Premature deaths, accidental bequests and fairness

Marc FLEURBAEY, Princeton University.
Marie-Louise LEROUX, ESG UQAM
Pierre PESTIEAU, Université de Liège, CORE and PSE.
Gregory PONTHIERE, Université Paris 12, PSE and IUF
Stéphane ZUBER, CNRS and PSE.

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Motivation (1)

- Taxation of bequest is a very debated subject as it involves many different interests

  $\rightarrow$ already at the heart of Mill's *Principles of Political Economy* (1848): bequests create unfair initial inequalities...but, if there is a testimony from the deceased, one should respect that.
  $\Rightarrow$ put a constraint on the amount people can inherit.

  $\rightarrow$ see also Kaplow (2008) for an overwiew of how to tax different types of bequests.

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

Motivation (2)

- 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).

- Our argument against the 100 % tax view is different: we introduce a concern for **compensating unlucky short-lived parents**.
- Accidental bequests can also, under unequal lifetimes, reduce well-being inequalities among parents (thanks to joy of giving).

Motivation (3)

Why should we compensate the short-lived?

- Some of the inequalities in the duration of life are 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)
  - pure luck
- 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 by taking into account the interests of the deceased and by 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 premature 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 even be optimal to subsidize accidental bequests (less robust).

- We also find a second-best egalitarian argument for taxing bequests at a rate that is *increasing* with the age of the deceased.

Literature (1)

- **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
  $\rightarrow$ Utilitarianism
- **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.
- **On annuitisation:** Yaari (1965), Brown (2004), Davidoff et al (2005), Lockwood (2012, 2018).
  $\rightarrow$ Annuitisation reduces inequalities *ex ante* but increases them *ex post.*

Outline

(The baseline static model)

1. The model
2. The laissez-faire equilibrium
3. The utilitarian optimum and its decentralization
4. The ex post egalitarian optimum and its decentralization
5. Bequest tax and the age of the deceased
6. Concluding remarks

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.
- Each agent has the same productivity, w_t.
- 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 all his 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 $u(\tilde{d}) = v(\tilde{d})$.
  - $d > \tilde{d}$, 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

- *Ex ante*, we have 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):

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

where $B_t^{i_t}$, the accidental bequest, is such that $B_t^{E_t} > B_t^{L_t} = 0$.

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:

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

- 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

- $c^E > c^L$, $d^E = d^L = \breve{d}$ *and* $b^E = b^L = \breve{b}$.
- *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.*

- *Demographic explanation for the concentration of wealth* : When, at steady-state, π increases:
  - fewer inheritants receiving accidental bequests.
  - larger accidental bequests (due to more saving).

The utilitarian planning problem

- The planner maximizes *average expected 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

- *There is no accidental bequest* ($e^i = 0$).
- $d^E = d^L > b^E = b^L$
- *The capital stock satisfies the Golden Rule* $f'(k) = 1$.
- *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 (1)

- 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.
- Double equalization of welfare across individuals (either long-lived or short-lived) and across dynasties (E and L-types).

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, but not in what their children *receive* net of all tax/transfers.

The ex post egalitarian optimum: more on decentralization (1)

- 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: $v(b) = v(b+e)$.
- Together with the egalitarian constraint, 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 distinguish, when the agent dies early, which part of the bequests is accidental and which is voluntary.

  $\rightarrow$ he cannot impose different tax rates, but can only tax bequests based on the age of the deceased.
- The government, acting as a Stackelberg leader, selects three policy instruments:
  - a first-period uniform 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**

$$\begin{aligned} \max_{T,\theta_L,\theta_E} \quad & w - s - b + T + \pi\left[u(s) + v((1-\theta_L)\, b)\right] \\ & +(1-\pi) v((1-\theta_E)\,(b+s)) \\ \text{s.t.} \quad & \pi\theta_L b + (1-\pi)\theta_E(b+s) = T \end{aligned}$$

- **Ex post egalitarian**

$$\begin{aligned} \max_{T,\theta_L,\theta_E} \quad & w - s - b + T + u(s) + v((1-\theta_L)\, b) \\ \text{s.t.} \quad & \pi\theta_L b + (1-\pi)\theta_E(b+s) = T \\ \text{s.t.} \quad & v((1-\theta_E)\,(b+s)) = u(s) + v((1-\theta_L)\, b) \end{aligned}$$

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 in favour of 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 to the idea of taxation increasing with age.

Conclusions (1)

- We revisit **the optimal taxation of accidental bequests by departing from the existing literature in two main ways:**
  - individuals may care about what they would, in case of premature death, leave to their offsprings.
  - consider an ex post egalitarian optimum and put more weight to the interests of the unlucky prematurely dead persons.
- Consider fairness among *offsprings but also among short-lived versus long-lived persons*.
- Under the egalitarian approach and, depending on the form of the joy of giving, it may be optimal to subsidize accidental bequests.
- In a second-best framework, taxing bequests at a rate increasing with the age of the deceased.