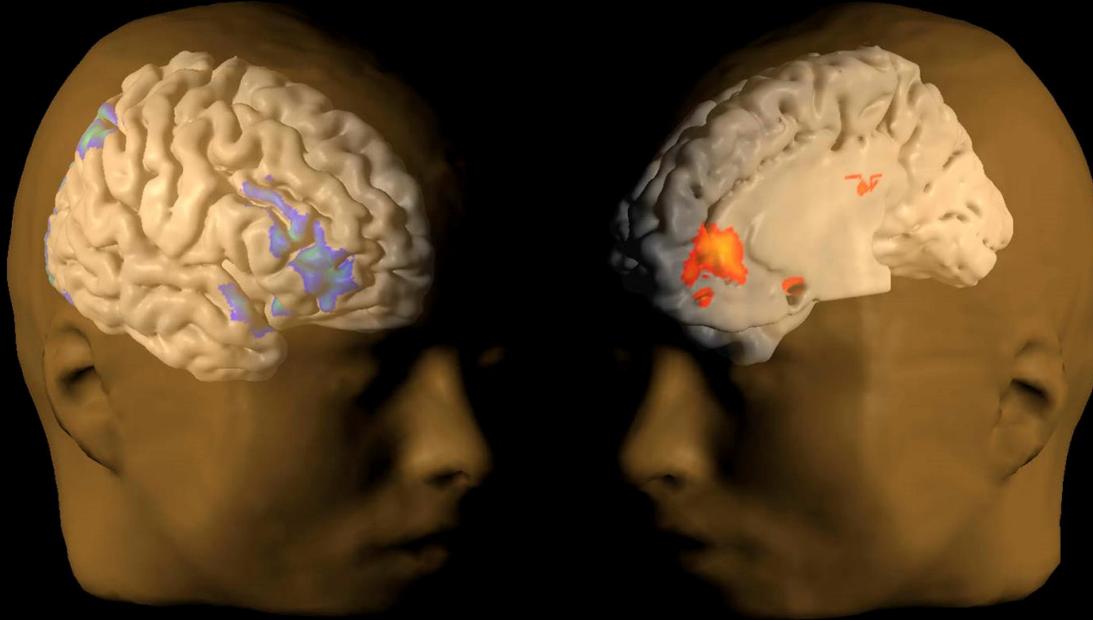# Behavioral Economics and Behavior Change

David Laibson

Chair, Department of Economics
Robert I. Goldman Professor of Economics
Director, Foundations of Human Behavior Initiative
Harvard University

April 26, 2018

ACM Conference in The Hague

Classical economics

Assumes that people are "rational actors."

Hence, society can influence behavior with financial incentives, education, and disclosure.

$100 bills on the sidewalk

- **DC = Defined Contribution Retirement Savings Plan**
- **In a U.S. DC plan contributions are matched by the employer**
- **DC plan is particularly appealing if you are over 59½**
  - Can withdraw your contribution without penalty and keep the match
- **Half of employees 59½+ are not fully exploiting the match**
  - Average loss is 1.6% of salary per year

Choi, Laibson, Madrian (2010)

We then conducted an educational intervention.

- **Randomized controlled trial with employees age 59½+**
- **Half of subjects were in a control group.**
- **Half were in an educational treatment group. Explain:**
  - They can contribute to the DC plan and then withdraw their contributions at any time without paying a penalty, and they can still keep the employer's matching funds
  - Calculated how many matching dollars they were losing ($1200/yr)

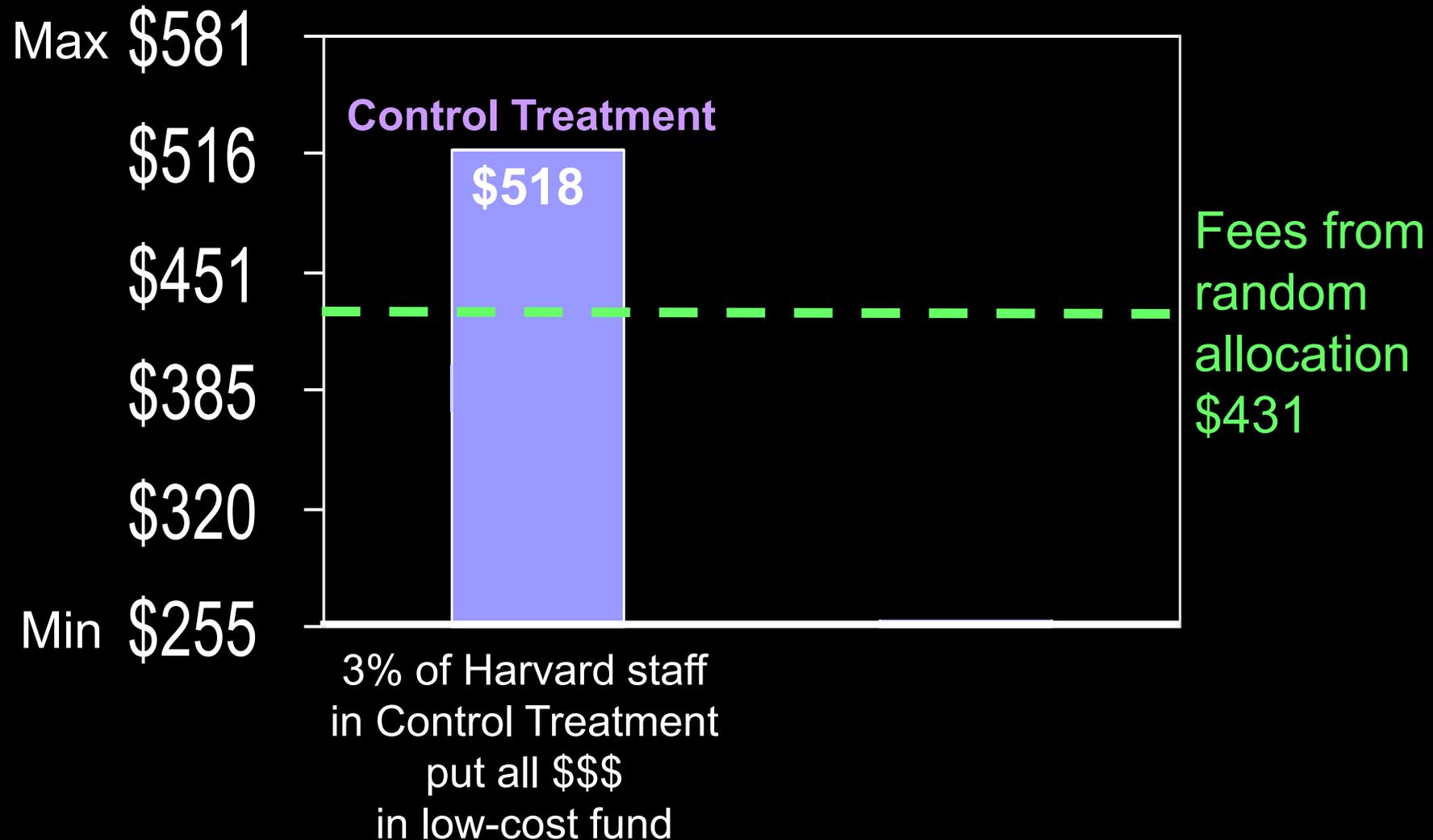- **How much did contributions increase among the newly educated group (relative to the control group)?**

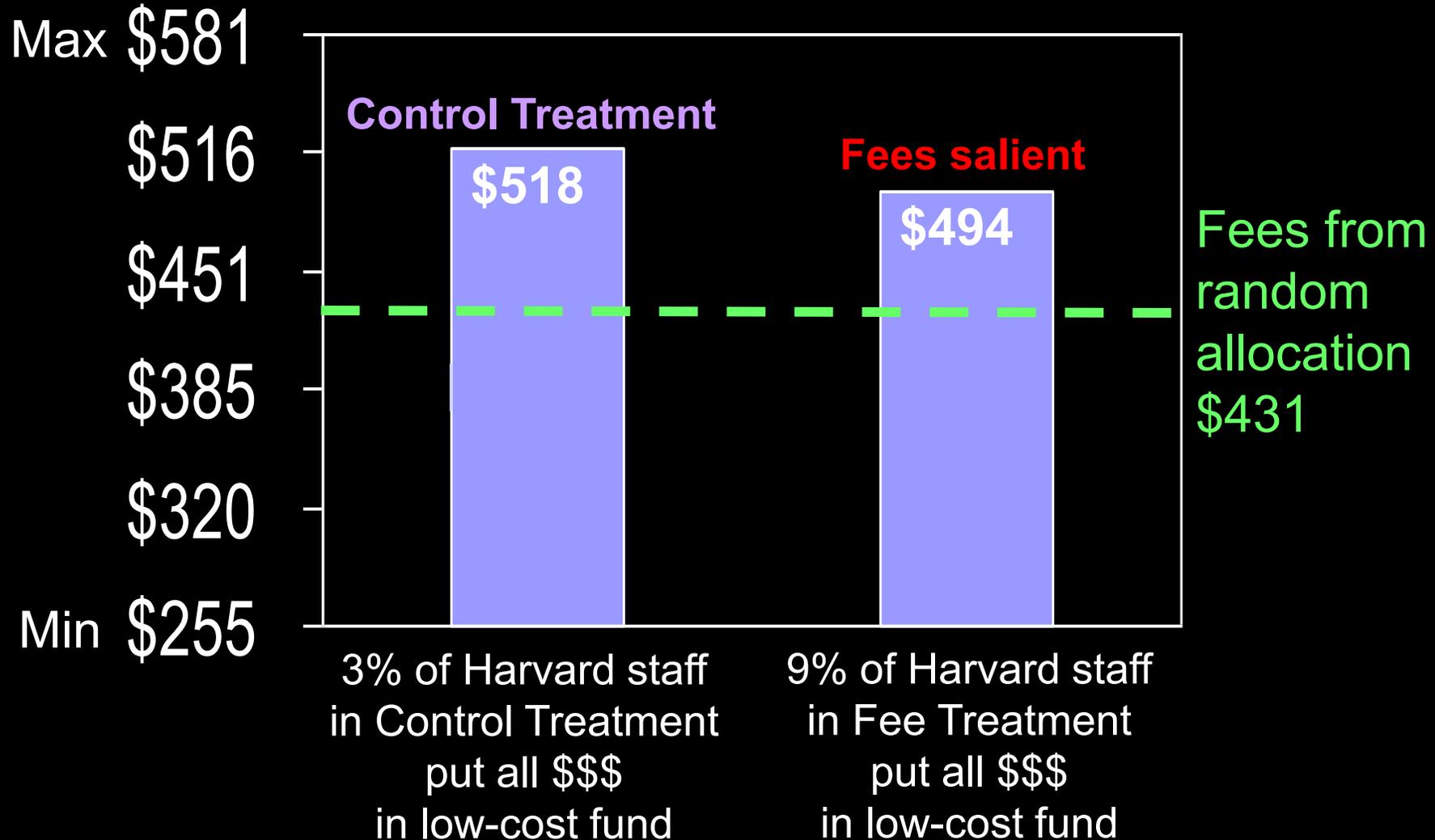 **0.1% of pay**

Fee insensitivity

- **Randomized control trial with 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**

Choi, Laibson, Madrian (2010)

Average fees paid by treatment arm

Max $581

$516

$451

$385

$320

Min $255

Control Treatment

$518

Fees from random allocation $431

3% of Harvard staff in Control Treatment put all $$$ in low-cost fund

6

Average fees paid by treatment arm

Max $581

$516

$451

$385

$320

Min $255

Control Treatment

$518

Fees salient

$494

Fees from random allocation $431

3% of Harvard staff in Control Treatment put all $$$ in low-cost fund

9% of Harvard staff in Fee Treatment put all $$$ in low-cost fund

Behavioral Economics

1. **The rational actor model is too extreme**
2. **Economic and psychological factors jointly influence behavior**
   - Limited rationality
   - Imperfect self-regulation
3. **Firms can sometimes exploit consumers**
   - Behavioral Industrial Organization
4. **Scope for regulation and choice architecture (e.g., nudges) that improve consumer outcomes**

What are the psychological roots of self-defeating behavior?

Choosing fruit vs. chocolate

Choosing Today

Eating Next Week

Time

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

Read and van Leeuwen (1998)

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

Time ——————————————————————————————> *Time*

70%
choose
chocolate

A psychological theory of good intentions:

Present bias or quasi-hyperbolic discounting

Immediate events get psychological weight of 1

Future events get psychological weight of only ½

Phelps and Pollak 1968, Ainslie 1974, Laibson 1997

Procrastination

- **Suppose you can exercise (effort cost 6) to gain delayed benefits (health value 8).**

- **When will you exercise?**

- **Exercise Today:**   **-6 + ½ [8] = -2**
- **Exercise Tomorrow:**   **0 + ½ [-6 + 8] = 1**

- **Happy to make plans today to exercise tomorrow.**
- **But likely to fail to follow through.**

Akerlof (1991), O'Donoghue and Rabin (1999), Carroll et al (2009)

Joining a Gym

- **Average cost of gym membership: $75 per month**
- **Average number of visits: 4**
- **Average cost per vist: $19**
- **Cost of "pay per visit": $10**

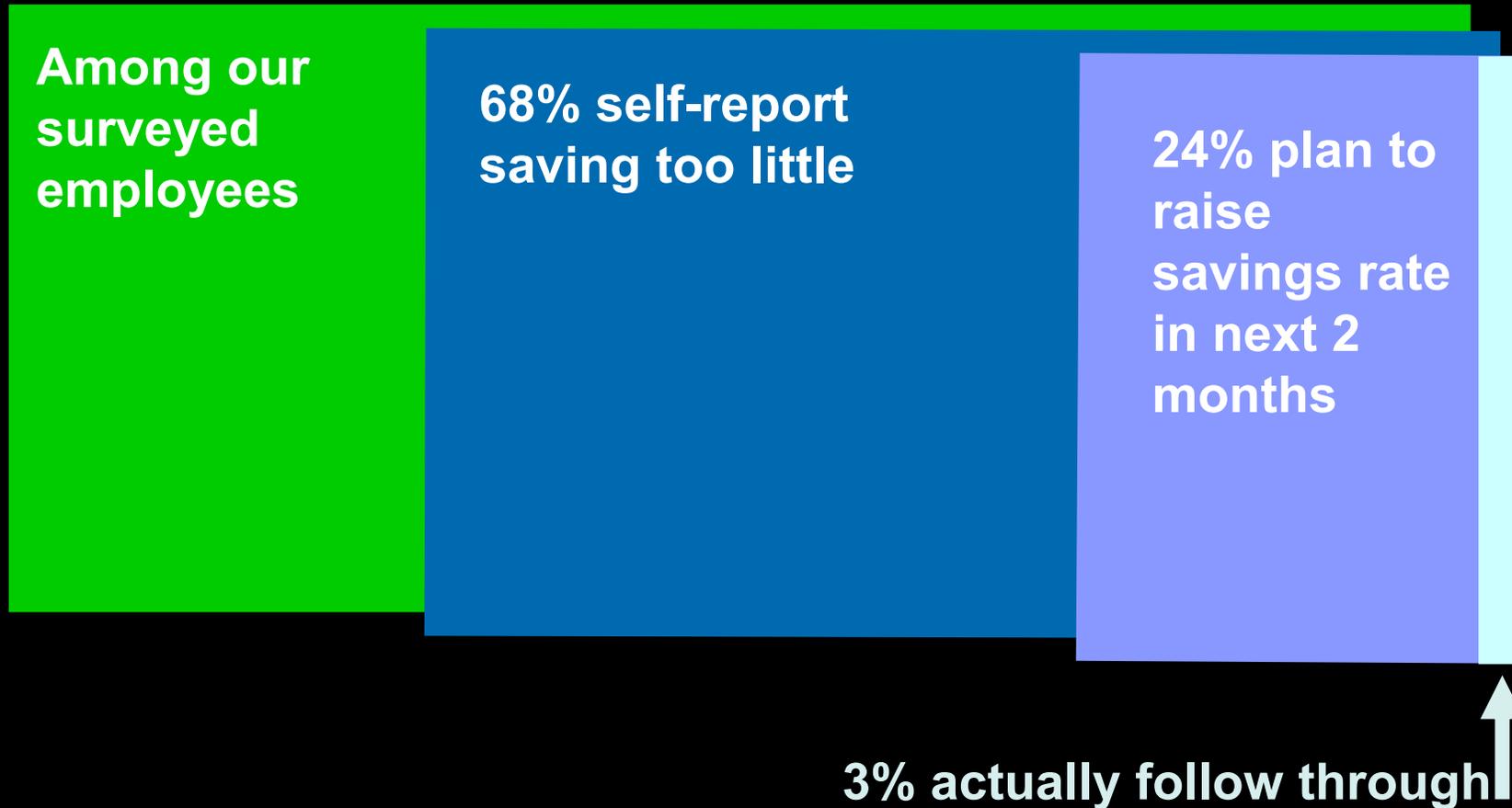Della Vigna and Malmendier (2004)

Procrastination in e-commerce

- **Suppose you can be vigilant in your e-commerce transactions (effort cost 6) to gain delayed benefits (value 8).**

- **When will you be vigilant?**

- **Vigilance Today:**   **$-6 + \frac{1}{2}[8] = -2$**
- **Vigilance Tomorrow:**   **$0 + \frac{1}{2}[-6 + 8] = 1$**

- **Happy to make plans today to be vigilant tomorrow.**
- **But likely to fail to follow through.**

Akerlof (1991), O'Donoghue and Rabin (1999), Carroll et al (2009)

Procrastination in retirement savings

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

Procrastination in retirement savings

Among our surveyed employees

68% self-report saving too little

24% plan to raise savings rate in next 2 months

3% actually follow through

Choi, Laibson, Madrian, Metrick (2002)

Active Choice

PROCRASTINATION

UNDESIRED BEHAVIOR: Must choose for oneself **non-participation**

START HERE

DESIRED BEHAVIOR: participation

Carrol, Choi, Laibson, Madrian, Metrick (2009)

Quick enrollment

UNDESIRED BEHAVIOR: Non-participation

START HERE

DESIRED BEHAVIOR: participation

Beshears, Choi, Laibson, Madrian (2009)

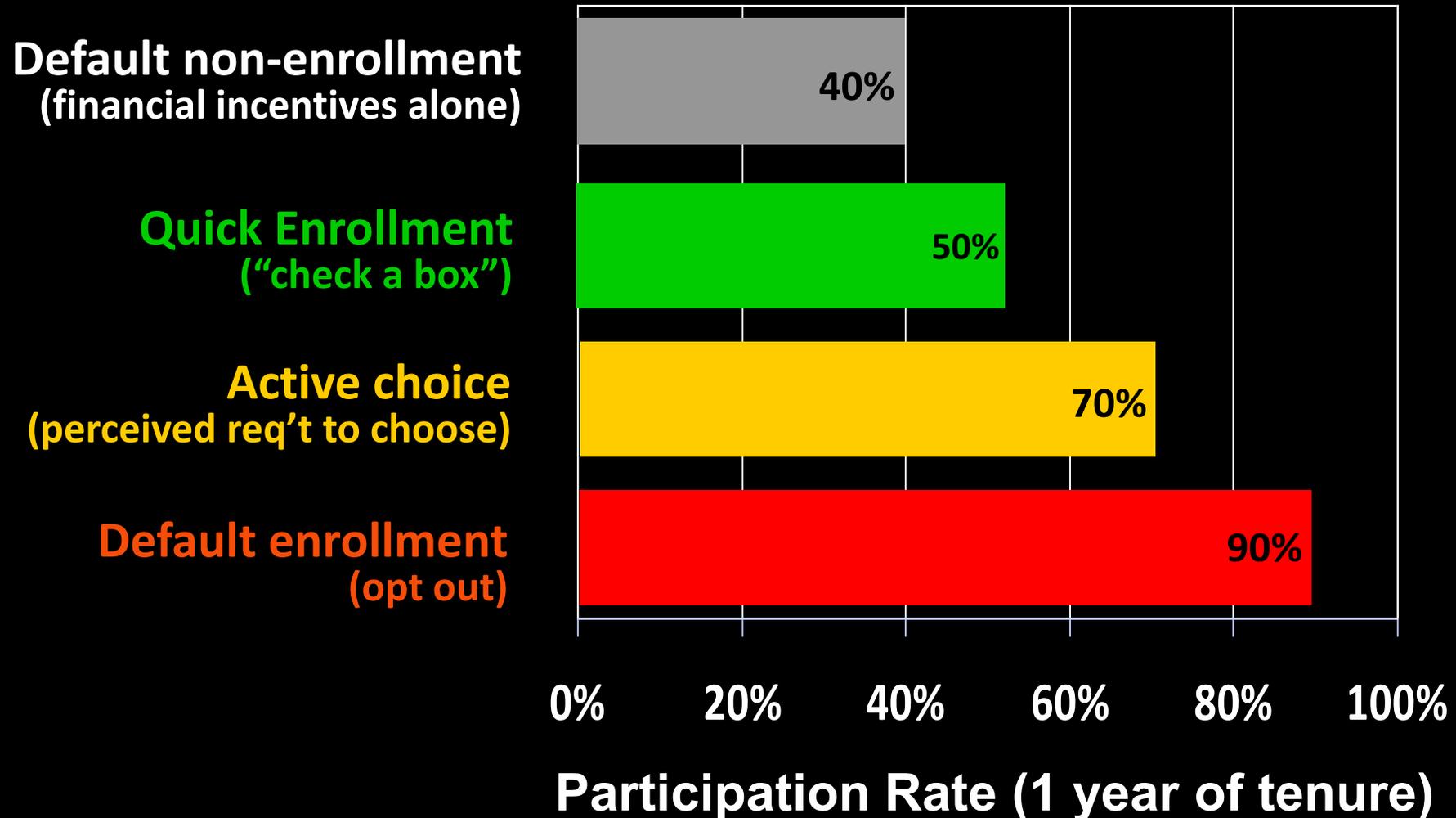# Quick enrollment

UNDESIRED BEHAVIOR: Non-participation

START HERE

DESIRED BEHAVIOR: participation

Beshears, Choi, Laibson, Madrian (2009)

Improving 401(k) participation

Default non-enrollment (financial incentives alone): 40%
Quick Enrollment ("check a box"): 50%
Active choice (perceived req't to choose): 70%
Default enrollment (opt out): 90%

Participation Rate (1 year of tenure)

Similar techniques will likely work in e-commerce

- **Regulator requires sticky socially optimal defaults (restricted data sharing)**
- **Make it easier for consumers to protect their data and understand choices**
- **Create a color-coded 10 step categorization that is used to grade every data sharing arrangement (e.g., use safe harbor rules for coding)**
  - 1 = minimal risk
  - 5 = modest risk
  - 10 = maximal risk
- **All defaults must be set at or below 3(?)**

Shrouding and the Curse of Education

- Firms do not have an incentive to educate or debias consumers if debiased consumers are not profitable.

- "Curse of education": educating the consumer makes her unprofitable.

# Examples of education that will make a consumer less profitable

- "Financial markets are nearly efficient."
- "Bottled water is no better than tap water."
- "The typical bank account holder pays $90 per year in add-on fees."

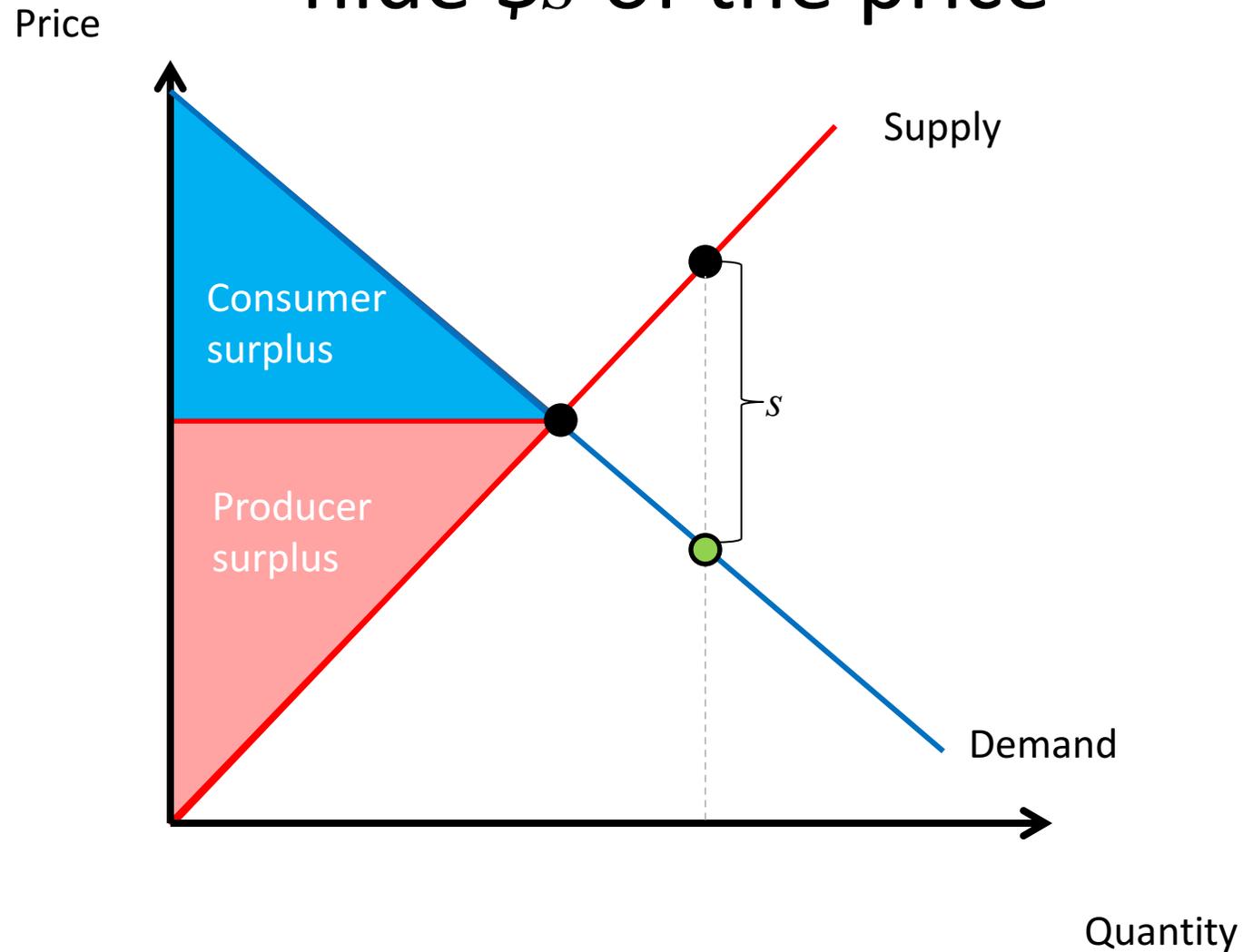- "Sharing your data with us is valuable to our company and increases your risk of being manipulated and/or hacked."

Shrouding and myopia

- **Gabaix and Laibson (2006)**
- **Heidhues, Koszegi and Murooka (2012)**

- **For rational agents in shrouding models, see Ellison (2005), Ellison and Ellison (2009)**
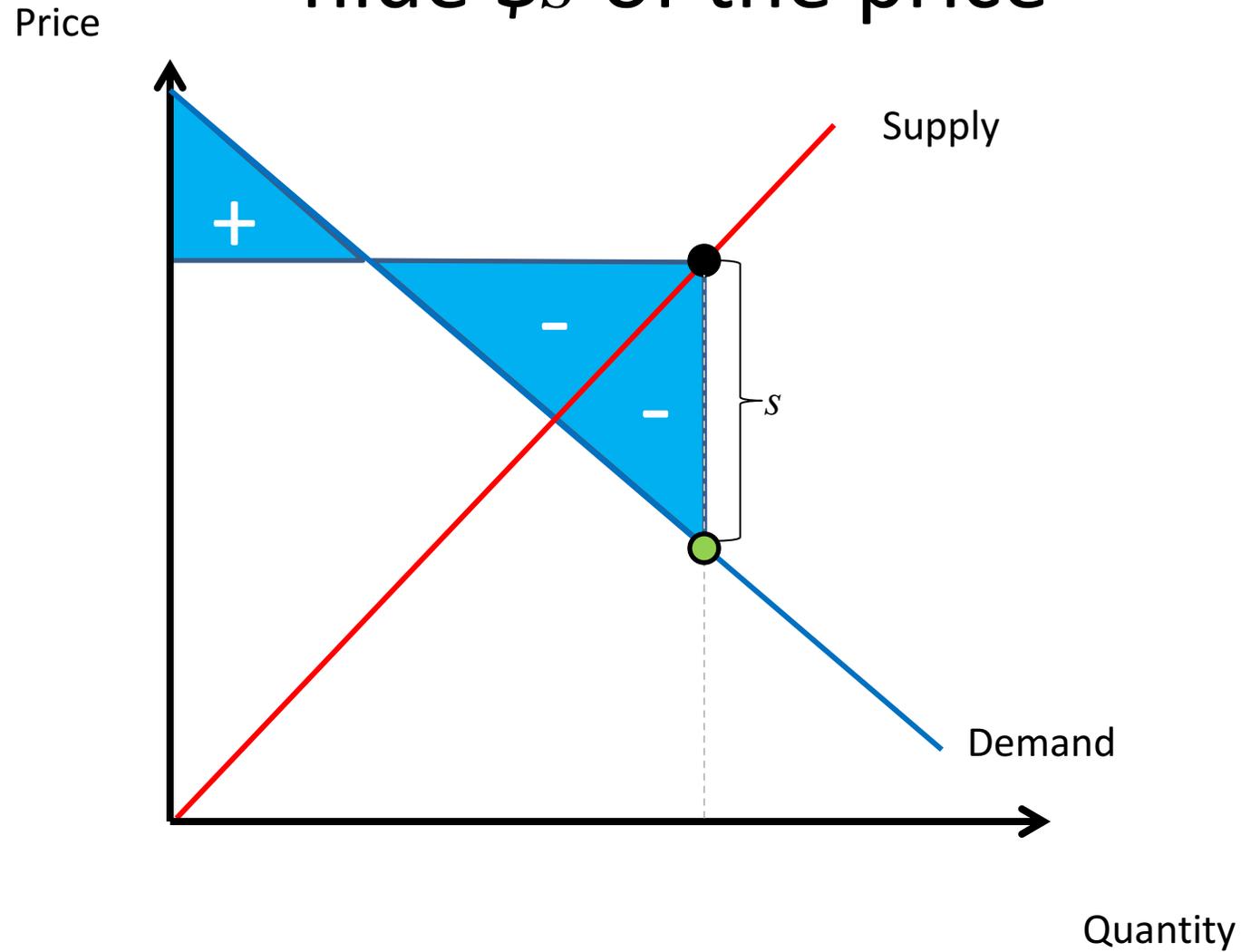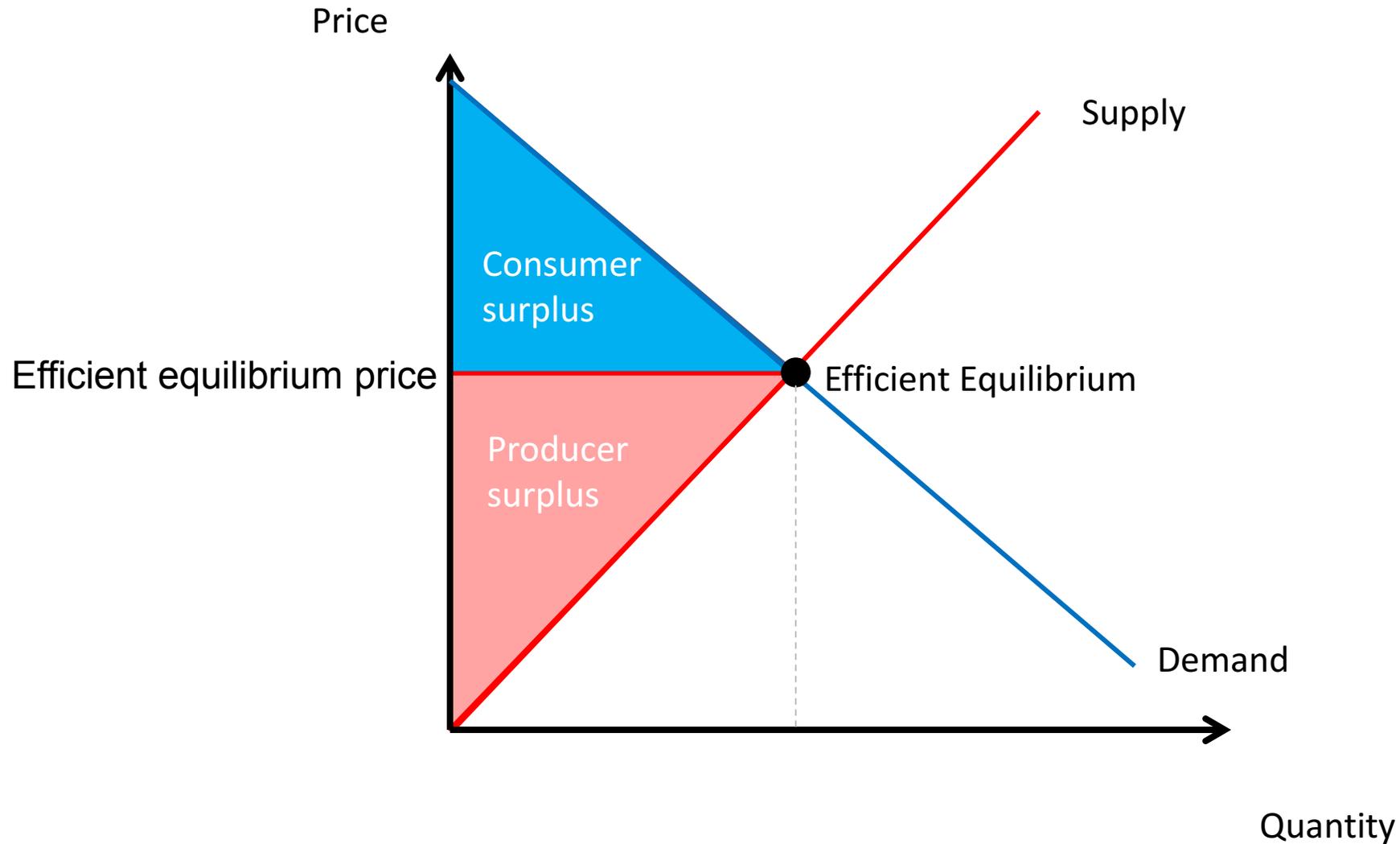
"Classical" equilibrium
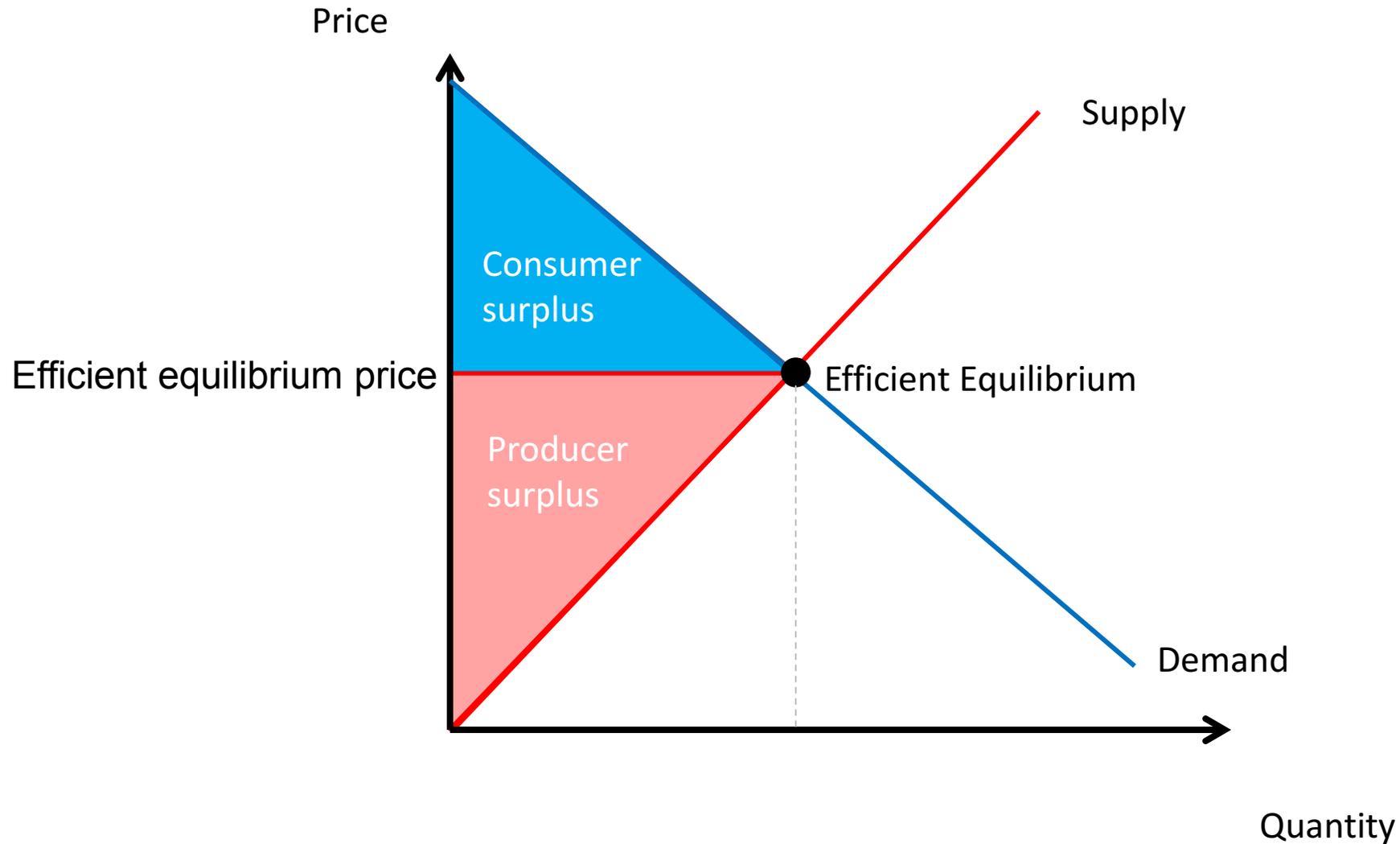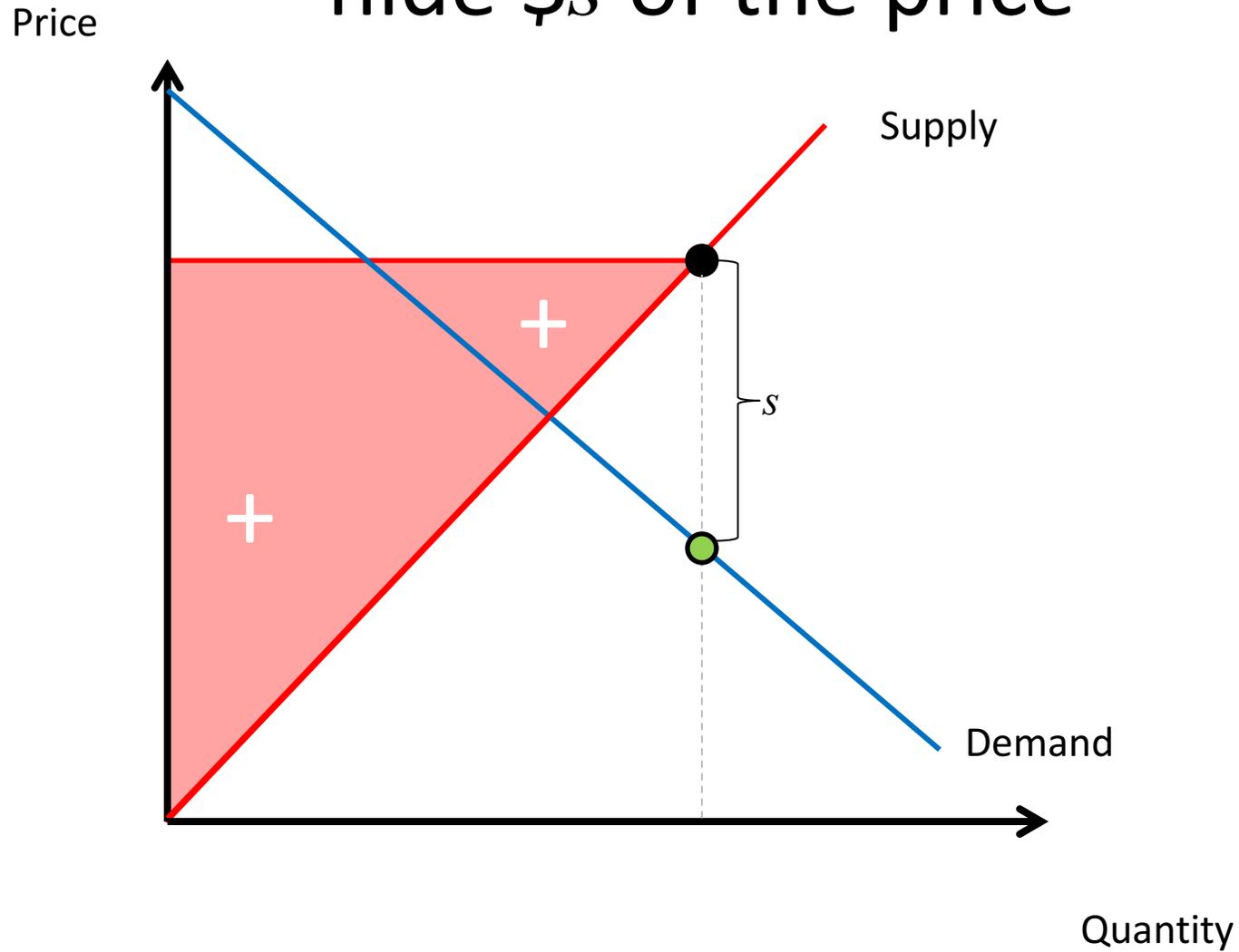
Firms use shrouding to hide $s of the price

Firms use shrouding to hide $\$s$ of the price

"Classical" equilibrium

Price

Supply

Consumer surplus

Efficient equilibrium price

Efficient Equilibrium

Producer surplus

Demand

Quantity
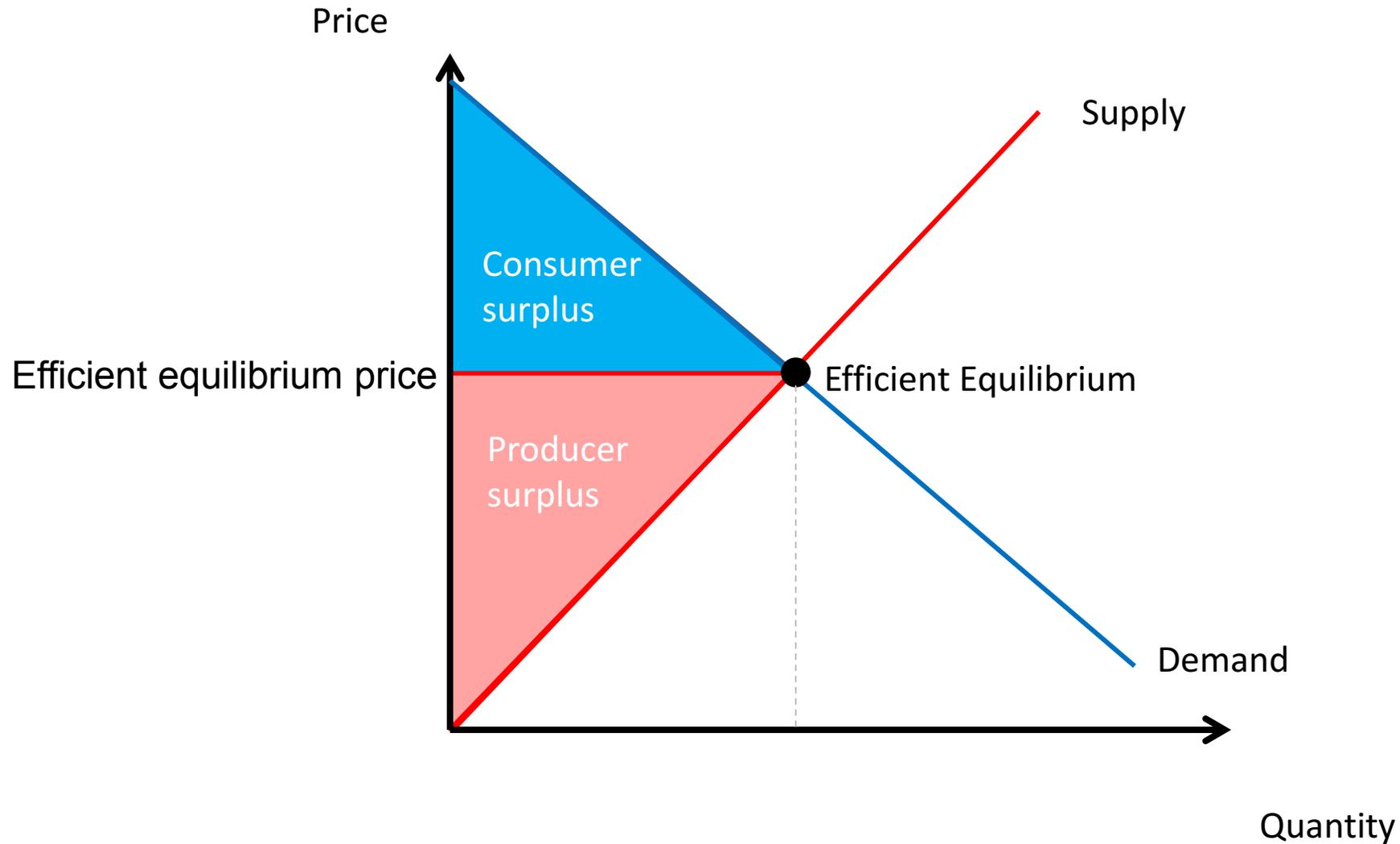
Firms use shrouding to hide $\$s$ of the price

"Classical" equilibrium

Properties of the shrouded equilibrium

- **Social surplus falls**
- **Consumer surplus falls by (much) more**
- **Producer surplus rises**

Worse news

- The consumer welfare losses are likely to be concentrated among the consumers who have low levels of economic literacy ("regressive" welfare consequences)

Competitive pressure may not lead to unshrounding

- **Producer surplus falls with unshrouding.**
- **There may be no competitive force that encourages unshrouding**
  - Curse of education
  - Gabaix and Laibson (2006)

More bad news:
Shrouding often produces cross-subsidies from myopes to sophisticates
(Gabaix and Laibson, 2006)

- **Sophisticates would rather *pool* with myopes at high mark-up firms, where the sophisticates get (loss-leader) cross-subsidies**

- **"Get the free bank services without paying the hidden fees."**

The future of behavioral economics...

▪ **The BE community is engaged in an ongoing process**

▪ **Designing new interventions and testing them with field experiments**

1. **Identify consumer mistakes:**
   – gaps between intentions and actions
   – shrouded attributes
2. **Identify cost-effective, scalable solutions/regulations**
3. **Test with field experiments**
4. **Replicate tests**
5. **Check to see if people like the solution**

BE in public policy

BE has become a driving force in US policymaking.
- Pension Protection Act (2006)
- The CARD Act (2009): use defaults to reduce over-limit fees
- Dodd-Frank Act (2010)
  - Consumer Financial Protection Bureau
- Social and Behavioral Sciences Team (2014)
- Executive Order on Behavioral Science (2015)
- Department of Labor fiduciary rules (2016)

And similar efforts around the globe, especially the UK:
- The Pensions Act (2008): Auto-enrollment and NEST
- Behavioral Insights Team (2010)
- Financial Services Act (2012): Financial Conduct Authority

Summary

- **By combining psychology and economics, behavioral economics explains why people often fail to act in their own best interest**

- **Self-defeating behavior can be changed using choice-preserving "nudges" (Thaler and Sunstein 2008)**
  - "Choice architecture"
  - Many of these interventions are inexpensive and scalable
  - Standard disclosure is **NOT** one of these successful nudges

- **Behavioral economics provides a framework for policy design and regulation.**