Lecture 9: Capital income, inheritance & wealth taxes over time & across countries
(check on line for updated versions)
Roadmap of lecture 9

• 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 → 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 + financial/business assets: about 50-50)
  (but large variations in portfolio comp. across distribution)
  $Y_K =$ capital income = rent, dividend, interest, profits,..

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

- Typically, in France, Germany, UK, Italy, US, Japan:
  $Y \approx 30\,000€$ (pretax average income, i.e. national income /population),
  $K \approx 150\,000-180\,000€$ (average wealth, i.e. capital stock/population);
  net foreign asset positions small in most countries (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.
The changing share of public ownership

- During the 1950-1980 period, the share of net public wealth in net national wealth was as large as 25-30% in many Western countries = mixed property regime
- By 2015, the share of net public wealth is negative not only in Italy but also in US, UK and Japan (and only slightly positive in France and Germany)
- In China, public share seems stabilize around 30%
- Changing ideology on efficiency of private vs public property
- Rising public debt: more difficulties to agree about fair tax burden with growth slowdown and globalization? And/or structural myopa in absence of strong rules or ideology?
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 2b. The decline of public property
(share of public wealth in national wealth)

Share of net public wealth (public assets minus public debt) in net national wealth (private + public).
Figure 2c. The decline of public property vs. the rise of sovereign funds
(share of public wealth in national wealth)

- China
- USA
- Japan
- France
- Britain
- Germany
- Norway

Share of net public wealth (public assets minus public debt) in net national wealth (private + public).
Figure 7c. The decline of public property: Russia vs other countries
(share of net public wealth in net national wealth)
Key distinction: taxes on capital income flows versus taxes on capital 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 \( \alpha = \frac{Y_k}{Y} \approx 30\% \), this is equivalent to an average tax rate ≈ 30% on all capital income flows
• With a capital/income ratio \( \beta = \frac{K}{Y} \approx 600\% \), 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 \( r_i = 2\% \), \( \tau_k = 1\% \) 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 2017)
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 $y=10000$, $50000$, $100000$, $300000$, etc. and net wealth $w=50000$, $500000$, $5M$, 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 underused 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)
The progressive tax triptyc: income, inheritance and wealth

• Most developed countries introduced between 1870 and 1920 modern progressive taxes on income and inheritance: first Germany-Sweden-Japan in 1870s-1890s, then UK 1892-1908, US 1913-1916, France 1901-1914, etc.

• General reaction to the perception of high inequality in late 19c and early 20c; international diffusion process; rise of universal suffrage

• But it is really after WW1 that these taxes became steeply progressive, particularly in the US-UK... until the progressive retreat of the 1980s-1990s (changing ideology, rising tax competition)
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.
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.
• General decline in tax progressivity since 1980s, in spite of the rise (or stabilisation) in total tax burden
• Progressive income tax: basic pillar for financing public goods and social spendings (together with social contributions)
• Progressive inheritance tax: lower tax revenue than income tax (say, <1% Y vs 10% Y), but important role to limit perpetuation & concentration of wealth & power in the same families
• The US invented very steeply progressive taxation of income and inherited wealth in the 1920s-1930s, partly because the US did not want to become as unequal as Europe
• See Fisher 1919 about the “undemocratic” concentration of wealth (top 2% owned 50% of US wealth at the time: less than in Europe, but already too much according to mainstream US economists of the time)
Figure 13.1. Tax revenues in rich countries, 1870-2010

Total tax revenues were less than 10% of national income in rich countries until 1900-1910; they represent between 30% and 55% of national income in 2000-2010. Sources and series: see piketty.pse.ens.fr/capital21c.
Over 1930-1980 period, top marginal income tax rate = 82% in the US

Extreme income tax progressivity at the very top is critical not so much to raise revenue, but mostly to keep top labor incomes and rent extraction under control

Top US & UK inheritance tax rates also reached 70-80% during 1930-1980 period, much more than in Germany and France (where wealth redistribution was largely carried out via other means: destruction, inflation, nationalization)

Progressive taxation = a US-UK invention


See also Beckert, *Inherited wealth*, PUP 2008
• Many European countries also created annual progressive taxes on net wealth (total assets minus debt) in the early 20th century (Germany, Sweden, Norway, Switzerland, etc.).

• Germany: creation of annual wealth tax in 1893 in Prussia (after income tax 1891), 1902 in Saxony, etc. See Dell 2008.


• Switzerland: local and federal wealth taxes since 1913. See Dell et al 2007
• But no progressive tax on wealth was created at that time in UK, US, France.

• Why? Maybe because these countries already had well developed, old-style annual proportional taxes on real-estate property (land, housing and buildings), like “taxe foncière” in France (created by French Revolution). Maybe it is more difficult to reform such taxes than to create brand new system.

• On the other, Swiss wealth taxes did evolve from old-style local property taxes.

• Anyway, UK-US-France in early 20c focused upon progressive taxes and income and inheritance (=so as to make new industrial and financial sectors contribute to tax) rather than wealth taxes.


• Exceptionnal wealth taxes in France 1945 (up to 25%, or even 100% for those whose wealth had increased between 1940 and 1944), a little bit like the exceptional wealth taxes in Germany 1949-1985 to repay public debt; but no annual wealth tax until 1981
• Wealth tax created in France in 1980s (IGF-ISF): based upon market values of all assets (but no automatic pre-filled declaration).

• Very different from the wealth taxes created around 1900-1910 in Germany or Sweden, at a time with no inflation: wealth taxes were based not on market values, but on cadastral values, which created huge valuation problems when inflation became important (a little bit like property tax in France and other countries, but with tax progressivity this is even more problematic).
• Germany 1997: suspension of wealth tax due to valuation problems (constitutional/legal decisions on lack of horizontal equity).

• In Sweden: top wealth tax rates up to 4% in the 1980s, but applied to mismeasured tax base. Repeal 2007. Partly due to valuation problems, partly due to ideological/political change + small-country syndrom (repeal inheritance tax 2005) + welfare-state success.

• New discussions on European wealth taxes have been growing since 2011-12, in the context of Euro debt crisis and rising Euro discontent. See e.g. Kreneck et al 2017.
• No annual progressive wealth tax in UK and US, but during many decades higher income tax progressivity than in all other countries.
• Also, during the 1970s, higher top income tax rates on capital income (« unearned income ») than on labour income (« earned income »)
• The opposite is true today, in the name of pragmatism (tax evasion, offshore financial accounts, although it would be technically simple to have automatic cross-country reporting and information transmission as counterpart to free capital flows), or sometime in the name of innovation (it is unclear however why interest or dividend income would have more innovative content than wage or self-employment income).
Figure 3: Top Income Tax Rates: Earned (Labor) vs Unearned (Capital)
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 strangers)
  = 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 to the children, no matter 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 (more & more common); universal community (very rare)
• Inheritance data can be used to study family strategies with wealth, porfolio reallocation during marriage, etc. (see [historical Parisian inheritance data project](#))
Figure 4: Portfolio reallocations during marriage

- □ Share of uncapsulated inherited assets (currently owned + sold or given during marriage) in total assets
- ■ Share of uncapsulated inherited assets (currently owned only) in total assets

Year: 1872, 1882, 1912, 1922, 1927, 1932, 1937
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)

<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>552 324 €</td>
<td>30,0%</td>
</tr>
<tr>
<td>902 838 €</td>
<td>40,0%</td>
</tr>
<tr>
<td>1 805 677 €</td>
<td>45,0%</td>
</tr>
</tbody>
</table>

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

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%

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

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:
  • See also: J. Beckert, Inherited wealth, PUP 2008
  • Fisher, « Economists in Public Service », AER 1919
Progressive wealth taxes

• Exemple with French ISF (impôt sur la fortune): see excel file

• Progressive tax schedule on net wealth >1.3m€ (with 30% exemption on primary residence) and top rate=1.5% above 10m€ (in 2017).

• Created in 1981 (IGF), suppressed in 1986, re-created as ISF in 1988 (ISF), suppressed/transferred into IFI in 2018 (see below).
### Marginal vs average tax rates: illustration with French 2012-2016 Wealth Tax

French 2013 wealth tax schedule (applied to 1/1/2013 wealth):

<table>
<thead>
<tr>
<th>Threshold</th>
<th>Marginal tax rate</th>
</tr>
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<tbody>
<tr>
<td>€800,000</td>
<td>0.50%</td>
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<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>

*Note 1: Tax rates start at €0.8M but are not applied before €1.3M.*

*Note 2: 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))

<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 \( w = 1 \text{ million } € \)**

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

>>> 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 \( w = 10 \text{ million } € \)**

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

>>> 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%

• See also Garbinti-Goupille-Piketty 2016, Accounting for Wealth Inequality Dynamics: Methods, Estimates and Simulations for France (1800-2014) (Slides): combining wealth survey, income tax capitalization, inheritance tax multiplier, wealth tax (ISF) data (limited) and national accounts: top financial wealth has increased faster than real estate wealth (and a lot faster than national income) since 1980s-1990s; little evidence of k flight

• Top financial wealth increased as fast (or even faster) in France as in other European countries (e.g. UK). With capital flight, one should have seen much less growth in France.
WORLD VIEW

Compare inequality between countries on an interactive world map

COUNTRY GRAPHS

Follow the evolution of inequality within countries with user-friendly graphs

DATA TABLES

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THE SOURCE FOR GLOBAL INEQUALITY DATA
Wealth taxes vs property taxes

• Progressive taxes on net wealth (real estate + business + financial assets – debt) still exist in Switzerland, France, Spain, Norway. Abolished in Sweden and Germany during the 2000s (mostly because of valuation problems, see above)

• Most common wealth tax: « property tax » = proportional tax on real estate assets (land and housing), created in early 19c or earlier

• Proportional, non-inflation-adjusted property taxes are at the origin of US tax revolt in the late 1970s: see I. Martin, The Permanent Tax Revolt: How the Property Tax Transformed American Politics, SUP 2008; After the Tax Revolt: California’s Proposition 13 Turns 30, 2008
• UK « mansion tax »: progressive tax on real estate transactions (very low rates <0.1m£, much higher rate above 1m£ or 2m£)

• Not clear why transactions should be taxed (better to have lower annual tax rates, independantly of whether you move or not), or why only real estate should be taxed rather than full net wealth
French IFI (impôt sur la fortune immobilière) is due to replace ISF in 2018. Same progressive tax schedule on net wealth >1.3m€ (with 30% exemption on primary residence) and top rate=1.5% above 10m€. Except that only real estate assets are taken into account (not financial assets).

Given that most wealth is financial at the top of the distribution, this is almost like a complete suppression (tax revenues are due to fall from about 5 billion to 1.5 billion €).
Justifications for IFI vary:

Either in the name of pragmatism: « financial assets are impossible to tax because of tax evasion, offshore financial wealth ». Ok, why not, except that top financial wealth (incl. top financial assets reported to ISF) have increased more than real estate wealth. Of course, one could still improve ISF administration by having automatic transmission of information, prefilled declaration, etc. In any case, fighting tax evasion by suppression taxation seems odd.

Or in the name of investment: « financial assets generate real economic activity, not real estate assets ». Impossible to understand: if I spend 10 millions euros to construct a new building, I generate more economic activity than if I purchase a financial portfolio from someone else (or abroad). Confusion between real-estate vs financial and new investment vs portfolio reallocation. These are two very different issues.