How can an insurer use nudge to increase the participation in a prevention program ?

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Motivation ?

Ehrlich Becker (1972) :

Homo-economicus

- Market Insurance
- **Self-Insurance** secondary / tertiary Prevention
- Prevention
- **Self-Protection** primary prevention

Assumption : The insurer **does not know** the prevention effort

Result :
- **Substitution** between self-insurance and insurance
- A **decrease** in loss probability **decreases** self-insurance

Assumption : The insurer **does know** the prevention effort. The **safety loading** is small

Result :
- **Complementarity** between self-protection and insurance
- Indeterminate form when the safety loading is large

Thaler Sunstein (2009) : Nudge

How to increase involvment to a plan ?
→ **Incentives**

Which incentives for an insurance company ?
- Gift
- Money (**premium**)

Problem : what is free is then worthless

Nudge → Presenting the **same thing** in a **different design** may produce different results . How to **present the incentive** ?

Different **behavioural bias** to deal with :

Loss aversion | Law of small numbers | Dynamic inconsistency

Reference

Thaler, R. H., & Sunstein, C. R. (1999). *Nudge: Improving decisions about health, wealth, and happiness*. New Haven, CT Yales University Press.

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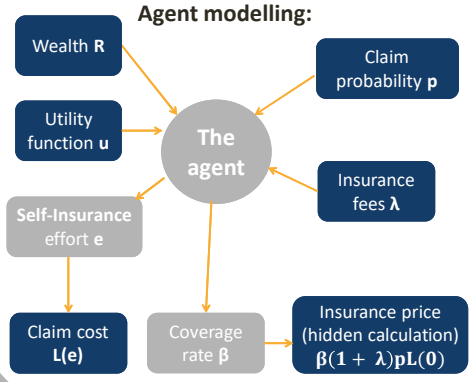
Model

Agent modelling:



Model 1 : benchmark

The agent can subscribe by himself to a sports club.
- Agent monetary cost : **c**
- Psychologic cost : **C(e)**
- **e** models the physical effort
- In every models, the agent **doesn't know** how is calculated the insurance premium

The agent maximizes E(u):

$$p\,[u(R - C(e) - \boldsymbol{c} - \beta(1+\lambda)pL - (1-\beta)L(e))] + (1-p)[u(R - C(e) - \boldsymbol{c} - \beta(1+\lambda)pL)]$$

We can compute e^* and β^* theoretically

Model 2 : insurance pays all

The agent can ask his insurance to subscribe to a sports club.
- Agent monetary cost : **0**
- Psychologic cost : **C(e)**
- Insurance cover all the financial cost
- **c is not included** into the premium

The agent maximizes E(u):

$$p[\,u(R - C(e) - \beta(1+\lambda)pL - (1-\beta)L(e))] + (1-p)[u(R - C(e) - \beta(1+\lambda)pL)]$$

- If the agent is rational, he does the **same choice** as in the model 1
- We expect e to change in practice

Model 3 : prevention is a benefit

The agent can ask his insurance to subscribe to a sports club.
- Agent monetary cost : $(1 - \boldsymbol{\beta})c$
- Psychologic cost : **C(e)**
- Insurance refunds $\boldsymbol{\beta}$ **c**
- This cost **is included** into the premium

The agent maximizes E(u):

$$p[\,u(R - C(e) - (\beta(1+\lambda)pL + \boldsymbol{\beta c}) - (1-\beta)(L(e) + \boldsymbol{c}))] + (1-p)[u(R - C(e) - (\boldsymbol{1-\beta})\boldsymbol{c} - (\beta(1+\lambda)pL + \boldsymbol{\beta c}))\,]$$

- If the agent is rational, he does the **same choice** as in the model 1
- We expect e to change in practice

Experimentation

Process

Controls :

Holt and Laurie test
- For the gain
- For the loss

Probability perception

Change between periods:

p, L(0), β

First step :
- We inform the subject of the risk he is facing
- He is told that he has paid an amount **c** to play a game
- He knows the rules of the game, and the effect on the risk he is facing
- We ask him **to choose an insurance contract** between 5 contracts

Second step :

He has chosen a contract

We let him play the game

Thus, given a β, we can watch the associated self insurance effort.

3 treatments, 120 participants

Experiment : 8 periods + 2 training periods, around 45 min

The game: slide task

Expected results

- Which model will imply the biggest prevention effort ?
- Will the measured effort be consistent with the theoretical prediction ?
- Are self-insurance and insurance substitutable ?
- Are the effects of loss probability and loss amount the same as the effect predicted by Ehrlich and Becker ?
- What is the impact of the probability perception ?

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