

# 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:** Tax based on residence of owner of capital.

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

**Source:** Tax based on location of capital

Real estate property tax and corporate income tax are source based

4) Capital taxation is extremely complex and provides many tax avoidance opportunities particularly for multinational firms

## FACTS ABOUT WEALTH

**Definition:** Capital Income = Return from Wealth

Wealth arises from expected future income and value of assets

Private wealth includes real estate (land+buildings), corporate and business equity, fixed claimed assets (bonds+deposits), net of debts (mortgage, student loans, consumer credit)

Aggregate US **Private** Wealth  $\simeq 5 \times$  Annual National Income

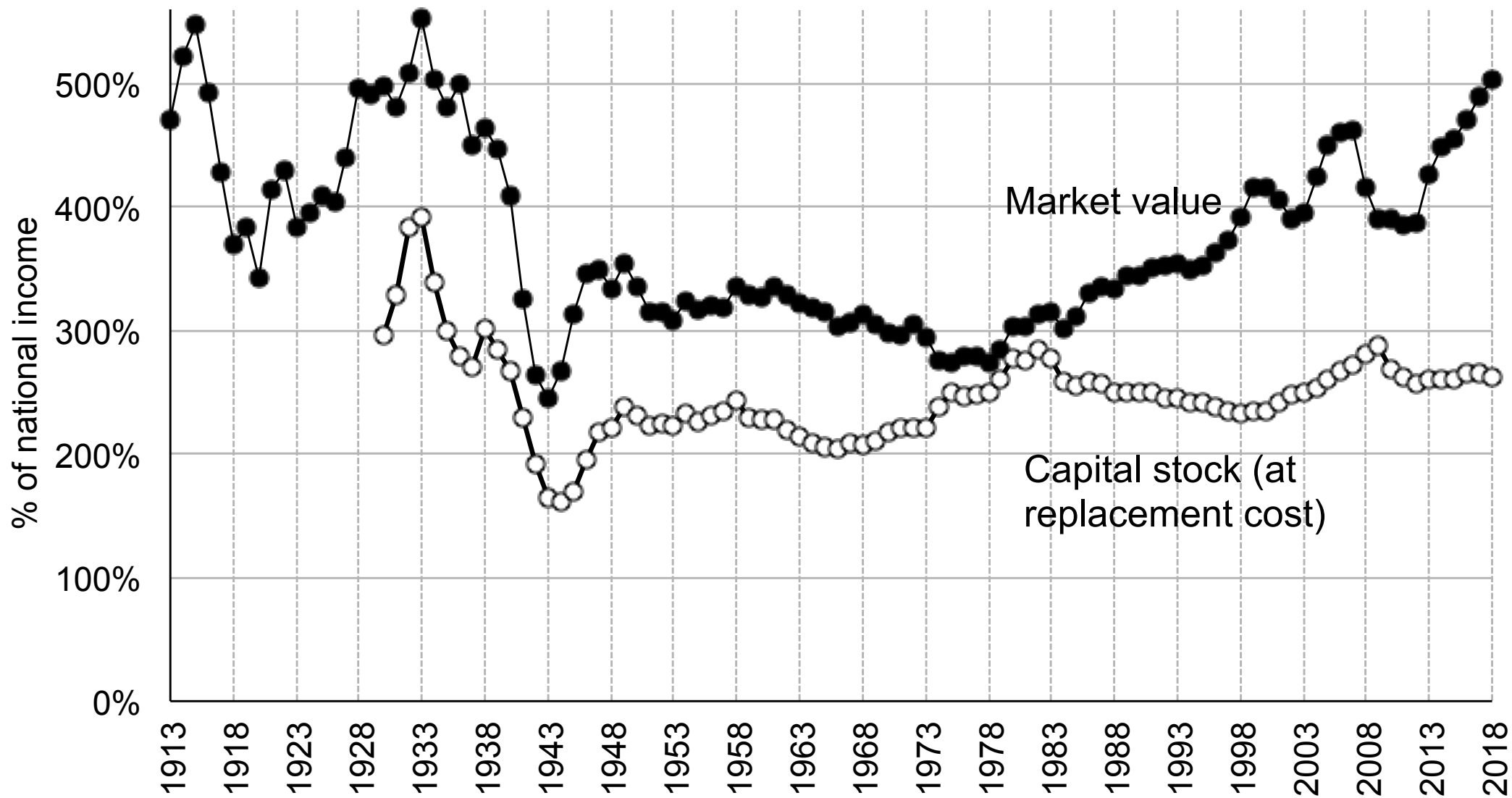
Total wealth reflects both capital stock accumulated through savings and pure price effects

Example 1: house can increase in value because it is improved (capital) or because local prices go up (pure price effect)

Example 2: greater monopoly power makes a business more valuable to owners (but at the expense of consumers)

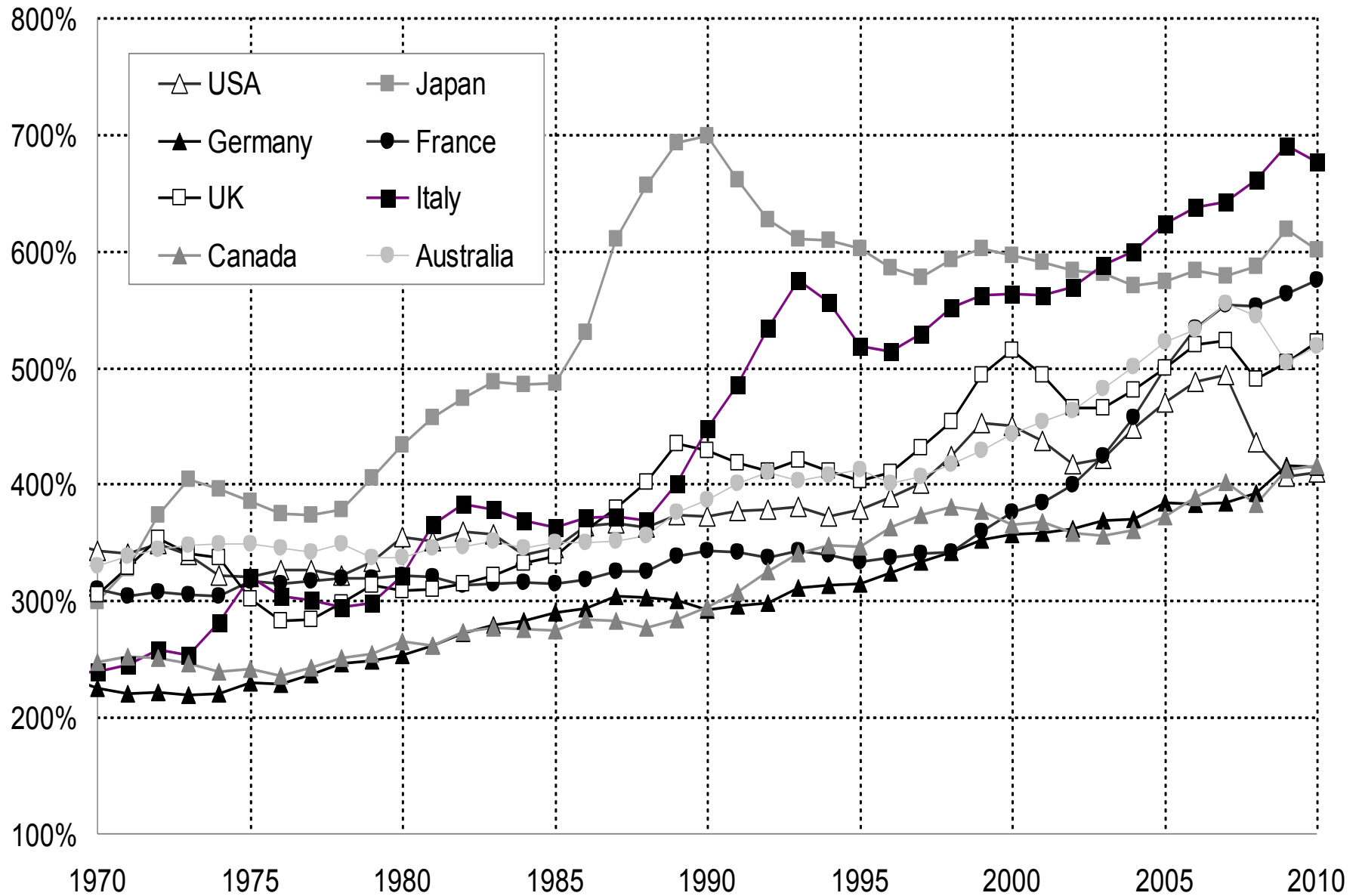
Recent increase in US private wealth mostly due to price effects

## Total household wealth (to national income)



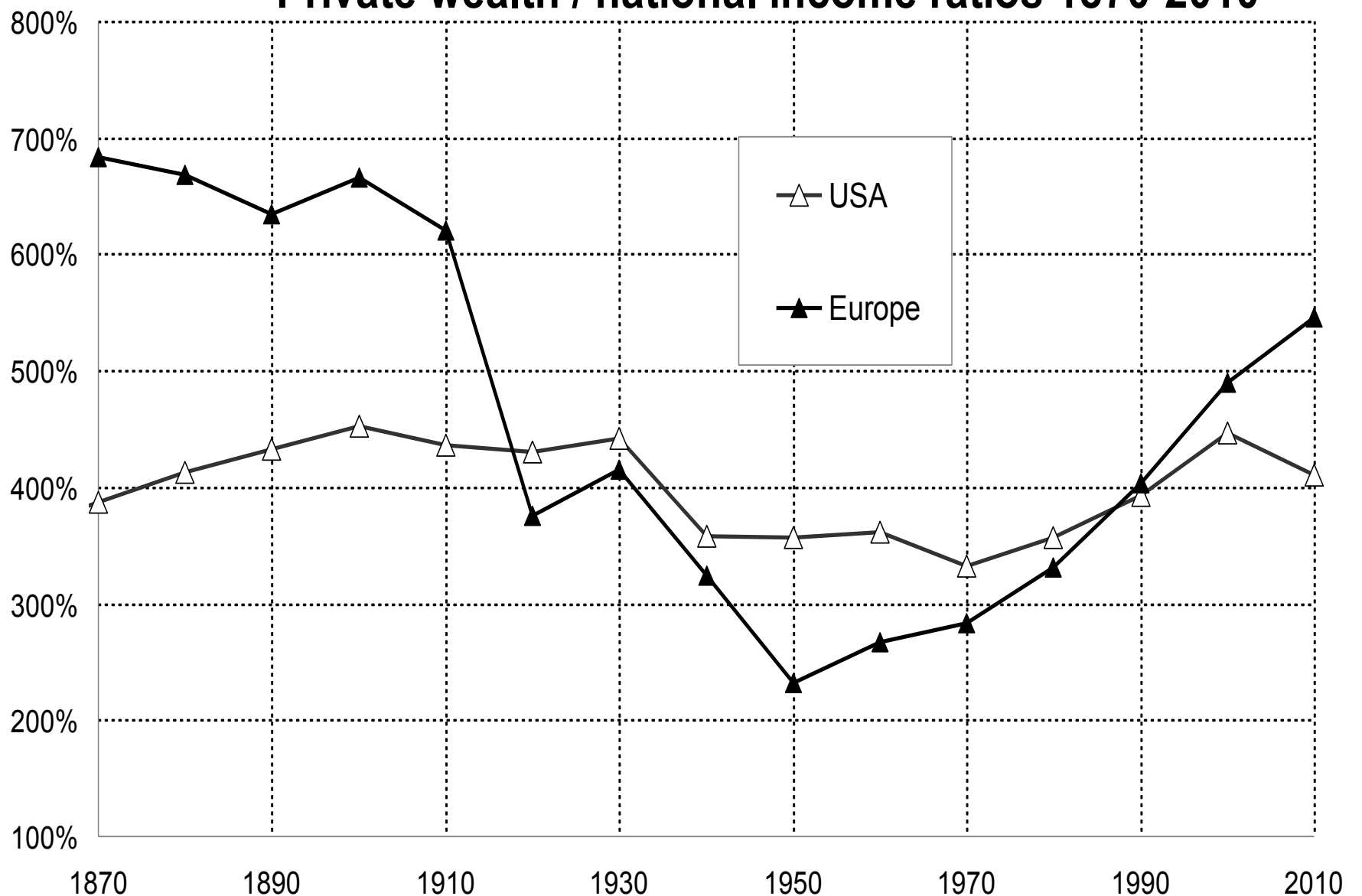
This figure depicts the share of total household wealth relative to national income Source: Piketty, Saez, and Zucman (2018).

# Private wealth / national income ratios, 1970-2010



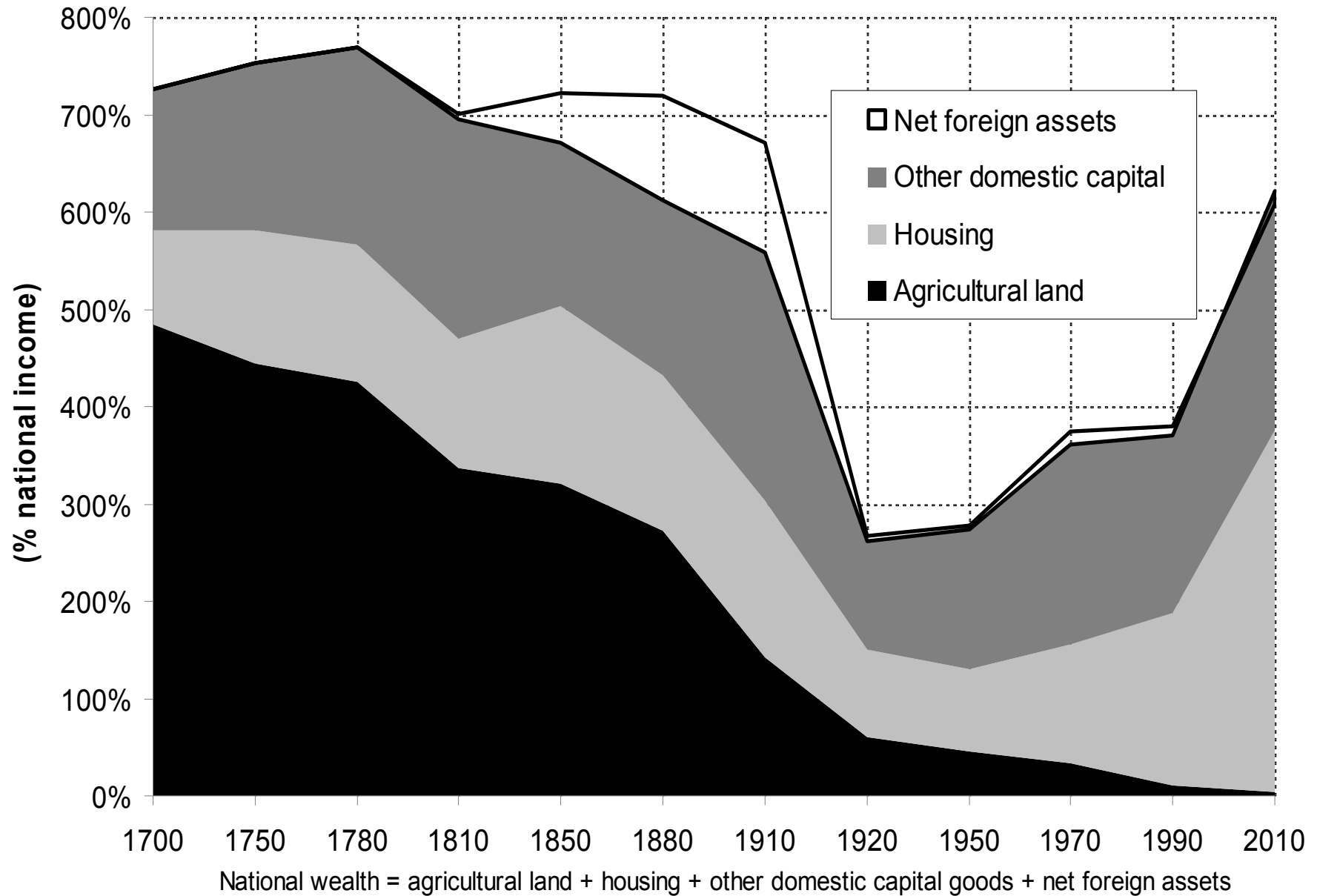
Authors' computations using country national accounts. Private wealth = non-financial assets + financial assets - financial liabilities (household & non-profit sectors)

## Private wealth / national income ratios 1870-2010



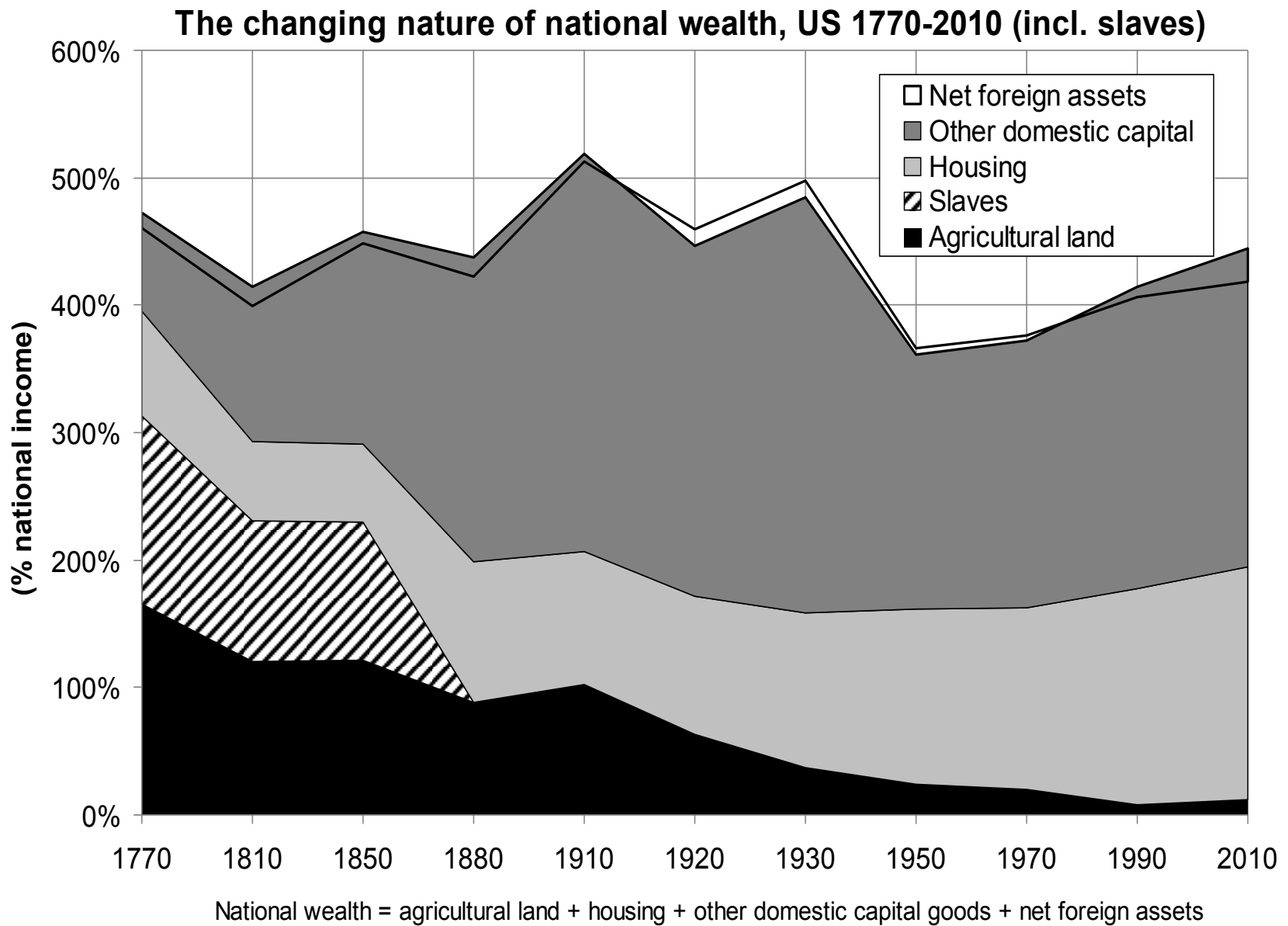
Authors' computations using country national accounts. Private wealth = non-financial assets + financial assets - financial liabilities (household & non-profit sectors)

## The changing nature of national wealth, France 1700-2010



Source: Piketty, Thomas [book]Capital in the 21st Century





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 '16)

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

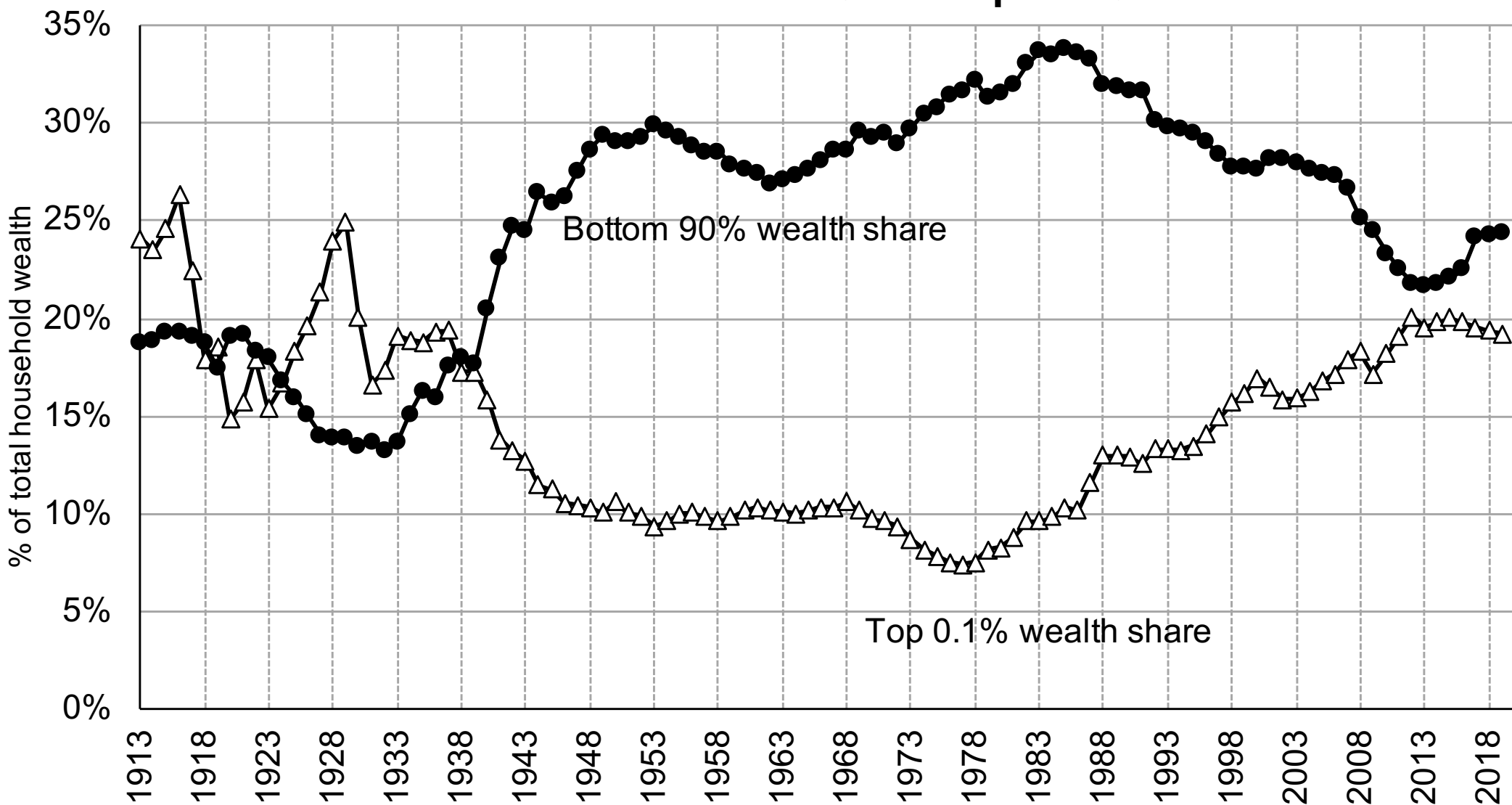
In the US in 2019: Top 1% wealthiest families get 40% of total wealth, Next 9% get about 35%, next 40% get 25%, bottom 50% get about 0%

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 in net since 1990]

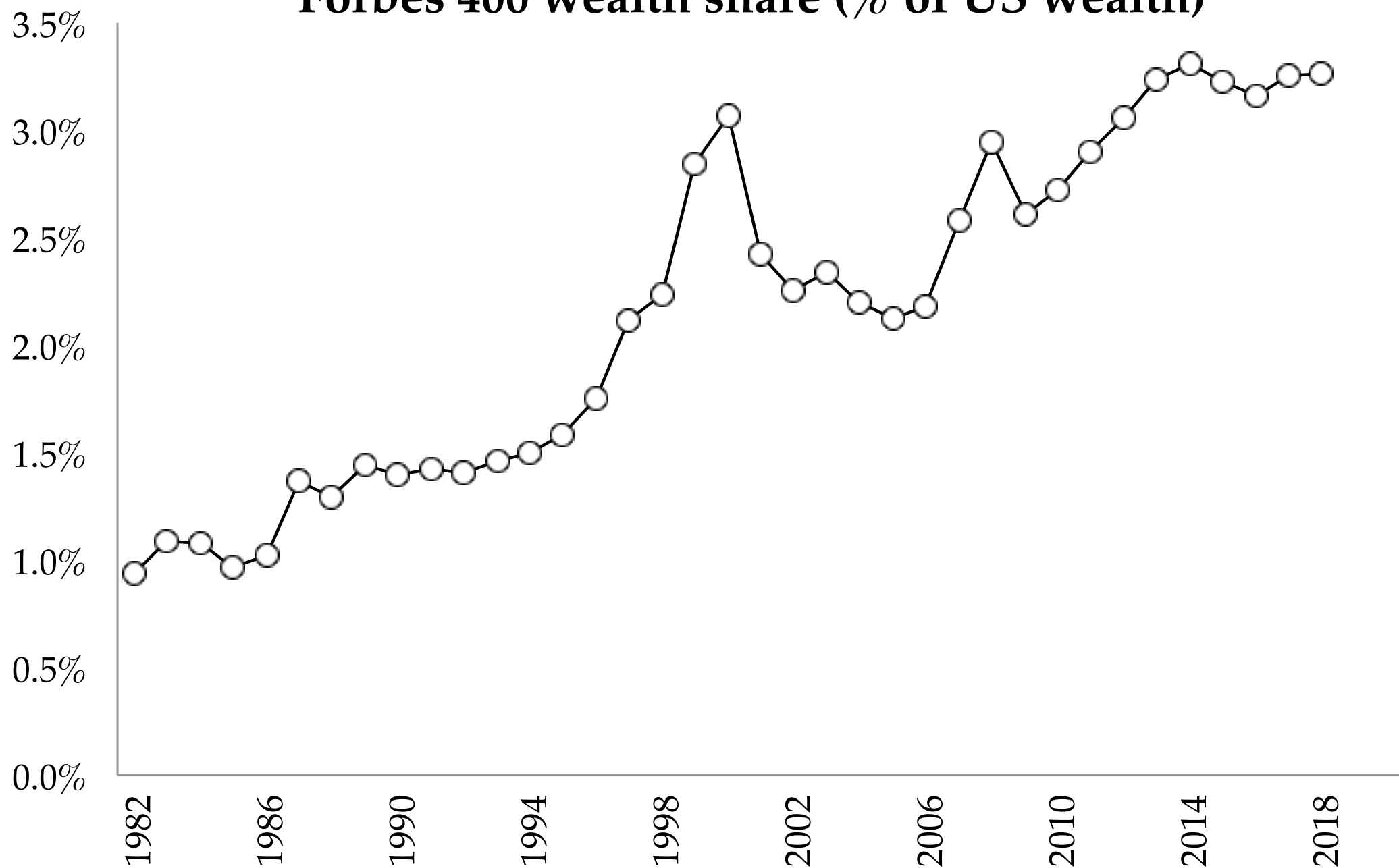
US public underestimates extent of wealth inequality and thinks the ideal wealth distribution should be a lot more equal [Norton-Ariely '11]

## Wealth shares of bottom 90% and top 0.1% families

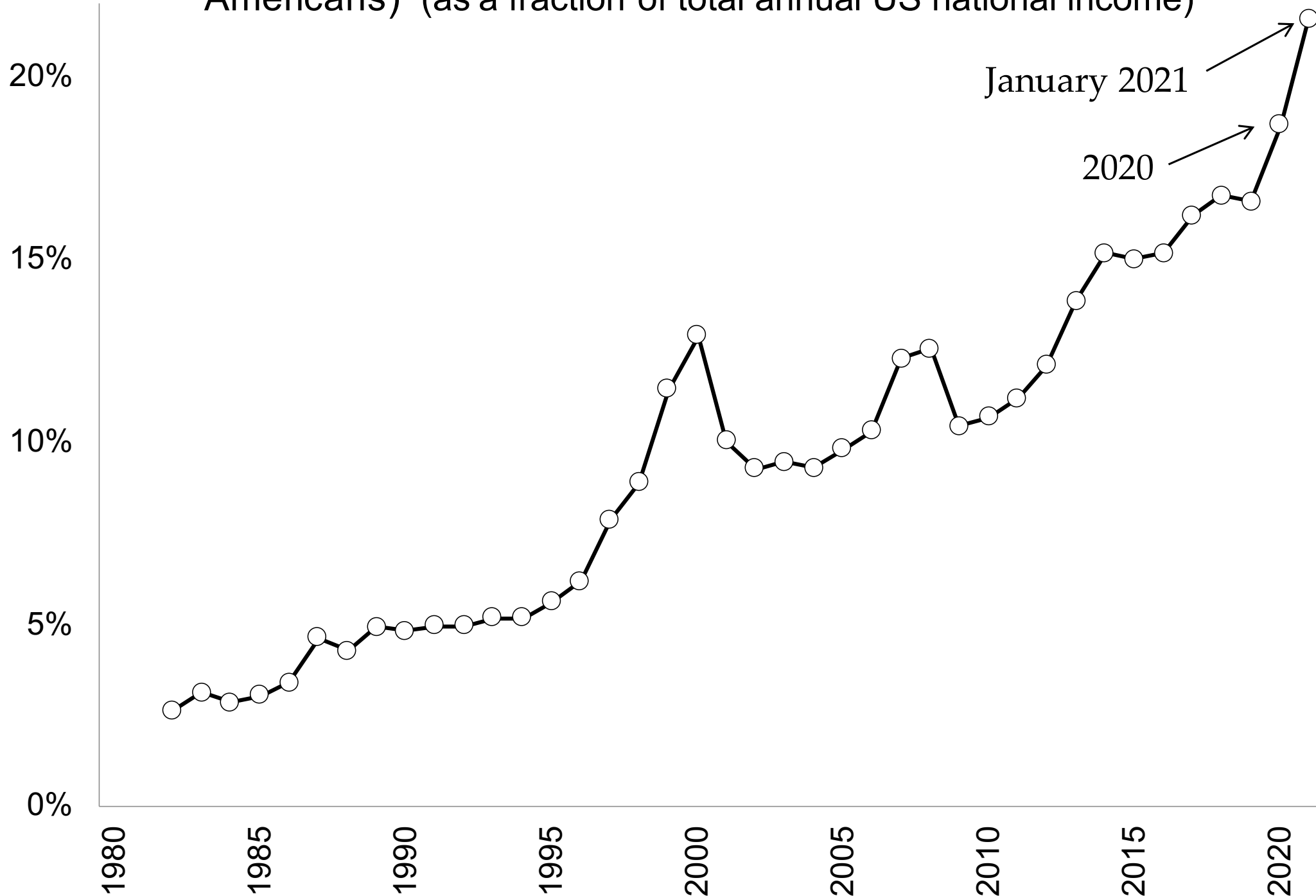


The figure depicts the share of total household wealth owned by bottom 90% and top 0.1% obtained by capitalizing income tax returns (Piketty, Saez and Zucman 2018, updated to 2019). The unit of analysis is the family.

**Forbes 400 wealth share (% of US wealth)**

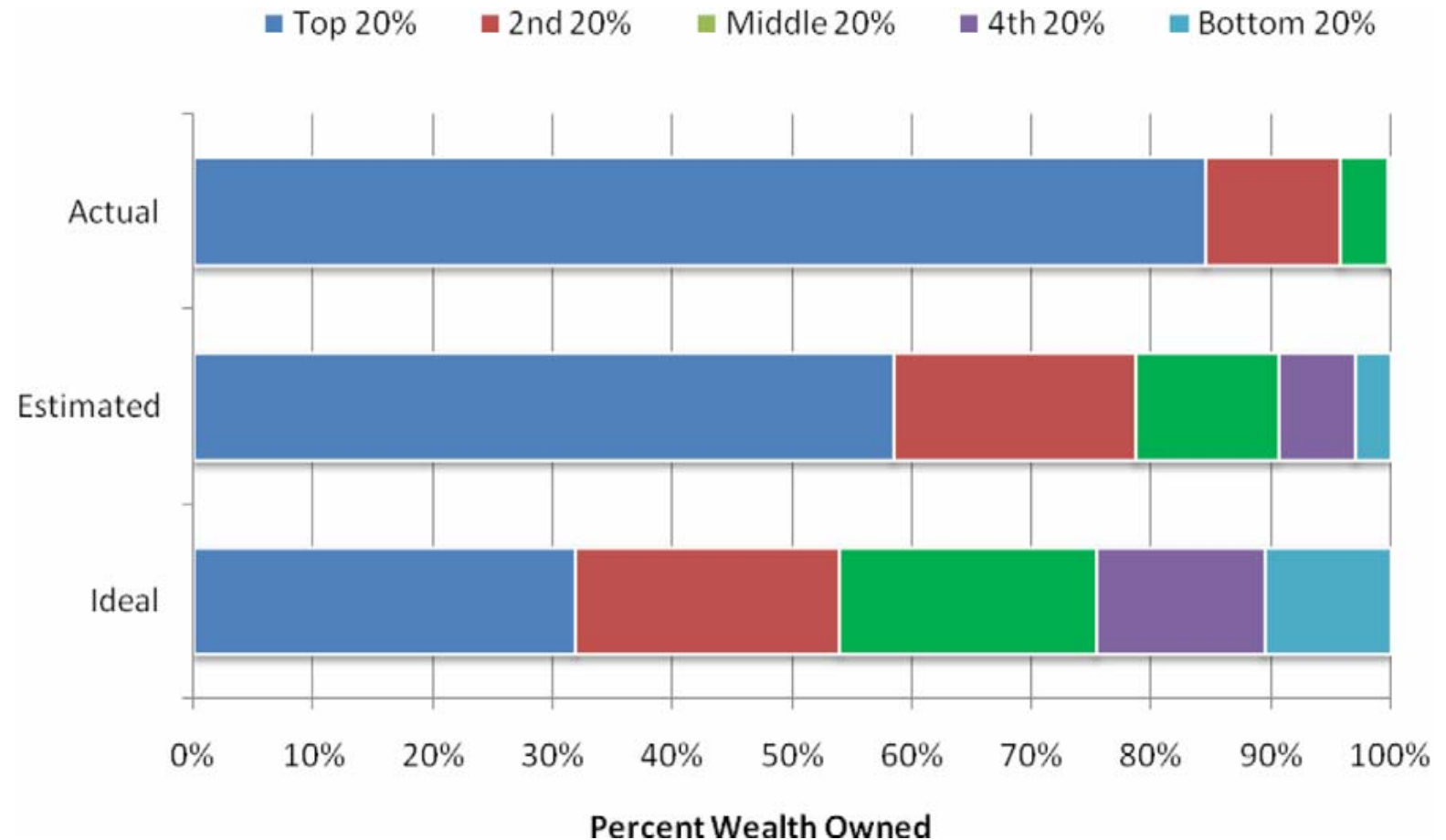


**Total wealth of the top 400** (top 0.00025% wealthiest Americans) (as a fraction of total annual US national income)



Source: Norton and Ariely 2011

*Building a Better America*



**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.

## FACTS ON US CAPITAL INCOME TAXATION

1) **Corporate Income Tax** (fed+state) on profits of corporations [complex rules with many industry specific provisions]: effective tax rate only 16% of corporate profits in 2018

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 (40% tax above \$11m) bequeathed to heirs (small and poorly enforced)

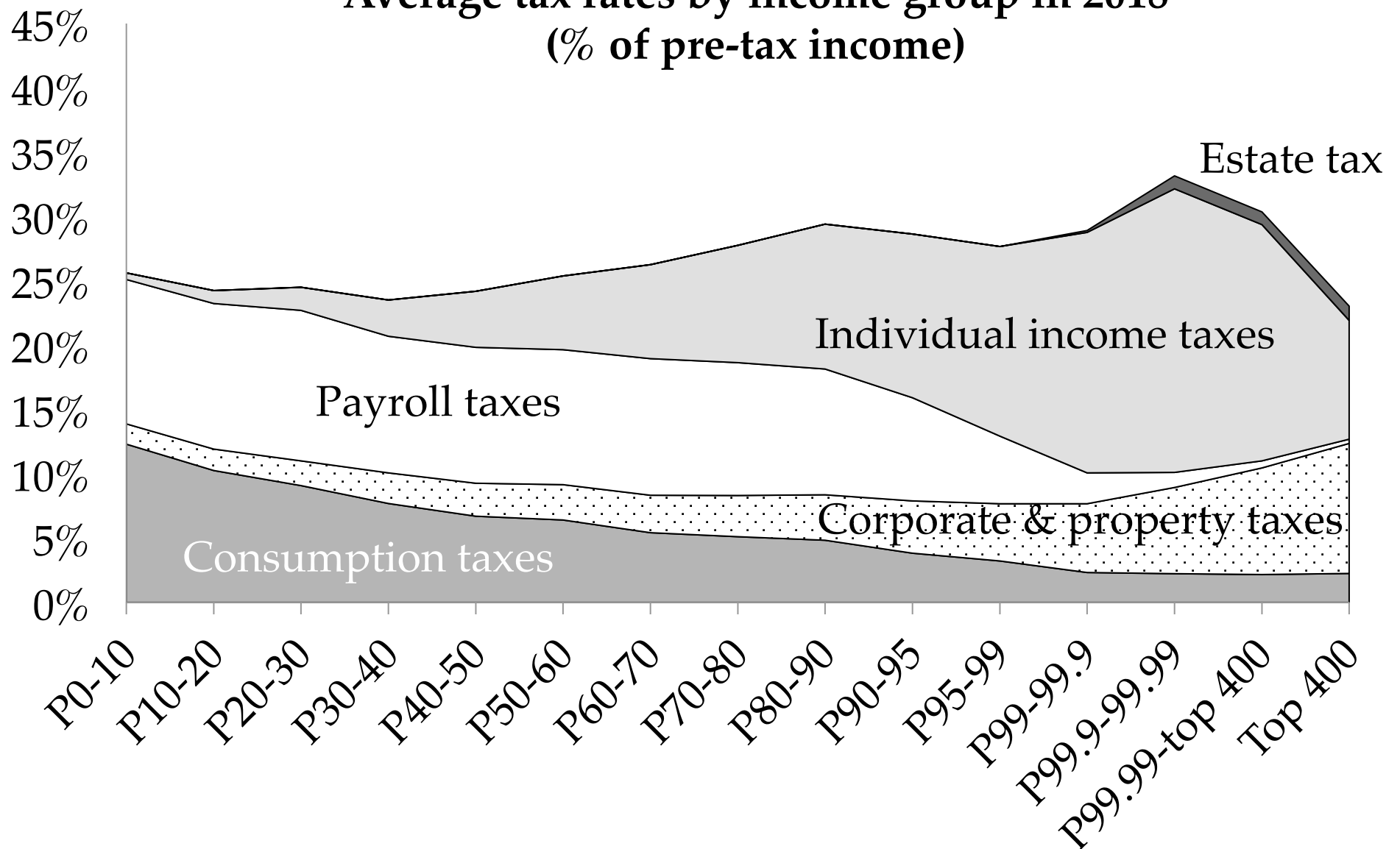
4) **Property taxes** (local) on real estate (old tax):

Tax varies across jurisdictions. About 0.5% of market value on average

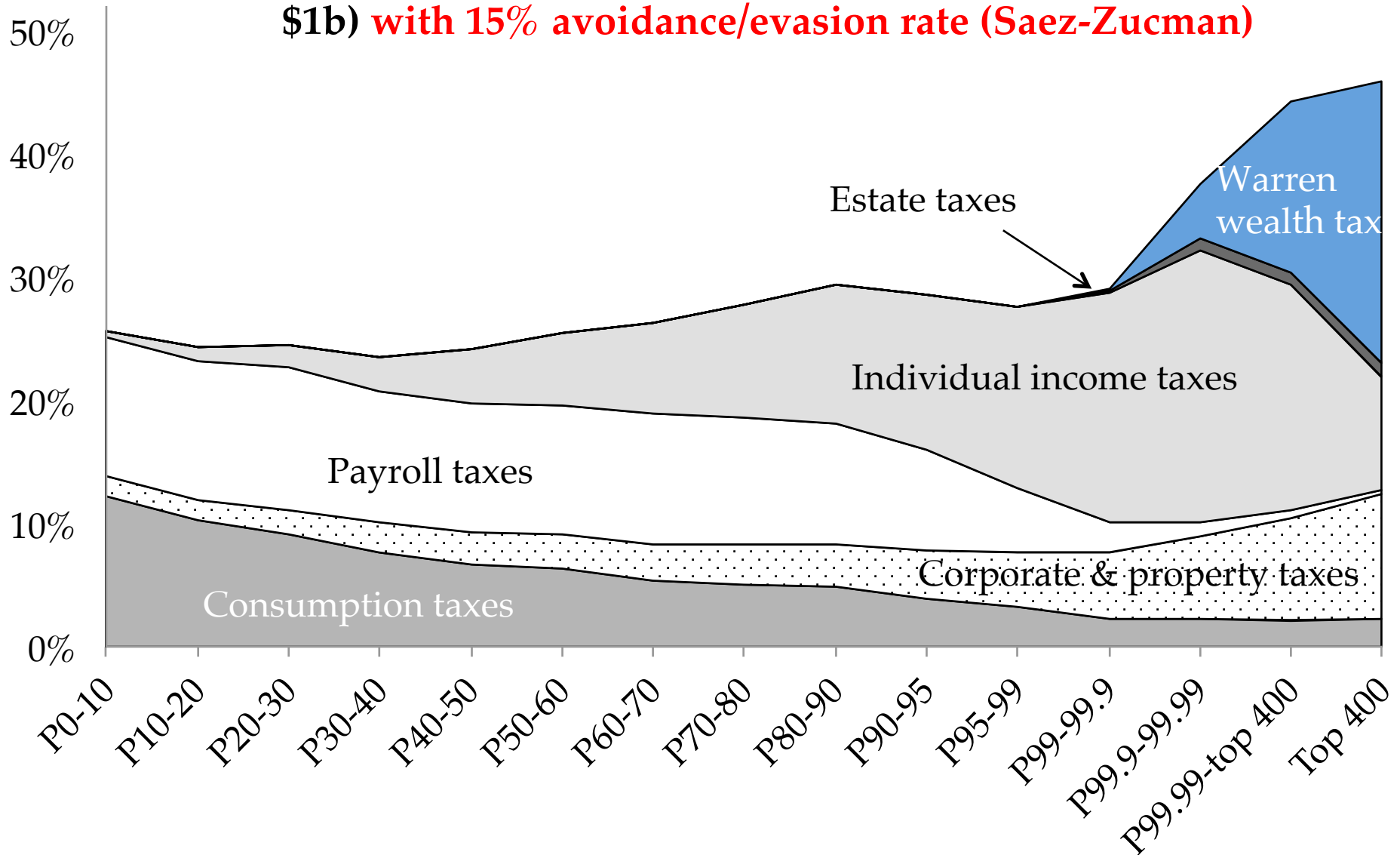
5) **Wealth tax** on total net worth of rich families (does not currently exist, proposed by Warren and Sanders, and in CA)



# Average tax rates by income group in 2018 (% of pre-tax income)



**Adding old Warren wealth tax (2% above \$50m, 3% above \$1b) with 15% avoidance/evasion rate (Saez-Zucman)**



## 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) [Piketty' 14]

Same trend in the US but less pronounced but poor data quality (Alvaredo-Piketty-Garbinti '17)

Piketty '14: return on wealth bigger than growth rate ( $r > g$ )  
⇒ wealth concentration and inherited wealth increases

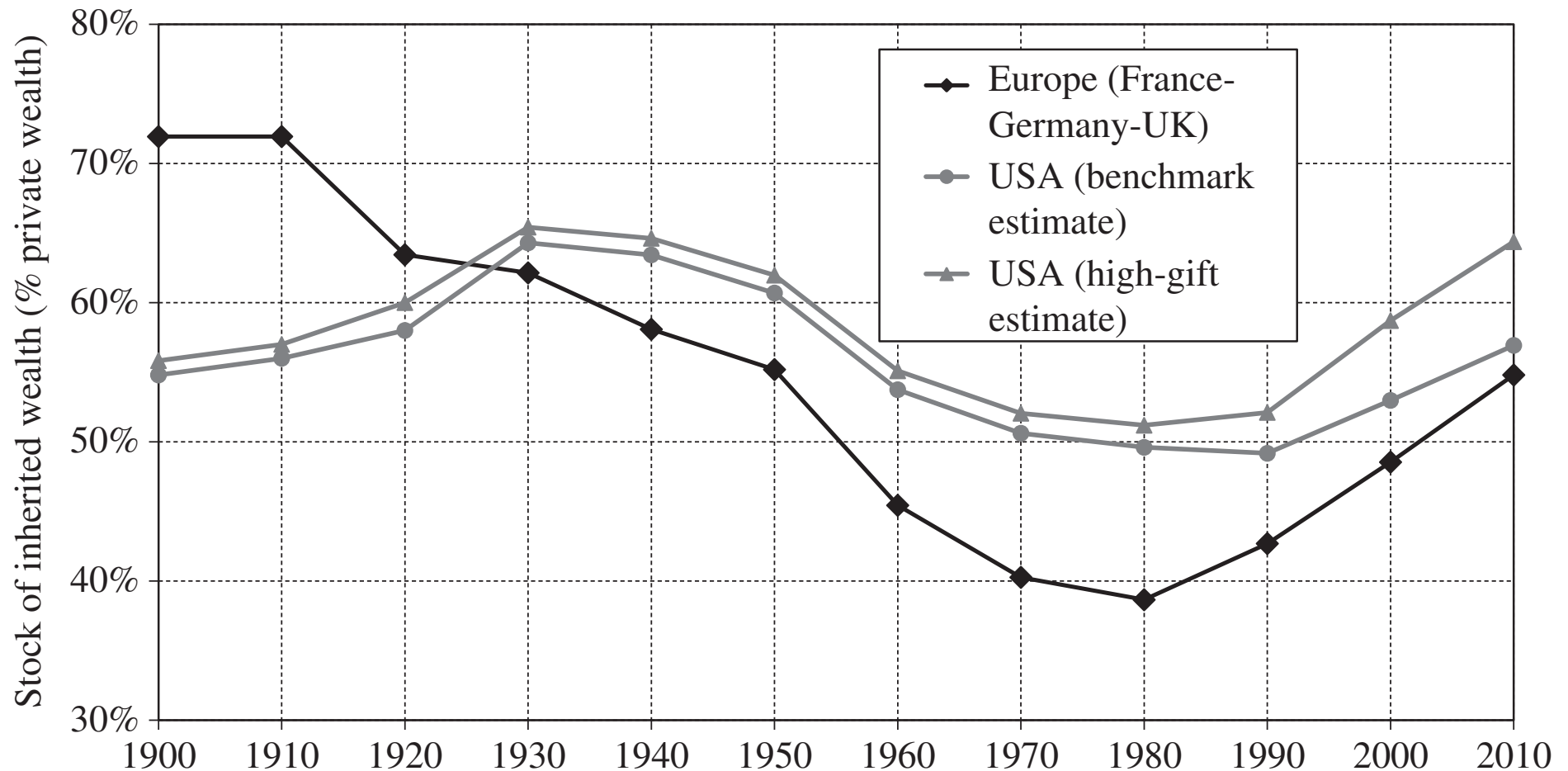


FIGURE 1. Share of inherited wealth, Europe and the USA 1900–2010.

*Notes:* Simplified definitions using inheritance vs. saving flows; approximate lower-bound estimates. The inheritance share in aggregate wealth accumulation was over 70% in Europe in 1900–10. It fell abruptly following 1914–45 shocks, down to 40% in the 1970–80 period. It was back to about 50–60% (and rising) in 2000–10. The US pattern also appears to be U-shaped but less marked, and with significant uncertainty regarding recent trends, due to data limitations.

Source: Alveredo-Garbinti-Piketty '17

## LIFE-CYCLE MODEL

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

$$U = u(c_1, l) + \delta \cdot v(c_2)$$

Start with case with no taxes

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

$$\text{Intertemporal budget: } c_1 + \frac{c_2}{1 + r} \leq wl$$

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

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

$$\text{First order condition savings: } \frac{\partial u}{\partial c_1} = \delta \cdot (1 + r) \frac{\partial v}{\partial c_2}$$

## TAXES IN LIFE-CYCLE MODEL

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

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

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

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

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

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

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

$\tau$  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)

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

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

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

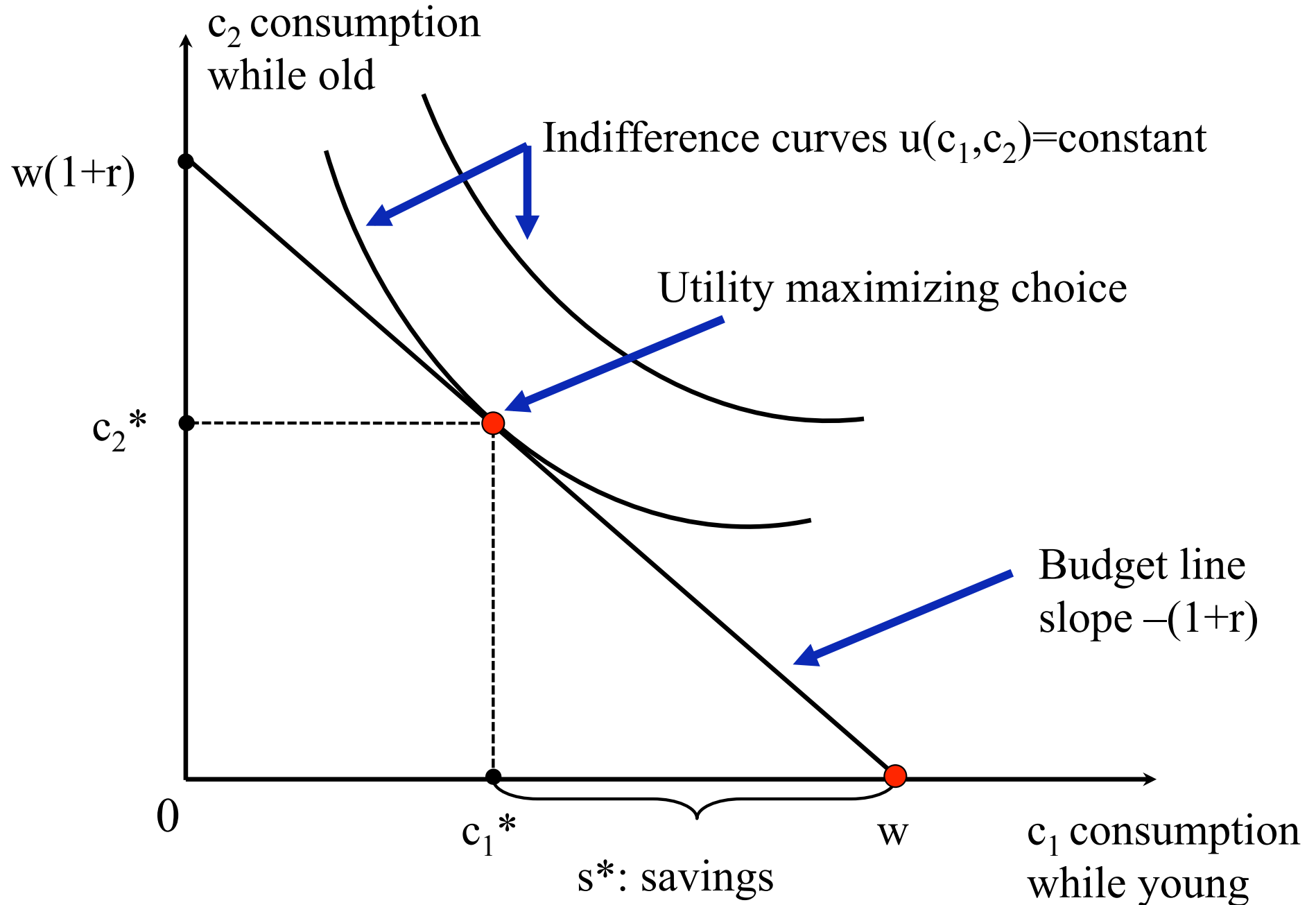
**1) Substitution effect:** price of  $c_2 \uparrow \Rightarrow c_2 \downarrow$ ,  $c_1 \uparrow \Rightarrow$  savings  $s = w - c_1$  decrease

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

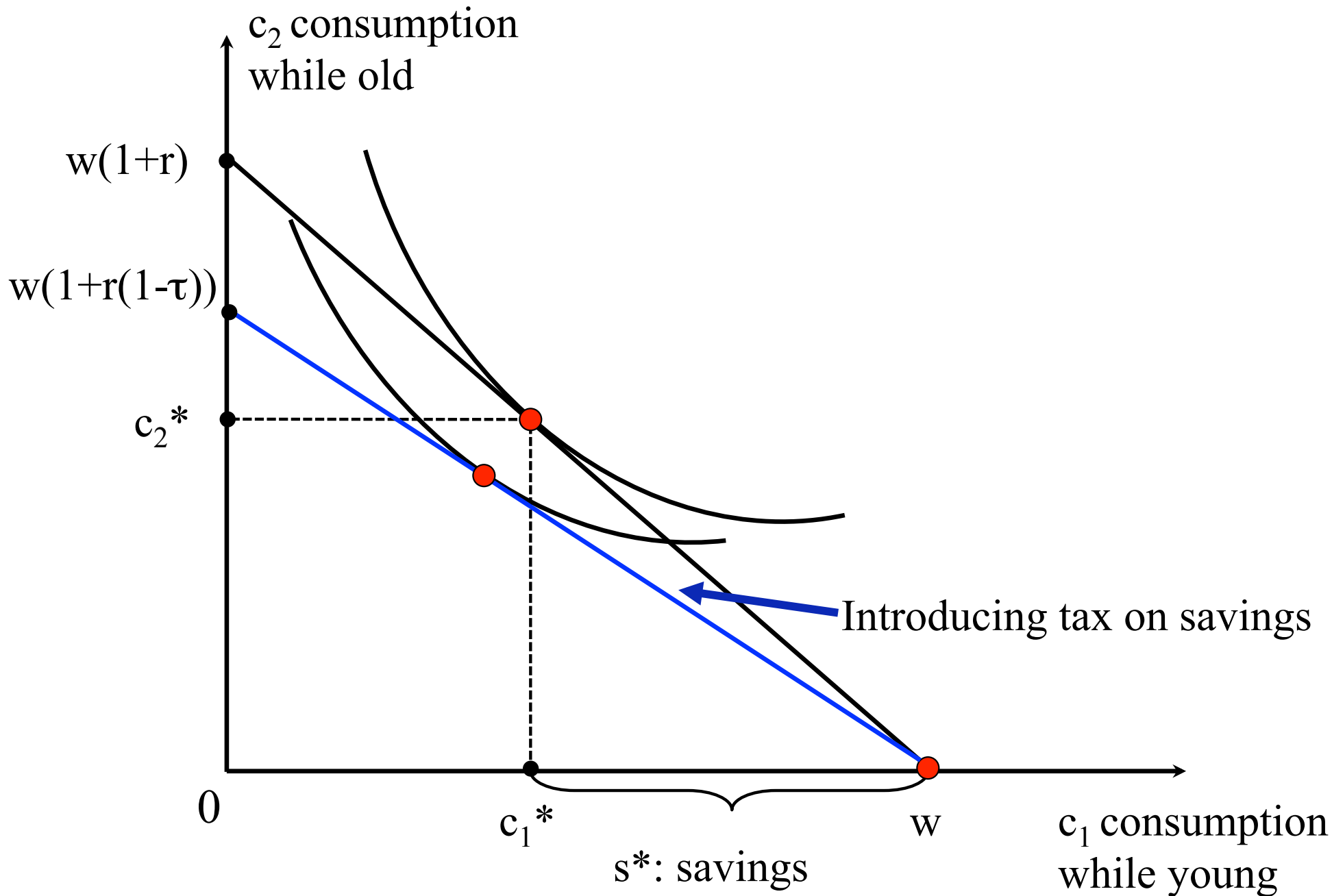
Total net effect is theoretically ambiguous  $\Rightarrow \tau_K$  has ambiguous effects on  $s$



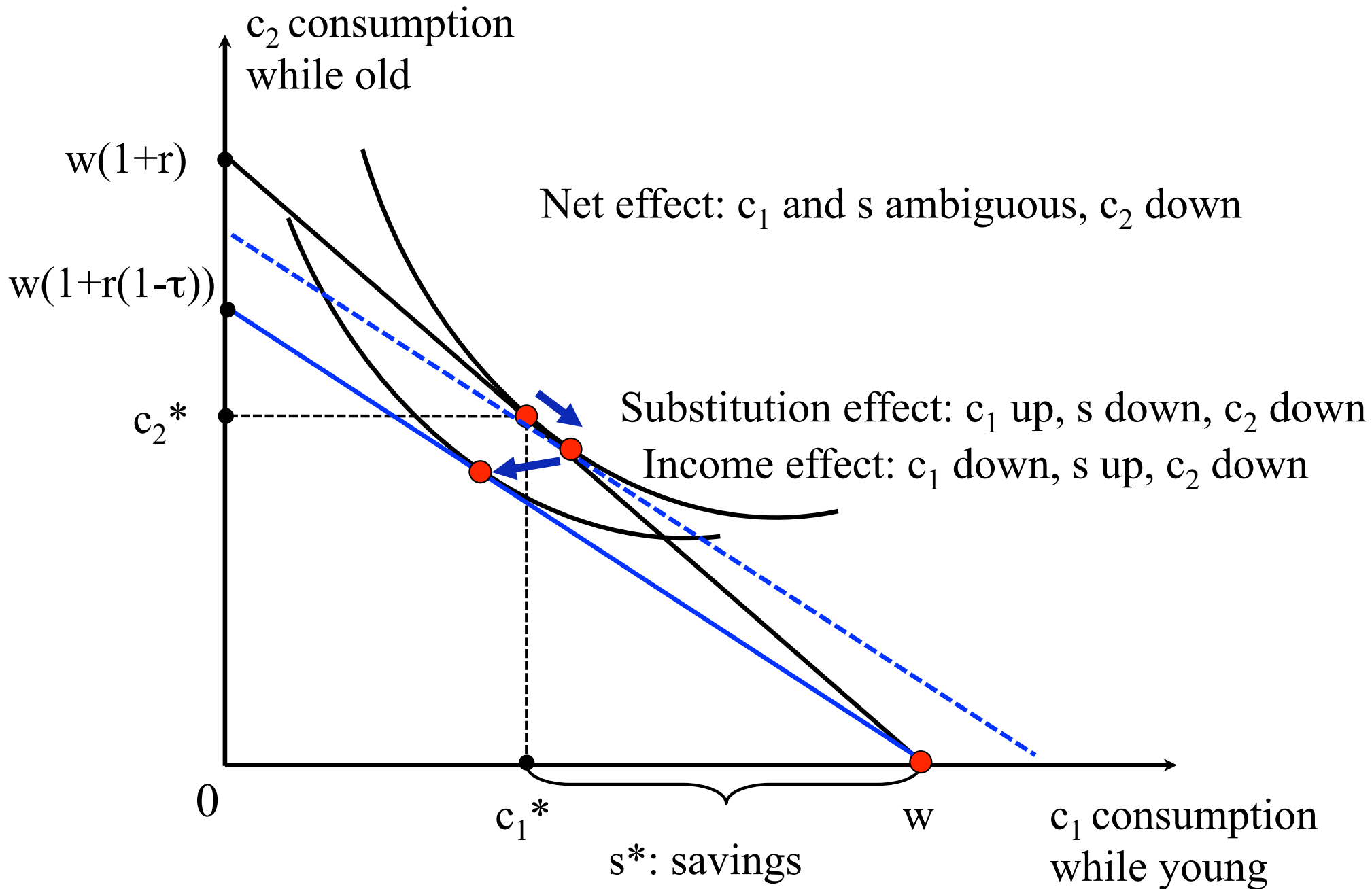
# Life cycle savings and taxes theory



# Life cycle savings and taxes theory



# Life cycle savings and taxes theory



## **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 economically equivalent to taxing only labor earnings

But 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)

Shift to consumption tax also generates a one time wealth tax (as accumulated wealth can now buy less)

Actual consumption taxes (such as value-added taxes) are regressive on an annual basis as rich save a lot more than the poor (relative to income)

## **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) inheritances

And distinction between labor income and capital income is hard to make in practice



## 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

## **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

## **Inheritance: Estate Taxation in the United States**

Estate federal tax imposes a tax on estates above \$11M exemption (less than .1% of deceased liable), tax rate is 40% above exemption (in 2018+)

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)

# Treatment example: Information about the Estate Tax

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.

## Taxation of Inheritances: Welfare Effects

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

Liberals emphasize (1) [taxing heirs] while conservative emphasize (2) [death tax]

## **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) social/family pressure

## **(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)  $\Rightarrow$  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

⇒ Two-dimensional inequality (labor, bequests) requires two-dimensional tax policy tool (labor tax, bequest tax)



## **(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  $\Rightarrow$  parents are made better-off by the estate tax  $\Rightarrow$  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]

## US WEALTH TAX DEBATE

Recent proposals for progressive wealth tax (Warren, Sanders, CA). Various justifications from center left to radical left:

**(1) Revenue:** US wealth is top heavy  $\Rightarrow$  well enforced wealth tax can raise substantial revenue

**(2) Tax fairness:** super-rich do not need to “realize” income and hence pay fairly low taxes relative to their true incomes (Warren Buffett example, Saez-Zucman '19)

**(3) Oligarchy risk:** wealth at the top is power. Evidence from Robber Barons US 19th century and devo countries that entrenched wealth stifles growth (Acemoglu-Robinson '10)

**Concerns of opponents:** Wealth tax will be easy to avoid/evade. If not, wealth tax will discourage entrepreneurs.

## US WEALTH TAX DEBATE

**Politically:** wealth tax is easy for public to understand as a tax on the rich (and polls well even among republicans)

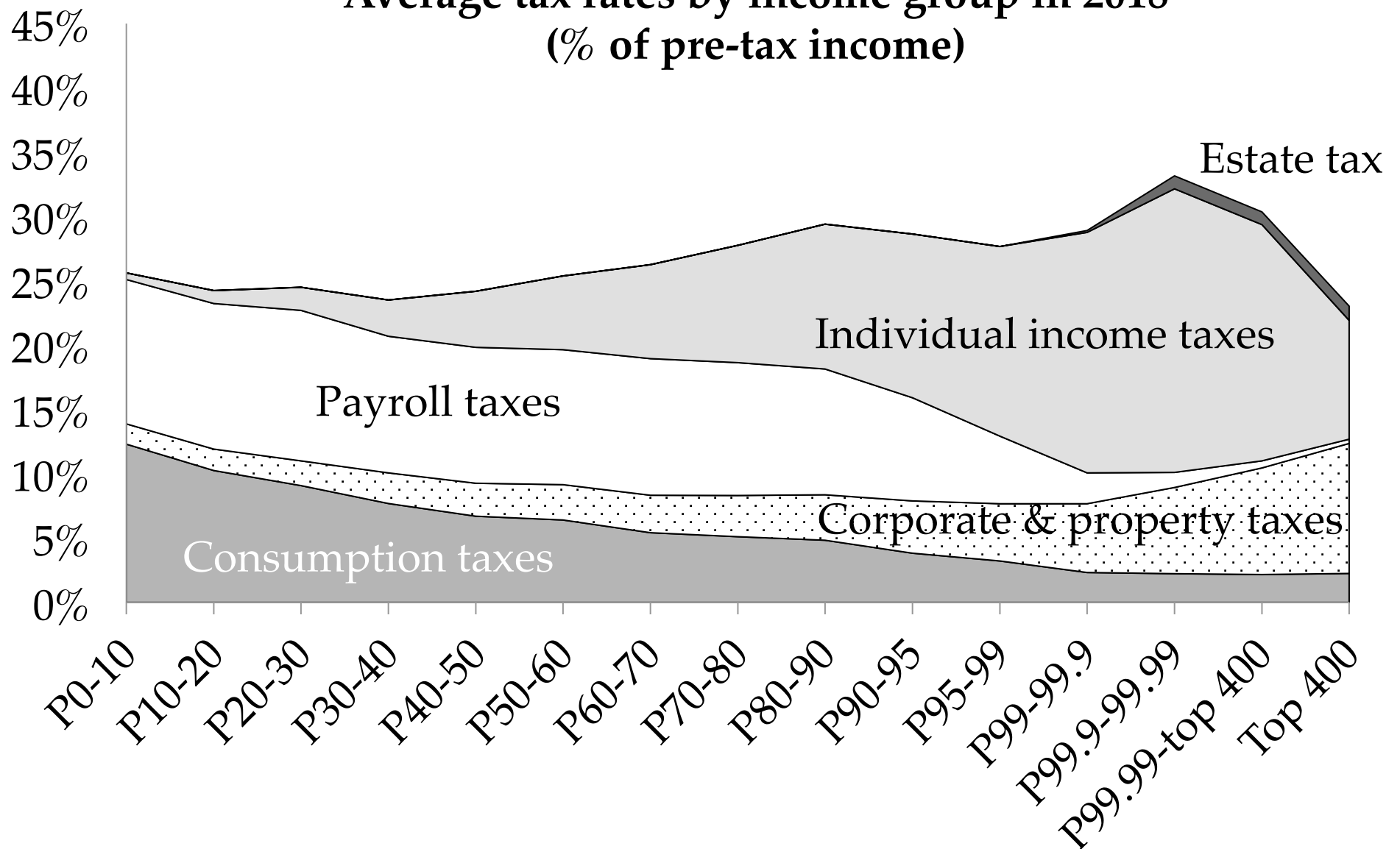
**Economically:** wealth tax powerful because

(1) wealth tax goes after the stock while a capital income tax goes after the flow: example if rate of return is  $r = 5\%$ , a wealth tax at rate 5% is like taxing capital income at 100%

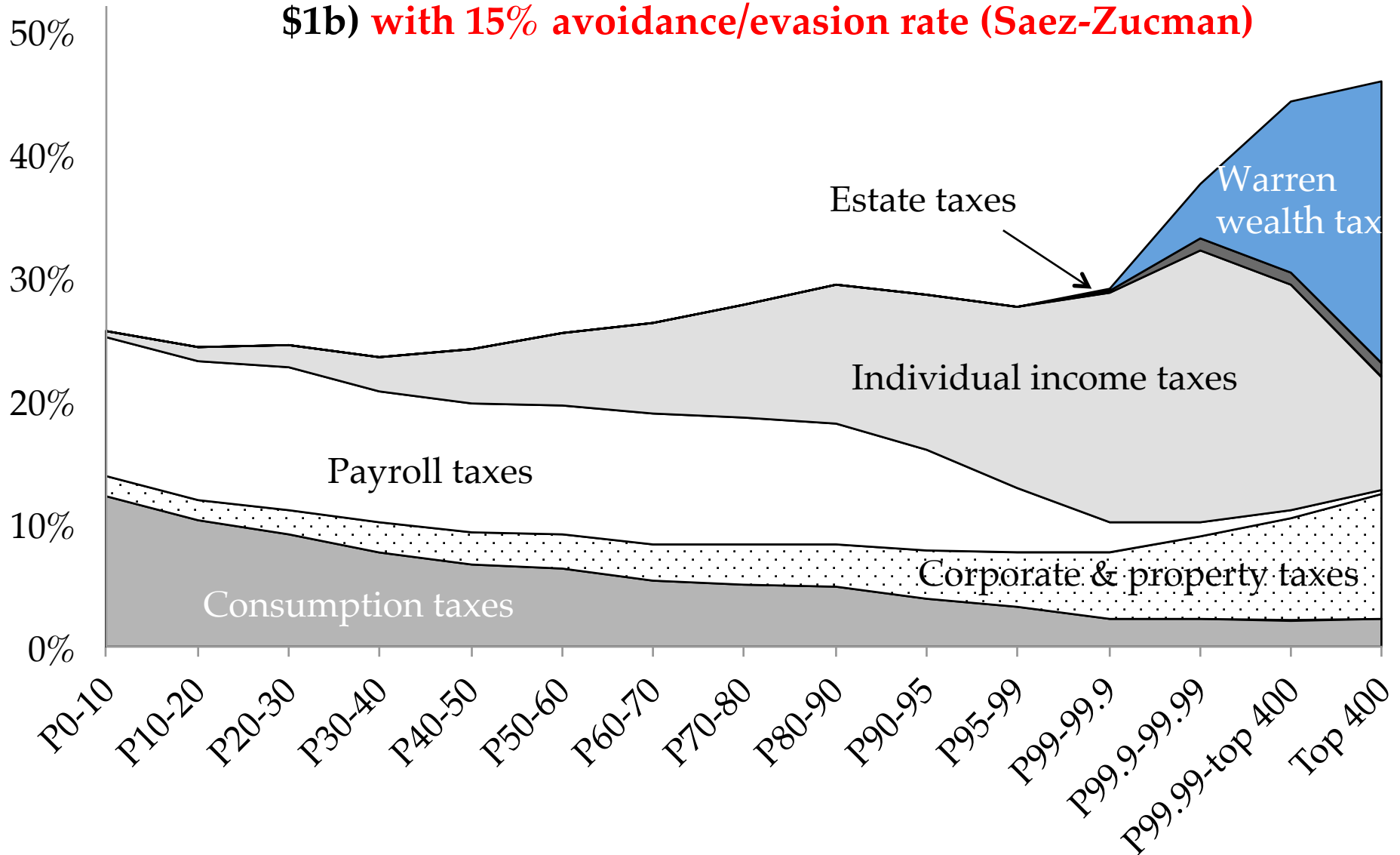
(2) wealth tax builds overtime: for billionaires, wealth tax mechanically reduces wealth by  $(1 - \tau_W)$  after 1 year,  $(1 - \tau_W)^2$  after 2 years, ...,  $(1 - \tau_W)^t$  after  $t$  years, etc.

⇒ Billionaires can still arise but don't stay billionaires as long

# Average tax rates by income group in 2018 (% of pre-tax income)



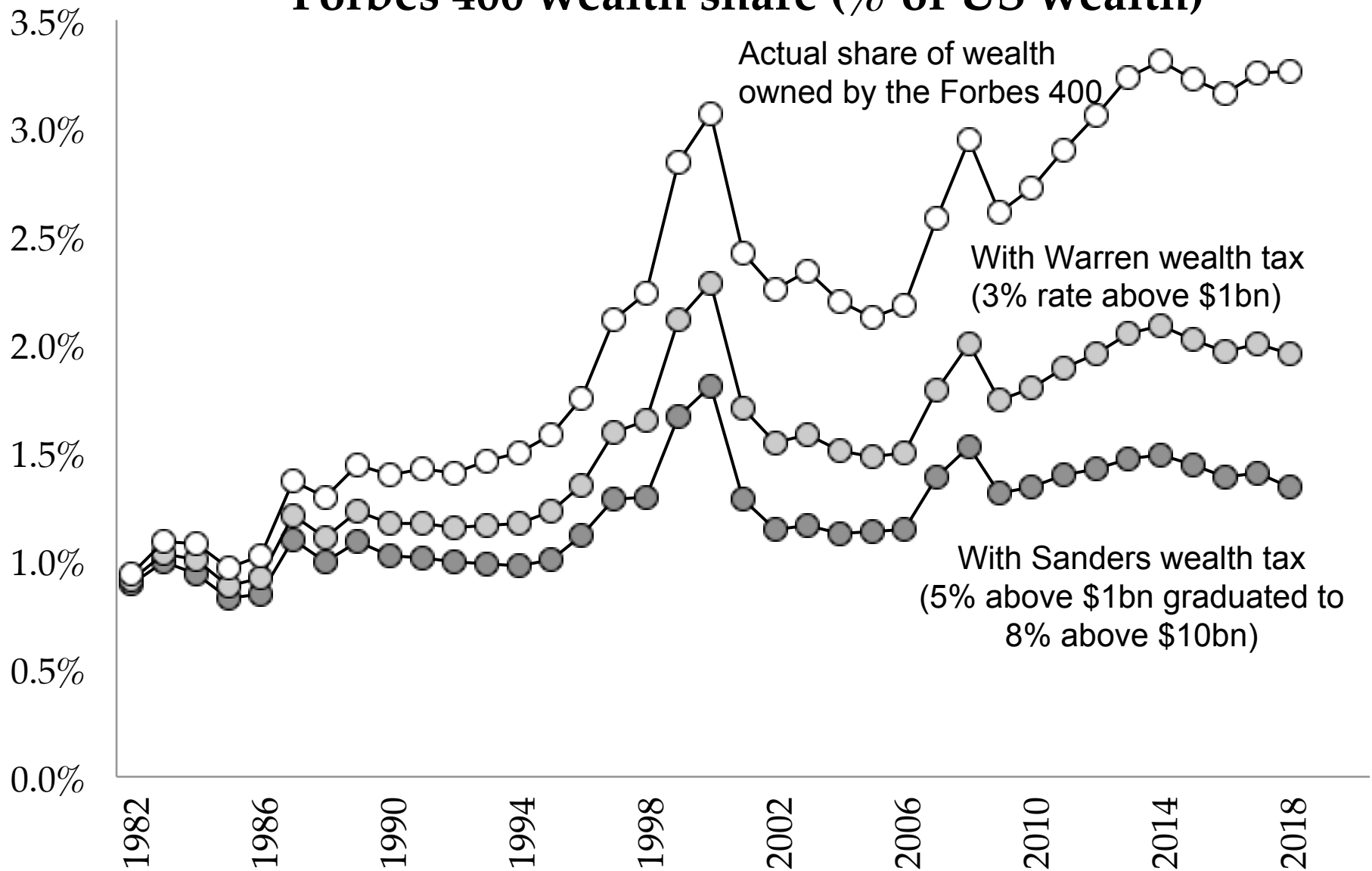
**Adding old Warren wealth tax (2% above \$50m, 3% above \$1b) with 15% avoidance/evasion rate (Saez-Zucman)**



## Long-Term Wealth Taxation and Top Wealth Holders

		Current 2018 wealth (\$ billions)	With Warren wealth tax (3% above \$1b) since 1982	With Sanders wealth tax (5% above \$1b up to 8% above \$10b)
<b>Top Wealth Holder Source</b>				
1. Jeff Bezos	Amazon (founder)	160.0	86.8	43.0
2. Bill Gates	Microsoft (founder)	97.0	36.4	9.9
3. Warren Buffett	Berkshire Hathaway	88.3	29.6	8.2
4. Mark Zuckerberg	Facebook (founder)	61.0	44.2	28.6
5. Larry Ellison	Oracle (founder)	58.4	23.5	8.5
6. Larry Page	Google (founder)	53.8	35.3	19.5
7. David Koch	Koch industries	53.5	18.9	8.0
8. Charles Koch	Koch industries	53.5	18.9	8.0
9. Sergey Brin	Google (founder)	52.4	34.4	19.0
10. M. Bloomberg	Bloomberg LP (f.)	51.8	24.2	11.3
11. Jim Walton	Walmart (heir)	45.2	15.1	5.0
...				
Total top 15		942.5	433.9	195.7

## Forbes 400 wealth share (% of US wealth)



## COULD A WEALTH TAX BE ENFORCED?

Wealth taxes have been used in Europe but have been scaled down (and never raised much revenue, except Switzerland). Suffered from 2 issues:

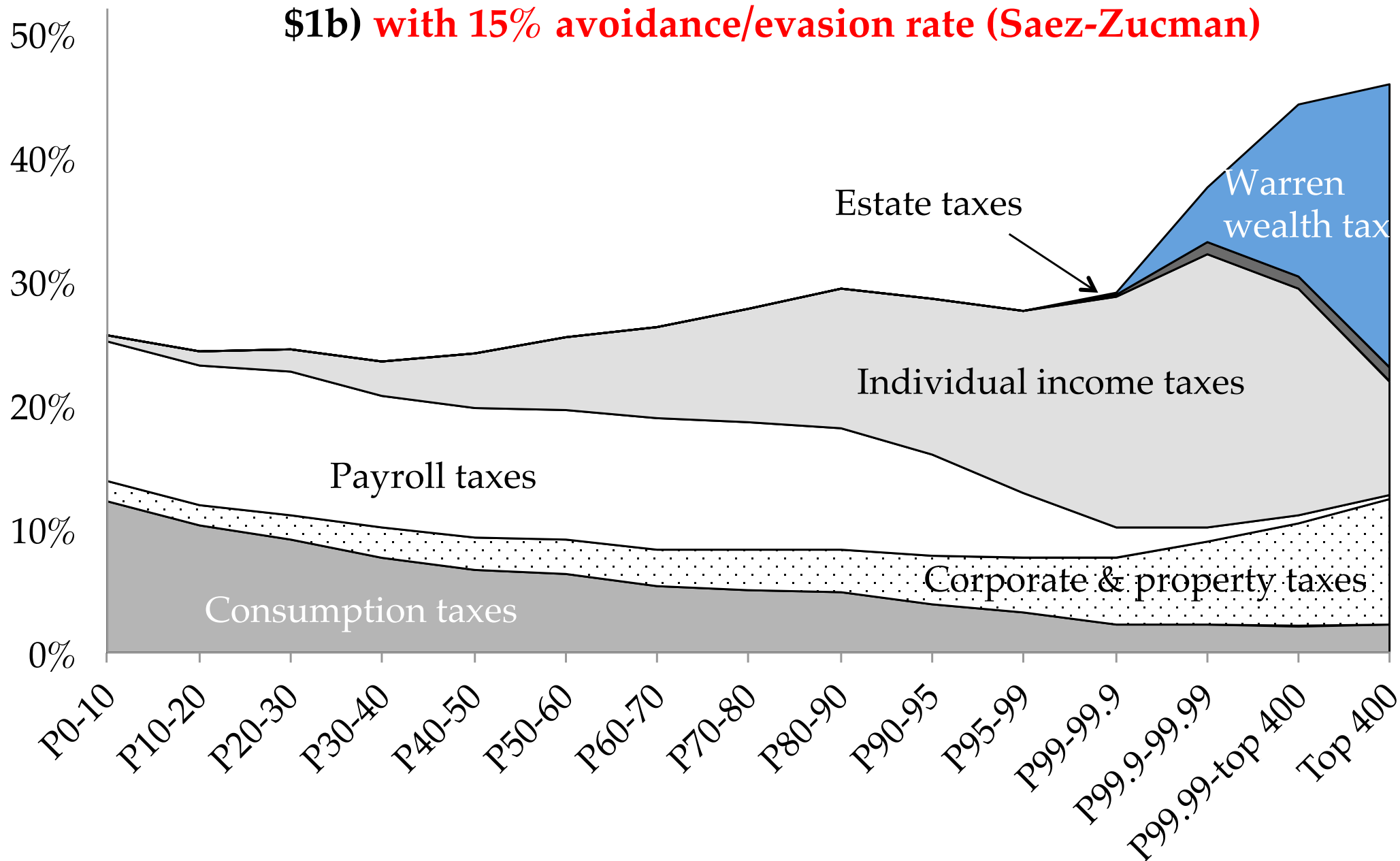
- 1) Tax competition concerns through offshore tax evasion and mobility of the rich: could evade easily or move out to avoid
- 2) Exemption threshold too low (like \$1m) creating hardship for illiquid millionaires (led to inefficient illiquid asset exemptions or tax limits based on reported income)

Both weaknesses could be remedied:

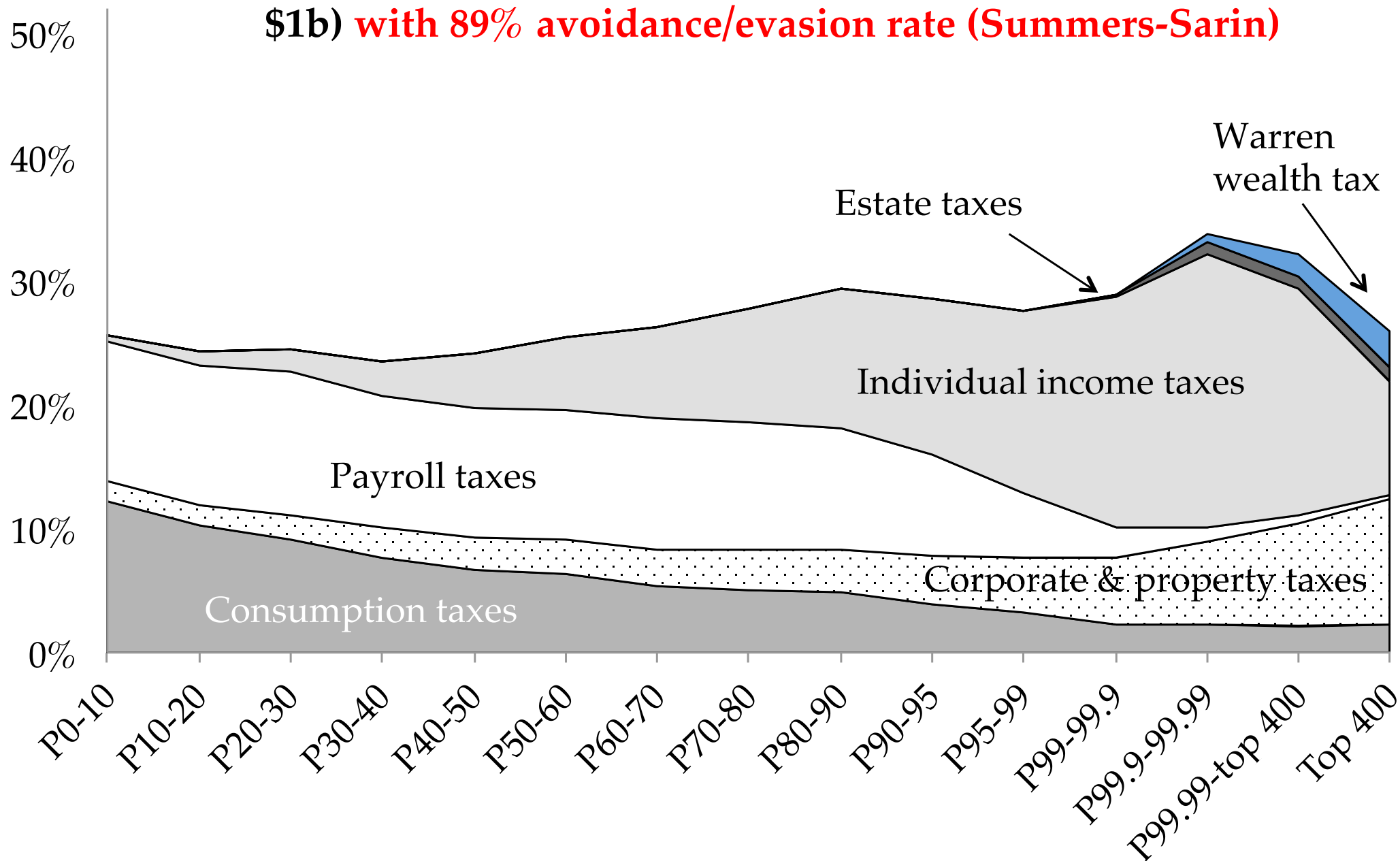
- 1) Fight offshore tax evasion (FATCA) and tax expatriates
- 2) Set high exemption threshold (\$50m rather than \$1m)



**Adding old Warren wealth tax (2% above \$50m, 3% above \$1b) with 15% avoidance/evasion rate (Saez-Zucman)**



**Adding old Warren wealth tax (2% above \$50m, 3% above \$1b) with 89% avoidance/evasion rate (Summers-Sarin)**



## 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

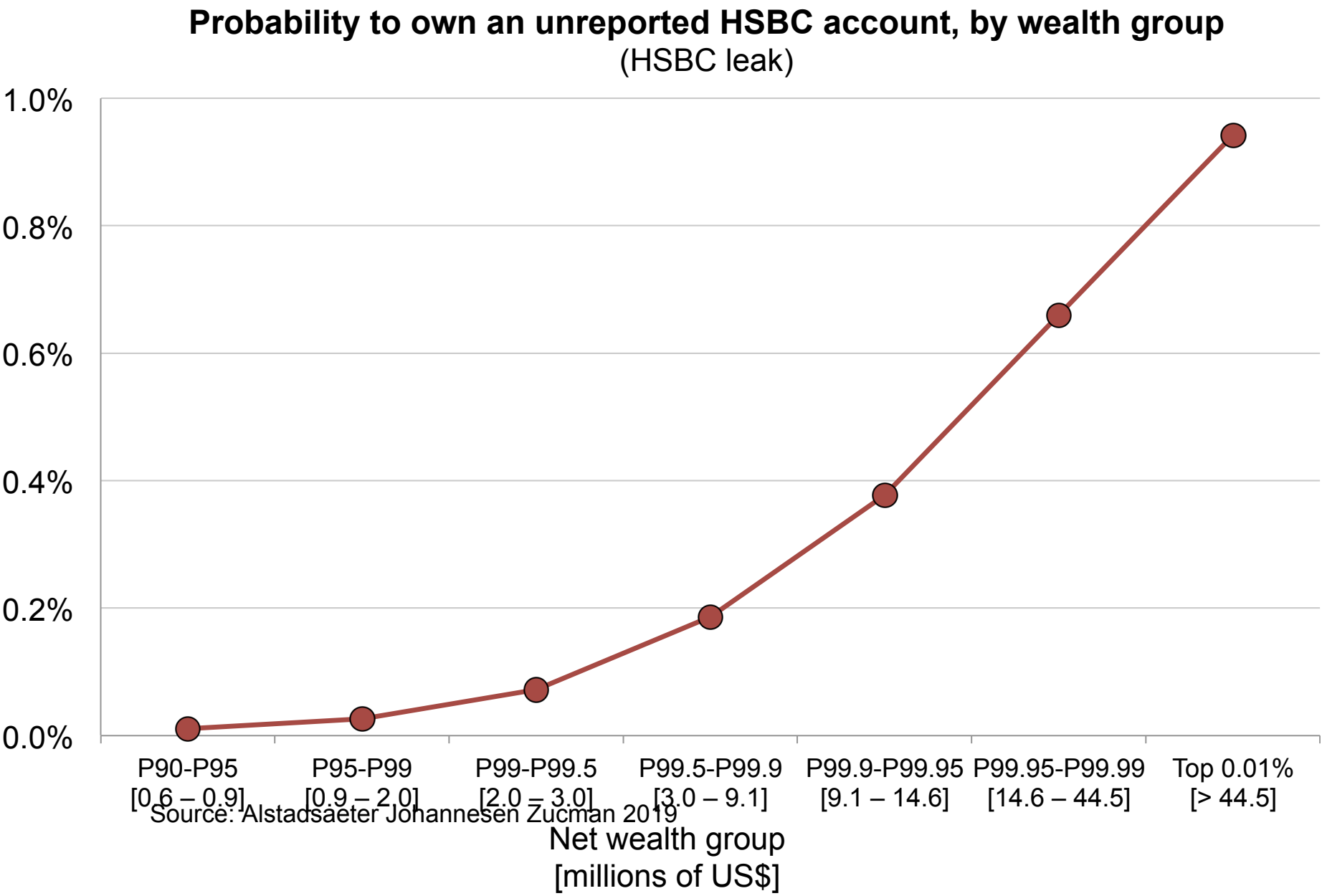
⇒ Total world liabilities are larger than world total assets

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%)

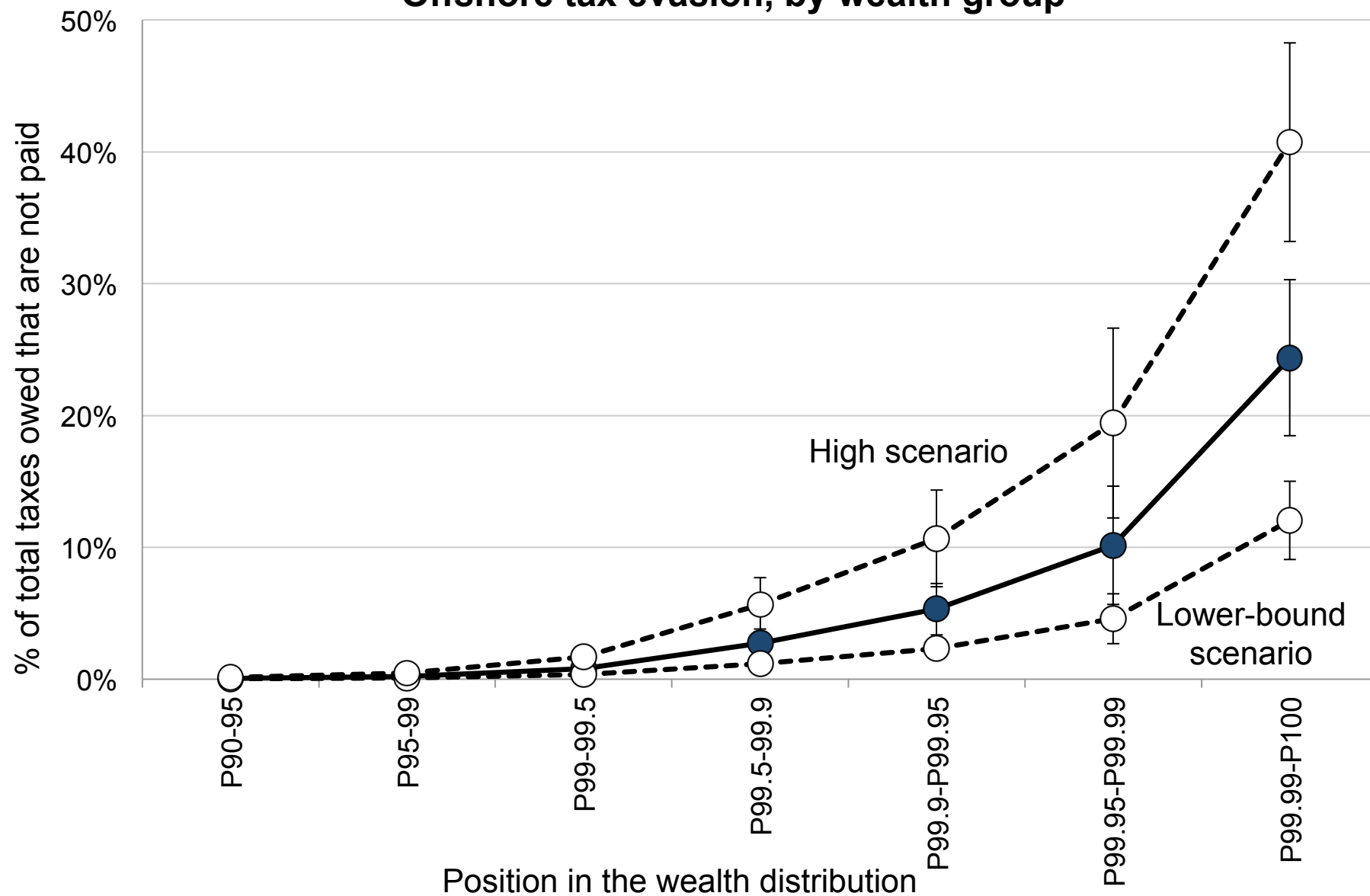
Alstadsaeter-Johannesen-Zucman '19 link data from HSBC leak of accounts to Norwegian tax data

⇒ offshore evasion super concentrated among wealthy and pretty large at the very top

Figure 2: Tax evasion at HSBC: intensive vs. extensive margin



## Offshore tax evasion, by wealth group



## **CURBING OFF-SHORE TAX EVASION**

Offshore tax evasion possible because of bank secrecy. Example: France cannot get a list of French 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 a 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.

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**FATCA'10 US regulations** 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 riskier

**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]

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