Public Economics: Tax & Transfer Policies

(Master PPD & APE, Paris School of Economics)

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Lecture 6: Capital Taxes over Time & across Countries

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(check on line for updated versions)

Basic notions & notations

- National income $Y = F(K,L) = Y_K + Y_L = rK + vL$
  with r = average rate of return
  v = average wage rate
- Individual income $y_i = y_{Ki} + y_{Li} = r_i k_i + v_i l_i$
  with r_i = individual rate of return, v_i = individual wage rate
- Individual capital (wealth) k_i comes from past savings and/or from inheritance (or sometime from various forms of appropriations or privatization processes, e.g. for natural ressources: land, oil, gold, etc.)
- In order to study capital taxation, one needs to specify where k_i comes from, i.e. one needs a dynamic, multi-period model: static, one-period model are fine to study labor income taxation, but cannot be used to study capital taxation → **see next lecture for explicit dynamic models; today = mostly a description of existing capital taxes**

Reminder: what is capital?

- K = real-estate (housing, offices..), machinery, equipment, patents, immaterial capital,..

  (≈ housing assets + business assets: about 50-50)

  Y_K = capital income = rent, dividend, interest, profits,..

- In rich countries, $\beta = K/Y = 5\text{-}6$ ($\alpha = Y_K/Y = 25\text{-}30\%$)

  (i.e. average rate of return $r = \alpha/\beta = 4\text{-}5\%$)

- Typically, in France, Germany, UK, Italy, US, Japan: Y ≈ 30 000€ (pretax average income, i.e. national income /population), K ≈ 150 000-180 000€ (average wealth, i.e. capital stock/population); net foreign asset positions small in most coutries (but rising); see this graph & inequality course for more details

Key distinction: taxes on flows versus stock

- Total tax burden EU27 ≈ 39% of GDP, incl. 9% in capital taxes (US: 28%, incl. 8% in capital taxes). See Eurostat 2013
- With a capital share $\alpha=Y_k/Y\approx30\%$, this is equivalent to an average tax rate ≈ 30% on all capital income flows
- With a capital/income ratio $\beta=K/Y\approx600\%$, this is equivalent to an average tax rate ≈ 1,5% on the capital stock

→ both forms of capital taxes raise ≈9% of GDP

- In practice, there is a large diversity of capital taxes: **stock-based** (one-off inheritance and transfer taxes, annual property or wealth taxes) or **flow-based** (corporate income taxes, taxes on capital income: rental income, interest, dividend, k gains etc.); why are they not all equivalent ?

- In the simplest economic models, we have a general equivalence result: if the rate of return on capital is equal to r and is the same across all individuals & over all assets (=perfect capital markets), then a tax at rate t_k on the capital income flow is exactly equivalent to a tax at rate τ_k on the capital stock, with:

$$\tau_k = r \times t_k \text{ , or } t_k = \tau_k / r$$

- If r=5%, it is equivalent to tax capital stock at τ_k=1% per year or to tax capital income flow at t_k=20% per year
- If r=4%, then τ_k=1% on stock $\leftrightarrow$ t_k=25% on income flow

- Exemple: assume that you own an appartement worth k=1 million €, and that its annual rental value is equal to y_k=40 000€, i.e. r = 4%
- Assume you have to pay a property tax (taxe foncière) at a rate τ_k=1%: 1% of k=10 000€ in tax
- It is equivalent to pay a tax at rate t_k=25% on the rental income (real or imputed):

  25% of y_k=40 000€ = 10 000€ in tax
- Same computations with k=100 000€, y_k=4 000€

- Note: in France, average rate of property tax ≈0,5%; in the US or UK, it is closer to ≈1%

- In practice, the key reason why taxes on the capital stock and taxes on the capital income flow are not equivalent is the existence of capital market imperfections: the rate of return r_i varies across assets & individuals
- For individuals with r_i > average r, then it is better to have stock taxes than flow taxes (& conversely for individuals with r_i < average r)
- If r_i=10%, τ_k=1% on stock $\leftrightarrow$ t_k=10% on income flow
- If if r_i=2%, τ_k=1% on stock $\leftrightarrow$ t_k=50% on income flow

- Key argument in favor of taxes on capital stock rather than on flow (i.e. capital tax rather than income tax): they put incentives to get a high return on k (Allais)

- In the EU & US, capital taxes = 8%-9% GDP
- Typical structure:
- inheritance taxes <1% GDP

  (say, 5%-10% of a 10% tax base)
- + annual wealth & property taxes 1%-2% GDP
  (say, 0,5% of a 200%-400% tax base)
- + corporate profits tax 2%-3% GDP

  (say, 20%-30% of a 10% tax base)
- + personal capital income tax 2%-3% GDP

  (say, 20%-30% of a 10% tax base)

Exemple of inheritance taxes

- Basic distinction:
- **Estate taxes** : tax rates depend on the total "estate" (real estate: immobilier + personal estate: mobilier, incl. financial), i.e. the total wealth left by the decedent, irrespective of how it is split between successors

  = **applied in US & UK** (complete testamentary freedom… but egalitarian default rules if no testament)
- **Inheritance taxes**: tax rates depend on the wealth received by each successor (part successorale) and the kin relationship (children vs stangers)

  = applied in **France & Germany** (limited testamentary freedom; rigid transmission rules)

  → in order to understand how the tax is computed, one first needs to understand how the wealth is divided

- Rigid transmission rules in France: the 1/n+1 rule
- « Réserve héréditaire » (this has to go the children, no matters what) = n/n+1
- « Quotité disponible » (what you can transmit to individuals other than your children) = 1/n+1 , with n = number of children
- With n = 1, free disposal of 50% of your wealth
- With n =2, free disposal of 33% of your wealth
- With n=3 or more, free disposal of 25% of your wealth; the other 75% is divided equally among children
- These basic rules were unchanged since 1804

- Default matrimonial regime: « community of acquisition » (« communauté réduite aux acquêts »)
- Married couple wealth $w = w_c + w_1 + w_2$
- with w_c = community assets = assets acquired during marriage

w_1 , w_2 = own assets (biens propres) = inherited by each spouse (or acquired before marriage)

- Only w_c is split 50-50

- Other matrimonial regimes: separate property; universal community (very rare)

Marginal vs average tax rates: illustration with French 2012-2013 Inheritance Tax

French 2012-2013 tax schedule (applied to 2012-2013 decedents):
(barème des droits de successions)
(see www.impots.gouv.fr)

This tax schedule applies "in direct line", i.e. for transmissions from parents to children, on individual estate shares ("parts successorales")

The exemption for children is equal to: 100 000

Inter vivos gift: exemption every 15 year

Spouses: tax exempt

Note: until 2011, top rate = 40% instead of 45%

Inheritance brackets (in excess of exemption)		**Marginal tax rate**
(€)		(%)
0	8 072	5,0%
8 072	12 109	10,0%
12 109	15 932	15,0%
15 932	552 324	20,0%
552 324	902 838	30,0%
902 838	1 805 677	40,0%
1 805 677		45,0%

Key change in 2012: in 2007-2011, children exemption = 150 000€, every 6 year

I.e. if they start giving to their children at age 50 and die at age 80, each parent could transmit 6 x 150 000€ = 900 000€ to each children with zero tax; i.e. a couple with two children could transmit 3,6 millions € with zero tax.

Since 2012, such parents can "only" transmit 4 x (3 x 100 000€) = 1,2 millions € with zero tax

In practice, less than 5% of direct line transmissions pay inheritance taxes (but this depends a lot on tax planning)

(in 1992-2006: children exemption = 50 000€, every 10 year)

Exemple 1: married couple with wealth w = 1 million € and two kids, no inter vivos gift

Assumption: each spouse owns 500 000€, and the couple wishes to transmit 500 000€ to each kid

Assume that the first decedent transmits the full property of 500 000€ to kids; then the second decedent transmits the remaining 500 000€ to the kids

Inheritance tax at first death: 5% x (8 072-0) + 10% x (12 109-8 072)+ 15% x (15 932-12 109) + 20% x (250 000 - 15 932 - 100 000) = 28 194€ = 11,3% of 250 000€

Estate tax at second death = same computation = 28 194€ = 11,3% of 250 000€

Total estate tax paid by each children = 56 389€ = 11,3% of 500 000€

Total inheritance tax paid = 112 777€ = 11,3% of 1 000 000€

Effective tax rate = 11,3% < Marginal tax rate=20%

Exemple 2: married couple with wealth w = 10 million € and two kids, no inter vivos gift

Assumption: each spouse owns 5 millions €, and the couple wishes to transmit 5 millions € to each kid

Assume that the first decedent transmits the full property of 5 millions € to kids; then the second decedent transmits the remaining 5 millions € to the kids

Inheritance tax at first death: 5% x (8 072-0) + 10% x (12 109-8 072)+ 15% x (15 932-12 109) + 20% x (552 324 - 15 932) + 30% x (902 838 - 552 324) + 40% x (1 805 677 - 902 838) + 45% x (2 500 000 - 1 805 677 - 100 000) = 842 394€ = 33,7% of 2 500 000€

Estate tax at second death = same computation = 842 394€ = 33,7% of 2 500 000€

Total inheritance tax paid by each children = 1 684 789€ = 33,7% of 5 000 000€

Total inheritance tax paid = 3 369 577 € = 33,7% of 10 000 000€

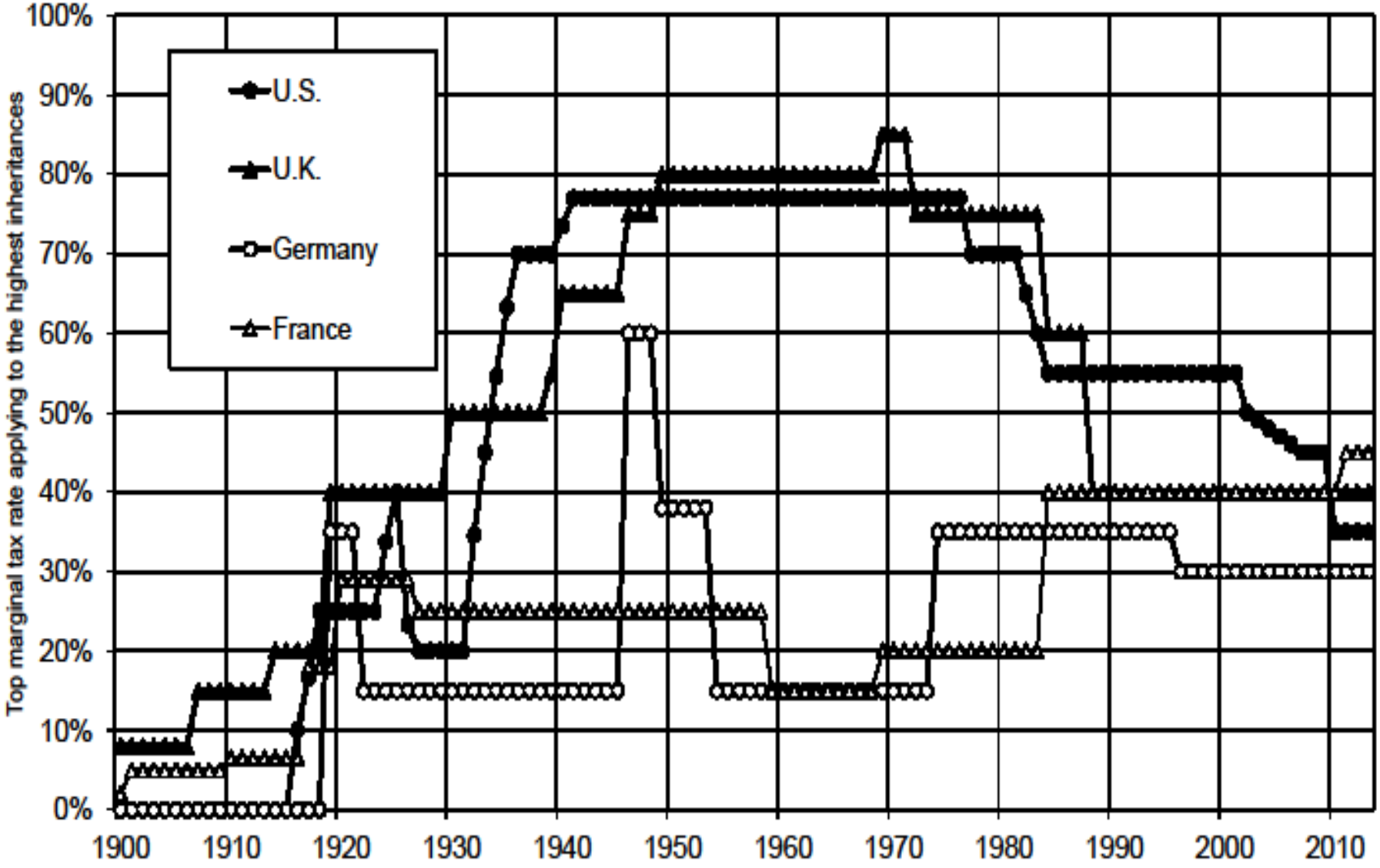
Effective tax rate = 33,7% < Marginal tax rate = 45%

- Other exemples of computations using tax schedules from France and the US: see excel file

- Chaotic evolution of top inheritance tax rates over time and across countries: see graph

- On the historical evolution of inheritance taxes:
- K. Scheve & D. Stasavadge, “Democracy, War & Wealth – Evidence from Two Centuries of Inheritance Taxation”, 2011 [article in pdf format]

Figure 14.2. Top inheritance tax rates, 1900-2013



The top marginal tax rate of the inheritance tax (applying to the highest inheritances) in the U.S. dropped from 70% in 1980 to 35% in 2013. Sources and series: see piketty.pse.ens.fr/capital21c.

Progressive wealth taxes

- Exemple with French ISF: see excel file

- On the evolution of the French wealth tax (ISF) :

See Zucman, G., “Les hauts patrimoines fuient-ils l’ISF? Une estimation sur la période 1995-2006 », PSE Master Thesis, 2008 [article in pdf format]

Marginal vs average tax rates: illustration with French 2008-11 Wealth Tax

French 2008 wealth tax schedule (applied to 1/1/2008 wealth):
(barème de l'impôt sur la fortune (ISF))
(see www.impots.gouv.fr)

threshold (€)	marg. rate (%)
770 000	0,55%
1 240 000	0,75%
2 450 000	1,00%
3 850 000	1,30%
7 360 000	1,65%
16 020 000	1,80%

(no major reform in 2008-2011, except small adjustement for inflation)

Exemple with wealth w = 1 million €

0,55% x (1 000 000 - 770 000) = 1 265€ = 0,13% of 1 000 000 €

>>> marginal wealth tax rate = 0,55%, average wealth tax rate = 0,13%

Implicit wealth income tax rate:
If r = 2%, i.e. rw = 20 000€, then average wealth income tax rate = 6,32%
If r = 10%, i.e. rw = 100 000€, then average wealth income tax rate = 1,26%

Exemple with wealth w = 10 million €

0,55% x (1 240 000 - 770 000) + 0,75% x (2 450 000 - 1 240 000) + 1% x (3 850 000 - 2 450 000)
+ 1,30% x (7 360 000 - 3 850 000) + 1,65% x (10 000 000 - 7 360 000) = 114 850€ = 1,15% of 10 000 000 €

>>> marginal wealth tax rate = 1,65%, average wealth tax rate = 1,15%

Implicit wealth income tax rate:
If r = 2%, i.e. rw = 200 000€, then average wealth income tax rate = 57,43%
If r = 5%, i.e. rw = 500 000€, then average wealth income tax rate = 22,96%
If r = 10%, i.e. rw = 1 000 000€, then average wealth income tax rate = 11,48%

Marginal vs average tax rates: illustration with French 2012 Wealth Tax

French 2013 wealth tax schedule (applied to 1/1/2013 wealth):	threshold	marg. rate
(barème de l'impôt sur la fortune (ISF))	(€)	(%)
(see www.impots.gouv.fr)	800 000	0,50%
	1 310 000	0,70%
	2 570 000	1,00%
	5 000 000	1,25%
	10 000 000	1,50%