Lecture 7: Wealth & property taxes over time & across countries
(check on line for updated versions)
Roadmap of lecture 5

• Basic notions & notations
• Reminder: what is capital?
• Key distinction: taxes on flow vs taxes on stock
• Inheritance taxes
• Progressive wealth taxes
• Property taxes
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 resources: 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 \( \rightarrow \) 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)
  \(Y_K = \text{capital income} = \text{rent, dividend, interest, profits,..}\)

- In rich countries, \(\beta = \frac{K}{Y} = 5-6\) \(\alpha = \frac{Y_K}{Y} = 25-30\%\)
  (i.e. average rate of return \(r = \frac{\alpha}{\beta} = 4-5\%\))

- Typically, in France, Germany, UK, Italy, US, Japan: \(Y \approx 30 000\text{€} \) (pretax average income, i.e. national income /population), \(K \approx 150 000-180 000\text{€} \) (average wealth, i.e. capital stock/population); net foreign asset positions small in most coutries (but rising); see economic history course for more details
Figure 3.1. Capital in the United Kingdom, 1700-2010

National capital is worth about 7 years of national income in the United Kingdom in 1700 (including 4 in agricultural land). Sources and series: see piketty.pse.ens.fr/capital21c.
In Italy, private capital rose from 240% to 680% of national income between 1970 and 2010, while public capital dropped from 20% to -70%. Sources and series: piketty.pse.ens.fr/capital21c.
Figure 5.7. National capital in rich countries, 1970-2010

Net foreign assets held by Japan and Germany are worth between 0.5 and 1 year of national income in 2010. Sources and series: see piketty.pse.ens.fr/capital21c.
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 $\alpha = Y_k/Y \approx 30\%$, this is equivalent to an average tax rate ≈ 30% on all capital income flows
• With a capital/income ratio $\beta = K/Y \approx 600\%$, 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 \( \tau_k \) on the capital stock, with:

\[
\tau_k = r \times t_k \text{, or } t_k = \frac{\tau_k}{r}
\]

• If \( r=5\% \), it is equivalent to tax capital stock at \( \tau_k=1\% \) per year or to tax capital income flow at \( t_k=20\% \) per year

• If \( r=4\% \), then \( \tau_k=1\% \) 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 $\tau_k=1\%$: 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 $\approx 0.5\%$; in the US or UK, it is closer to $\approx 1\%$
• 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 $r_i=10\%$, $\tau_k=1\%$ on stock $\leftrightarrow t_k=10\%$ on income flow
• If if $r_i=2\%$, $\tau_k=1\%$ 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) (see also “Use it lose it: efficiency gains from wealth taxation”, Guvenen et al 2016)
Popular perceptions about capital tax: see Fisman et al 2016, “Do Americans Want to Tax Capital? Evidence from on-line surveys”

Experiment: show hypothetical individuals with income $y=10,000$, $50,000$, $100,000$, $300,000$, etc. and net wealth $w=50,000$, $500,000$, $5M$, etc., and ask how much total tax (income tax + property tax + all taxes) they should pay.

Result: for given income $y$, everybody want individuals with higher net wealth $w$ to pay more taxes. Implicit wealth tax rates are pretty high.

Common-sense reaction: if some individuals have very high wealth but very low income, there’s no reason to exempt them from taxation; they should just sell some of their under-used assets to pay their taxes.
The diversity of capital taxes

• 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 $\frac{1}{n+1}$ rule
• « Réserve héréditaire » (this has to go the children, no matters what) = $\frac{n}{n+1}$
• « Quotité disponible » (what you can transmit to individuals other than your children) = $\frac{1}{n+1}$, 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 (more & more common); universal community (very rare)
• Inheritance data can be used to study family strategies with wealth, portfolio reallocation during marriage, etc.
  (see historical Parisian inheritance data project)
Figure 4: Portfolio reallocations during marriage
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%

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)

<table>
<thead>
<tr>
<th>Inheritance brackets (in excess of exemption)</th>
<th>Marginal tax rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>5,0%</td>
</tr>
<tr>
<td>8 072</td>
<td>10,0%</td>
</tr>
<tr>
<td>12 109</td>
<td>15,0%</td>
</tr>
<tr>
<td>15 932</td>
<td>20,0%</td>
</tr>
<tr>
<td>902 838</td>
<td>30,0%</td>
</tr>
<tr>
<td>1 805 677</td>
<td>40,0%</td>
</tr>
<tr>
<td>1 805 677</td>
<td>45,0%</td>
</tr>
</tbody>
</table>
Exemple 1: married couple with wealth \( w = 1 \text{ million } \varepsilon \) and two kids, no inter vivos gift

Assumption: each spouse owns 500 000\( \varepsilon \), and the couple wishes to transmit 500 000\( \varepsilon \) to each kid

Assume that the first decedent transmits the full property of 500 000\( \varepsilon \) to kids; then the second decedent transmits the remaining 500 000\( \varepsilon \) to the kids

Inheritance tax at first death:
\[
5\% \times (8 \, 072 - 0) + 10\% \times (12 \, 109 - 8 \, 072) + 15\% \times (15 \, 932 - 12 \, 109) + 20\% \times (250 \, 000 - 15 \, 932 - 100 \, 000)
\]
\[
= 28 \, 194 \varepsilon = 11,3\% \text{ of } 250 \, 000 \varepsilon
\]

Estate tax at second death = same computation = 28 194\( \varepsilon \) = 11,3\% of 250 000\( \varepsilon \)

Total estate tax paid by each children = 56 389\( \varepsilon \) = 11,3\% of 500 000\( \varepsilon \)

Total inheritance tax paid = 112 777\( \varepsilon \) = 11,3\% of 1 000 000\( \varepsilon \)
Effective tax rate = 11,3\% < Marginal tax rate=20\%

Exemple 2: married couple with wealth \( w = 10 \text{ million } \varepsilon \) and two kids, no inter vivos gift

Assumption: each spouse owns 5 millions \( \varepsilon \), and the couple wishes to transmit 5 millions \( \varepsilon \) to each kid

Assume that the first decedent transmits the full property of 5 millions \( \varepsilon \) to kids; then the second decedent transmits the remaining 5 millions \( \varepsilon \) to the kids

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

Estate tax at second death = same computation = 842 394\( \varepsilon \) = 33,7\% of 2 500 000\( \varepsilon \)

Total inheritance tax paid by each children = 1 684 789\( \varepsilon \) = 33,7\% of 5 000 000\( \varepsilon \)

Total inheritance tax paid = 3 369 577 \( \varepsilon \) = 33,7\% of 10 000 000\( \varepsilon \)
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:
• See also: J. Beckert, Inherited wealth, PUP 2008
Fisher, « Economists in Public Service », AER 1919
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.
Figure 14.1. Top income tax rates, 1900-2013

The top marginal tax rate of the income tax (applying to the highest incomes) in the U.S. dropped from 70% in 1980 to 28% in 1988. 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 also G. Du Rietz, M. Henrekson, « Swedish Wealth Taxation (1911–2007) », in Swedish Taxation: Developments since 1862, Palgrave 2015, Chap. 6
### Marginal vs average tax rates: illustration with French 2012-2016 Wealth Tax

**French 2013 wealth tax schedule**

(Barème de l’impôt sur la fortune (ISF))

<table>
<thead>
<tr>
<th>Threshold (€)</th>
<th>Marginal tax rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>800,000</td>
<td>0.50%</td>
</tr>
<tr>
<td>1,310,000</td>
<td>0.70%</td>
</tr>
<tr>
<td>2,570,000</td>
<td>1.00%</td>
</tr>
<tr>
<td>5,000,000</td>
<td>1.25%</td>
</tr>
<tr>
<td>10,000,000</td>
<td>1.50%</td>
</tr>
</tbody>
</table>

**Notes:**

- Tax rates start at 0.8M€ but are not applied before 1.3M€
- Tax rates apply after deductions (in particular 30% deduction for main residence)

(see www.impots.gouv.fr)
**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)

<table>
<thead>
<tr>
<th>Threshold (€)</th>
<th>Marg. rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>770 000</td>
<td>0,55%</td>
</tr>
<tr>
<td>1 240 000</td>
<td>0,75%</td>
</tr>
<tr>
<td>2 450 000</td>
<td>1,00%</td>
</tr>
<tr>
<td>3 850 000</td>
<td>1,30%</td>
</tr>
<tr>
<td>7 360 000</td>
<td>1,65%</td>
</tr>
<tr>
<td>16 020 000</td>
<td>1,80%</td>
</tr>
</tbody>
</table>

(no reform in 2008-2011, except small adjust. for inflation)

**Exemple with wealth \(w = 1\) million €**

\[
0,55\% \times (1 000 000 - 770 000) = 1 265€ = 0,13\% \text{ of } 1 000 000 €
\]

>>> 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 €**

\[
0,55\% \times (1 240 000 - 770 000) + 0,75\% \times (2 450 000 - 1 240 000) + 1\% \times (3 850 000 - 2 450 000) \\
+ 1,30\% \times (7 360 000 - 3 850 000) + 1,65\% \times (10 000 000 - 7 360 000) = 114 850€ = 1,15\% \text{ of } 10 000 000 €
\]

>>> 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%
Wealth taxes vs property taxes

• Progressive taxes on net wealth (real estate + business + financial assets – debt) exist in Switzerland, France, Spain. They used to exist in Sweden and Germany (abolished during 2000s, mostly because of valuation problems)

• Most common wealth tax: « property tax » = proportional tax on real estate assets

• UK « mansion tax »: progressive tax on real estate transactions (higher rate above 1m£ or 2m£)