Voluntary Social Insurance
VSI

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Introduction

A **Voluntary** and Redistributive Health Insurance seems infeasible but

- Since 1981 one can opt out of social health insurance in Chile.

  Employees are required to spend at least 7% of their income on health insurance.

  In 1996, **60%** of Chilean were benefiting from Social Health Insurance.

- Some US state health insurance programs.

  Maryland Health Insurance Plan, **Minnesota** Care, **New Jersey** Health Insurance Plans, Family Health Plus and Healthy NY in **NY**, Adult Basic in **Pennsylvania**, and **Vermont** Health Access Plan.

- **Literature:** Top-up of compulsory social insurance.
  This paper: Top-up of voluntary social insurance.

- **Literature:** Implications for the social policy due to possibility of topping-up.
  This paper: Additionally, implications to the private market.

  Anderberg (1999), Besley and Coate (2003), Casamatta et al.(2000), Epple and Romano (1996), Fernandez and Rogerson (1999), Gouveia (1997), De Donder and Hindriks (2003).

Results:

1. VSI **always subsists**.

2. If there is VSI, **private market coverage can increase**.

3. Welfare implications.
   - If Status Quo has social insurance: $\uparrow$ private coverage, $\downarrow$ redistribution.
   - Otherwise, **Pareto Improvement**: $\uparrow$ private coverage, $\uparrow$ redistribution.

4. **There is no political opposition** to voluntary social coverage.

Voluntary Social Insurance

Possibility of not participating in the social insurance both by not benefiting from it and by not contributing to its financing.

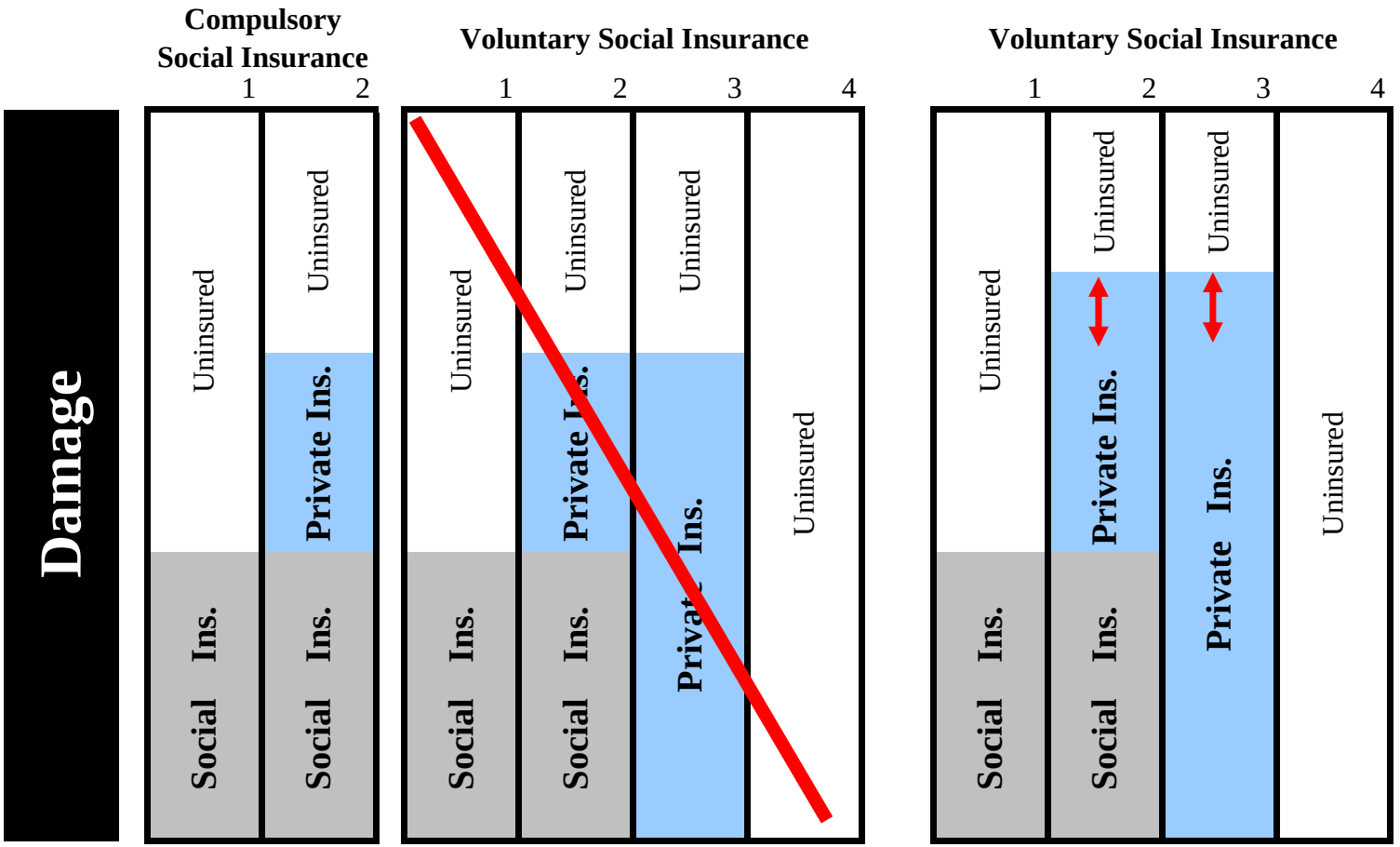
- Private coverage supplements social coverage.
- Social insurance pool risks and redistributes wrt income.
- Private market Rothschild and Stiglitz (1976):
  Full coverage high risk + Incomplete coverage low risk.

  Private information on risk + Competitive market $\Rightarrow$
  $\Rightarrow$ Adverse selection, Ins. contracts separate risks.

  Private market does not redistribute wrt risk or income.

Possibilities of Insurance

Possibilities of Insurance



The Setup

- Individuals are characterized by **probability of accident** θ and **income** w.
- Two levels of income $w_L < w_H$, two levels of risk $\theta_L < \theta_H$.
  $\lambda_{ij} > 0$: share of the population of risk θ_i and income w_j, with $i, j = L, H$.
- Individuals' Private Information: θ_i. Common Knowledge: λ_{ij}, (w_j).
- Individuals incur a damage $d = 1$. Insurance Contract: $\{\pi, \delta\}$.
- **Yaari (1987)'s Dual Theory (DT)**:

$$\begin{aligned} V(w, \theta; \pi, \delta) &= \phi(\theta_i)(w_j - \pi - (1 - \delta)) + (1 - \phi(\theta_j))(w_j - \pi) \\ &= w_j - \pi - \theta_i(1 + \alpha)(1 - \delta) \end{aligned}$$

- With DT, still, Full coverage high risk + Incomplete coverage low risk.
- With DT, corner preferences wrt wealth.

  Risk aversion $\Rightarrow \phi(\theta_i) > \theta_i$, De Donder and Hindriks (2003): $\phi(\theta_i) = (1+\alpha)\theta_i$ with $0 \leq \alpha \leq \frac{1-\theta_H}{\theta_H}$

Voluntary Social Insurance

1. Individuals vote on the level of social coverage $\delta^u \in [0, 1]$.

2. Private companies compete in offering insurance contracts.

$$\Big\{ \underbrace{\pi(I^u_{ij}, I^{u^*}_{-(ij)}; \theta_i)}_{\text{Premium}}, \quad \underbrace{(\delta(I^u_{ij}, I^{u^*}_{-(ij)}; \theta_i) - \delta^u \times I^u_{ij})}_{\text{Private Coverage}} \Big\}.$$

3. Individuals choose whether to participate in social insurance (I^u_{ij}), and which contract to purchase in the private market.

4. Purchasing of contracts and government implements $\{\pi^u, \delta^u\}$.

I^u_{ij} - indicator of the participation in the public system.
The outcome of each stage is revealed before the next stage begins.
Subgame-perfect Nash Equilibrium.

Compulsory Social Insurance ($I_{ij}^u = 1$)

1. Individuals vote on the level of social coverage $\delta^u \in [0, 1]$.

2. Private companies compete in offering insurance contracts.

$$\Big\{ \underbrace{\pi(1,1;\theta_i)}_{\text{Premium}}, \quad \underbrace{(\delta(1,1;\theta_i) - \delta^u \times 1}_{\text{Private Coverage}} \Big\}.$$

3. Individuals choose which contract to pick up in the private market.

4. Purchasing of contracts and government implements $\{\pi^u, \delta^u\}$.

I_{ij}^u - indicator function of the participation in the public system.
The outcome of each stage is revealed before the next stage begins.
Subgame-perfect Nash Equilibrium.

Stage 4: Purchasing of contracts and implementation of $\{\pi^u, \delta^u\}$

Budget Balance: $\pi^u = \frac{w_j}{w'_\mu}\delta^u\theta'_\mu$.

Stage 3: Choice whether to participate in VSI + private contract.

$$\max_{\{\pi,\delta\},I^u_{ij}} V\Big(\underbrace{\pi^u, \delta^u}_{\text{Social Ins.}} , \underbrace{\pi(I^u_{ij};\theta_i), (\delta(I^u_{ij}, I^u_{-(ij)};\theta_i) - \delta^u \times I^u_{ij})}_{\text{Private Ins. Contract}}, I^u_{ij};\theta_i, w_j\Big)$$

$s.t.$**(RC)** $\quad V\Big(\pi^u, \delta^u, \pi(I^u_{ij};\theta_i), (\delta(I^u_{ij}, I^u_{-(ij)};\theta_i) - \delta^u \times I^u_{ij}), I^u_{ij};\theta_i, w_j\Big) \geq V\Big(\pi^u, \delta^u, 0, 0, I^u_{ij};\theta_i, w_j\Big)$.

- **RC:** $\Rightarrow$ Reservation premium $>$ Actuarially fair premium (due to risk aversion).
- **Nash equilibrium in the staying in-opting out subgame (I_{ij}):**
  What do they want from social insurance?
  θ_L want coverage. θ_H want redistribution.
  w_L want redistribution. w_H want nothing.

Stage 2: The private market designs menus of insurance contracts

$\pi(I^u_{ij}, I^u_{-(ij)}; \theta_i) = (1+\alpha)\theta_i(\delta(I^u_{ij}, I^u_{-(ij)}; \theta_i) - \delta^u \times I^u_{ij}) \qquad \delta^*(I^u_{ij}, I^u_{-(ij)}; \theta_i) - \delta^u \times I^u_{ij}$

Proposition 1: In a VSI system, private coverage increases for:

- (θ_L, w_H), when this type is the only opting out,

and private contracts do not change when
(i) all participate in social insurance, (ii) the rich opt out,
(iii) (θ_H, w_H) opts out, (iv) (θ_H, w_L) participates in social insurance.

Corollary: If voluntary, there are always individuals participating in social insurance.

Stage 1: Political Equilibrium (δ^u) (corner preferences)

Proposition 2: Nobody is against a VSI coverage. In particular, *when only low risks opt out full social insurance ($\delta^u = 1$) is unanimously politically supported*.

Welfare Analysis

- If Status Quo with Compulsory Social Insurance
  Voluntary Social Insurance $\longrightarrow$ Less Redistribution, More Efficiency

  Chilean Reform.

- **Proposition 3**: If Status Quo without Compulsory Social Insurance
  Voluntary Social Insurance $\longrightarrow$ More Redistribution, More Efficiency

  Pareto Improvement

  US states example, and eventual creation of VSI in developing countries.

Proposition 4: The absence of social insurance cannot be justified by efficiency or redistribution arguments. **A voluntary system is always desirable** to no social insurance at all.

Conclusion

- A voluntary Social Insurance system is motivated by efficiency reasons.
- Sometimes at the cost of less redistribution; others at the benefit of more (Pareto improvement).
- The possibility of opting out strengthens the political support of social insurance.
- The absence of social insurance cannot be justified by efficiency or redistribution arguments.

Discussion and future research

- Minimal Contribution for all. Implementation.
- Is the private market needed?
- Empirical validation of the results: Chilean reform, US states.