

How are preferences revealed?

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- Revealed preferences:
 - The choices that people make
- Normative preferences:
 - The choices that they should make

Revealed Preferences \neq Normative Preferences

One example:

- In 401(k)'s with employer stock as an option, approximately a third of retirement savings is invested in employer stock.
- This choice reveals many things, among them, confusion about the risk characteristics of employer stock.
- On average, US workers report that their employer's stock is *less* risky than a diversified mutual fund.

\$100 bills on the sidewalk

Choi, Laibson, Madrian (2004)

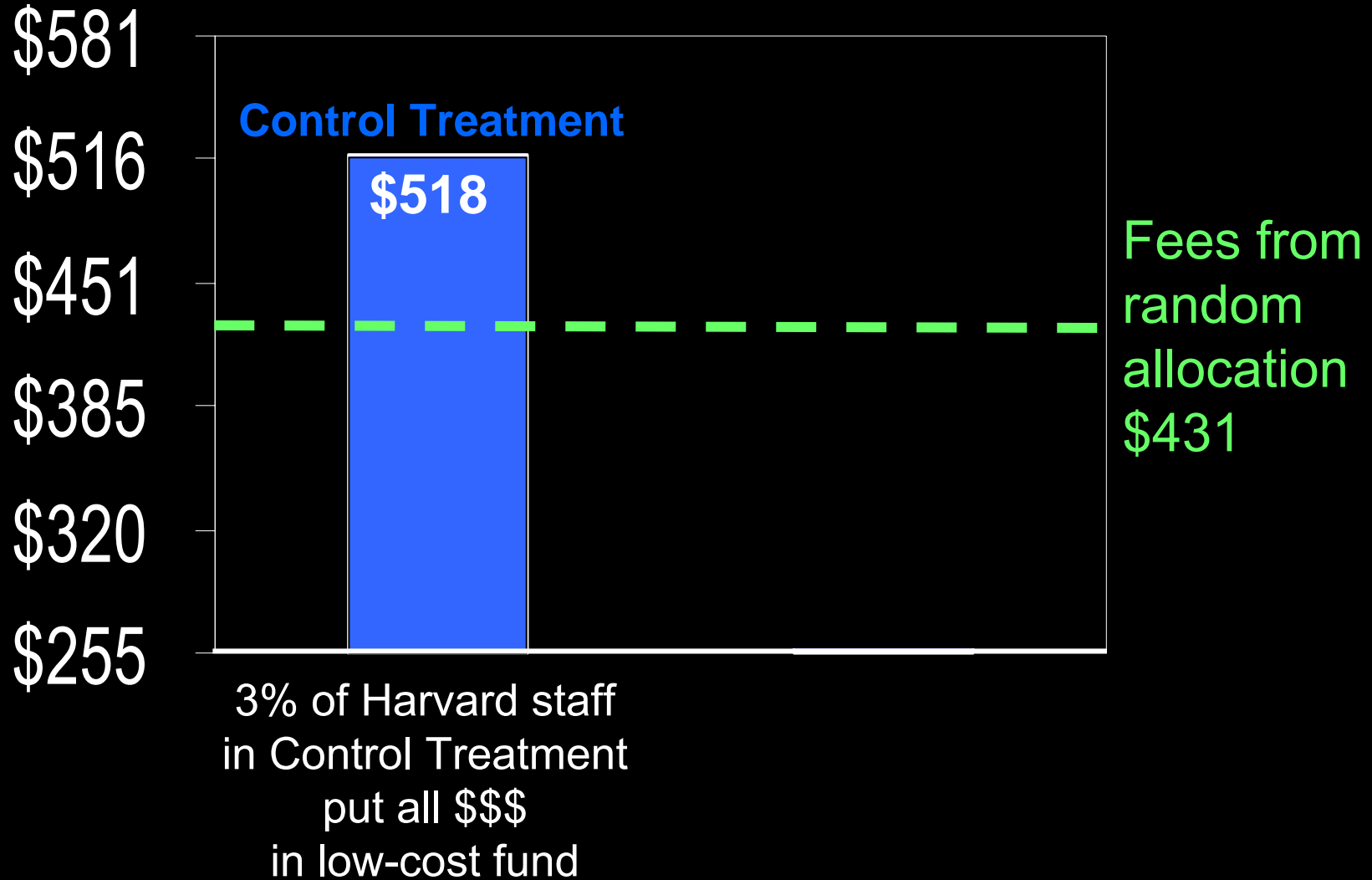
- Employer 401(k) match is an instantaneous, riskless return
- Particularly appealing if you are over 59½ years old
 - Can withdraw money from 401(k) without penalty
- On average, half of employees over 59½ years old are not fully exploiting their employer match
- Educational intervention has no effect

Education and Disclosure

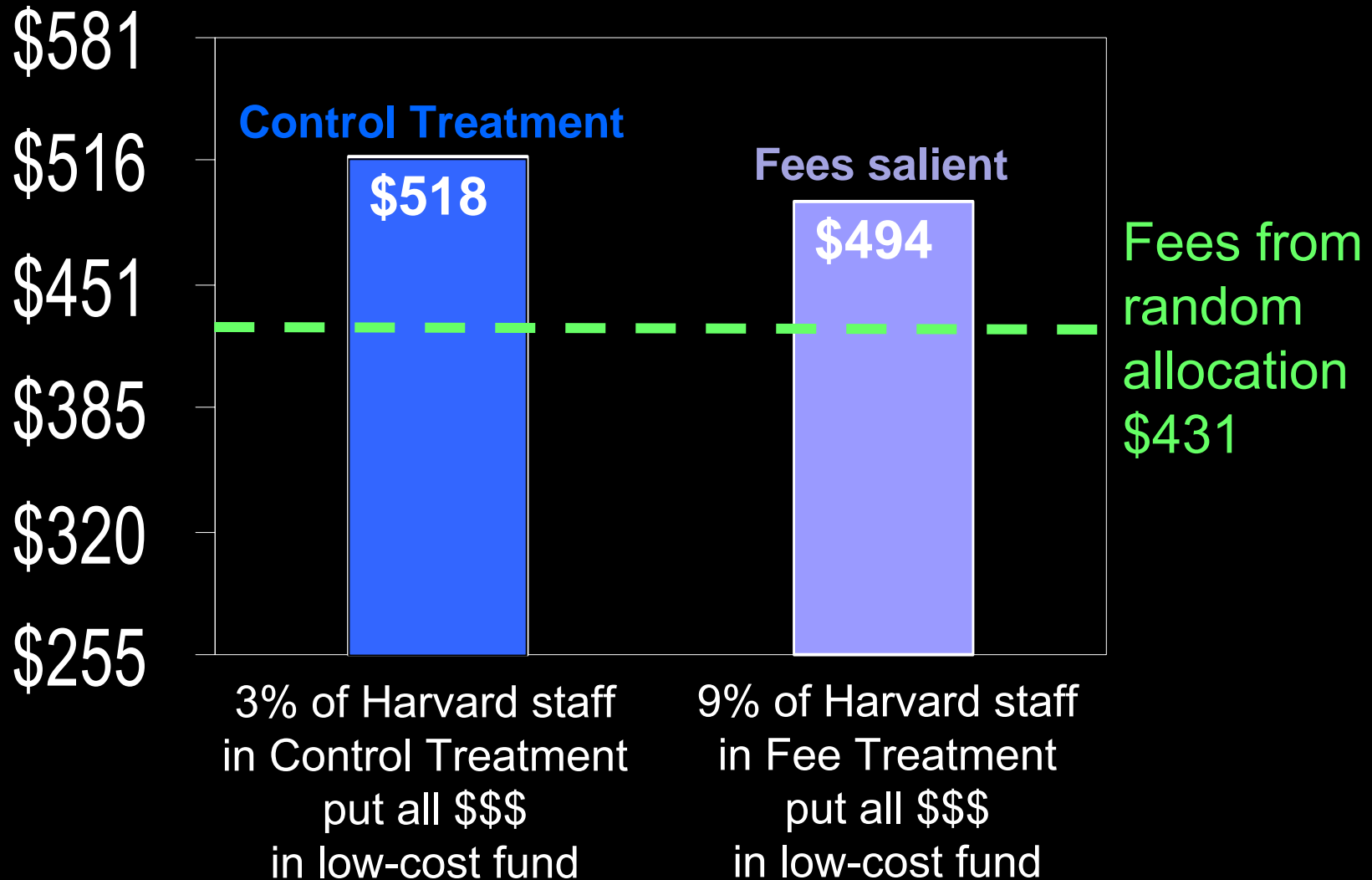
Choi, Laibson, Madrian (2007)

- Experimental study with 400 subjects
- Subjects are Harvard staff members
- Subjects read prospectuses of four S&P 500 index funds
- Subjects allocate \$10,000 across the four index funds
- Subjects get to keep their gains net of fees

Data from Harvard Staff



Data from Harvard Staff



When are revealed preferences likely to deviate from normative preferences?

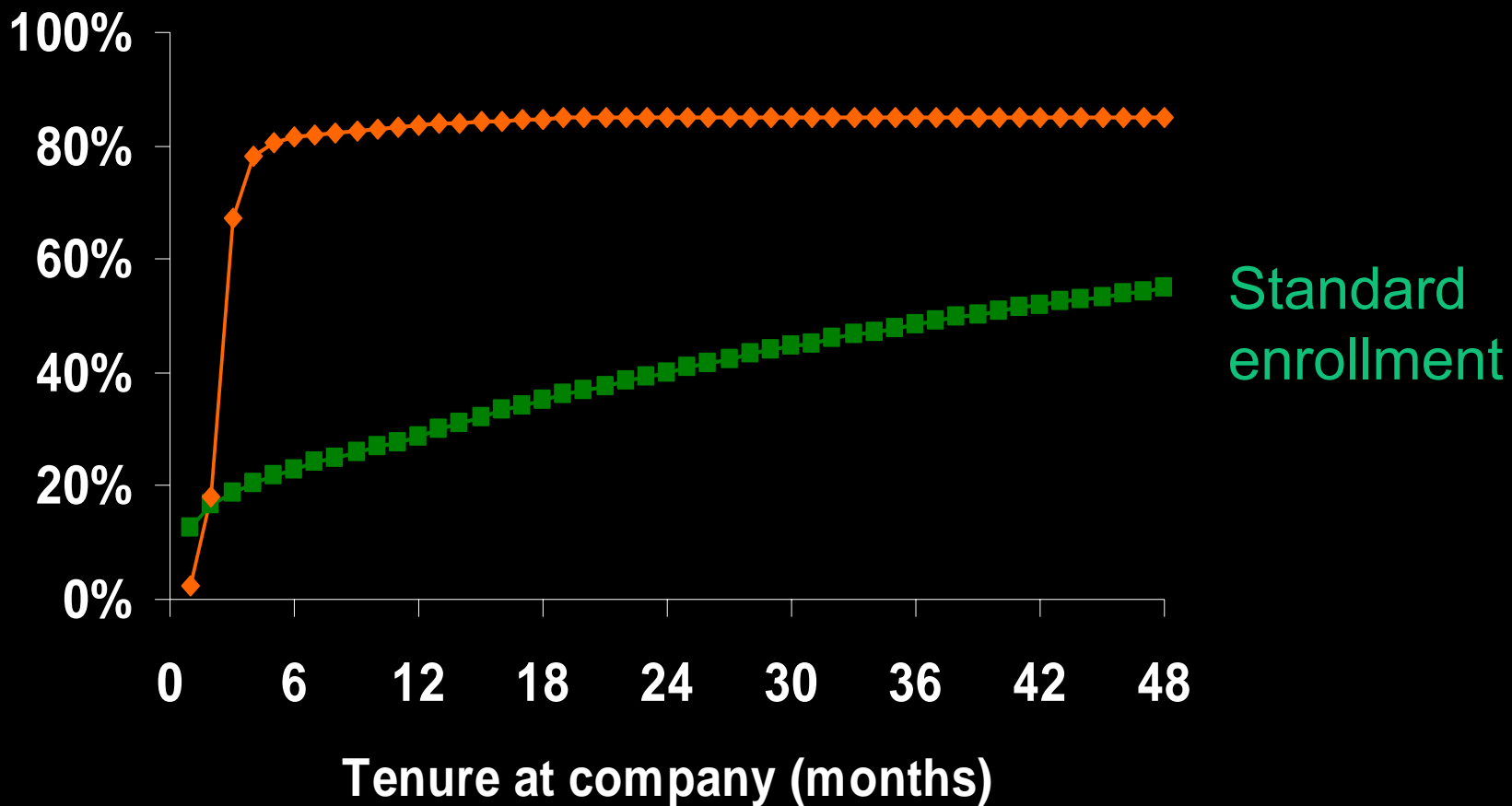
- 1. Passive choice:**
- 2. Complexity:**
- 3. Limited personal experience:**
- 4. Third-party marketing:**
- 5. Intertemporal choice:**

1. Passive choice

- Decision-makers have an overwhelming tendency to adopt defaults.

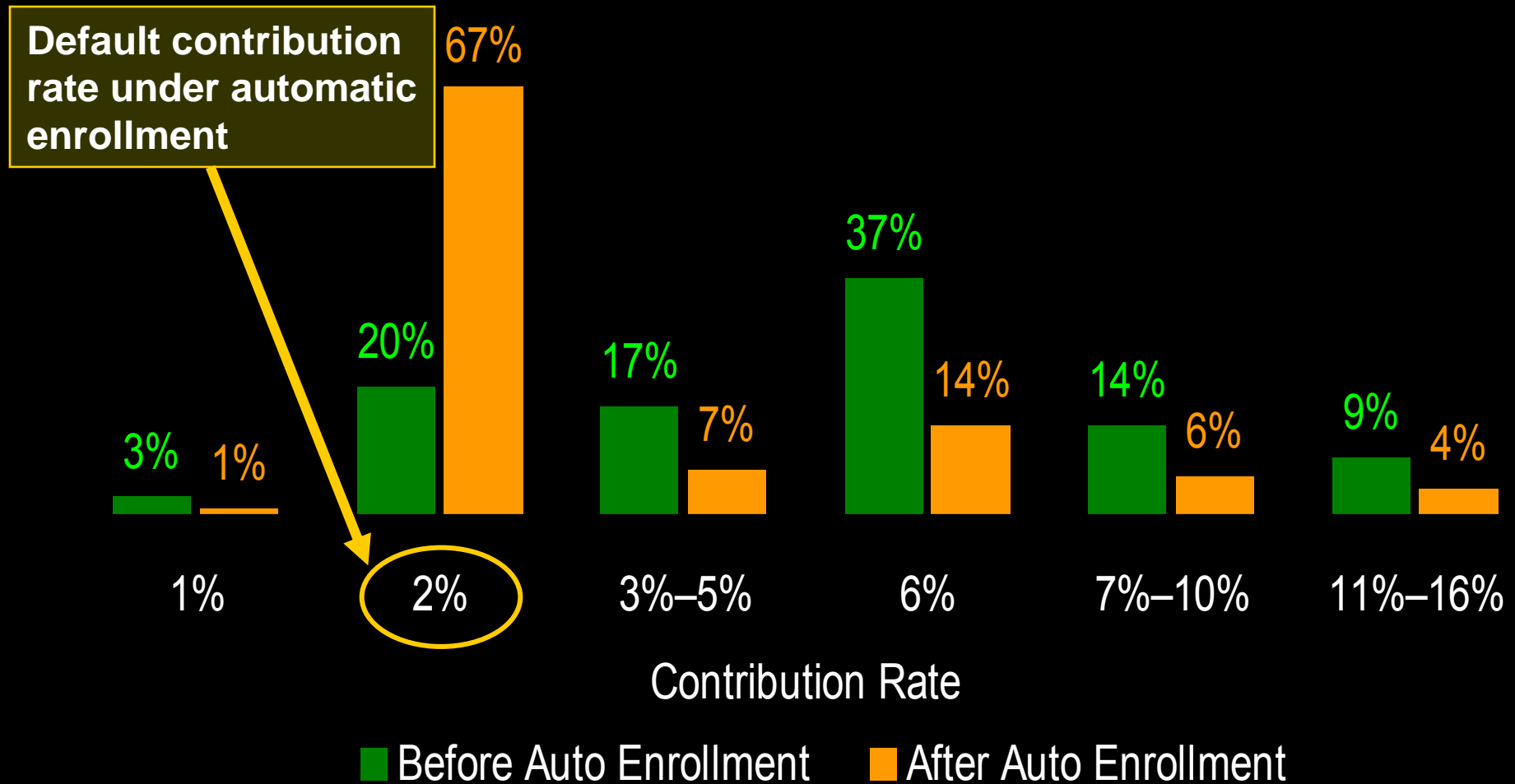
Madrian and Shea (2001)
Choi, Laibson, Madrian, Metrick (2004)

401(k) participation by tenure at firm



Employees enrolled under automatic enrollment cluster at default contribution rate.

Fraction of Participants at different contribution rates:



2. Complexity

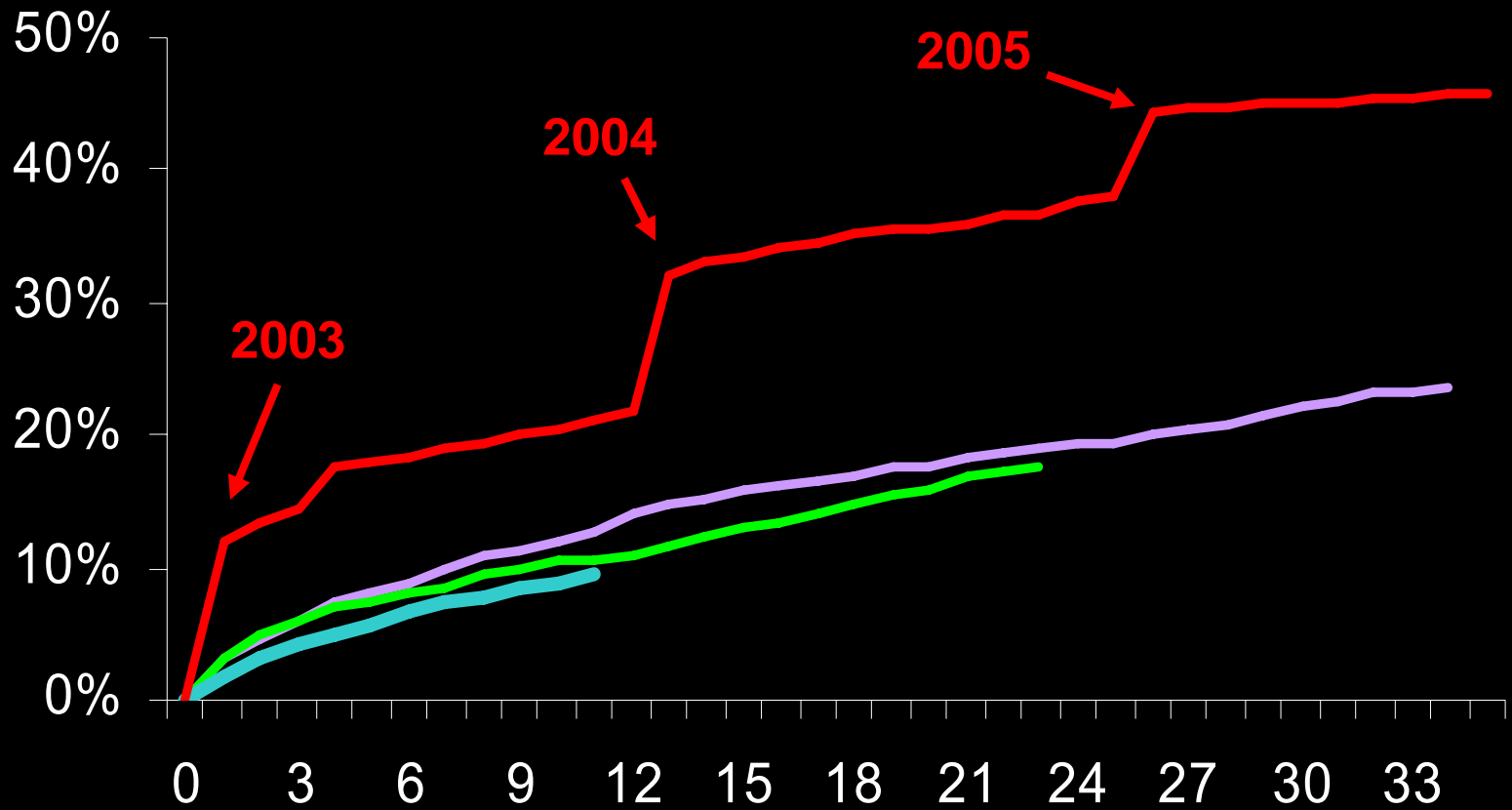
Three channels of distortion:

- Complexity *delays* choice, increasing the fraction of consumers who adopt default options (O'Donoghue and Rabin, 2004).
- Complexity *biases* choice, since people tend to avoid complex options (Shafir and Tversky, 1994; Iyengar and Kamenica, 2006).
- Complexity adds *noise* to choice, since complex options are not as transparent and well-understood as simple options. Hence, some consumers will choose a complex option because they misestimate its value (Gabaix, Laibson, and Li, 2006).

Simplification

Beshears, Choi, Laibson, Madrian (2006)

Fraction Ever Participating in Plan

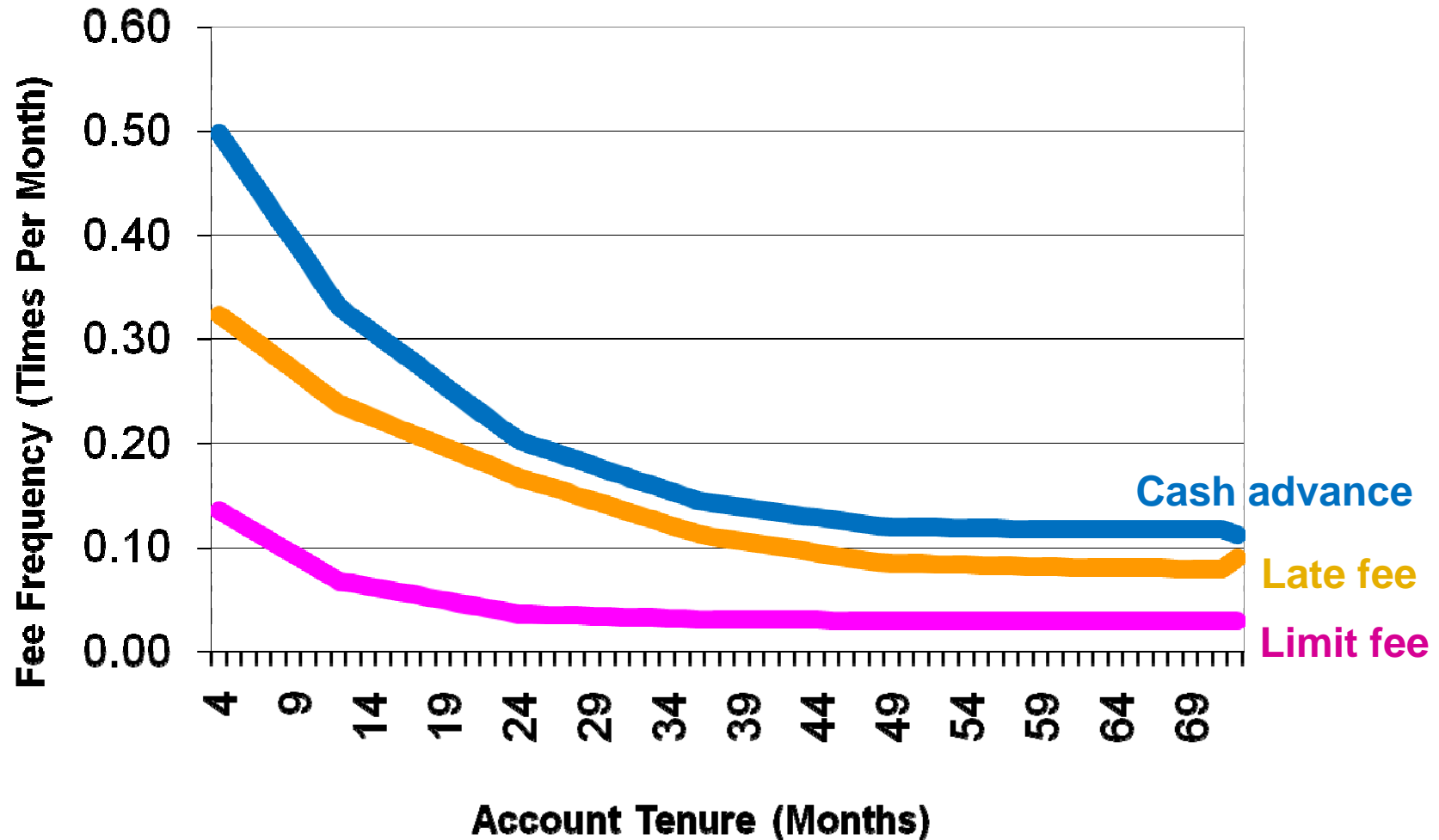


Time since baseline (months)

3. Limited personal experience

- People learn primarily through direct personal experience, not through indirect passive channels.
- For example, the lessons of Enron, Worldcom, and Global Crossing were not heeded by workers outside of these firms (Choi et al 2005).
 - Even new workers at other firms failed to avoid employer stock.
 - Even new workers at other Houston firms failed to avoid from employer stock.

Agarwal, Driscoll, Gabaix, and Laibson (2006)
Credit Card Fee Frequency and Account Tenure



4. Third-party marketing

- Explicit Persuasion
- Implicit Persuasion
 - Shrouding (Gabaix and Laibson, 2006)
- Examples of shrouded attributes:
 - Cost of printer ink
 - Bank account fees
 - Credit card fees
 - Mutual fund fees

5. Intertemporal choice

- Which set of preferences is valid?
 - Today's decision to exercise tomorrow?
 - Or my decision tomorrow, not to exercise after all?
- Good intentions inconsistent with subsequent actions
 - Diet
 - Savings
 - Human capital investment
 - Safe sex
 - Medical adherence

Choosing fruit vs. chocolate

Read and van Leeuwen (1998)

Choosing Today

Eating Next Week

Time

If you were
deciding **today**,
would you choose
fruit or chocolate
for **next week**?



Patient choices for the future:

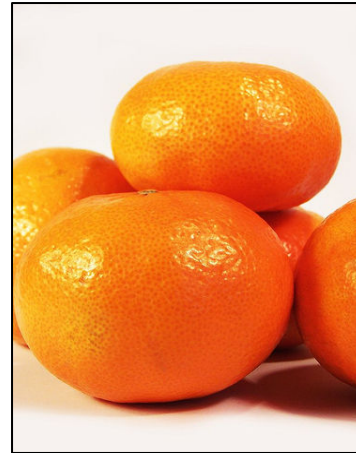
Choosing Today

Eating Next Week

Time

Today, subjects typically choose fruit for **next week**.

74% choose fruit



Impatient choices for today:

Choosing and Eating
Simultaneously

Time

If you were
deciding **today**,
would you choose
fruit or chocolate
for **today**?



Time Inconsistent Preferences:

Choosing and Eating
Simultaneously



70%
choose
chocolate



The desire for instant gratification

Read, Loewenstein & Kalyanaraman (1999)

Choose among 24 movie videos

- Some are “low brow”: *Four Weddings and a Funeral*
- Some are “high brow”: *Schindler’s List*

- Picking for tonight: 66% of subjects choose low brow.
- Picking for night two weeks away: 29% choose low brow.

A Behavioral Approach to Revealed Preference:

Choices partially reveal both *normative preferences* and decision-making biases.

How can we measure normative preferences using behavioral data?

1. Structural estimation
2. Active decisions
3. Asymptotic choice
4. Aggregated revealed preferences
5. Reported preferences
6. Expert opinion/informed preferences

1. Structural Estimation

Econometrically estimate a model that includes ***both*** psychological biases and normative preferences

Laibson, Repetto, and Tobacman (2004)

Use MSM to estimate discounting parameters, including present bias:

- Substantial illiquid retirement wealth: $W/Y = 3.9$.
- Extensive credit card borrowing in US:
 - 68% didn't pay their credit card in full last month
 - Average credit card interest rate is 14%
 - Credit card debt averages 13% of annual income
- Consumption-income comovement:
 - Marginal Propensity to Consume = 0.25
(i.e. consumption tracks income)

LRT Simulation Model

- Stochastic Income
 - Lifecycle variation in labor supply (e.g. retirement)
 - Social Security system
 - Life-cycle variation in household dependents
 - Bequests
 - Illiquid asset
 - Liquid asset
 - Credit card debt
-
- Numerical solution (backwards induction) of 90 period lifecycle problem.

LRT Results:

$$U_t = u_t + \beta [\delta u_{t+1} + \delta^2 u_{t+2} + \delta^3 u_{t+3} + \dots]$$

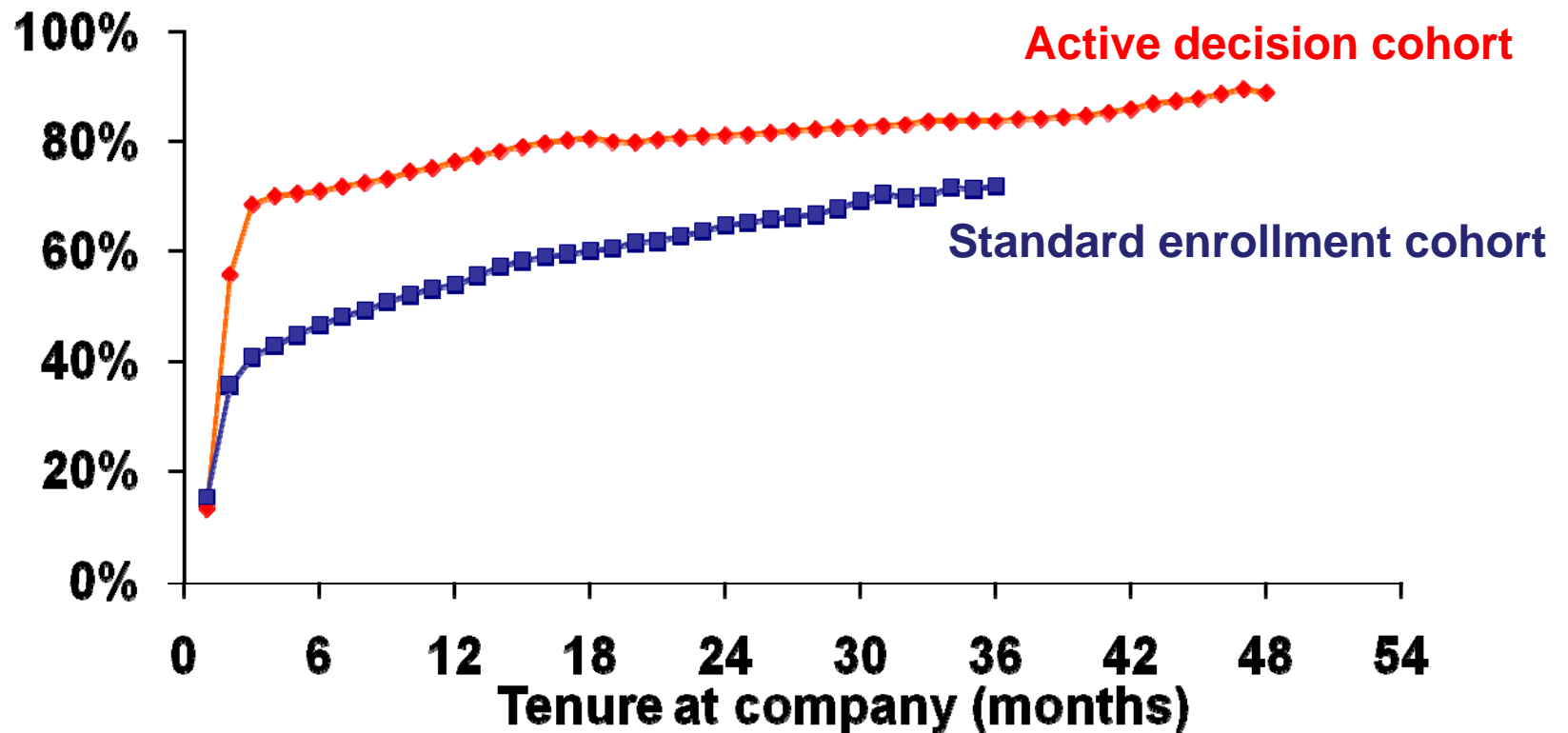
- $\beta = 0.70$ (s.e. 0.11)
- $\delta = 0.96$ (s.e. 0.01)
- Null hypothesis of $\beta = 1$ rejected (t-stat of 3).
- Specification test accepted.
- Moments:

| | Empirical | Simulated (Hyperbolic) |
|---------|-----------|------------------------|
| %Visa: | 68% | 63% |
| Visa/Y: | 13% | 17% |
| MPC: | 23% | 31% |
| f(W/Y): | 2.6 | 2.7 |

2. Active Decisions

- If passivity, inertia, and procrastination are problems, then forcing agents to make active choices will reveal their normative preferences.
- Tools for active decision-making:
 - Deadlines
 - Forced choices (with compliance incentives)
 - Tied choices
- At least for savings behavior, Choi et al (2006) find that active savings choices produce distributions of outcomes that are identical after three months to the distributions that would normally take workers three years to converge to.

401(k) participation rate increases under active decisions

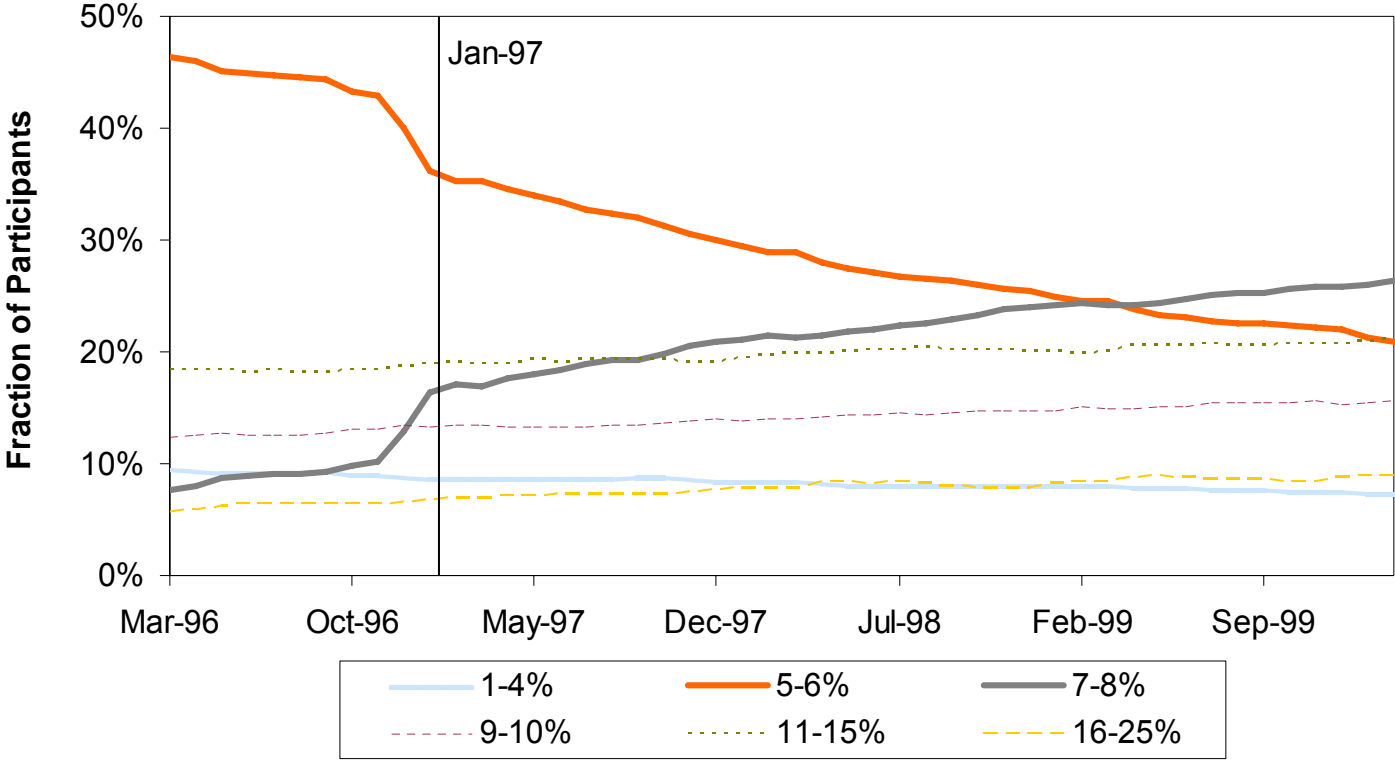


3. Asymptotic Choice

- In standard 401(k) plans, short-run passivity gives way to long-run action.
- At six months of tenure, enrollment rates range from 20%-50%.
- At four years of tenure, enrollment rates range from 50%-80%.

Employees move slowly from an old match threshold to a new match threshold.

401(k) contribution rate response to match threshold change: Company G



4. Aggregated Revealed Preferences

- Median and average savings rates and asset allocations are quite sensible.
- For example, the dollar weighted average allocation to equities is 68% (Investment Company Institute 2006).
- At TIAA-CREF, the dollar weighted average allocation to equities is 58%.
- However, individual portfolios vary widely.
- Benartzi and Thaler (2002) find that most retirement plan participants prefer the median asset allocation to their own asset allocation.

5. Reported Preferences

- Reported preferences have the liability that talk is cheap and often designed to please the interviewer.
- On the other hand, reported preferences can express long-term goals that may be undermined by short-term self-defeating behaviors (like procrastination or inertia).
- Reported preferences also enable us to engage a host of well-being measures, including life satisfaction measures and moment based measures.

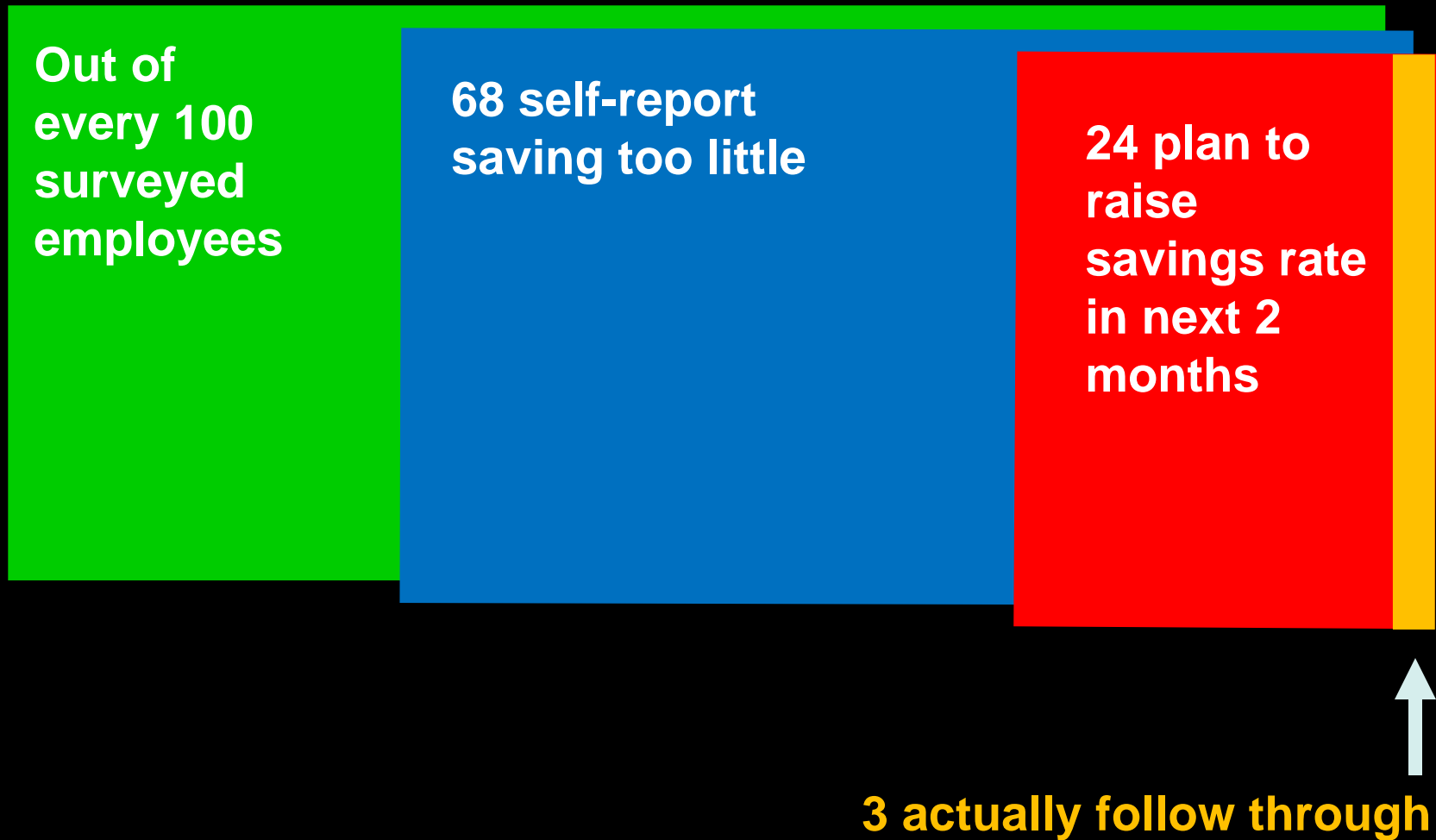
Procrastination and Under-saving

Choi, Laibson, Madrian, Metrick (2002)

Survey

- Mailed to a random sample of employees
- Matched to administrative data on actual savings behavior

Typical breakdown among 100 employees



Self-reports after a financial education seminar

| | Seminar attendees | | Non-attendees |
|-------------------------|--|-------------------------------------|-------------------------------------|
| | Percent planning to make change | Percent actually made change | Percent actually made change |
| “Will enroll in 401(k)” | 100% | 14% | 7% |

Do workers like automatic enrollment?

- 97% of employees in **auto-enrollment** firms approve of auto-enrollment.
- Even among workers who opt out of **automatic enrollment**, approval is 79%.

6. Expert Opinion/Informed Preferences

- Naturally, we may wish to place special emphasis on the views of experts or “educated” consumers.
- Examples include:
 - Expert systems (like ESPlanner, Financial Systems)
 - Expert advisors (CFP, financial economists)
 - Normative models (lifecycle asset allocation models)
 - Focus groups with an educational component

Conclusion:

- Choices reveal both *normative preferences* and decision-making biases. Hence, revealed preferences are not the same as normative preferences.
- Tools for measuring normative preferences
 1. Structural estimation
 2. Active decisions
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 6. Expert opinion/informed preferences