Long-term care policies with nonlinear strategic bequests

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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 \( \implies \) 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 $\pi$.
- When young: earn a given labor income $w \overline{T}$ and save $s$.
- Preferences
  \[
  EU = w \overline{T} - s + (1 - \pi)U(s) + \pi E[H(m)],
  \]
  with $m = s + a - \tau(a)$, where $a \in [0, a^{\text{max}}]$ is informal care, while $\tau(a)$ is transfer (bequest or gift) from parents to children.
- Children differ in $\beta \in \{\underline{\beta}, \overline{\beta}\}$: 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 $\beta$).

• 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

$$EU = w\overline{T} - s + (1 - \pi)U(s) + \pi E_\beta [H(s + a(\beta) - \tau(a(\beta)))]$$
• Equivalent mechanism design problem where parents choose \( s, a(\beta) \) and \( \tau(\beta) \) to maximize

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

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 $\beta$, but only parents observe $a$.

Parents’ problem

$$\max_{\bar{a}, \underline{a}, s} P^f = wT - \pi g - s + (1 - \pi) U(s) + \pi \left[ \lambda H(s + \underline{a} - v(\underline{a}, \underline{\beta}) + g) ight.$$ 
$$+ (1 - \lambda) H(s + \bar{a} - v(\bar{a}, \bar{\beta}) + g) \big]$$

- So that
  $$1 = v_a(\bar{a}, \bar{\beta}) = v_a(\underline{a}, \underline{\beta}),$$

- Note that solution does not depend on $g$. 

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Government’s problem

\[
\max_g G^f = wT - \pi g - s + (1 - \pi)U(s) + \pi \left[\lambda H(s + a - v(a, \beta) + g)
+ (1 - \lambda)H(s + \overline{a} - v(\overline{a}, \overline{\beta}) + g)\right],
\]

note that children’s utility is zero either way.

- Solution

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

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

\[ \tau = v(\alpha, \beta) + [v(a, \beta) - v(a, \beta)]. \]

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

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

• Low-cost child has a positive utility (rent).
• Government’s FOC
\[
\frac{\partial G^{as}}{\partial g} = \alpha \{-\pi + \pi[\lambda H'(m) + (1 - \lambda)H'(\overline{m})]\}
\]
\[+ \pi(1 - \lambda)(1 - \alpha)[v_a(a, \beta) - v_a(a, \overline{\beta})]\frac{\partial a}{\partial g} = 0.
\]

• When \( \alpha = 1 \) (only parent’s utility matters in SWF) we have
\[U'(s) = [\lambda H'(m) + (1 - \lambda)H'(\overline{m})] = 1.
\]

• 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 $\frac{\partial a}{\partial g} < 0$: less than full insurance and $g$ decreases with the weight of children in social welfare.

  (b) When $H(m)$ exhibits IARA we have $\frac{\partial a}{\partial g} > 0$ 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 $\alpha$ decreases in $\alpha$ 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 $\tau$.

• The LTC policy can then screen for $\beta$.

• 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 $((\overline{\tau}, \overline{g}), (\underline{\tau}, g))$.

• The only choice left to parents is then to fix the level of $a$ associated with each option.
• Practical implementation:

  – when $\tau$ is *inter vivos* gift (occurs before $g$ is consumed): function $g(\tau)$ is sufficient;
  – when $\tau$ 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 $\tau$ 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 \( a \)

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

so that the sign of the distortion on \( a \) 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 $a$ 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 \(a\) in order to increase utility (rents) of low-cost children.
Uniform vs nonuniform 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.