Reforming Estate Taxation by Reversing the Generation-Skipping Transfer Tax

James Feigenbaum (Utah State)

Scott Findley (Utah State)

The Estate Tax

- The estate tax is one of the most controversial of taxes in the United States.
  - Critics revile it as the “death tax”.
  - Proponents call efforts to repeal it the “Paris Hilton tax rebate”.
- Even academics are divided about it.
  - It is a tax on capital, which is generally considered the worst kind of tax.
  - It may reduce wealth inequality.

Estate Tax Design

- The study of the optimal design for an estate tax has had a fairly narrow scope.
- People have looked at
  - whether there should be an estate tax.
  - the optimal exemption level and tax rate.
- People have not looked at how the estate tax should vary with the properties of the people who actually pay the tax, i.e. the heirs.

Generation-Skipping Tax

- Certain dimensions of tax design may be ignored because it is believed unfair or politically unfeasible to consider them.
  - That is not the case here.
- The U.S. tax code already imposes a higher rate on estates left to grandchildren instead of children, assuming the children are still alive.
  - This is intended to prevent dynasties from reducing their overall tax burden.

Age-Dependent Tax Rates

- Consider a two-period OLG model.
- When an old person dies, he must allocate his estate between his children (i.e. old households next period) and his grandchildren (i.e. young households next period).
- We allow these bequests to be taxed at different rates and determine the optimal rates.
  - Estates to young should be taxed at a zero rate.
  - Estates to the old should be taxed at a high rate.
- **Current code is opposite to optimal policy.**

Ancient Masonic Wisdom

- “The Solomon inheritance—a centuries-old tradition in the family—bequeathed a staggeringly generous piece of wealth to every Solomon child on his or her eighteenth birthday. The Solomons believed that an inheritance was more helpful at the *beginning* of someone’s life than at the end. Moreover, placing large pieces of the Solomon fortune in the hands of eager young descendants had been the key to growing the family’s dynastic wealth.”

-Dan Brown
The Lost Symbol

Benefits of Bequests

- Feigenbaum and Gahramanov (FG) (2011a, b) have shown that bequests improve welfare.
  - A possible solution to the annuities puzzle.
  - Though households are better off individually if they prevent accidental bequests by annuitizing, we are all better off in GE if we do not annuitize.
- Bequests transfer wealth from the old to the young.
  - Reverse Social Security

Early Bequests Increase Utility via Two Channels

- Capital (indirect) channel: If households save a portion of the bequest, this will increase the capital stock, leading to higher wages.
- Bequest (direct) channel: A bequest received earlier in the lifecycle has a higher present value and allows better consumption bundles.
- FG find the quantitative contribution of the bequest channel is much larger than the capital channel.

Quantitative Question

- FG considered only accidental bequests.
- Here we assume households have a “warm glow” bequest motive.
  - Utility comes from bequest, not utility of heirs.
  - Households value bequests to children and grandchildren differently.
- Can we encourage bequests to grandchildren by manipulating estate tax rates, thereby increasing steady-state utility?

Political Feasibility

- A direct transfer of wealth from the old to the young, a reverse Social Security, is infeasible since it takes wealth from the elderly, who vote most.
- Our proposal simply involves tax cuts.
  - A tax cut on grandchildren ought to be popular.
- Welfare would be increased further if we raise taxes on estates to children.
  - This would be more difficult to sell since it would be imposed on the middle-aged, who vote second most.

The Model

- Intended as a proof of concept.
  - Highly stylized to enable quasianalytic solution.
- An overlapping-generations model in which households live a maximum of two periods.
  - Q_s is the probability of surviving till age s, where $1 = Q_0 \geq Q_1 > Q_2 = 0$.
- There is a tax on labor θ^l and a tax $\theta^e{}_s$ on estates received by households at age s.
  - Estate is taxed after earning gross interest R.

Preferences

- Utility comes from
  - c_s is consumption at age s.
  - $R(1 - \theta^e_s)b_s$, where b_s is the planned bequest to households of age s, assuming you live to age 1.
    - No utility comes from accidental bequests.
- Households maximize

$$U = u(c_0) + \beta Q_1[u(c_1) + \rho u(H(b_0, b_1))] .$$

  - $u(c)$ is CRRA with inverse elasticity γ.
  - $H(b_0, b_1)$ is CES in after-tax estates with elasticity of substitution η^{-1} and weights μ_0, μ_1.

Budget Constraint

- Endowment e_s of labor productivity at age s that earns we_s, where w is the real wage.
- Household at age s can save a_{s+1} at the gross rate R, where $a_0 = 0$.
- Household receives bequest B_s at age s.

$$c_s + a_{s+1} = \left(1 - \theta^l\right) we_s + Ra_s + B_s \quad s = 0,1$$

$$b_0 + b_1 = a_2$$

Equilibrium Conditions

- The production function is $Y = K^{\alpha}N^{1-\alpha}$
- The labor supply is $N = e_0 + Q_1 e_1$.
- The capital stock is $K = a_1 + Q_1 a_2$.
- Factor prices are

$$w(K) = (1-\alpha)\left(\frac{K}{N}\right)^{\alpha}$$

$$R(K) = \alpha\left(\frac{K}{N}\right)^{\alpha-1} + 1 - \delta$$

Bequest Balance Conditions

- The received bequest at age s must satisfy

$$Q_s B_s = \left(1 - \theta^e{}_s\right) R \left[\frac{Q_s}{P}(1 - Q_1)a_1 + Q_1 b_s\right].$$

  - $P = 1 + Q_1$ is the total population.

- Estate tax revenue is

$$\Theta^e = \theta^e{}_s R \sum_{s=0}^{1} \left[\frac{Q_s}{P}(1 - Q_1)a_1 + Q_1 b_s\right].$$

Government Budget Constraint

- The government purchases goods G, which is exogenous.
- Labor tax revenue is $\Theta^l = \theta^l wN$.
- The government must satisfy its constraint $G = \Theta^l + \Theta^e$.
- Tax rates (θ^l, $\theta^e{}_0$, $\theta^e{}_1$) support G if there is an equilibrium with these tax rates and government spending G.

Analytic Case

- In general, we can solve for all the endogenous variables as functions of (B_0, B_1, K).
  - We compute an equilibrium as a fixed point of the mapping of (B_0, B_1, K) into itself.
- For the special case when $\gamma = \eta = Q_1 = \delta = e_0 = 1$ and $e_1 = 0$, everything can be solved for analytically.
- Since a period is 30 years, setting $\delta = 1$ is not unreasonable.

Policy Functions

- Let W be lifetime wealth:

$$W = \left(1 - \theta^{l}\right)e_0 + B_0 + \frac{B_1}{R}$$

- The policy functions are

$$c_0 = \frac{W}{1 + \beta(1 + \rho)} \qquad \begin{aligned} c_1 &= \beta R c_0 \\ b_0 &= \mu_0 \beta \rho R c_0 \\ b_1 &= \mu_1 \beta \rho R c_0 \end{aligned}$$

- Allocation independent of tax rates.
  - Cannot use tax policy for estate engineering.

Ricardian Equivalence of θ^l and $\theta^e{}_0$

- The government budget constraint reduces to

$$G = \theta^l w + R(\theta^e{}_0 b_0 + \theta^e{}_1 b_1)$$

- Lifetime wealth can be written

$$W = w(R) + Rb_0 - G + \left(1 + (R-1)\theta^e{}_1\right)b_1.$$

- Since b_0 and b_1 are proportional to W, W is just a function of R, G, and $\theta^e{}_1$.

Optimal Choice of ${\theta^e}_0$

- In GE, R will just be a function of G, ${\theta^e}_1$, and other exogenous parameters.
- Observables are neutral to $\theta^l w + R{\theta^e}_0 b_0$.
- Lifetime utility is

$$U = (1 + \beta + \beta\rho)\ln(W) + \beta\rho(\ln R + \mu_0 \ln(1 - {\theta^e}_0) + \mu_1 \ln(1 - {\theta^e}_1))$$

- If $(\theta^l, {\theta^e}_0, {\theta^e}_1)$ supports G while maximizing U, if $\theta^l < 1$ then ${\theta^e}_0$ must be zero.

Intuition

- Taxes on labor and estates received while young essentially behave as lump-sum taxes.
- We can view θ^l and $\theta^e{}_0$ as perfect substitutes, but utility directly depends on $\theta^e{}_0$.
- The tax on estates received while old is different because these estates are discounted as lifetime wealth.
  - The other taxes are both assessed at age 0.

Wealth, Utility, and θ^e_1

- In partial equilibrium (i.e. holding R, w, and G fixed), $\partial W/\partial \theta^e_1 > 0$ if $R > 1$.
- However, holding W constant, $\partial U/\partial \theta^e_1 < 0$, so lifetime utility is a nonmonotonic function of θ^e_1.
  - In practice we find the optimal choice of θ^e_1 is still close to 1.
- We **should** tax estates received while old and we should do so heavily.

Calibration

- First we calibrate the model to match the existing economy with $\theta^e{}_0 = 2\theta^e{}_1$.
- Observable parameters
  - Share of capital: $\alpha = 1/3$
  - Endowments: $e_0 = 1$ and $e_1 = 1/3$
  - Mortality: $Q_1 = 0.92$

Unobservable Parameters

- Depreciation rate $\delta = 1$ (cannot match C/Y with $\delta \leq 1$)
- $G/Y = 0.2$
- $\Theta^e/Y = 0.0025$

$$\Rightarrow \theta^l = 0.296$$

$$\Rightarrow \theta^e{}_1 = 0.0055$$

- $c_1/a_2 = 1.73 \Rightarrow \rho = 0.58$
- $K/Y = 3.5 \Rightarrow \beta_{\text{ann}} = 0.95$; $\beta = 0.20$

Untethered Parameters

- Inverse elasticity of intertemporal substitution: $\gamma = 1$
- Inverse elasticity of substitution between bequests to children and grandchildren: $\eta = 1/2$
- Guess that 20% of bequests go to grandchildren, which implies $\mu_1 = 1.72$.

Baseline Calibration

Parameter Name	Parameter Symbol	Value
young-age productivity	e_0	1
old-age productivity	e_1	1/3
survival probability young	Q_0	1
survival probability old	Q_1	0.92
capital share	α	1/3
capital depreciation rate	δ	1
government debt	D	0
labor income tax rate	θ^I	0.29625
risk aversion coefficient	γ	1
inverse elasticity of bequest substitution	η	1/2
bequest discount factor	ρ	0.58
subjective discount factor	β	0.19921
estate tax rate (young generation)	θ_0^e	0.0110
estate tax rate (old generation)	θ_1^e	0.0055
strength of bequest motive to young	μ_0	1
strength of bequest motive to old	μ_1	1.72

Eliminating the Estate Tax

	baseline	no estate tax
θ_0^e	0.0110	0.000
θ_1^e	0.0055	0.000
θ^l	0.29625	**0.30021**
G	0.089291	0.089291
K	0.0521	0.0520
Y	0.4464	0.4461
R	2.856	2.859
w	0.2278	0.2276
B_0	0.0402	0.0409
B_1	0.1322	0.1329
c_0	0.2059	0.2057
c_1	0.1078	0.1078
b_0	0.01572	0.01579
b_1	0.04677	0.04678
Δ	0.000%	**-0.009%**

Eliminating Young Estate Tax While Fixing Old Estate Tax

	baseline	no estate tax young
θ_0^e	0.0110	0.000
θ_1^e	0.0055	0.0055
θ^l	0.29625	**0.29740**
G	0.089291	0.089291
K	0.0521	0.0523
Y	0.4464	0.4470
R	2.856	2.848
w	0.2278	0.2281
B_0	0.0402	0.0409
B_1	0.1322	0.1315
c_0	0.2059	0.2063
c_1	0.1078	0.1077
b_0	0.01572	0.01585
b_1	0.04677	0.04662
Δ	0.000%	**0.145%**

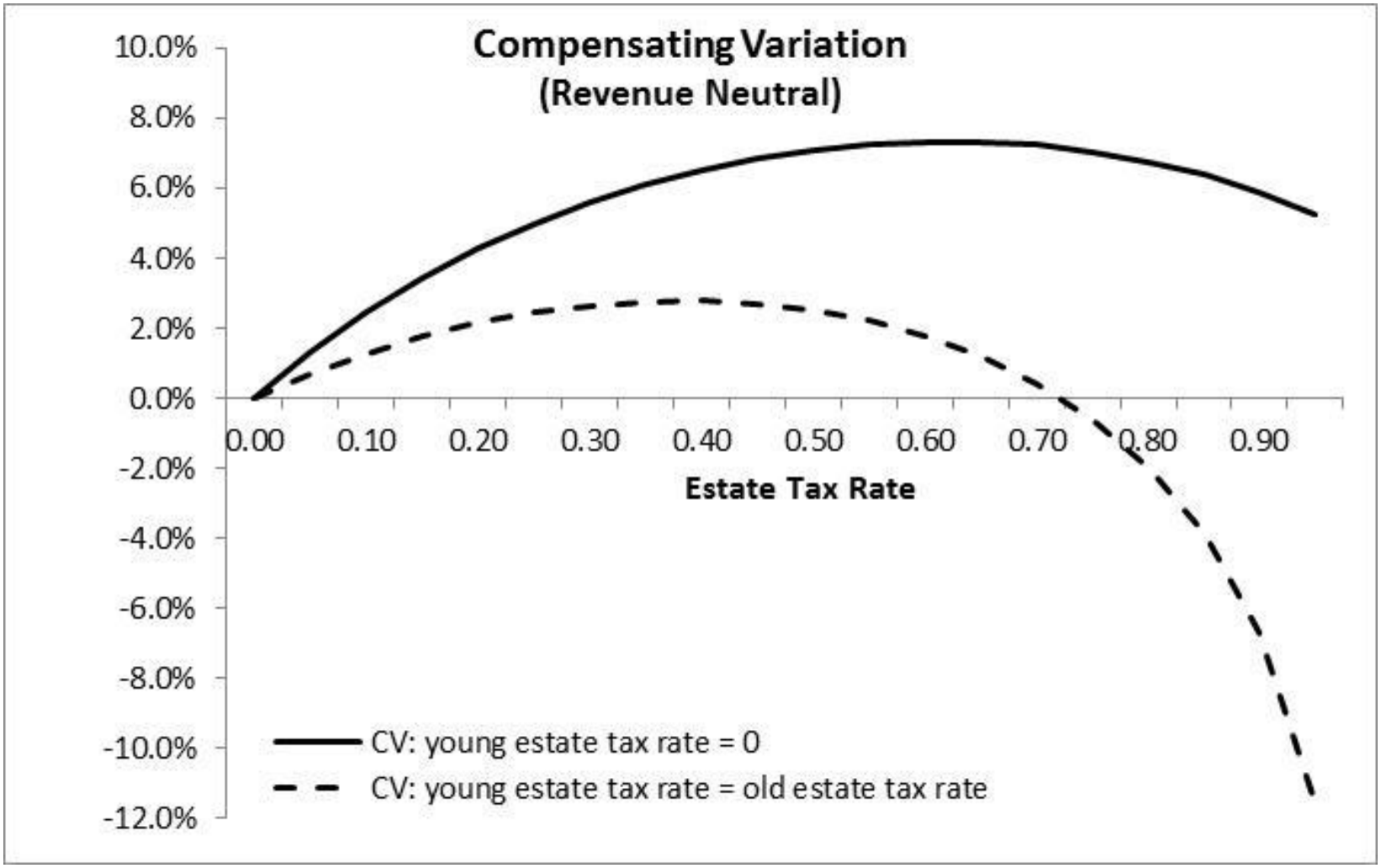
Eliminating Young Estate Tax While Fixing Labor Tax

	baseline	no estate tax young
θ_0^e	0.0110	0.000
θ_1^e	0.0055	**0.0078**
θ^l	0.29625	0.29625
G	0.089291	0.089291
K	0.0521	0.0524
Y	0.4464	0.4473
R	2.856	2.844
w	0.2278	0.2282
B_0	0.0402	0.0409
B_1	0.1322	0.1309
c_0	0.2059	0.2066
c_1	0.1078	0.1077
b_0	0.01572	0.01587
b_1	0.04677	0.04658
Δ	0.000%	**0.208%**

Optimal Revenue Neutral Policy

	baseline	no estate tax young
θ_0^e	0.0110	0.000
θ_1^e	0.0055	**0.6191**
θ^l	0.29625	**0.14683**
G	0.089291	0.089291
K	0.0521	0.0799
Y	0.4464	0.5147
R	2.856	2.148
w	0.2278	0.2626
B_0	0.0402	0.0562
B_1	0.1322	0.0260
c_0	0.2059	0.2537
c_1	0.1078	0.0999
b_0	0.01572	0.02723
b_1	0.04677	0.03069
Δ	0.000%	**7.323%**

Varying the Old Estate Tax



Varying the Old Estate Tax

θ_1^e	K	Y	R	w	θ^l	Θ^e/Y	B_0/B_1	Δ_{GE}	Δ_{PE}
0.0	0.052	0.45	2.9	0.23	0.30	0.000	0.3	-0.0	-0.0
0.0055	0.052	0.45	2.8	0.23	0.30	0.002	0.3	0.2	0.2
0.1	0.057	0.46	2.7	0.24	0.26	0.024	0.4	2.4	4.4
0.2	0.062	0.47	2.5	0.24	0.22	0.043	0.5	4.3	9.2
0.3	0.067	0.48	2.4	0.25	0.19	0.057	0.6	5.6	14.6
0.4	0.071	0.49	2.3	0.25	0.17	0.067	0.9	6.5	20.6
0.5	0.075	0.50	2.2	0.26	0.16	0.073	1.3	7.1	27.3
0.6	0.079	0.51	2.2	0.26	0.15	0.076	2.0	7.3	34.8
0.7	0.083	0.52	2.1	0.27	0.15	0.073	3.4	7.2	43.2
0.8	0.087	0.53	2.0	0.27	0.16	0.064	7.6	6.8	52.8
0.9	0.090	0.54	2.0	0.27	0.18	0.044	28.8	5.9	63.5

Conclusions

1. In a two-period OLG model, eliminating the estate tax wholesale will increase steady-state utility.
2. Reversing the generation skipping tax by eliminating the tax on estates received by the young will improve utility more.
3. Raising the tax on estates received by the old will further improve utility.

Future Work

1. More serious quantitative analysis of optimal estate tax design.
   - Within-cohort heterogeneity is needed to consider the optimal tax schedule (i.e. exemption level and rates) and the redistributive effects of the estate tax, which could be sizeable.
2. Transition dynamics