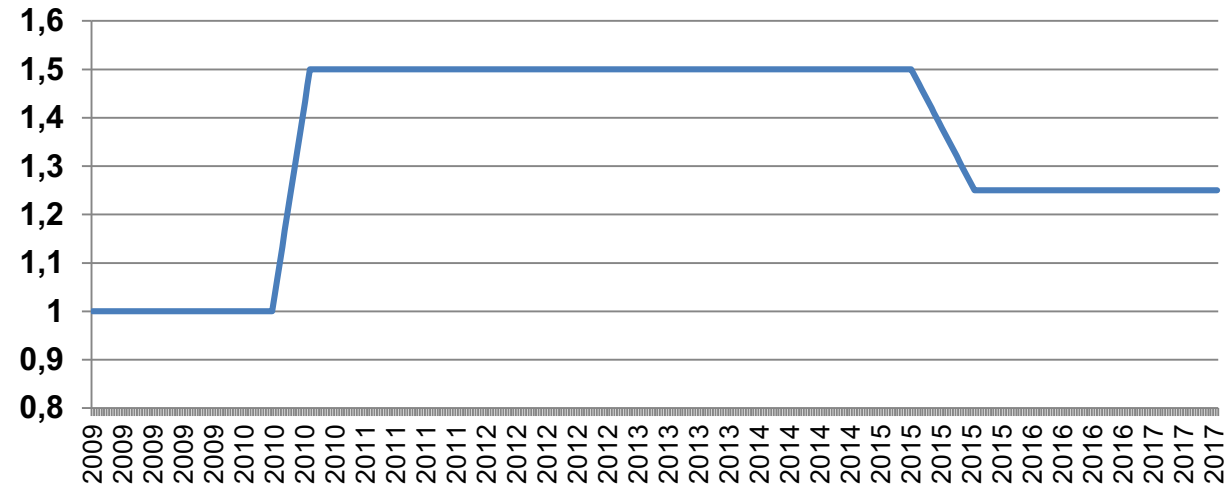
In 2015 the leverage was reduced to 25%.

- ❑ One of the (now 900) funds available was virtually identical to the default fund without leverage.
- ❑ Did any investors notice the leverage and switch?

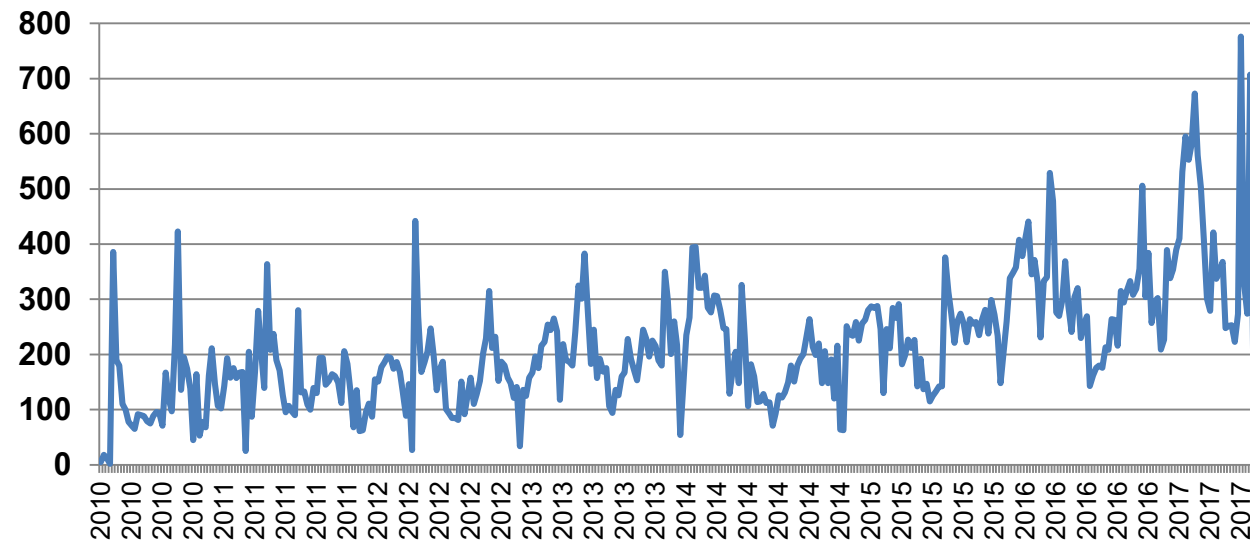


We cannot reject the hypothesis that 3 million Swedish investors in the default fund are asleep.

**Leverage
over time**



**Volume of
investors who
sold AP7**

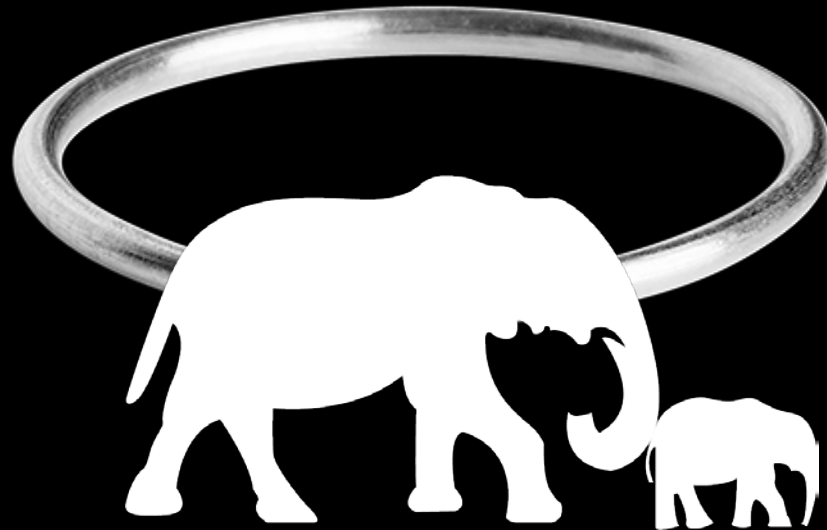


Implications of the Swedish experience

1. Nudges can be very powerful.
2. Their effects can be long lasting.
3. New marketing campaign...



NUDGES ARE FOREVER



Conclusion

- It is possible to do economics without *homo economicus*.
- Understanding human nature can improve the explanatory power of economic theory, and help us devise solutions to public policy problems.
- In short, we can *nudge for good*.

Thanks to everyone who helped. And as Danny always says, “to be continued...”

As you can see, Danny and I will remain hard at work.



