“The Welfare Cost of Capital Taxation” by Feldstein and “Taxation of Risky Assets” by Bulow and Summers

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Introduction

- two papers about welfare costs of capital taxation
- Feldstein (1978): focus on effects on capital income taxation on labor supply and timing of consumption at individual level
- Bulow and Summers (1984): focus on effects of capital taxation on risky investments at corporate level
- note: both papers focus on linear taxes

Feldstein (1978)

four “mistaken” propositions regarding capital income taxation

1. reductions in τ_K compensated by increases in labor/consumption tax must increase personal savings
2. to achieve efficiency, one should tax labor income or consumption but not capital income
3. capital income taxation has an excess burned only to the extend that (compensated) supply of savings respond to net rate of return
4. not taxing capital income would violate principle of horizontal equity (individuals with same income should pay the same tax)

to “fix”: model in which τ_K affects labor supply and timing of consumption

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  - more taxes early in life cycle and less taxes late in life cycle
  - hence don't need to save as much to cover future tax payments
- role for public savings because of change in timing of tax revenues
  - irony: reducing τ_K to stimulate private savings can reduce private savings but facilitate public savings ...

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- theory of second-best: generally want to distort all margins to minimize overall distortion
  - based, e.g., on Harberger triangle arguments
- Ramsey problem: will only want $\tau_K = 0$ if $\frac{C_1}{C_2}$ is independent of the wage rate (C_i = consumption in period i)
  - I think equivalent to weak separability from Atkinson–Stiglitz

3. Supply of savings

- Harberger triangle in terms of compensated elasticity ϵ:

$$L \approx \frac{1}{2}\left(\frac{\tau}{p}\right)^2 \epsilon(Qp)$$

- letting R = compensated retirement consumption demand and (p_0, p_1) = (pre-tax, post-tax) price of retirement consumption

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- need to look at consumption, not just *net* savings
  - e.g., no net savings in simple, stationary, OLG model; but τ_K distorts consumption within lifetime

4. Horizontal equity and capital income taxation

- Haig (1921)–Simons (1938) notion: tax liability should be same for individuals with same income, regardless of income sources
- more economically sound version: tax liability should only depend consumption stream / present value of lifetime income
  - equivalence relies on homogeneous preferences

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- define annual income = non-capital income (including gifts)
- with linear tax, horizontal equity favors taxes on annual income or consumption over tax on total income
- with nonlinear tax, horizontal equity favors tax on consumption

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  - $\epsilon_{H,W}$ = compensated labor supply elasticity
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- Harberger triangle estimate:

$$\Delta L \approx \frac{1}{2}\left(\frac{p_1 - p_0}{p_1}\right)^2 \epsilon_{R,p} S_1 - \left(\frac{p_1 - p_0}{p_1} \cdot \frac{W_1 - W_0}{W_1}\right) \epsilon_{H,p} W_1 H_1$$

  - not necessarily positive when $W_1 \neq W_0$

Cost of capital taxation: Calibration

- extreme assumption: savings, labor supply don't respond to taxes
  - intuitively, obtain underestimate of welfare cost
- σ = marginal propensity to save = 0.2
- m_{1-H} = marginal propensity to spend on leisure = 0.3
- S_1 = current gross savings (~ 9% of national income)
- capital tax rate τ_K = 40% (keep in mind this is pre-1981)

- if $\tau_L = 0$, gain from capital tax $\rightsquigarrow$ lump-sum tax: $0.2S_1$
- if $\tau_L = 40\%$, gain: $0.33S_1$
- if $\tau_L = 40\%$, gain from capital tax $\rightsquigarrow$ labor tax: 1.87% of wage income

Cost of corporate taxation

- Harberger (1966): corporate taxation distorts between corporate and noncorporate sectors
  - estimated welfare cost from misallocation: 0.5% of national income
- but corporate taxation is also an additional tax on capital income
- estimate of 0.5% gain from converting to tax on total income

Bulow and Summers (1984)

- simple models: corporate taxation reduces return but also risk on investments
  - Feldstein (1969), Stiglitz (1969), Gordon (1981), ...
- this paper: risk sharing not obtained if risk is not taken into account in depreciation schedules (which it is not)
- hence, simple models understate costs of corporate taxation

Simple model: certain depreciation

- before taxes: CAPM $\rightsquigarrow$

$$f'(K)^e - \delta = r + \alpha$$

  - $f'(K)^e$ = expected marginal product of capital
  - δ = depreciation rate
  - r = real interest rate
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- now suppose that there is a tax τ on the risk premium

$$r + \delta + (1 - \tau)(f'(K)^e - r - \delta) = r + \delta + \alpha(1 - \tau) \qquad \text{(CAPM)}$$

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  - no distortion in risk-taking

Simple model: income tax

- now consider an income tax with only depreciation deduction

$$(1-\tau)(f'(K)^e - \delta) = r + \alpha(1-\tau) \qquad \text{(CAPM)}$$

$$f'(K)^e - \delta = \frac{r}{1-\tau} + \alpha$$

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- very little distortion if r is low (e.g., U.S. economy)
  - e.g., with Cobb-Douglas production (with capital share of $\frac{1}{4}$) and $r = 2\%$, corporate income tax reduces K by only 13%
- but raises expected revenue of $\tau K \frac{r+\alpha}{1-\tau}$
  - plausible estimate: 5% of market value of capital stock

Free lunch?

- because government is taking claim of 0 market value (in equilibrium), can only finance programs whose budget has certainty equivalent of 0
- if government wishes to spend expected revenues with certainty, need to impose another tax with high market value but zero expected revenue (e.g., burdensome countercyclical tax)

Importance of fluctuating capital prices

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  but rate of return is often larger than earnings-price ratio in data
- also: corporate tax revenues have always been positive
- also: stock market volatility $\gg$ marginal product volatility

TABLE 1

Standard Deviations of Depreciation Rates

Asset	Age (Years)							
	1	2	3	4	5	6	7	8
Cars:								
Pinto		8.8	10.7	6.3	5.2			
Malibu		3.9	5.3	10.2	12.7			
Impala		3.1	3.7	6.9	14.1			
Trucks:								
Ford F600	6.9	6.5	6.5	5.9	9.6	6.0	6.2	5.1
Ford C8000	1.2	3.2	5.6	5.6	5.9	7.2	11.3	.9
International Harvester 1600	6.7	5.8	6.4	6.5	7.6	7.8	14.5	13.3
Chevrolet CE61003	7.8	5.2	6.0	5.8	6.8	6.6	10.5	11.5
Dodge D600	6.2	5.6	6.4	4.8	5.7	6.6	7.3	13.1

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$$f'(K)^e - \delta^e = \frac{r}{1-\tau} + \alpha$$

- but with deduction for ex ante depreciation, get

$$(1-\tau)f'(K)^e - \tau\delta^e = r + \alpha \qquad \text{(CAPM)}$$
$$f'(K)^e - \frac{\tau}{1-\tau}\delta^e = \frac{r+\alpha}{1-\tau}$$

Taxation based on ex post vs. ex ante depreciation

- suppose $\delta^e = 0$
- with deduction of ex post depreciation, get

$$f'(K)^e = \frac{r}{1-\tau} + \alpha$$

- with deduction of ex ante depreciation, get

$$f'(K)^e = \frac{r+\alpha}{1-\tau},$$

  and much larger distortion of risk-taking

Making ex ante depreciation as favorable as ex post depreciation

- key idea: make certain depreciation occur at rate $\alpha + \delta^e$ (versus uncertain depreciation at rate δ)

- may seem paradoxical, but restores risk-sharing aspect of taxation
- intuition: with risk, economic depreciation is low when market does well, high when market does poorly

- should not use expected depreciation: need to adjust for risk/covariance

TABLE 2

COMPARATIVE DEPRECIATION RATES

Year	Ex Post Depreciation	Ex Ante Depreciation	NIPA Depreciatio
1950	−.5	27.5	5.7
1951	11.1	29.2	5.8
1952	7.5	22.4	5.6
1953	18.7	19.3	5.7
1954	−27.2	23.2	5.8
1955	−4.7	16.0	6.0
1956	8.1	12.6	6.3
1957	27.0	11.7	6.2
1958	−23.1	13.6	6.1
1959	7.8	10.1	6.2
1960	10.2	9.0	6.1
1961	−9.5	9.1	6.1
1962	17.5	8.8	6.1
1963	−4.9	10.2	6.0
1964	−.7	9.3	6.1