Premature deaths, accidental bequests and fairness

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Motivation (1)

- Taxation of bequest is a very debated subjects as it involves many different interests
  $\rightarrow$ already at the heart of Mill's *Principles of Political Economy* (1848)
  $\rightarrow$ see also Kaplow (2008).

- Have to distinguish between *purely accidental* and *non accidental (i.e. unconditional)* bequests.

- Purely accidental bequests should be taxed at a 100% rate to diminish arbitrary inequalities among descendants
  ...yet some arguments against it : Blumkin and Sadka (2003), Cremer et al. (2012).

Motivation (2)

- We challenge the 100 % tax view by introducing a concern for **compensating unlucky short-lived parents**.
  - accidental bequests are not only a source of well-being inequalities among children
  - accidental bequests can also, under unequal lifetimes, reduce well-being inequalities among parents (thanks to joy of giving).

Why should we compensate the short-lived?

- Inequalities in the duration of life are mainly due to circumstances.
  - genetic background: 25-33 % of longevity inequalities (Christensen et al 2006)
  - environmental factors: 23-40 % of premature deaths (Pimentel et al 1998)
- Hence the Principle of Compensation applies (Fleurbaey and Maniquet 2004, Fleurbaey 2008)
  - well-being inequalities due to circumstances should be abolished by governments.

This paper

- **This paper revisits the taxation of accidental bequests while paying attention to inequalities in longevity.**

- Model an OLG economy peopled of long-lived and short-lived individuals. No annuities and bequests made of two components:
  - unconditional bequests (are given independently from duration of life)
  - accidental bequests (would have been consumed in case of a longer life)

- Focus on policies decentralizing the utilitarian optimum and the ex-post egalitarian optimum (priority to the worst off).

Three main results

- We provide an egalitarian argument against the 100 % tax on accidental bequests. If:
  - A1 Individuals have preferences on how lost saving is distributed in case of death;
  - A2 governments care about the deceased's interests in giving;
  - A3 governments want to equalize lifetime well-being for all (ex post egalitarian SWF);
- It can be optimal to subsidize accidental bequests (less robust).
- We also find a second-best egalitarian argument for taxing bequests at a rate increasing with the age of the deceased.

Literature

- **On bequest taxation:**
  Blumkin and Sadka (2004), Cremer Gahvari and Pestieau (2012), Farhi and Werning (2013), Piketty and Saez (2013)
  $\rightarrow$ Strong emphasis on heterogeneity in productivity
  $\rightarrow$ Here, emphasis on heterogeneity in the duration of life (leading to 2 kinds of bequests).

- **On compensation for unequal lifetimes**
  Fleurbaey and Ponthiere (2013), Fleurbaey Leroux Ponthiere (2014), Fleurbaey Leroux Pestieau Ponthiere (2016), Leroux Ponthiere (2018).
  $\rightarrow$ Use consumption, labor and retirement profiles to reduce inequalities between short-lived and long-lived.
  $\rightarrow$ Here, special emphasis on the capacity of bequests to provide compensation to the prematurely dead.

Outline

The Model (1)

Basics

- Two-period OLG economy with risky lifetime. The length of each period is normalized to 1.
- Each cohort is a continuum of agents normalized to 1.
- Period 1 (young adulthood): individuals supply inelastically 1 unit of labor, consume, have one child, plan a bequest and save for their old days.
- Period 2 (old age) is reached with probability $0 < \pi < 1$. Individuals enjoy savings and do not work.

The Model (2)

Transfers

- No annuities.

- Two kinds of transfers from parents to children:
  - *Non-accidental bequest:* parents plan to give a *gift* b to their child unconditionally (whatever the duration of life is).

  - *Accidental bequest:* parents, in case of premature death, transfer to their child the amount d that would have been consumed in case of survival

$\Rightarrow$ In case of late (resp. early) death, agents transmit b (resp. $d+b$).

The Model (3)

Heterogeneity

- Two sources of heterogeneity:
  - The individual's duration of life
  - The individual's endowment, i.e. the bequest he received, which depends on the duration of life of his parent
- Assume quasi-linear preferences so as to keep the intergenerational dynamics of wealth accumulation Markovian
  $\rightarrow$ the endowment of an agent born at time t depends *only* on the longevity of his parent born at $t-1$, and not on the longevity of previous ancestors.

The Model (4)

- **Preferences** have the following quasi linear form:

$$c_t + \pi \left[u \left(d_{t+1} \right) + v \left(b_{t+1} \right) \right] + (1 - \pi) v \left(d_{t+1} + b_{t+1} \right)$$

where

  - c_t is consumption at young age
  - b_{t+1} is gifts (the unconditional component of parental bequest)
  - d_{t+1} is either consumption at old age (in case of survival) or the accidental bequest left to his child (in case of premature death)
  - $u(\cdot)$ and $v\left(\cdot\right)$ increasing and concave.
  - $v\left(\cdot\right)$ captures the joy of giving (alive or dead).

The Model (5)

- We assume:
  - $u(0) < 0 = v(0)$ and $v(d) > 0$ under $d > 0$.
  - there exists $\bar{c} > 0$ such that $u(\bar{c}) = 0$.
  - $u'(d) > v'(d) \forall d \geq 0$ (Hurd 1989).
  - there exists $\tilde{d} > 0$ such that $u\left(\tilde{d}\right) = v(\tilde{d})$.
  - $d > \tilde{d}$, i.e. an affluent economy: in the absence of gift, a person prefers surviving and consuming d to dying and letting d to his child.
- A corollary of $d > \tilde{d}$ is $u(d) + v(b) > v(d + b)$: short-lived worst off than long-lived (intuitive).

The Model (6)

Budget constraints

- At the level of budget constraints, we must distinguish between two types of individuals:
  - Type-E_t: young adults at t whose parents die early (proportion $1-\pi$);
  - Type-L_t: young adults at t whose parents die late (proportion π).
- The budget constraints for a type i are (no annuities):

$$\begin{aligned} c_t^{i_t} + s_t^{i_t} + b_{t+1}^{i_t} &= w_t + b_t^{i_t} + B_t^{i_t} \\ d_{t+1}^{i_t} &= R_{t+1} s_t^{i_t} \end{aligned}$$

where $B_t^{i_t}$, the accidental bequest, satisfies: $B_t^{E_t} = R_t s_{t-1} > B_t^{L_t} = 0$.

The Model (7)

Production

- Production takes place with labour ℓ_t and capital k_t, according to a CRS production function.
- In intensive terms, we have:

$$y_t = f(k_t)$$

with $f'(k_t) > 0$ and $f''(k_t) < 0$.

- We assume full depreciation of capital after one period of use, thus:

$$k_{t+1} = \pi s_t^L + (1-\pi) s_t^E$$

- Factors are paid at their marginal productivity:

$$\begin{aligned} w_t &= f(k_t) - k_t f'(k_t) \\ R_t &= f'(k_t) \end{aligned}$$

The Laissez-faire: temporary equilibrium

- The problem of a type i_t agent is:

$$\max_{c^{i_t}, d_{t+1}^{i_t}, b_{t+1}^{i_t}} \quad c_t^{i_t} + \pi \left[u(d_{t+1}^{i_t}) + v(b_{t+1}^{i_t}) \right] + (1-\pi) v(d_{t+1}^{i_t} + b_{t+1}^{i_t})$$

$$\text{s.t.} \quad w_t + b_t^{i_t} + B_t^{i_t} = c_t^{i_t} + \frac{d_{t+1}^{i_t}}{R_{t+1}} + b_{t+1}^{i_t}$$

- Thanks to quasi linearity, we have: $d_{t+1}^{i_t} = d_{t+1}^t \forall i \in \{E, L\}$ and $b_{t+1}^{i_t} = b_{t+1}^t \forall i \in \{E, L\}$.
- However, we have: $c_t^{E_t} > c_t^{L_t}$.

The Laissez-faire: stationary equilibrium

- The rest of the paper assumes the existence, uniqueness and stability of the stationary equilibrium.

Proposition

- *For a given longevity, individuals of type E are better off than individuals of type L.*
- *Within a given type $i = E, L$, the long-lived is better off than the short-lived.*

- Concentration of wealth at steady-state *increasing* with π:
  - fewer inheritants receiving accidental bequests.
  - larger accidental bequests (due to more saving).

The utilitarian planning problem

- The planner maximizes *average lifetime welfare* at steady-state:

$$\max_{c^i,d^i,b^i,e^i,k} \left[\begin{array}{l} (1-\pi)c^E + \pi(1-\pi)\left[u(d^E)+v(b^E)\right] \\ +(1-\pi)^2 v(b^E+e^E) \\ +\pi c^L + \pi^2\left[u(d^L)+v(b^L)\right] \\ +\pi(1-\pi)v(b^L+e^L) \end{array} \right]$$

$$\text{s.t. } f(k) = \pi c^L + (1-\pi)c^E + (1-\pi)b^E + \pi(1-\pi)d^E$$
$$+(1-\pi)^2 e^E + \pi b^L + \pi^2 d^L + \pi(1-\pi)e^L + k$$

- We do not impose $e^i = d^i$. Accidental bequest may differ from what would have been consumed in case of survival (unlike at laissez-faire).

The utilitarian optimum (with equal c)

Proposition

- *The capital stock satisfies the Golden Rule* $f'(k) = 1$.
- *There is no accidental bequest* ($e^i = 0$).
- *Individuals of types* E *and* L *are equally well-off (same consumptions and gifts).*
- *For a given type* i*, short-lived individuals are, in general, worse off than long-lived ones.*

The utilitarian optimum: decentralization

Proposition

- *The decentralization requires a system of intergenerational lump-sum transfers leading to the Golden Rule.*
- *The decentralization requires also either introducing full collective annuitization or introducing full taxation of accidental bequests.*

$\Rightarrow$ **Full taxation of accidental bequests** or collective annuitization are equally good at equalizing the initial endowments of all individuals.

But inequalities remain between the long-lived and the short-lived.

The ex post egalitarian planning problem

- The Principle of Compensation requires compensating the unlucky short-lived, and those whose parent died late.
- The ex post egalitarian planning problem is:

$$\max_{\substack{c^E,d^E,b^E,e^E \\ c^L,d^L,b^L,e^L,k}} \min\{U^{ELL}, U^{ESL}, U^{LLL}, U^{LSL}\}$$

$$\text{s.t.} \quad f(k) = \pi c^L + (1-\pi)c^E + (1-\pi)b^E + \pi(1-\pi)d^E$$
$$+(1-\pi)^2 e^E + \pi b^L + \pi^2 d^L + \pi(1-\pi)e^L + k$$

where $U^{iLL} = c^i + u(d^i) + v(b^i)$ and $U^{iSL} = c^i + v(e^i + b^i)$

- The problem can be rewritten as:

$$\max_{c,b,d,e,k} c + u(d) + v(b)$$
$$\text{s.t.} \quad f(k) = c + b + \pi d + (1-\pi)e + k$$
$$\text{s.t.} \quad u(d) + v(b) = v(b+e)$$

The ex post egalitarian optimum

Proposition

- *The capital stock satisfies the Golden Rule.*
- *Accidental bequests are augmented with respect to old-age consumption ($e>d$).*
- *Individuals of types E and L are equally well off (same consumptions, gifts and accidental bequests).*
- *The short-lived and long-lived are equally well off.*

- Higher accidental bequests allow to increase the well-being of the prematurely dead through a higher joy of giving.

The ex post egalitarian optimum: decentralization

Proposition

- *The decentralization requires a system of intergenerational lump-sum transfers leading to the Golden Rule.*
- *It requires also a system of intragenerational lump-sum transfers equalizing endowments across types E and L.*
- *It requires also introducing either life insurance or a subsidy on accidental bequests.*

- Here annuitization is not desired: this would raise inequalities between the long-lived and the short-lived.
- This decentralization (double equalization) assumes that parents are interested in what they *give* to their children (augmented by the subsidy), but not in what their children *receive* net of all tax/transfers.

The ex post egalitarian optimum: more on decentralization

- If parents are interested in what their children receive *net of all taxes and transfers*.

Proposition

- *The decentralization requires a system of intergenerational lump-sum transfers leading to the Golden Rule.*
- *In the absence of annuitization and life insurance, the decentralization requires also imposing a tax on accidental bequests (less than 100 %), a tax on second-period consumption and a lump-sum transfer compensating individuals of type L.*

- Here accidental bequests lose their usefulness as a way to equalize lifetime well-being between long-lived and short-lived: $v(b) = v(b+e)$.
- Since parents care about what children receive net of all transfers, we have $c + u(d) + v(b) = c + v(b) \iff d = \bar{c}$.

Bequest tax and the age of the deceased

- We now consider a second-best setting where the government cannot impose different tax rates on unconditional and accidental bequests, but can tax bequests based on the age of the deceased.
- The government, acting as a Stackelberg leader, selects three policy instruments:
  - a first-period demogrant T,
  - a tax rate on bequests left by a short-lived, θ_E,
  - a tax rate on bequests left by a long-lived, θ_L.
- We consider here a small open economy at its stationary equilibrium (with $R = 1$).
- We abstract from inequalities in initial endowments among children.

Second-best: 2 planning problems

- Take $d \equiv d\left(T, \theta_E, \theta_L\right)$ and $b \equiv b\left(T, \theta_E, \theta_L\right)$ from the agent's problem.
- **Utilitarian**

$$\begin{array}{ll} \max\limits_{T,\theta_L,\theta_E} & \left[\begin{array}{l} w-d-b+T+\pi\left[u(d)+v\left(\left(1-\theta_L\right)b\right)\right] \\ +(1-\pi)v\left(\left(1-\theta_E\right)\left(b+d\right)\right) \end{array}\right] \\ \text{s.t.} & \pi\theta_L b+(1-\pi)\theta_E(b+d)=T \end{array}$$

- **Ex post egalitarian**

$$\begin{array}{ll} \max\limits_{T,\theta_L,\theta_E} & w-d-b+T+u(d)+v\left(\left(1-\theta_L\right)b\right) \\ \text{s.t.} & \pi\theta_L b+(1-\pi)\theta_E(b+d)=T \\ \text{s.t.} & v\left(\left(1-\theta_E\right)\left(b+d\right)\right) \geq u(d)+v\left(\left(1-\theta_L\right)b\right) \end{array}$$

Second-best: results

Proposition

- *Under the utilitarian criterion, the tax on bequests should be decreasing with the age of the deceased ($\theta_E > \theta_L$);*
- *Under the ex post egalitarian criterion, the tax on bequests should be increasing with the age of the deceased ($\theta_E < \theta_L$).*

- Not the first argument for age-differentiated taxation of bequests, but it is not robust to the social welfare criterion.
  - Vickrey (1945) argued for a bequest tax increasing with the age gap between the donator and the receiver (to avoid fiscal arbitrages).
    $\rightarrow$ close the idea of taxation increasing with age.

Conclusions

- The optimal tax on (accidental) bequests depends on the ethical treatment of the prematurely dead.
  - Utilitarianism:
    - ⋆ FB: a 100 % tax on accidental bequests is optimal.
    - ⋆ SB: taxing bequests at a rate decreasing with the age of the deceased.
  - Ex post egalitarianism:
    - ⋆ FB: a 100 % tax on accidental bequests is not optimal $\rightarrow$ even subsidization in some cases!
    - ⋆ SB: taxing bequests at a rate increasing with the age of the deceased.