Long-term care policies with nonlinear strategic bequests

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SCOR, Paris,
November 2018

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Introduction

- Provision of sustainable long-term care (LTC) represents major societal challenge.
- Due to population ageing a dramatic increase in the number of dependent elderly with cognitive and physical impairments is expected.
- Dependency represents a significant financial risk, most of which is typically not covered by social or private insurance (Germany being an exception).
- Currently the family is a major provider and informal care represents a significant part of total care.
- "*The extent of informal caregiving is believed to be enormous, yet precise numbers are hard to quantify*" Norton (2016)

- Informal provision has no direct bearing on public finances, but
  - unlikely to be sustainable at its current level,
  - and may not appear desirable: its real costs (financial and psychological), imposed on caregivers, are often "hidden".
- Summing up: current situation does not appear to be adequate as it leaves some elderly without proper care and often imposes a considerable burden on caregivers.
- Potential role of public intervention through social LTC provision or insurance.
- What is the potential role of voluntary of mandatory private insurance.

- However, the public LTC policy (and private insurance) will interact with informal care and the exchanges within the family.
- Informal care can be motivated by
  - altruism,
  - exchange,
  - social norms.

- Our model is inspired by the strategic bequest approach, but children are heterogenous and parent's *do not observe their children's' cost of providing informal care.*
- Alternative interpretation: parents do not know children's degree of altruism.
- Parents can commit to a bequest rule specifying bequests conditional on the level of informal care.
- However, because of the asymmetry of information they can no longer extract the full surplus.

- We consider social LTC financed by uniform lump-sum tax.
  - Designed to maximize a weighted sum of parent's an children's utilities $\Longrightarrow$ we explicitly account for the wellbeing of caregivers.
  - Anticipating induced equilibrium of game played by parents and children.

- First part: uniform social LTC policy, providing same level of LTC to *all* dependent individuals.
  - Empirically relevant and "simple" to study.
  - But not the "best" policy given information structure.
- Second part: non-uniform LTC policy
  - Screen for children's cost of care via parents' transfers.
  - Taxation of bequests or gifts introduces means-testing.
  - Methodologically more challenging: nested principal-agent problem.

Model

- Consider a generation of identical parents.
- When old: risk of being dependent with probability π.
- When young: earn a given labor income $w\overline{T}$ and save s.
- Preferences

$$EU = w\overline{T} - s + (1-\pi)\,U(s) + \pi E\left[H(m)\right],$$

  with $m = s + a - \tau(a)$, where $a \in [0, a^{max}]$ is informal care, while $\tau(a)$ is transfer (bequest or gift) from parents to children.
- Children differ in $\beta \in \left\{\underline{\beta}, \overline{\beta}\right\}$: determines cost of providing care.
- $\underline{\beta}$ (high cost): probability $\lambda \in]0,1[$.
- Using contract theory terminology: $\overline{\beta}$ is "good" type.

- Children's cost of providing care a: $v(a, \beta)$, with $v_a > 0$, $v_\beta < 0$, $v_{aa} > 0$, $v_{a\beta} < 0$ (*marginal* cost of informal care also decreases with β).
- The children's utility from helping their parents in case of dependence is

$$U_k = c_k - v(a, \beta) \geq 0,$$

  where $c_k = \tau(a)$.
- Children choose a to maximize U_k

$$\tau'(a) = v_a(a, \beta),$$

  and the solution to this problem is denoted $a(\beta)$.
- Parents choose s and $\tau(a)$ to maximize

$$EU = w\overline{T} - s + (1 - \pi)\, U\,(s) + \pi E_\beta \left[H(s + a(\beta) - \tau(a(\beta))\right]$$

- Equivalent mechanism design problem where parents choose s, $a(\beta)$ and $\tau(\beta)$ to maximize

$$EU = w\overline{T} - s + (1-\pi)\,U\,(s) + \pi E_\beta\left[H(s + a(\beta) - \tau(\beta))\right]$$

subject to the relevant participation constraints, as well as the incentive constraints.

- LTC policy is determined to maximize social welfare which is given by a weighted sum of parents and children's expected utilities

$$\alpha EU_p + (1-\alpha)EU_k$$

with $\alpha \in]0, 1]$.

Uniform LTC benefit

Full information benchmark

- Parents and government have full information on β , but only parents observe a.

Parents' problem

$$\max_{\overline{a},\underline{a},s} \quad P^f = w\overline{T} - \pi g - s + (1-\pi)\,U\,(s) + \pi\left[\lambda H(s + \underline{a} - v(\underline{a},\underline{\beta}) + g) + (1-\lambda)H(s + \overline{a} - v(\overline{a},\overline{\beta}) + g)\right]$$

- So that

$$1 = v_a(\overline{a},\overline{\beta}) = v_a(\underline{a},\underline{\beta}),$$

- Note that solution does not depend on g.

Government's problem

$$\max_{g} \quad G^f = w\overline{T} - \pi g - s + (1-\pi)\,U(s) + \pi\left[\lambda H(s + \underline{a} - v(\underline{a}, \underline{\beta}) + g) + (1-\lambda)H(s + \overline{a} - v(\overline{a}, \overline{\beta}) + g)\right],$$

note that children's utility is zero either way.

- Solution

$$U'(s) = [\lambda H'(\underline{m}) + (1-\lambda)H'(\overline{m})] = E_\beta[H'(m)] = 1.$$

full insurance against dependency but not against risk of having high-cost child.

- Solution can also be achieved by (voluntary) fair private insurance.

Asymmetric information

- Parents' problem now includes incentive constraint

$$\overline{\tau} = v(\overline{a}, \overline{\beta}) + [v(\underline{a}, \underline{\beta}) - v(\underline{a}, \overline{\beta})].$$

- Solution involves downward distortion on care provided by high-cost child: we have

$$[1 - v_a(\underline{a}, \underline{\beta})] = \frac{(1-\lambda)H'(\overline{m})}{\lambda H'(\underline{m})}[v_a(\underline{a}, \underline{\beta}) - v_a(\underline{a}, \overline{\beta})] > 0,$$

- Low-cost child has a positive utility (rent).

- Government's FOC

$$\frac{\partial G^{as}}{\partial g} = \alpha\{-\pi + \pi[\lambda H'(\underline{m}) + (1-\lambda)H'(\overline{m})]\}$$
$$+ \pi(1-\lambda)(1-\alpha)[v_a(\underline{a},\underline{\beta}) - v_a(\underline{a},\overline{\beta})]\frac{\partial \underline{a},}{\partial g} = 0.$$

- When $\alpha = 1$ (only parent's utility matters in SWF) we have

$$U'(s) = [\lambda H'(\underline{m}) + (1-\lambda)H'(\overline{m})] = 1.$$

- Same rule as under full information

Results: linear policy

- Risk of having high-cost children is not fully insured.
- If children have zero weight in social welfare, optimal policy implies full insurance against dependence. Uniform benefit larger than in the full information case (full information *rule* but higher *level*).
- Otherwise, two possible cases:

  (a) When $H(m)$ exhibits DARA (usual assumption) we have $\partial \underline{a}/\partial g < 0$: less than full insurance and g decreases with the weight of children in social welfare.

  (b) When $H(m)$ exhibits IARA we have $\partial \underline{a}/\partial g > 0$ and more than full insurance; g is higher than under full information. Furthermore, it increases with the weight of children in social welfare.

- In either case $\underline{a}$ decreases in α and thus increases in $(1-\alpha)$, children's weight.
- Surprising result, due to the exchange motive behind family care.
- Higher reliance on the family for the provision of long-term care implies higher rents for children.
- The optimal policy implies that the high-cost children will provide more informal care than in the *laissez-faire*, but they will be compensated by higher bequests.
- This in turn will "spill over" to the low cost children via the incentive constraint and they will be better off than in the *laissez-faire*.

Private insurance?

- Solution can be achieved by private insurance.
- However, insurance must now be regulated and mandatory, except when $\alpha = 1$.
- This is because parents when buying insurance do not take welfare of caregivers into account.

Nonlinear policies

- Bequests are publicly observable and g can be conditioned on τ.
- The LTC policy can then screen for β.
- We continue to assume that a is observable only to parents.
- Concentrate on case where neither the parents nor the government can observe children's types.
- The government proposes a menu $\big((\overline{\tau}, \overline{g}), (\underline{\tau}, \underline{g})\big)$.
- The only choice left to parents is then to fix the level of a associated with each option.

- Practical implementation:
  - when τ is *inter vivos* gift (occurs before g is consumed): function $g(\tau)$ is sufficient;
  - when τ is a bequest: policy must be supplemented by nonlinear bequest tax, to prevent parents from picking a pair, but then leaving a larger bequest (in order to "buy" more care).
- More precisely, with bequests, we need a nonlinear tax on bequest which is prohibitively large when τ deviates from the one associated with the level of public LTC consumed.
- In practice this means that "excess" public transfers can be recovered from an individual's bequest.

- Solution now implies

$$U'(s) = H'(\underline{m}) = H'(\overline{m}) = 1.$$

- And for a

$$\lambda\alpha\left[1 - v_a(\underline{a}, \underline{\beta})\right] - (1-\lambda)(2\alpha - 1)\left[v_a(\underline{a}, \underline{\beta}) - v_a(\underline{a}, \overline{\beta})\right] = 0.$$

so that the sign of the distortion on $\underline{a}$ depends on sign of $(2\alpha - 1)$.

Results: nonlinear policy

Separating contract

1. The risk of having high-cost children is fully insured.
2. Informal care is set at its first-best level for the low-cost children.
3. The level of informal care provided by high-cost children is distorted and the direction of the distortion depends on children's weight in the welfare function. It has the same sign as $(1 - 2\alpha)$

- downward distortion when the weight of the children is lower than $1/2$ ($\alpha > 1/2$);
- upward distortion when the weight of the children is larger than $1/2$ ($\alpha < 1/2$).

4. The level of informal care $\underline{a}$ always increases in $(1-\alpha)$ irrespective of the parents' degree of risk aversion.

Pooling contract

- Occurs when children's weight in welfare is sufficiently large.
- Properties 1. and 4. continue to hold.

Private insurance

- Solution cannot be achieved by private insurance alone.
- Not due to nonlinearity, but due to instruments.
- Public provision can be conditioned on transfer.

Concluding comments

Crowding out of informal care and children's welfare weight

- In all cases, optimal average level of informal care increases with $(1-\alpha)$, the weight of children in the social welfare function.
- At first surprising, but due to exchange based motive of informal care.
- Policy does involve a tradeoff between parents' and children's utilities.
- But this implies that g is reduced to *increase* $\underline{a}$ in order to increase utility (rents) of low-cost children.

Uniform vs nonunifom policies

- Uniform policy can only provide insurance against dependency risk but not the risk of having high cost (low altruism) children.
- Non uniform policy provide full insurance irrespective of the weights; very powerful instrument; specific type of means testing.