Designing tax & benefit systems: new results on capital taxation

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Policy Analysis Today:

Taxation and the distribution of income & its legacy

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Designing tax & benefit systems

- What have have learned since 1970 ?
- We have made some (limited) progress regarding optimal labor income taxation
- But our understanding of optimal capital tax is close to zero…virtually no useful theory…

→ in this presentation, I will present new results on optimal capital taxation & try to convince you that they are useful

(on-going work, « A Theory of Optimal Capital Taxation »,2011, joint with E. Saez)

Optimal labor income taxation

- Pre-tax labor income: $y = \theta l$ (θ = productivity)
- Disposable income: $c = y - T(y)$
- Mirrlees-Diamond-Saez formula:

$$T'/(1-T') = 1/e \ [1-F(y)]/yf(y)$$

→ this is a useful formula, because it can used to put numbers and to think about real-world tax policy & trade-offs in an informed way (or at least in a more informed way than in the absence of theory...)

(=minimalist definition of a useful theory)

- (1) If elasticity e = flat, then **marginal tax rates T'(y) should follow a U-shaped pattern**: high at bottom & top, but low in the middle, because high pop density; but e might be higher at bottom (extensive participation effects): study of work-credit trade-offs etc.
- (2) **As y→∞, T' → 1/(1+ae)** (a = Pareto coeff)

(a=2.5→1.5 in US since 70s: fatter upper tail)

→ if a=1.5 & e=0.1, t'=87%; but if e=0.5, t'=57%

- **Main limitation**: at the top, e has little to do with labor supply; tax enforcement issues; rent extraction issues; marginal product illusion

Optimal capital taxation

- Standard theory: optimal capital rate τ_K=0%...
  (Chamley-Judd, Atkinson-Stiglitz)
- Fortunately nobody seems to believe in this extreme result: nobody is pushing for the complete supression of corporate tax, inheritance tax, property tax, etc.
- Eurostat 2010: total tax burden EU27 = 39% of GDP, including 9% of GDP in capital taxes
- The fact that we have no useful theory to think about these large existing capital taxes is one of the major failures of modern economics

A Theory of Inheritance Taxation

- Inheritance = 1st key ingredient of a proper theory of optimal capital taxation
- Imperfect K markets = 2nd key ingredient (to go from inheritance tax to lifetime K tax)
- With no inheritance (100% life-cycle wealth) **and** perfect K markets, then the case for t_K=0% is indeed very strong: 1+r = relative price of present consumption → do not tax r (Atkinson-Stiglitz: do not distort relative prices, use redistributive labor income taxation only)

- Key parameter: $b_y = B/Y$ = aggregate

annual bequest flow B/national income Y

- Very large historical variations:

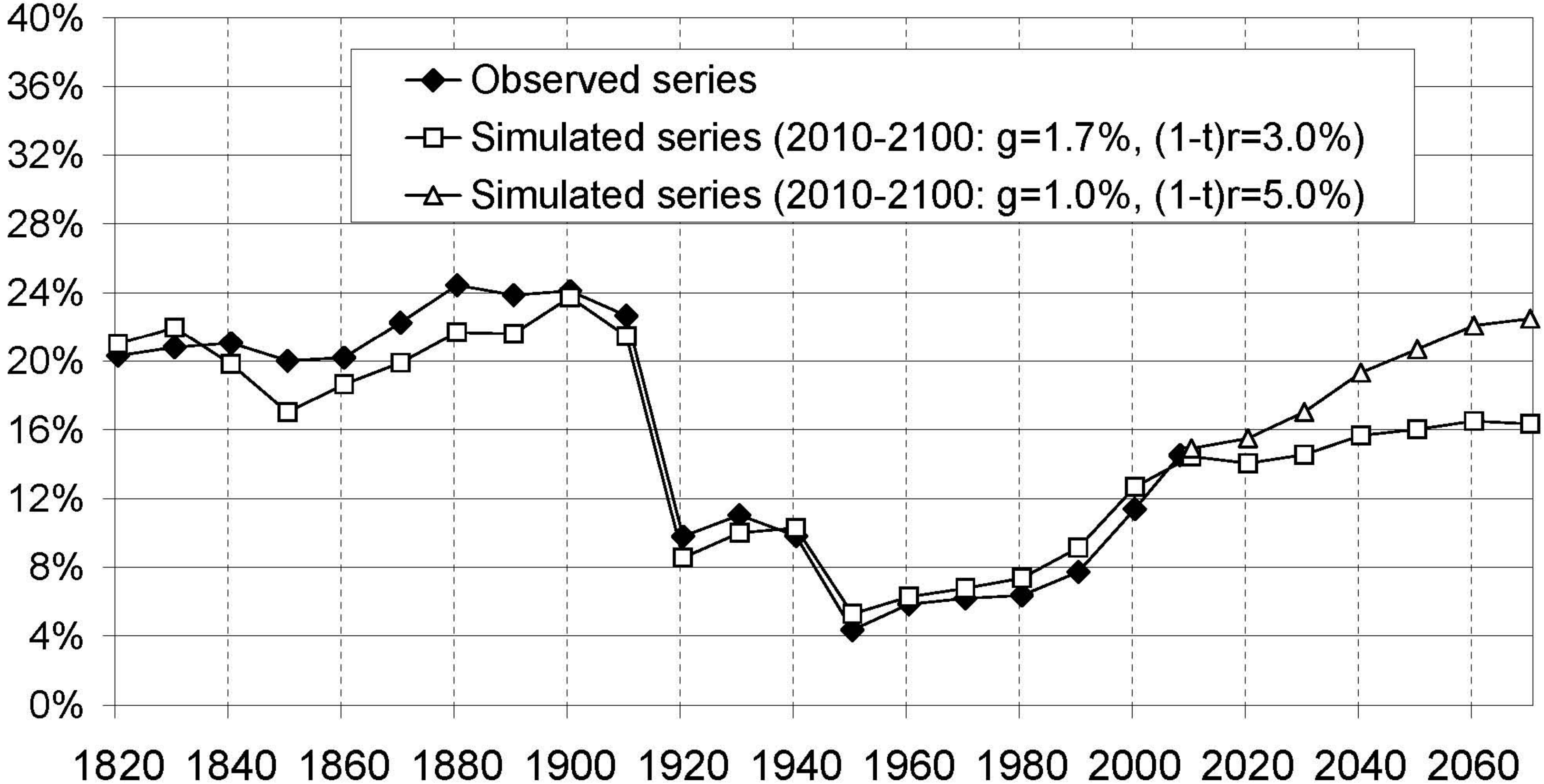
b_y=20-25% of Y until WW1 (=very large)

b_y<5% in 1950-1960 (~Modigliani lifecycle story)

b_y back up to ~15% by 2010

- See « On the Long-Run Evolution of Inheritance – France 1820-2050 », Piketty WP'10, forth.QJE'11
- **r>g story**: g small & r>>g → inherited wealth capitalizes faster than growth → b_y high

Figure 9: Observed vs simulated inheritance flow B/Y, France 1820-2100



Why Chamley-Judd fails with inheritances?

C-J in the dynastic model implies that inheritance tax rate τ_K should be zero in the long-run

(1) If social welfare is measured by the discounted utility of first generation then $\tau_K=0$ because inheritance tax creates an infinitely growing distortion but…

this is a crazy social welfare criterion that does not make sense when each period is a generation

(2) If social welfare is measured by long-run steady state utility then $\tau_K=0$ because supply elasticity e of inheritance wrt to price is infinite but…

we want a theory where e is a free parameter

Why Atkinson-Stiglitz fails with inheritances?

A-S applies when sole source of lifetime income is labor: $c_1+c_2/(1+r)=\theta l-T(\theta l)$

Inheritances provide an additional source of life-income:

$c+b(\text{left})/(1+r)=\theta l-T(\theta l)+b(\text{received})$

➔conditional on θl, high b(left) is a signal of high b(received) [and hence low u_c] ➔ "Commodity" b(left) should be taxed even with optimal $T(\theta l)$

Extreme example: no heterogeneity in θ but pure heterogeneity in bequests motives ➔ bequest taxation is desirable for redistribution

Note: bequests generate positive externality on donors and hence should be taxed less (but still >0)

A Good Theory of Optimal Inheritance Tax

Should follow the optimal labor income tax progress and hence needs to capture key trade-offs robustly:

1) **Welfare effects:** people dislike taxes on bequests they leave, or inheritances they receive, but people also dislike labor taxes → interesting trade-off
2) **Behavioral responses:** taxes on bequests might (a) discourage wealth accumulation, (b) affect labor supply of inheritors (Carnegie effect) or donors
3) Results should be **robust** to heterogeneity in tastes and motives for bequests within the population and formulas should be expressed in terms of estimable **“sufficient statistics”**

Simplified 1-period model

- Agent i in cohort t (1 cohort =1 period =H years)
- Born at the begining of period t
- Receives bequest b_{ti} at beginning of period t
- Works during period t
- Receives labor income y_{Lti} at end of period t
- Consumes c_{ti} & leaves bequest b_{t+1i}
- Max $U(c_{ti},b_{t+1i})=(1-s_{Bi})\log(c_{ti})+s_{Bi}\log(b_{t+1i})$

s.c. $c_{ti} + b_{t+1i} \leq y_{Lti} + b_{ti}\, e^{rH}$ (H=generation length)

$$\rightarrow \quad b_{t+1i} = s_{Bi}\,(y_{Lti} + b_{ti}\, e^{rH})$$

- Steady-state growth: $Y_t = K_t^{\alpha} H_t^{1-\alpha}$, with $H_t = H_0 e^{gt}$ and g=exogenous productivity growth rate
- Assume $E(s_{Bi} \mid y_{Lti}, b_{ti}) = s_B$ (i.e. preference shocks s_{Bi} i.i.d. & indep. from y_{Lti} & b_{ti} shocks)
- Then the aggregate transition equation takes a simple linear form:

$$B_{t+1} = s_B \left(Y_{Lt} + B_t\, e^{rH}\right)$$

$$b_{yt} = B_t/Y_t \rightarrow b_y = s_B(1-\alpha)e^{(r-g)H}/(1-s_B e^{(r-g)H})$$

- b_y is an increasing function of r-g, α & s_B
- r-g=3%,H=30,α=30%,s_B=10% $\rightarrow$ b_y=23%
- b_y indep. from tax rates τ_L & τ_B (elasticity e=0)

Optimal inheritance tax formulas

- Rawlsian optimum, i.e. from the viewpoint of those who receive zero bequest (b_{ti}=0)
- Proposition 1 (pure redistribution, zero revenue) Optimal bequest tax: $\boldsymbol{\tau_B = [b_y - s_B(1-\alpha)]/b_y(1+s_B)}$
- If b_y=20%,α=30%,s_B=10%, then τ_B = 59%
- I.e. bequests are taxed at τ_B=59% in order to finance a labor subsidy $\tau_L=\tau_B b_y/(1-\alpha)$=17%

→ zero receivers do not want to tax bequests at 100%, because they themselves want to leave bequests → trade-off between taxing successors from my cohort vs my own children

- Proposition 2 (exo. revenue requirements τY)
  $\boldsymbol{\tau_B=[b_y-s_B(1-\alpha-\tau)]/b_y(1+s_B),\ \tau_L=(\tau-\tau_B b_y)/(1-\alpha)}$

- If τ=30% & b_y=20%, then τ_B=73% & τ_L=22%
- If τ=30% & b_y=10%, then τ_B=55% & τ_L=35%
- If τ=30% & b_y=5%, then τ_B=18% & τ_L=42%

→ with high bequest flow b_y, zero receivers want to tax inherited wealth at a higher rate than labor income (73% vs 22%); with low bequest flow they want the oposite (18% vs 42%)

- The level of the bequest flow b_y matters a lot for the level of the optimal bequest tax τ_B
- Intuituion: with low b_y (high g), not much to gain from taxing bequests, and this is bad for my children; i.e. with high g what matters is the future, not the rentiers of the past
- but with high b_y (low g), it's the opposite: it's worth taxing bequests & rentiers, so as to reduce labor taxation and to allow people with zero inheritance to leave a bequest...

- Proposition 3 (any utility function, elasticity e>0)
  $\boldsymbol{\tau_B=[b_y-s_{B0}(1-\alpha-\tau)]/b_y(1+e+s_{B0})}$

With s_{B0} = aver. eff. saving rate of zero receivers

e= elasticity of bequest flow b_y wrt $1-\tau_B$

- If $b_y=10\%$, $s_{B0}=10\%$, and $e=0$ then $\tau_B=55\%$ & $\tau_L=35\%$
- If $e=0.2$, then $\tau_B=46\%$ & $\tau_L=36\%$
- If $e=0.5$, then $\tau_B=37.5\%$ & $\tau_L=37.5\%$
- Behavioral responses matter but not hugely as long as elasticity is reasonable
- Note that if $s_{B0} = 0$ (zero receivers never want to leave bequests), we obtain $\tau_B=1/(1+e)$, the classical revenue maximizing inverse elasticity rule

From inheritance tax to capital tax

- With perfect K markets, it's always better to have a big tax τ_B on bequest, and zero lifetime tax τ_K on K stock or K income, so as to avoid intertemporal distorsion
- However in the real world most people prefer paying a property tax τ_K=1% during 30 years rather than a big bequest tax τ_B=30%
- Total K taxes = 9% GDP, but bequest tax <1%
- In our view, the collective choice in favour of lifetime K taxes is a rational consequence of K markets imperfections, not of tax illusion

- Other reason for lifetime K taxes: fuzzy frontier between capital income and labor income, can be manipulated by taxpayers
- Proposition 4: With fuzzy frontier, then $\tau_K = \tau_L$ (capital income tax rate = labor income tax rate), and bequest tax $\tau_B > 0$ iff bequest flow b_y sufficiently large

→ comprehensive income tax system + bequest tax = what we observe

→ but k-labor frontier not entirely fuzzy; see property tax example; one needs K market imperfections to explain obs. tax preferences

- Two kinds of K market imperfections:

(1) Liquidity pbs: paying τ_B=30% might require successors to sell the property (borrowing constraints + indivisibility pb)

→ empirically, this seems to be an important reason why people dislike inheritance taxes (« death taxes ») much more than property taxes & other lifetime K taxes

(2) Uninsurable uncertainty about future rate of return on inherited wealth: what matters is $b_{ti}\ e^{rH}$, not b_{ti} ; but at the time of setting the bequest tax rate τ_B, nobody has any idea about the future rate of return during the next 30 years… (idyosincratic + aggregate uncertainty)

→ with uninsurable uncertainty on r, it's more efficient to split the tax burden between one-off transfer taxes and flow capital taxes paid during entire lifetime

- In case the intertemporal elasticity of substitution is small, and liquidity pb and/or uninsurable uncertainty on future r is substantial, then maybe it’s not too surprising to find that lifetime capital taxes dominate one-off transfer taxes in the real world

- Proposition 5. Depending on parameters, optimal capital income tax rate τ_K can be > or < than labor income tax rate τ_L; if IES σ small enough and/or b_y large enough, then $\tau_K > \tau_L$

(=what we observe in UK & US until the 1970s)

- True optimum: K tax exemption for self-made wealth (savings accounts); but this requires complex individual wealth accounts
- Progressive consumption tax cannot implement rawlsian optimum (bc labor & inheritance treated similarly by τ_C)

Conclusion

- Main contribution: simple, tractable formulas for analyzing optimal tax rates on inheritance and capital
- Main idea: economists' emphasis on $1+r$=relative price is excessive
- The important point about r is that it's large ($r>g \rightarrow$ tax inheritance, otherwise society is dominated by rentiers), volatile and unpredictable ($\rightarrow$ use also lifetime K taxes for insurance reasons)