131: Public Economics
Taxes on Capital and Savings

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MOTIVATION

1) Capital income is about 25-30% of national income (labor income is 70-75%) but distribution of capital income is much more unequal than labor income

Capital income inequality is due to differences in savings behavior but also inheritances received

⇒ Equity suggests it should be taxed more than labor

2) Capital Accumulation correlates strongly with growth [although causality link is not obvious] and capital accumulation might be sensitive to the net-of-tax return.

⇒ Efficiency cost of capital taxation might be high.
MOTIVATION

3) Capital more mobile internationally than labor

Key distinction is **residence** vs. **source** base capital taxation:

**Residence:** Capital income tax based on residence of owner of capital.

Most individual income tax systems are residence based (with credits for taxes paid abroad)

Incidence falls on the owner $\Rightarrow$ can only escape tax through tax evasion (offshore tax heavens) or changing residence (mobility)

Tax evasion through tax heavens is a very serious concern (Zucman’s book “Scourge of Tax Heavens” 2015)
Source: Capital income tax based on location of capital

Real estate property tax and corporate income tax are source based (exception US corporate tax applies to worldwide profits of US corporations but only upon rapatriation)

Incidence is then partly shifted to labor if capital is mobile

Mechanism: tax on capital, capital flees the country, hurts the wage of domestic workers (as workers are less productive with less capital) ⇒ Workers bear part of the burden

4) Capital taxation is extremely complex and provides many tax avoidance opportunities particularly for multinational firms (Gravelle, 94)
FACTS ABOUT WEALTH AND CAPITAL INCOME

Definition: Capital Income = Returns from Wealth Holdings

Aggregate US Private Wealth $\simeq 4 \times$ Annual National Income

Housing: residential real estate (land + buildings) [income = rents] net of mortgage debt

Unincorporated business assets: value of sole proprietorships and partnerships [income = individual business profits]

Corporate equities: Value of corporate stock [income = dividends + retained earnings]

Fixed claim assets: Currency, deposits, bonds [income = interest income] minus debts [credit card, student loans]

Pension funds: Substantial amount of equities and fixed claim assets held indirectly through pension funds
The composition of household wealth in the U.S., 1913-2013

This figure depicts the evolution of the ratio of total household wealth to national income. This ratio has followed a U-shaped evolution and the composition of wealth has changed markedly since 1913. Source: Appendix Table A1.

Source: Saez and Zucman ’14
The composition of capital income in the U.S., 1913-2013

- Housing rents (net of mortgages)
- Noncorporate business profits
- Profits & interest paid to pensions
- Net interest
- Corporate profits

Source: Saez and Zucman '14
Authors' computations using country national accounts. Private wealth = non-financial assets + financial assets - financial liabilities (household & non-profit sectors)

Source: Piketty and Zucman '13
Private wealth / national income ratios 1870-2010

Authors' computations using country national accounts. Private wealth = non-financial assets + financial assets - financial liabilities (household & non-profit sectors)

Source: Piketty and Zucman '13
The changing nature of national wealth, France 1700-2010

National wealth = agricultural land + housing + other domestic capital goods + net foreign assets

The changing nature of national wealth, US 1770-2010 (incl. slaves)

National wealth = agricultural land + housing + other domestic capital goods + net foreign assets

Source: Piketty and Zucman '13
FACTS ABOUT WEALTH AND CAPITAL INCOME

Wealth = $W$, Return = $r$, Capital Income = $rW$

$$W_t = W_{t-1} + r_t W_{t-1} + E_t + I_t - C_t$$

where $W_t$ is wealth at age $t$, $C_t$ is consumption, $E_t$ labor income earnings (net of taxes), $r_t$ is the average (net) rate of return on investments and $I_t$ net inheritances (gifts received and bequests - gifts given).

Differences in Wealth and Capital income due to:

1) Age
2) past earnings, and past saving behavior $E_t - C_t$ [life cycle wealth]
3) Net Inheritances received $I_t$ [transfer wealth]
4) Rates of return $r_t$
Wealth Inequality (Saez and Zucman ’14)

Wealth inequality is very large (always much higher than income inequality)

In the US 2012: Top 1% wealthiest families get 40% of total wealth, Next 9% get about 35%, next 40% get 20%, bottom 50% get about 0%

Wealth inequality decreases from 1929 to 1980: wealth democratization due to rise in homeownership and pensions

Wealth inequality increases sharply since 1980 fueled by increases in income inequality and savings inequality [bottom 90% saves zero since 1990]

US public underestimates extent of wealth inequality and thinks the ideal wealth distribution should be a lot more equal [Norton-Ariely ’11]
Bottom 90% wealth share in the United States, 1917-2012
Composition of the bottom 90% wealth share

- Pensions
- Business assets
- Housing (net of mortgages)
- Equities & fixed claims (net of non-mortgage debt)
Top 1% wealth share in the United States, 1913-2012

This figure depicts the share of total household wealth held by the 1% richest families, as estimated by capitalizing income tax returns. Source: Saez and Zucman (2014).
This figure depicts the share of total household wealth held by the 0.1% richest families, as estimated by capitalizing income tax returns. In 2012, the top 0.1% includes about 160,000 families with net wealth above $20.6 million. Source: Appendix Table B1.
Real average wealth of bottom 90% and top 1% families

Top 1% (left y-axis)

Bottom 90% (right y-axis)

Real values are obtained by using the GDP deflator, 2010 dollars. Source: Appendix Tables B3.
agreed that such redistribution should take the form of moving wealth from the top quintile to the bottom three quintiles. In short, although Americans tend to be relatively more favorable toward economic inequality than members of other countries (Osberg & Smeeding, 2006), Americans' consensus about the ideal distribution of wealth within the United States

**Fig. 2.** The actual United States wealth distribution plotted against the estimated and ideal distributions across all respondents. Because of their small percentage share of total wealth, both the “4th 20%” value (0.2%) and the “Bottom 20%” value (0.1%) are not visible in the “Actual” distribution.

Source: Norton and Ariely 2011
FACTS OF US CAPITAL INCOME TAXATION

1) Corporate Income Tax (fed+state): 35% Federal tax rate on profits of corporations [complex rules with many industry specific provisions]: effective tax rate much lower

2) Individual Income Tax (fed+state): taxes many forms of capital income

Realized capital gains and dividends receive preferential treatment (to lower double taxation of corporate profits)

Imputed rent of home owners and returns on pension funds are exempt

3) Estate tax: tax on very large estates (above $6m) bequeathed to heirs (now very small, repealed in 2017?)

4) Property taxes (local) on real estate (old tax):

Tax varies across jurisdictions. About 0.5% of market value on average
LIFE CYCLE VS. INHERITED WEALTH

Economists divide existing wealth into 2 categories:

1) **Life-cycle wealth** is wealth from savings earlier in your life

2) **Inherited wealth** is wealth from inheritances received

Distinction matters for taxation because individuals are responsible for life-cycle wealth but not inherited wealth

Inherited wealth used to be very large in Europe (before World-War I), became small in post-World War II period, but is growing in recent decades (especially in Europe)
Inherited wealth represents 80-90% of total wealth in France in the 19th century; this share fell to 40%-50% during the 20th century, and might return to 80%-90% during the 21st century. Sources and series: see piketty.pse.ens.fr/capital21c

Source: Piketty (2014)

Analyzes income, wealth, inheritance data over the long-run:

1) Growth rate $g = \text{population growth} + \text{growth per capita}$. Population growth will converge to zero, growth per capita for frontier economies is modest (1-1.5%) ⇒ long-run $g \approx 1–1.5$

2) Long-run aggregate wealth to income ratio ($\beta$) = savings rate ($s$) / annual growth ($g$):

Proof: $W_{t+1} = (1 + g) \cdot W_t = W_t + s \cdot Y_t \Rightarrow \frac{W_t}{Y_t} = \frac{s}{g}$

With $s = 8\%$ and $g = 2\%$, $\beta = 400\%$ but with $s = 8\%$ and $g = 1\%$, $\beta = 800\%$ ⇒ Wealth will become important

3) Rate of return on wealth $r \approx 5\%$ significantly larger than $g$ [except exceptional period of 1940s-1960s]

With $r \gg g$, role of inheritance in wealth grows and wealth inequality increases [past swallows the future]

Explanation: Rentier who saves all his return on wealth accumulates wealth at rate $r$ bigger than $g$ and hence his wealth grows relative to the size of the economy. The bigger $r - g$, the easier it is for wealth to “snowball”: fortunes are created faster and last longer

$\Rightarrow$ Capital income taxation reduces $r$ to $r \cdot (1 - \tau_K) \Rightarrow$ reduces wealth concentration and relative weight of inherited wealth
The rate of return to capital (after tax and capital losses) fell below the growth rate during the 20th century, and may again surpass it in the 21st century. Sources and series: see piketty.pse.ens.fr/capital21c

Source: Piketty (2014)
LIFE-CYCLE MODEL

Individual lives for 2 periods, works \( l \), earns \( wl \), consumes \( c_1 \) in period 1, consumes \( c_2 \) in period 2:

\[
U = u(c_1, l) + \delta v(c_2)
\]

Start with case with no taxes

Savings \( s = wl - c_1, c_2 = (1 + r)s \). Capital income \( rs \)

Intertemporal budget: \( c_1 + \frac{c_2}{1 + r} \leq wl \)

\[
\max_{l, c_2} u \left( wl - \frac{c_2}{1 + r}, l \right) + \delta v(c_2)
\]

First order condition labor Supply: \( \frac{w}{\partial c_1} + \frac{\partial u}{\partial l} = 0 \)

First order condition savings: \( \frac{\partial u}{\partial c_1} = \delta \cdot (1 + r) \frac{\partial v}{\partial c_2} \)
TAXES IN LIFE-CYCLE MODEL

1) Budget with consumption tax at rate $t_c$:

$$(1 + t_c)\left[c_1 + c_2/(1 + r)\right] \leq wl$$

Budget with labor income tax at rate $\tau_L$:

$$c_1 + c_2/(1 + r) \leq (1 - \tau_L)wl$$

2) Consumption and labor income tax are equivalent if

$$1 + t_c = 1/(1 - \tau_L)$$

Both taxes distort only labor supply and not savings
TAXES IN LIFE-CYCLE MODEL

3) Budget with capital income tax at rate $\tau_K$: $c_2 = (1 + r(1 - \tau_K)) \cdot s \Rightarrow$

$$c_1 + \frac{c_2}{1 + r(1 - \tau_K)} \leq wl$$

$\tau_K$ distorts only savings choice (and not labor supply)

4) Budget with comprehensive income tax $\tau$ on both labor and capital income: $c_1 = w(1 - \tau)l - s$, $c_2 = (1 + r(1 - \tau))s$

$$c_1 + \frac{c_2}{1 + r(1 - \tau)} \leq (1 - \tau)wl$$

$\tau$ distorts both labor supply and savings

$\tau$ imposes “double” tax: on (1) earnings AND on (2) savings
EFFECT OF CAPITAL TAX ON SAVINGS

Consider simpler model (fixed earnings $w$ in period 1)

$$\max_{c_1,c_2} u(c_1) + \delta u(c_2) \quad \text{subject to} \quad c_1 + \frac{c_2}{1 + r(1 - \tau_K)} \leq w$$

Recall that $c_1 = w - s$ and $c_2 = [1 + r(1 - \tau_K)] \cdot s$ [draw graph]

Suppose $\tau_K$ increases and hence $1/[1 + r(1 - \tau_K)] \uparrow$

1) **Substitution effect:** price of $c_2 \uparrow \Rightarrow c_2 \downarrow$, $c_1 \uparrow \Rightarrow$ savings $s = w - c_1$ decrease

2) **Income effect:** consumer is poorer $\Rightarrow$ both $c_1$ and $c_2 \downarrow \Rightarrow$ savings $s$ increase

Total net effect is theoretically ambiguous $\Rightarrow \tau_K$ has ambiguous effects on $s$
Life cycle savings and taxes theory

\[ w(1+r) \]

\( c_2 \) consumption while old

Indifference curves \( u(c_1, c_2) = \text{constant} \)

Utility maximizing choice

Budget line

slope \( -(1+r) \)

\( w \)

\( c_1^* \): savings

\( c_2^* \)

\( c_1 \) consumption while young
Life cycle savings and taxes theory

\[ w(1+r) \]

Consumption while old

\[ c_2^* \]

Consumption while young

\[ s^* : \text{savings} \]

Introducing tax on savings

\[ w(1+r(1-\tau)) \]
Life cycle savings and taxes theory

- Consumption while old: \( w(1+r) \)
- Consumption while young: \( c_1 \) and savings: \( s^* \)

**Substitution effect:**
- \( c_1 \) increases, \( s \) decreases, \( c_2 \) increases

**Income effect:**
- \( c_1 \) decreases, \( s \) increases, \( c_2 \) decreases

**Net effect:**
- \( c_1 \) and \( s \) are ambiguous, \( c_2 \) decreases

Graphical representation:
- \( c_2 \) consumption while old
- \( w(1+r) \)
- \( w(1+r(1-\tau)) \)
- \( c_2^* \)
- \( c_1^* \)
- \( w \)
- \( c_1 \) consumption while young
- \( s^* \): savings
Fundamental tax reform: Shift to consumption taxation

Current US tax system is an income tax taxing both earnings and capital income

Some conservatives advocate shifting to consumption tax

Consumption tax is equivalent to taxing only earnings

Shift from labor tax to consumption tax generates double taxation of transitional generation (who have paid labor tax when working and need to pay consumption tax when old)

Actual consumption taxes (such as value-added taxes) tend to be flat while actual income taxes are generally progressive
OPTIMAL CAPITAL INCOME TAXATION

Two broad types of models:

1) Life-cycle models: wealth is due solely to life-cycle savings

2) Models with bequests: wealth is due solely to inheritances
Optimal Tax in Life-Cycle model

Government can use both a progressive labor income tax $T(wl)$ and a linear capital income tax $\tau_K$

Individuals live 2 periods, earn in period 1, retired in period 2

$$\max_{c_1, c_2, l} u(c_1) - h(l) + \delta u(c_2) \quad \text{s.t.} \quad c_1 + \frac{c_2}{1 + r(1 - \tau_K)} \leq wl - T(wl)$$

Individuals differ only according to their earning ability $w$

Government maximizes social welfare function based on individual utilities

**Atkinson-Stiglitz JpubE’76 theorem:** The optimal tax $\tau_K$ on capital income should be zero. Using a labor tax on earnings $T(wl)$ is sufficient.
Optimal Tax in Life-Cycle model

Atkinson-Stiglitz’ theorem shows that life-time savings should not be taxed, tax only labor income.

Key intuition: in basic life-cycle model, inequality in life-time resources is due solely to differences in earnings ability. This inequality can be addressed with labor income taxation. Capital income taxation needlessly distorts saving behavior.

From justice view: seems fair to not discriminate against savers if labor earnings is the only source of inequality.
LIMITS OF LIFE-CYCLE MODEL

In reality, capital income inequality also due

(1) difference in rates of returns across individuals

(2) shifting of labor income into capital income

(3) inheritances
Difference in Rates of Returns Across Individuals

Rate of return on wealth varies significantly over time and across individuals

Example: stock market can gain 30% in some years or lose 20% in others

Specific stocks can increase much faster for successful start-ups (Google) or collapse entirely for bankrupt firms (Enron)

In general, richer individuals are able to invest in higher return assets due to ability to take risks and scale effects in financial advice [e.g., large University endowments get a larger return than smaller ones, Piketty 2014, Chapter 12]

⇒ Taxing capital income is a way to mitigate such inequality
SHIFTING OF LABOR / CAPITAL INCOME

In practice, difficult to distinguish between capital and labor income [e.g., small business profits, professional traders]

Differential tax treatment can induce shifting

(1) Carried interest in the US: hedge fund and private equity fund managers receive fraction of profits of assets they manage for clients. Those profits are really labor income but are taxed as realized capital gains

(2) Finnish Dual income tax system: taxes separately capital income at preferred rates since 1993: Pirttila and Selin SJE’11 show that it induced shifting from labor to capital income especially among self-employed

With income shifting, taxing capital income becomes desirable to curb this tax avoidance opportunity
Inheritance: Estate Taxation in the United States

Estate federal tax imposes a tax on estates above $5.5M exemption (only about .1% of deceased liable), tax rate is 40% above exemption (in 2013 and after)

Charitable and spousal giving are fully exempt from the tax

E.g.: if Bill Gates / Warren Buffet give all their wealth to charity, they won’t pay estate tax

Popular support for estate tax is pretty weak (“death tax”) but public does not know that estate tax affects only richest

Support for estate tax increase shots up from 17% to 53% when survey respondents are informed that only richest pay it (Kuziemko-Norton-Saez-Stantcheva AER’15 do an online Mturk survey experiment)
Besides the income tax, the government can also level the playing field with the federal estate tax.

The Federal Estate Tax (also known as the Death Tax) applies when a deceased person leaves more than $5 million in wealth to his or her heirs. Wealth left to a spouse or charitable organizations is exempt from estate tax.

Only 1 person out of 1000 is wealthy enough to face the estate tax.

Average Americans do not have anything close to $5 million in wealth, so the estate tax does not affect them and they can pass on their property to their children tax-free.

Eliminating the estate tax would allow the very richest families to pass down all of their wealth to their children tax-free. Hence, children of rich people would also start off very rich themselves.

Increasing the estate tax is a way to level the playing field between the children of wealthy parents and children of middle-class parents.
Inheritances (or gifts from living parents) raise difficult issues of social justice [see Kaplow 2001]:

(1) Inequality in inheritances contributes to economic inequality and individuals not responsible for inheritances they receive:

⇒ seems fair to redistribute from those who received inheritances to those who did not

(2) However, it seems unfair to tax the parents who worked hard (and already paid tax on income) to pass on wealth to children
Taxation of Inheritances: Behavioral Responses

Potential behavioral response effects of inheritance tax:

(1) reduces wealth accumulation of altruistic parents (and hence tax base) [no very good empirical evidence, Kopczuk-Slemrod 2001 suggest small effects]

(2) reduces labor supply of altruistic parents (less motivated to work if cannot pass wealth to kids) [no good evidence]

(3) induces inheritors to work more through income effects because they receive smaller inheritances (Carnegie effect, decent evidence from Holtz-Eakin, Joulfaian, Rosen QJE’93)

Critical to understand why there are inheritances for optimal inheritance tax policy. 3 models of bequests: (a) accidental, (b) altruistic bequests, (c) manipulative bequest motive
(a) ACCIDENTAL BEQUESTS

People die with a stock of wealth they intended to spend on themselves (or that they accumulated out of love for wealth, Carroll ’98):

Bequest taxation has no distortionary effect on behavior of parent and can only increase labor supply of inheritors (through income effects) ⇒ strong case for taxing bequests heavily

Surveys show that bequest motives are not the main driver of wealth accumulation (Kopczuk-Lupton ’07):

Only 1/3 of people surveyed say that the main reason they accumulate wealth is for bequests to their children
(b) ALTRUISTIC BEQUESTS (Piketty and Saez 2013)

Utility $u(c) - h(l) + \delta v(b_{\text{left}})$ where $c$ is own consumption, $l$ is labor supply, and $b_{\text{left}}$ is net-of-tax bequests left to next generation and $v(b_{\text{left}})$ is utility of leaving bequests for donor

Individual receives $b_{\text{received}}$, works and earns $wl - T(wl)$, consumes $c$, saves $s = wl - T(wl) + b_{\text{received}} - c$, which translates into $b_{\text{left}} = s(1 + r)(1 - \tau_B)$ for heir ($\tau_B$ is bequest tax rate)

Bequests provide an additional source of life-income:

$$c + \frac{b_{\text{left}}}{(1 - \tau_B)(1 + r)} = wl - T(wl) + b_{\text{received}}$$

In this model, Atkinson-Stiglitz breaks down and using bequest taxation is desirable to supplement labor income taxation

$\Rightarrow$ Two-dimensional inequality (labor,bequests) requires two-dimensional tax policy tool (labor tax, bequest tax)
(c) MANIPULATIVE BEQUESTS

Parents use potential bequest to extract favors from children

Empirical Evidence: Bernheim-Shleifer-Summers JPE ’85 show that number of visits of children to parents is correlated with bequeathable wealth but not annuitized wealth of parents

[Annuitized wealth is wealth that disappears at death such as a pension or an annuity]

\[
\text{Visits}_i = \alpha + \beta \cdot \text{Bequeathable Wealth}_i + \gamma \cdot \text{Annuitized wealth}_i + \varepsilon_i
\]

In regression, they find $\beta > 0$ and $\gamma = 0$ (but causality not clear)

$\Rightarrow$ Bequest becomes one additional form of labor income for inheritor and one consumption good for parent

$\Rightarrow$ Inheritances should be counted and taxed as labor income for donees
(c) SOCIAL-FAMILY PRESSURE BEQUESTS

Parents may not want to leave bequests but feel compelled to by pressure of heirs or society: bargaining between parents and children

With estate tax, parents do not feel like they need to give as much ⇒ parents are made better-off by the estate tax ⇒ Case for estate taxation stronger

Empirical evidence:

Aura JpubE’05: reform of private pension annuities in the US in 1984 requiring both spouses signatures when worker decides to get a single annuity or couple annuity: reform increases sharply couple annuities choice

Equal division of estates [Wilhelm AER’96, Light-McGarry ’04]: estates are very often divided equally probably to avoid conflicts [gifts before death are not as equally split]
WEALTH IN TAX HAVENS

Official statistics substantially underestimate the net foreign asset positions of rich countries bc they do not capture most of the assets held by households in off-shore tax havens.

Example: Wealthy US individual opens a Cayman Islands account and buys mutual fund shares (composed of US corporate stock): Cayman Islands record a liability but US do not record an asset (because this is not reported in the US).

⇒ Total world liabilities are larger than world total assets.

Zucman QJE’13 compiles international financial stats and estimates that around 8% of the global financial wealth of households is held in tax havens (3/4 of which is unrecorded = 6%).

If top 1% hold about 50% of total financial wealth, then about 12% of financial wealth of the rich is hidden in tax heavens.
CURBING OFF-SHORE TAX EVASION

Offshore tax evasion possible because of bank secrecy: US cannot get a list of US individuals owning Swiss bank accounts from Switzerland

⇒ No 3rd party reporting makes tax enforcement very difficult

In principle, problem could be solved with exchange of information across countries BUT need all countries to cooperate

Johannesen-Zucman AEJ-EP’14 analyze tax haven crackdown: G20 countries forced number of tax havens to sign bilateral treaties on bank information sharing

Key result: Instead of repatriating funds, tax evaders shifted deposits to havens not covered by treaty with home country.
FATCA’13 US regulations try to impose information exchange for all entities dealing with US:

If foreign bank B does not provide list of all its US account holders, any financial transaction between B and US will carry 30% tax withholding ⇒ Interesting to see what it will do

Leaks like HSBC and Panama papers make tax evasion harder

Long-term solution will require:

a) Systematic registration of assets to ultimate owners [already exists within countries for domestic tax enforcement]

b) Systematic information exchange between tax countries with no exceptions for tax heavens

⇒ Could be enforced with tariffs threats on tax heavens [Zucman JEP’14 and book ’15]
REFERENCES


