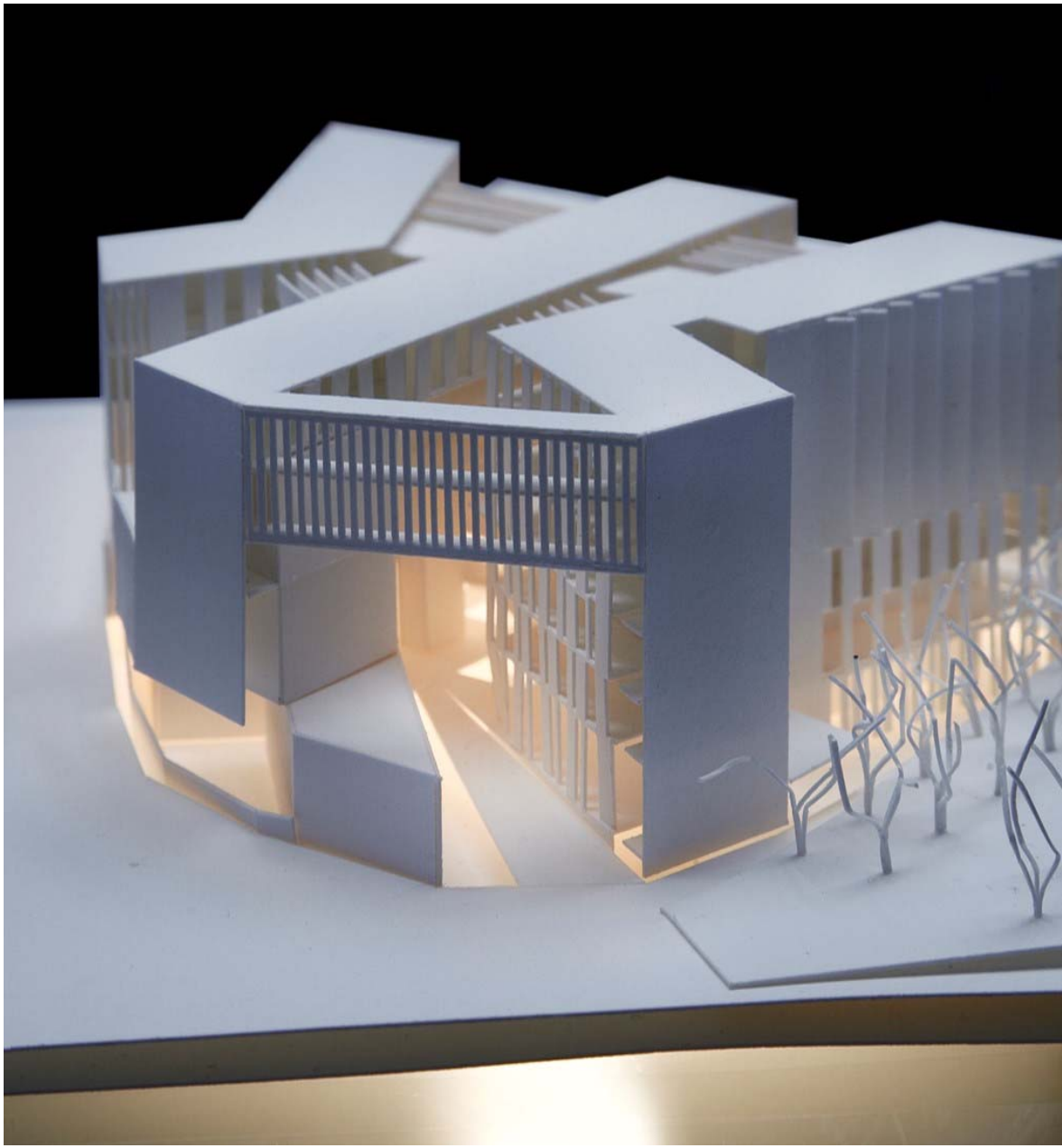
Behavioral insurance economics: An introduction

Nicolas Treich, TSE, INRAE

SCOR-TSE workshop, 15 April 2021

Toulouse School of Economics



Behavioral economics

- Best of two worlds:
  - Normative power and rigor of economic approach
  - More precise and realistic description of individual behavior from psychology and other behavioral sciences

- Main topics:
  - Bounded rationality
  - Bounded self-interest
  - Bounded self-control

Some key contributors

- Daniel Kahneman

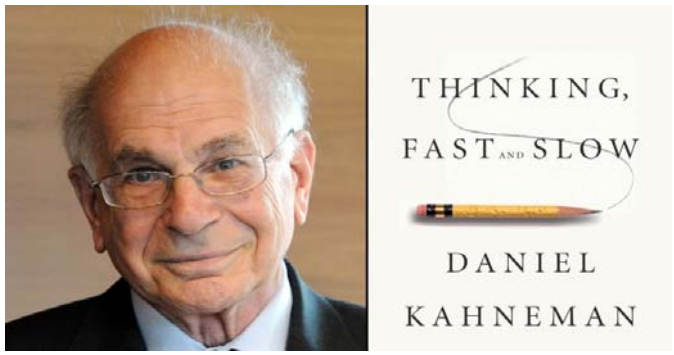
  Psychology, Nobel econ 2002, studies on systems 1 & 2 and prospect theory (with A. Tversky)

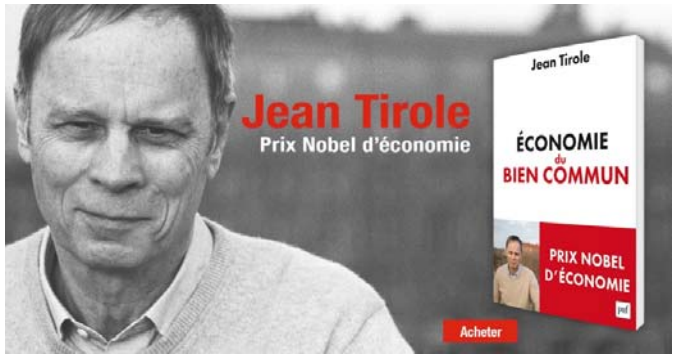
- Jean Tirole

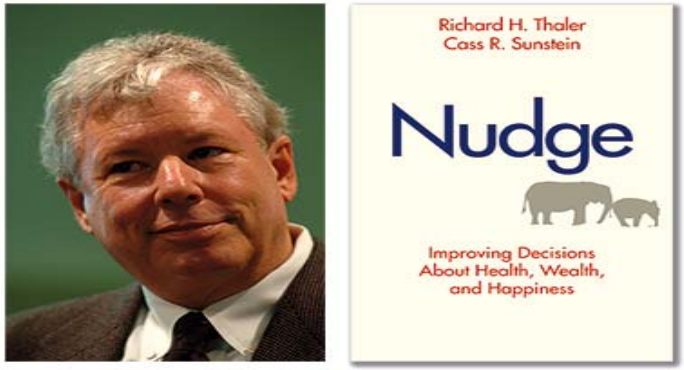
  IO, Nobel econ 2014, studies on motivated beliefs and intrinsic motivation (with R. Benabou)

- Richard Thaler

  Behavioral econ., Nobel econ 2017, studies on mental accounting and nudge (with C. Sunstein)



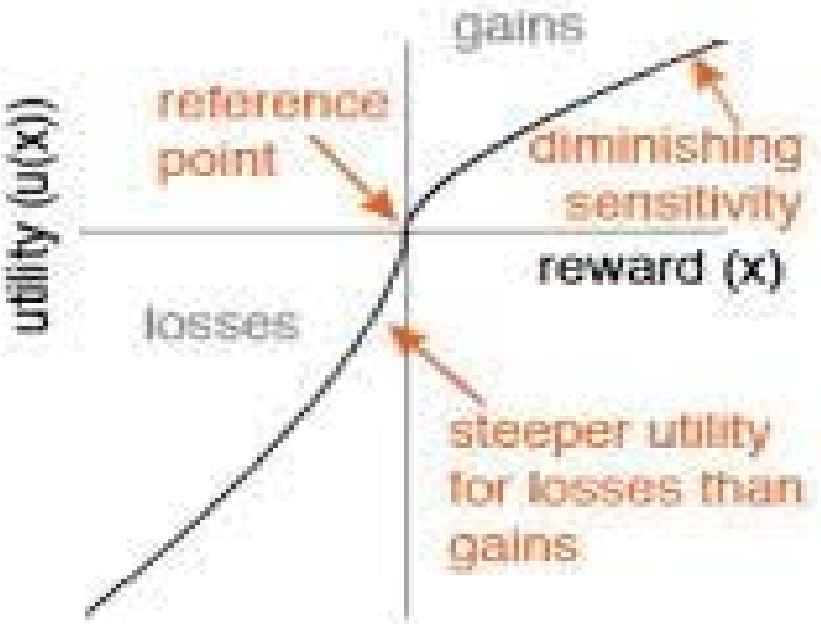


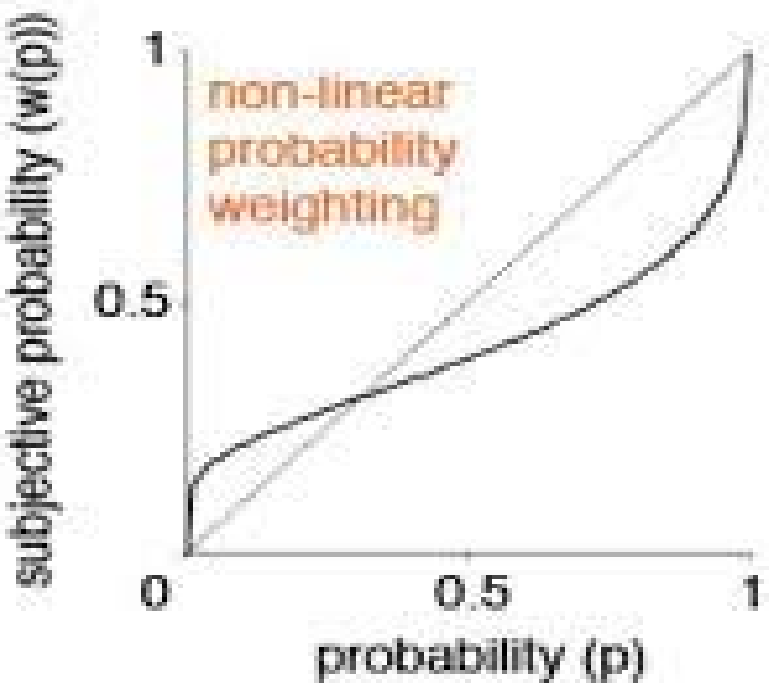


Some key concepts in behavioral economics

- Prospect theory
- Regret/disappointment
- Anchoring
- Mental accounting
- Hyperbolic discounting
- Overconfidence
- Fairness and inequity aversion
- Default effect
- Imperfect memory
- Rational inattention
- Confirmation bias
- Strategic ignorance
- Motivated beliefs

Prospect theory





Risk misperceptions

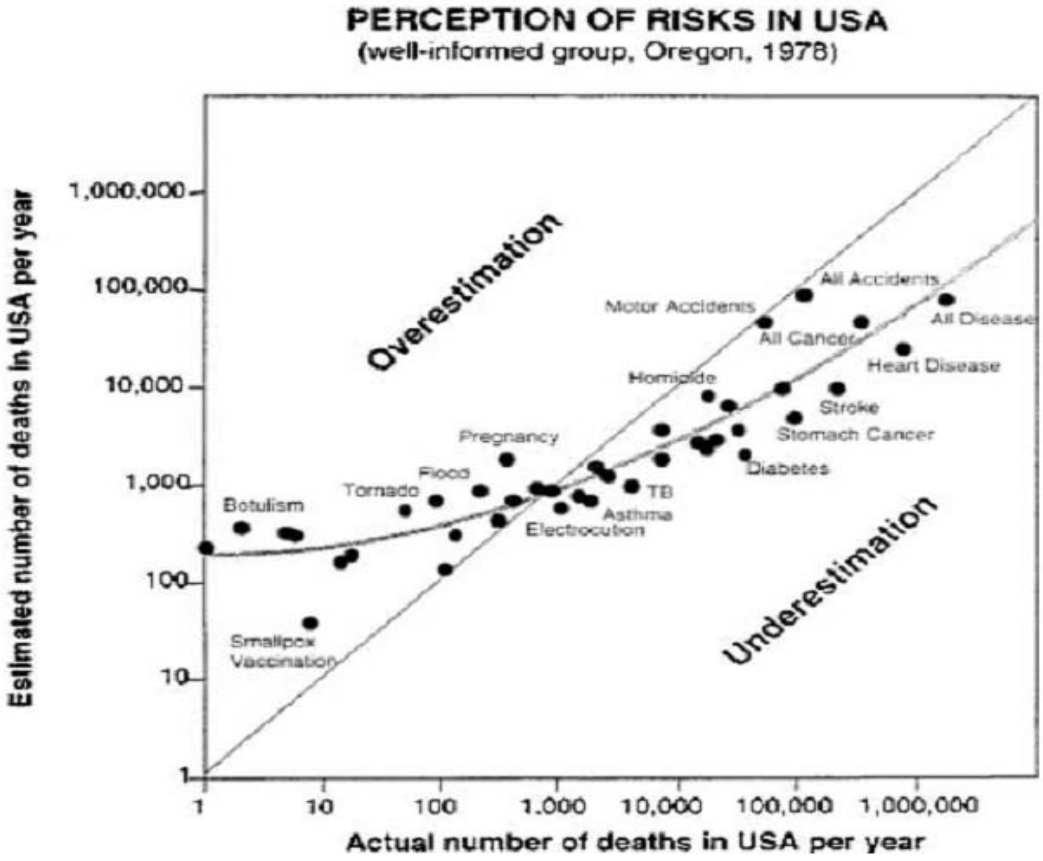


Figure 2. Relationship between judged frequency and the actual number of deaths per year for 41 causes of death (adapted from Slovic, 2000)

Insurance: A rich ground for behavioral econ?

- Risk/uncertainty
- Complexity
- Long term decisions
- Passive decisions
- Death-related decisions
- Risk sharing (social dimensions)
- Third-party marketing

Behavioral finance vs. behavioral insurance

- GoogleScholar
  - « Behavioral finance »: >57,000
  - « Behavioral insurance »: 362

- Should we expected similar behavioral issues as in behavioral finance?

Overinsurance of modest risks

Sydnor (2010 AEJ: Applied Economics)

- Customers chose their level of home insurance coverage from a menu of four available deductibles: $1,000, $500, $250 and $100
- Puzzle:
  - Most common choice is $500 deductible, corresponding on average to a payment of $100 to reduce the deductible from $1,000 to $500
  - Claim rates were under 5 percent, implying that the additional coverage was worth less than $25 in expectation

  => implausible level of risk aversion
- Discussed explanations: Risk misperception, menu effects, role of sales agents and prospect theory

Excessive demand for extended warranties

Abito and Salant (2018 REStud)

- Puzzle:
  - Data: 45,000 transactions made by almost 20,000 households between 1998 and 2004. Almost 30% buy extended warranties
  - On average, a buyer pays $90 or more to insure against a loss of at most $400 with 7% probability
- Explanation: people overestimate failure probability
  - A 5% objective failure probability is perceived as a 13% failure probability
  - Providing information to consumers about failure probabilities significantly reduces their willingness to pay for warranties
  - When shutting down probability distortions, volume and profit decrease by more than 90%

Underinsurance of high consequence risks

Browne et al. (2015 JRU)

- An insurer provides coverage on both a LPHC (low proba high consequence) risk, the flood peril, and a HPLC risk, bicycle theft
- Evidence of more insurance for the HPLC risk than for the LPHC risk (33% of policyholders are covered against 13%)
- Possible explanation: risk misperception, skewness preference, moral hazard, object affection
- Buying through an agent is positively related to LPHC insurance purchase
- Wealth is positively associated with both insurance products

Over-reaction to nonperformance risk

Wakker et al. (1997 JRU)

- Survey participants would be willing to pay $700 for fire insurance, but only $500 for a fire insurance where the claim is not paid with a 1% chance (nonperformance risk)
  - This shows a >20% reduction while EU would predict about 1% reduction
  - Suggest that prospect theory with probability weighting can explain the result

- See also Zimmer et al. (2009 JEP), and Jaspersen et al. (2020 WP) who argue that the probability weighting explanation is incomplete

(In)consistency of insurance/finance decisions

- Barseghyan et al. (2011 AER*)* reject the hypothesis that households' deductible choices in auto and home insurance reflect stable risk preferences
  - Many households exhibit greater risk aversion in their home deductible choices than their auto deductible choices

- Einav et al. (2012 AER) use health insurance coverage decisions and one 401(k) investment decision and exhibit systematic consistency patterns among insurance decisions, but not with financial decisions
  - Higher correlation in choices that are "closer" in context
  - When calibrating models, suggest to use preferences estimates from a similar context

Social comparisons and risks correlation

- Friedl et al. (2014 JRU) compare in an experiment subjects' willingness to insure in treatments with both correlated and uncorrelated risks
  - They find a significant treatment effect, such that participants have a lower overall willingness to insure when the risks are correlated
  - May explain low take up of disaster insurance
  - Possible hypothesis: inequity aversion

- This result that social comparisons matter in risky situations is supported in several other experiments (e.g., Rohde and Rohde 2011 JRU; Linde and Sonnemans 2012 JRU).

A research agenda?

- Better understand insurance demand (and related risk-taking decisions)
  - Identify « puzzles » in insurance decisions
  - Explore rational/behavioral explanations
  - Interdisciplinary research and discussion with insurance practitioneers are needed
- Better understand implications for the supply side
  - Impact on insurance contracting, pricing and competition
  - How can insurance companies nudge/sludge consumers?
- Better understand welfare implications and regulation
  - Welfare definition is not clear under behavioral limitations
  - Consumer protection policy